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Changing the Indian Health System

Current Issues, Future Directions

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Preface

When I accepted this assignment, little did I realize that the exercise would be so arduous, yet at the same time so rewarding. Never in my long career has my intellectual stamina been so severely tested. But the experience was also deeply satisfying, since the study was so timed that it could make a contribution, however small, to the ongoing exercise of formulating a new health policy. If this Report helps improve understanding of health issues, generates awareness and stimulates an informed debate, our labours will be amply rewarded.

Having worked mainly on global issues since leaving the Health Ministry in 1994, I was glad to return once again to the national health scene. This project provided an excellent opportunity to pick up the threads again and to look at the issues more objectively and in greater depth. Despite some welcome developments, what I found was deeply disappointing. The problems that I had left behind seven years back had not only remained largely unchanged, but had been greatly aggravated, with the health system becoming even more dysfunctional and iniquitous. The fiscal situation in the states had deteriorated to such an extent that they seemed helpless, unable to correct the most glaring inadequacies, even when there was a sincere desire to do so. On the positive side, there were some welcome initiatives in the states that could be regarded as the beginnings of a reform process. There was also a huge improvement in the availability of data as a result of NSSO 42nd and 52nd rounds, NFHS 1 and 2, and NCAER household surveys. Regrettably though, the NIPFP initiative in the early nineties to develop national health accounts was not followed up, so that health finance had become the weakest link in the database. More important, the new data had been analyzed in depth by competent researchers, thanks to the collaborative initiatives of donor agencies and the central government, making available critical inputs to policymakers. The stage was now set for evidence-based policy initiatives.

The Report brings out quite unambiguously the gross inadequacy of public investment in health. It is true that no system can be expected to perform at the current low levels of funding. However, it is also equally true that an increase in funding levels by itself is unlikely to produce the desired results without accompanying systemic changes. As in the case of the energy sector, increased investment must to go hand in hand with system reform. This is why we decided that the most appropriate title for the document would be **Changing the Indian Health System: Current Issues, Future Directions.**

I was ably assisted in my endeavours, by the two co-authors, Rachel Chatterjee (formerly Health Secretary, Andhra Pradesh), and Sujatha Rao (Joint Secretary in the Ministry of Health and Family Welfare). The former made a huge contribution because of her intimate knowledge of the health

system at the state level. The latter provided the valuable and complementary perspective of policymaking and programme management at the central level. The three of us worked as a team and are jointly responsible for every word in the document.

This study was conceived by Professor Jeffrey Sachs, Chair of the Commission on Macroeconomics and Health, and he was instrumental in arranging the funding support from the Bill and Melinda Gates Foundation in record time. He has, all through, been the main inspiration for this work, and has guided it from time to time despite his many commitments. To Dr. Isher Ahluwalia, Director of ICRIER, goes the credit of giving concrete shape to his proposal and sponsoring the study by ICRIER. But for her sustained and ungrudging support, and that of all her colleagues at ICRIER, this Report could never have been completed on schedule.

Studying any health system is a highly complex task, and this is particularly true for a country as vast and diverse as India. Keeping this is mind, we commissioned background papers by reputed scholars and researchers. Despite the very tight schedule, all the contributors were very understanding of our requirements and compulsions. To all the contributors, we owe a debt of gratitude.

From the very beginning, we tried to make this a highly participatory exercise. Consultations were organized with researchers, representatives of the states, NGOs and public health experts – all of whom contributed valuable inputs. A steering committee was constituted with representation from relevant ministries/ departments of the central government, Planning Commission and multilateral agencies involved with health such as the WHO, the World Bank, UNDP, UNICEF and UNAIDS. The committee met regularly and provided valuable guidance to our work. It was the active support and cooperation of all agencies that enabled us to access relevant information and data.

Finally, the support and dedication of our staff, Jai Mansukhani, Anidya Ghosh and Prasanna Ash made it possible to complete the exercise in such a short time. In particular, the contribution of Jai Mansukhani deserves a special mention, as he worked tirelessly, with single-minded devotion, to type out the Report and incorporate the seemingly endless revisions of the drafts.

Rajiv

(Rajiv L. Misra)
Team Leader, India Health Study, ICRIER

New Delhi, August 16, 2001

List of Abbreviations

1.	AP	:	Andhra Pradesh
2.	HP	:	Himachal Pradesh
3.	MP	:	Madhya Pradesh
4.	NE	:	North Eastern
5.	TN	:	Tamil Nadu
6.	UP	:	Uttar Pradesh
7.	Lakh	:	Hundred thousand
8.	Crore	:	Ten million
9.	*Dai*	:	Traditional Birth Attendant
10.	Anganwadi	:	Village level worker in the nutritional and child welfare programmes
11.	Panchayati Raj Institutions	:	Elected local bodies, (Panchayat for group of villages, Panchayat Samiti for around 1,00,000 population, and Zila Parishad for the district). These Institutions discharge many responsibilities for local self government and development in respect of rural areas

1.	AIIMS	:	All India Institute of Medical Sciences
2.	APAC	:	Aids Prevention and Control
3.	CBHI	:	Central Bureau of Health Information
4.	CDSCO	:	Central Drug Standard Control Organization
5.	CIDA	:	Canadian International Development Agency
6.	CMH	:	Commission for Macroeconomic Health
7.	CSIR	:	Council of Scientific and Industrial Research
8.	CSO	:	Central Statistical Organization
9.	DCG	:	Drug Controller General
10.	DCH&MO	:	District Chief Health and Medical Officer
11.	DFID	:	Department for International Development
12.	DGH&MS	:	Director General of Health and Medical Services
13.	DGHS	:	Director General of Health Service
14.	DSPRUD	:	Delhi Society for Promotion of Rational Use of Drugs
15.	GOI	:	Government of India
16.	ICMR	:	Indian Council for Medical Research
17.	IICT	:	Indian Institute of Chemical Technology
18.	IIHMR	:	Indian Institute of Health Management and Research
19.	IIPS	:	Indian Institute of Popular Science
20.	JICA	:	Japanese International Co-operative Agency
21.	MHFW/MOHFW	:	Ministry of Health and Family Welfare
22.	MLEC	:	Modified Leprosy Eradication Campaign
23.	MRS	:	Medical Relief Societies
24.	NACO	:	National AIDS Control Organization
25.	NCAER	:	National Council for Applied Economic Research
26.	NDA	:	National Drug Authority
27.	NFHS	:	National Family Health Survey
28.	NICD	:	National Institute od Communicable Diseases
29.	NII	:	National Institute of Immunology
30.	NIPFD	:	National Institute of Public Finance and Development
31.	NMEP	:	National Malaria Eradication Programme
32.	NPPA	:	National Pharmaceutical Pricing Authority
33.	NSSO/NSS	:	National Sample Survey Organization
34.	PSPU	:	Policy and Strategic Planning Unit
35.	SIDA	:	Swedish International Development Association
36.	SRS	:	Sample Registration System
37.	TNSACS	:	Tamil Nadu State Aids Control Society
38.	USFDA	:	United States Food and Drug Administration
39.	VHAI	:	Voluntary Health Association of India

1.	WHR	:	World Health Report
2.	WDR	:	World Development Report

1.	ANC	:	Antenatal Care
2.	ANM	:	Auxiliary Nurse Midwife
3.	APAC	:	Aids Prevention and Control
4.	ARI	:	Acute Respiratory Infection
5.	BIA	:	Benefit Incidence Analysis

6. BMI	:	Body Mass Index
7. BOD	:	Burden of Diseases
8. BPL	:	Below Poverty Line
9. CAM	:	Complementary Alternative Medicine
10. CBR	:	Child Birth Rate
11. CCIM	:	Central Council of Indian Medicine
12. CDR	:	Crude Death Rate
13. CGHS	:	Central Government Health Scheme
14. CHC	:	Community Health Centre
15. CHD	:	Coronary Heart Disease
16. CHW	:	Community Health Worker
17. CMR	:	Child Mortality Rate
18. CMS	:	Commercial Sex Worker
19. CVD	:	Cardiovascular Disease
20. DALYs	:	Disability Adjusted Life Years
21. DOTS	:	Directly Observed Treatment, Short-course
22. ECO	:	Emergency Obstetric Care
23. EDL	:	Essential Drug List
24. EMCP	:	Enhanced Malaria Control Programme
25. EOC	:	Emergency Obstetric Care
26. GBDS	:	Global Burden of Disease Study
27. GDI	:	Gender Development Index
28. HAART	:	Highly Active Anti-Retroviral Therapy
29. HDI	:	Human Development Index
30. HMO	:	Health Maintenance Organization
31. HPI	:	Human Poverty Index
32. IAVI	:	International Aids Vaccine Initiative
33. IDU	:	Intravenous Drug User
34. IFA	:	Iron and Folic Acid
35. IMR	:	Infant Mortality Rate
36. IOL	:	Intra Ocular Lenses
37. IP	:	Inpatient
38. ISM	:	Indian Systems of Medicine
39. LEB	:	Life Expectancy at Birth
40. MCH	:	Maternal and Child Health
41. MDT	:	Multi Drug Therapy
42. MMR	:	Maternal Mortality Rate
43. MPW	:	Multipurpose Health Worker
44. NAMP	:	National Anti – Malaria Programme
45. NCD	:	Non Communicable Disease
46. NCE	:	New Chemical Entity
47. NDDS	:	Novel Drug Delivery System
48. NHP	:	National Health Policy
49. NMHP	:	National Mental Health Programme
50. NMHP	:	National Mental Health Programme
51. NTP	:	National TB Programme
52. ODA	:	Official Development Assistance
53. OP	:	Outpatient
54. ORS	:	Oral Rehydration Salt
55. ORT	:	Oral Rehydration Therapy
56. PDS	:	Public Distribution System
57. Pf	:	P falciparum
58. PHC	:	Primary Health Centre
59. PPP	:	Public Private Partnership
60. QI	:	Quality Improvement
61. QOC	:	Quality of Care
62. RCH	:	Reproductive and Child Health Programme
63. RMP	:	Rural Medical Practitioners
64. RNTCP	:	Revised National TB Control Programme
65. RTI	:	Reproductive Tract Infection
66. SCC	:	Short Course Chemotherapy
67. STD	:	Sexually Transmitted Diseases
68. TBA	:	Traditional Birth Attendant
69. TFR	:	Total Fertility Rate
70. UIP	:	Universal Immunisation Programme

1. EME	:	Established Market Economies

2.	ESIS	:	Employees State Insurance Scheme
3.	IEC	:	Information, Education, Communication
4.	IPR	:	Intellectual Property Right
5.	MNC	:	Multinational Company
6.	PDS	:	Public Distribution System
7.	SC/ST	:	Scheduled Caste / Scheduled Tribe
8.	TOR	:	Terms of Reference
9.	TRIPS	:	Trade Related Aspects of Intellectual Property Rights

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Changing the Indian Health System: Current Issues, Future Directions
Executive Summary

This Report had as its starting point the terms of reference of the WHO-appointed Commission for Macroeconomics and Health (CMH). During the CMH meeting hosted by ICRIER in New Delhi in April 2000, detailed presentations made by four Indian states clearly brought out the diversity of socioeconomic conditions, health outcomes and approaches in different parts of the country. This diversity, together with the quality of research and data available, suggested that India could make a significant contribution to the CMH exercise. A team at ICRIER, led by Rajiv Misra, former Secretary Health, Government of India, prepared the Report with a view to making inputs into the CMH thinking and contribute to the ongoing debate on the National Health Policy. The Report thus evolved into a country-specific study with a focus on national issues relevant to Indian policymakers, while maintaining an international dimension that addresses the CMH terms of reference. The project was funded by the Bill and Melinda Gates Foundation.

I. Introduction

It is increasingly recognized that good health is an important contributor to productivity and economic growth, but it is, first and foremost, an end in itself. In a poor country like India, where the only asset most people have is their bodies, health assumes even greater significance for their economic status. Good health, and its natural corollary, defense against illness, is fundamental to every man and woman and child, not only for their well being, but for their very survival. If the State exists to safeguard the right of its citizens to the fundamental prerequisites of survival, this same State must own up to its responsibility to protect its citizens from illness and premature mortality.

The Indian State has articulated this responsibility often enough. Since Independence, the government, ostensibly driven by socialistic goals, has expressed its intentions to discharge this responsibility in one Five-Year Plan after the other. Ambitious systems, programmes and schemes have been drawn up to alleviate poverty while promoting the goal of universal healthcare, although the close linkages between the two have not been fully appreciated.

There have indeed been large gains in health status since Independence. Life expectancy has gone up from 36 years in 1951 to 62 years in 1995. Infant Mortality Rate is down from 146 in 1951 to 71 in 1997. Crude Birth Rate has been reduced from 36.9 in 1970 to 26.1 in 1998, and Crude Death Rate from 14.9 to 8.7 in the same period. One of the major reasons for these gains has been the development of an impressively vast, three-tiered system of rural health infrastructure, with sub-centres for each 5000 population, PHCs for each 30,000

population, and CHCs for each 1,00,000 population. Immunization to control communicable diseases has made a major contribution to these gains; success stories include small pox eradication, the near elimination of leprosy, and the extraordinary social mobilization for polio eradication. Improvements in determinants such as water supply and sanitation have also helped achieve outcomes. These aggregations, however, mask the wide differentials between and within states. The health indicators of Kerala are comparable to those of middle-income countries, while Uttar Pradesh, Madhya Pradesh and Orissa are almost at the level of Sub-Saharan Africa. There are huge disparities between urban and rural areas, and between developed and relatively remote areas inhabited by the marginalized sections of society.

Moreover, the figures regarding achievements present an impressive picture only when viewed in splendid isolation. First, a comparison of targets and goals dilutes the gains considerably. The National Health Policy 1983 set some targets for 1985, 1990 and 2000. A comparison of goals with actual achievements reveals the real picture: we are nowhere near targets, except for life expectancy, Crude Death Rate and polio immunization. Second, while India seems to have performed better than countries with the same level of per capita income, such a comparison is obviously misleading. With its knowledge base, its administrative and institutional strengths, and its growth potential, India is capable of much higher levels of achievement.

It is clear that those health systems that direct their resources and energies towards the health needs of the poor have a better overall health status. This is a logical association, since the poor carry the larger burden of disease. But the facts make a mockery of such logic as they establish the raw deal the poor are getting from the public healthcare system. A recent NCAER study reveals that the richest 20% enjoy three times the share of public subsidy for health compared with the poorest quintile. The poorest 20% of Indians have more than double the mortality rates, fertility rates and undernutrition levels of the richest 20%. The poor suffer disproportionately more from pre-transition diseases such as malaria and TB. On an average, they spend 12% of their incomes on healthcare, as opposed to only 2% spent by the rich. Treatment or hospitalization for chronic illness often means the liquidation of meagre assets, even permanent indebtedness. One episode of hospitalization is enough to wipe out all the assets of the family. It is no wonder then that the number of the poor who did not seek treatment because of financial reasons increased from 15% to 24% in rural areas and doubled from 10% to 21% in urban areas in the decade 1986-96.

The obvious question then is Why? If the State has universal healthcare and poverty alleviation as basic objectives; if there have been gains, however patchy and inadequate; if there are systems in existence if not actually thriving, why is the current health scenario so bleak?

The obvious and most important reason is that for a State that promises universal healthcare through the public health system, India has one of the lowest health budgets in the world. How is the objective to be met if there are no

II. The Current Health Scenario: Issues

1. Present Challenges

Communicable Diseases: One of the biggest blots in the current health scenario is the failure to control communicable diseases, despite the availability of cost-effective and relatively simple technologies. These pre-transition communicable and infectious diseases constitute a major cause of premature death in India: they kill over 2.5 million children below the age of five and an equal number of young adults every year. The proportion of total deaths caused by communicable diseases (including maternity related conditions and nutritional deficiencies) continues to be unacceptably high at 42%. (Of the 269 million disability-adjusted life years or DALYs lost, communicable diseases accounted for 50.3%.) Despite the global eradication of small pox, and despite expectations that current efforts will ensure the elimination of leprosy and polio within the next five years, environmental and social factors impose severe constraints on the control of two of the communicable diseases that pose a special threat – malaria and TB. The total number of TB patients is estimated at 15 million. Moreover, India has been identified as a hot spot for Multi Drug Resistant (MDR) TB, which is both difficult and expensive to treat. The resurgence of malaria and TB in forms difficult to control or treat, along with the exponential rate of development of HIV/AIDS, have imparted a new sense of urgency to disease control. Special projects have been launched for the control of communicable diseases such as malaria, TB and leprosy with the support of the World Bank and other donors, and they constitute an appropriate strategic response to the increasing threat. They have improved performance considerably through stable funding and programmatic reforms. However, except in the case of leprosy where the objective of elimination appears achievable, the coverage in other programmes is still low, and large uncovered areas have been receiving even less attention than before. These projects must cover the entire country, and central funding support must be extended to 100%, rather than matching 50:50 with the states, as in many cases at present. The sustainability of these special programmes once external assistance ceases also needs to be addressed.

- *TB:* India accounts for one-third of global TB, and the largest number of persons suffering from active TB in the world. According to available estimates, about 2.2 million persons are added each year to the existing load of about 15 million active TB cases. Of these new cases, about 800,000 are infectious, and about 450,000 die. Most disturbing is that 20% of 15 year olds are reportedly infected; and among women in the reproductive age group of 15-44 years, it causes more deaths than all the

resources to put policy and schemes into actual practice? This gross mismatch between objectives and resources is at the heart of both the inadequacies and the inequities of the Indian health system. Higher public health expenditures are clearly and unequivocally associated with better health outcomes, and thus productivity, especially in a poor country. Any attempt at understanding the failures of the health system, and setting these derailed intentions and structures back on course, would involve, for a start, a much higher priority to the health sector. This higher priority will then have to be translated into increased allocation of resources. Otherwise financial risk protection for the poor, who are beset by illness as well as the threat of loss of work, will remain what it has been for the last several decades: pious declarations on paper.

The State's role in health has been so far from its declared intentions that not only has it failed to provide healthcare to the majority of the population through the public sector; it has also countenanced a large and thriving private sector to grow practically without regulation. In recent times, one point of view has offered the private sector as the panacea for all ills; another view perceives the private sector as a negative accompaniment to liberalization and links its growth with that of inequity. Neither view takes into account two facts: one, that in the context of a public health system that does not deliver services to those who need them, the private sector has grown to be the main provider of curative healthcare. It currently dominates both outpatient and inpatient care, and this evidence shows no significant variations by income group, rural/urban location, gender, caste or tribe. Two, the private sector is almost entirely unregulated so that its costs, its quality of care and its spatial distribution are for the large part incompatible with national health goals. It is not surprising then that the poor are forced into a situation where they have to pay for private healthcare they cannot afford. Their deprivation and vulnerability make the poor ill more easily; and illness makes them even poorer. There is no dearth of evidence that establishes this nexus. A recent analysis of the World Bank (*India – Raising the Sights: Better Health Systems for India's Poor*, May 2001) concludes that "the hospitalized Indian spends more than half of his total annual expenditures on buying healthcare; more than 40% of hospitalized people borrow money or sell assets to cover expenses and 35% fall below the poverty line." The same study also suggests that out-of-pocket medical costs alone may push 2.2% of the population below the poverty line in one year.

Given this context, the first task of policymakers is to define realistic goals and provide the necessary financial resources for their achievement. Besides, the lack of clarity on the relative roles of the centre and the states has caused the centre to focus on the day-to-day management of institutions and programmes, rather than concentrating on its stewardship role. The result is that even the meagre available resources have not been put to optimal use. Clearly, along with increased resources, the need of the hour is wide-ranging systemic reforms, both at the centre and the states. We believe that the reform process must begin with a thorough restructuring of the Ministry of Health and Family Welfare on the lines indicated in the Appendices of this Report.

- enhancement of community based action, such as undertaking bioenvironmental control measures and promoting personal prophylactic measures.

The effectiveness of these efforts is hampered by weak and often non-functional public health systems, non-availability of required manpower, inaccessibility of areas most effected (e.g. tribal areas), and poor community participation. The removal of these constraints is a major challenge for the programme.

- *Maternal and Child Health (MCH):* Children below five and women in the reproductive age group make up 36.2% of the population of India, and in terms of survival and well being, they also constitute the most vulnerable group in society. Income levels and social exclusion only serve to exacerbate this vulnerability: health indicators for SC and ST women and children reveal that they are considerably worse off. As in other aspects of the health sector, the database so essential for planning and setting of priorities is not reliable. But the estimates available show that the Maternal Mortality Rate (MMR) continues to remain at an unacceptable level – 408 for 1,00,000 live births. The causes for these poor indicators of maternal health are well documented: the low socioeconomic status of women, the undernourishment and anemia rampant among them, the low proportion of institutional deliveries, and the absence of trained birth attendants in as many as two-thirds of cases. Again, only a revamping of the primary healthcare system, along with effective referrals for complications, will help improve antenatal and maternity care. Simultaneously, a fundamental link – between high mortality on the one hand and high fertility and age at delivery on the other – must be addressed to get a handle on the problem of maternal survival and health.

  The poor status of maternal health is inextricably linked with the gender disparities that pervade all aspects of life in India. The results of the 2001 Census seem to indicate that the reported decline in the sex ratio during the last century has, at last, been not only arrested but also marginally reversed. But the sex ratio in the 0-6 age group has worsened, and this is cause for serious concern. Again, the tempo of decline in Infant Mortality Rate (IMR) and under-5 mortality achieved between 1981 and 1991 has not been sustained. The critical point is that IMR has been hovering around 72, and under-5 mortality around 95 per 1000 live births, during the last few years. The rate of decline has, during the last four years, reached a disturbing plateau.

- *Other Infections:* Linked with child survival and health is the range of water-related or soil-transmitted illnesses. Acute

various causes of maternal mortality put together. Added to this are the facts that every sputum positive case carries the potential to infect 10-15 individuals in a year, and that TB is the principal opportunistic infection of HIV. The result is the alarming possibility that deaths caused by TB can go up to 4 million in the next decade. At present, the DOTS strategy is implemented under the aegis of the RNTCP in about 200 districts, covering a population of 350 million. The programme is supported by about Rs.746.76 crores of external funding. The results of the RNTCP are impressive, but nevertheless the future scenario of TB control appears grim. First, only an estimated 20-25% of TB patients in the country have been brought under DOTS. The same familiar reasons crop up as barriers to further expansion and better performance : low budgets; weak institutional capacity; the dangers of MDR exacerbated by unregulated private practitioners following their disparate, sometimes irrational treatment regimes, as well as unplanned, unprepared and hasty expansion of the programme. Multiple systems of TB control – conventional, SCC and RNTCP – are all being implemented with different financing mechanisms. And as in other programmes, poor community support is a hindrance. In addition to all this, the future of TB control has to be viewed in light of the ominous fact that nearly two-thirds of opportunistic infection among AIDS patients is TB, portending a dual epidemic of TB and HIV in the near future.

- *Malaria:* The prevalence of malaria was brought down to about 2 million cases by 1984; but in 1994, once again, there were several focal outbreaks resulting in high mortality. The most dangerous strain of malaria, caused by the parasite Plasmodium falciparum (Pf), has been steadily rising to account for almost half of all malaria cases in 2001. As expected, the disadvantaged sections are the worst hit: in Andhra Pradesh, the rate of Pf malaria among tribal groups accounted for 75% of malarial deaths in the state.

Several reasons have been cited for the failure to reduce malarial prevalence: parasite resistance to drugs and vector resistance to insecticides in some high endemic areas, environmental changes caused by development activities such as irrigation projects, and rapid urbanization. A three-pronged strategy was drawn up, which is now being implemented throughout the country under the National Anti-Malaria Programme (NAMP). The main objective of the strategy is interrupting the transmission of disease by

- early detection and prompt treatment to reduce the reservoir of infection;
- reduction of the vector population through selected vector control using anti-adult and anti-larval measures;

diarrhea, worm infestations and digestive tract infections become illnesses to reckon with in view of their debilitating impact on the immunity system, particularly those of children and of those already undernourished. In addition to comprehensive health education – which would promote community hygiene and healthy living – India needs to make adequate investments in water supply, sewerage systems and sanitation to reduce the infectious disease load. Acute Respiratory Infections (ARI) continue to take a heavy toll, especially among children, despite the availability of inexpensive and effective anti-microbials, causing almost a million avoidable deaths every year. This again is due to a dysfunctional public health system and lack of access to quality primary and secondary care.

The threat of communicable diseases, as well as perinatal morbidity and mortality, looms larger because of the poor nutritional status of a substantial part of the population. Despite a nationwide programme for nutritional supplementation of pregnant women and children, NFHS II (1998-99) shows only a slight improvement over NFHS I (1992-93). The percentage of underweight children has only reduced from 52% to 47%, and of the severely underweight from 20% to 18%. 74% of children were found to be anemic; the same study found that 52% women have some anemia, which is a major cause of maternal mortality.

The present challenges of communicable diseases and maternal and child survival show up the weaknesses of the health system. But even as the system struggles to meet the current demands of disease control, a new challenge, again a communicable disease, is emerging in the form of HIV/AIDS, threatening to sharpen existing problems of resources, health infrastructure and inequities.

2. Emerging Challenges

HIV/AIDS: The threat presented by the rapidly growing HIV/AIDS infection has not received the priority attention that it deserves, partly because of the long gestation period between HIV infection and the development of full-blown AIDS. Also, it is the opportunistic infections (such as TB) that get noticed; the root cause of morbidity and mortality often remains undiagnosed. The major route of transmission in India is sexual contact, but sex as a subject is weighed down with taboos in a traditional society. The high prevalence of STDs in India also makes the country particularly vulnerable to the AIDS threat. In the year 2000, the number of Indians infected with HIV was estimated at 3.86 million, or roughly a prevalence rate of 0.7%, quite low when compared to the prevalence rates of 25% and over in South Africa, Zimbabwe and Botswana. But the infection in India is no longer confined to high-risk groups or

only to urban areas and it is spreading rapidly. And since the epidemic is more than a decade old, mortality due to AIDS is increasing: in 1999 alone, nearly 300,000 Indians are estimated to have died of AIDS. As of March 2000, 11,251 cases have been reported to NACO: 79% are males, 21% female. This is, however, only a fraction of AIDS morbidity in the country, reflecting the stigma and the ignorance surrounding the infection. Widespread discrimination against the infected hinders their access to healthcare. Similarly, the low income levels of the infected, coupled with lack of resources in the government funded programme – despite the manufacture and availability of the drugs in India at more affordable prices – preclude the widespread use of highly active anti-retroviral therapy (HAART). As a result, morbidity and mortality of those infected continues to be high.

The most important contribution of the National AIDS Control Programme (NACO) has been sentinel surveillance; it has also heightened awareness regarding blood safety. The Programme has now begun its second phase, which is to focus on targeted interventions among high-risk behaviour groups. But awareness levels are still low or uneven; information, education and communication (IEC) remain a crucial element. If India is to avoid the catastrophe that Africa is struggling with, far greater efforts will have to be made to keep the epidemic at bay. Fortunately, we have a model in the state of Tamilnadu, which has successfully arrested the increase in the level of infection by concentrating on high-risk segments of the population, and by devising innovative mechanisms for programme implementation. India must act immediately and vigorously to control the level of HIV infection so that it does not grow beyond 3% of the population.

3. Future Challenges

As if present and emerging problems do not present enough of a challenge to a resource-hungry and weak health system, there are also the challenges of the future for which provisions must be made. Projections of population increase indicate a changing demographic profile with profound implications for health planners and economists. The next two decades will see a significant increase in the 15-59 age group; the increase in longevity will almost double the population of the elderly (> 60 years). As more individuals survive to middle age, the years of exposure to the risk factors of chronic disease increase. Non-communicable diseases (NCDs) will gradually become the dominant contributors to the burden of disease – their share increasing from an estimated 33% in 1998 to 57% in 2020. In fact, even at the present stage of health transition, India contributes substantially to the global burden of NCDs. In 1990, India accounted for 19% of all deaths, 16% of all NCD deaths and 17% of all CVD

deaths in the world. CVD in India alone accounted for around 2.4 million deaths, in contrast to nearly 3.2 million CVD deaths in all the industrialized countries put together. In addition, recent evidence suggests that impaired fetal nutrition, reflected in small birth size, results in programmed susceptibility to adult cardiovascular disease, diabetes and some cancers. With NCDs positioned as a major public health challenge, the existing health systems will need to be reorganized and reoriented to deliver the expanded mandate of healthcare – involving the prevention, surveillance and management of chronic diseases along with primary and secondary healthcare. The emerging burden of NCDs poses a special threat to the poor due to the often prolonged and expensive treatment required for these conditions, as well as much greater exposure to risk factors like tobacco and alcohol.

The management of NCDs is often technology-intensive and expensive. Individual as well as societal resources are already being drained at a disproportionately high level by the tertiary care management of NCD, drawing scarce resources away from the unfinished agenda of infectious disease and maternal and child health. Though NCD epidemics usually originate in the upper socioeconomic strata, they diffuse across the social spectrum, with the social gradient ultimately reversing and the poor becoming the most afflicted.

The exorbitant costs of treating chronic diseases make prevention the most suitable option for India. Traditionally, public health approaches to NCD control has consisted of a high-risk strategy, targeting those with high levels of risk factors and employing interventions to reduce them, usually with drugs; and a population strategy that attempts to reduce risk factor levels in the whole community, usually through lifestyle-related measures. Along with these approaches, effective low-cost case-management strategies are required for those who manifest disease. Such technologies are available, but they await widespread dissemination and application. Tobacco control is a major public health imperative providing the largest benefit for NCD prevention. Tobacco-related cancers, CVD and chronic obstructive airway disease can be effectively prevented if the tobacco habit is discouraged and overcome among the population. At present, programmes for NCD control are either non-existent or functioning at a low level in India. The National Cancer Control Programme involves cancer registries at selected sites and strengthening of facilities for clinical care (such as radiotherapy). Pilot studies for the control of CVD and diabetes have been initiated but have not had an impact on policy and programme development. Tobacco control has received greater attention, but it still awaits the passage of proposed legislation as well as a vigorous public education campaign.

Taken together, what do the present, emerging and future challenges imply? To begin with, they call for the high-priority control of communicable diseases to avoid the double burden of communicable and non-communicable diseases. They call for appropriate public health interventions to control the risk factors of NCDs such as tobacco and unhealthy lifestyles, emphasize preventive strategies, and set up arrangements for the early detection and cost-effective treatment of NCDs at the primary and secondary levels.

4. Finance

The recurring refrain in any discussion of the Indian health system is finance, a refrain that grows more shrill and urgent because of policy failures and State neglect. The crux of the problem is abysmally low public health expenditure – around 0.9% of GDP, below the average of low-income countries and even Sub-Saharan Africa. Despite the increasing urgency of problems in the health sector, public health expenditure as a proportion of total government expenditure has in fact *declined* over the years. This has to be seen against a background of fiscal deficits: the combined fiscal deficits of the centre and the states are estimated at 10% of GDP. Following a temporary stabilization in the early nineties, the fiscal situation has deteriorated, so that government ability to increase investments in health has been eroded further. Since the states typically account for about 75% of public health expenditure, their financial health is crucial for both general development and specific health outlays. But the combined gross fiscal deficits of the states, which ranged between 2.4-2.9% between 1993-94 and 1997-98, increased to 4.2% in 1998-99 and to 4.9% in 1999-2000. Fiscal crises have meant sharp reductions in the non-salary recurring expenditure in public health facilities, leading to further deterioration of quality. In addition, the increase in salary and pension liabilities after the Fifth Pay Commission has aggravated the resource crunch.

The share of health expenditure in the major states, in the range of 6-7% up to the 1980s, has come down to just over 5% in the 1990s. This is a significant decline in the proportion of health expenditure to the total expenditure in the states in over two decades. As far as the real per capita public spending on health is concerned, the evidence of 11 states at 1980-81 constant prices shows a steady increase, though in varying degrees. The sole exception is Uttar Pradesh, the most populous state; the declining per capita public spending in this state with very poor health outcomes is indeed a disturbing trend. Moreover, trends of the real per capita public spending on health of selected major states, and their distribution among primary, secondary and tertiary healthcare, show that between the period 1985-86 and 1998-99, per capita public spending increased at the

primary and secondary levels by about 50%, while spending levels increased by more than 100% in the tertiary sector. This has grave implications for both the equity and efficiency of the health system.

The declared policy was for the State to provide free universal healthcare to the entire population, but this policy objective has been totally divorced from the reality on the ground. In fact, India has one of the highest levels of private financing (87%), with out-of-pocket expenses estimated to be as high as 84.6%. The highly skewed pattern of health finance in India is a major contributor to the perpetuation of poverty. Indeed, the greatest failure of the Indian health system is its inability to develop a financing mechanism for the healthcare of the poor. It is clear then that the foremost objective of the Indian health finance system is financial risk protection for the poorer and weaker sections of the population. Access to health services should depend on individual need, not on ability to pay. The most efficient way of providing financial protection is to pool the risk between the rich and the poor, the young and the old, and the employed and the unemployed, to enable cross subsidization. At the international level, the main instrument used to achieve this objective is health insurance, but this has remained relatively undeveloped in India.

That there is a strong case for increasing the share of health in resource allocation is by now self-evident. But the extent to which tax revenues can be reallocated to the health sector would depend not only on political will, but also on the fiscal situation. In a poor country with a low tax base, mounting debt liabilities, undeniable security concerns and a legacy of poorly targeted subsidies, we cannot rest content with merely advocating reallocation of resources for larger investment in health. Generally speaking, the available tax resources should be used primarily for provision of public goods, the healthcare of the poor – particularly those in the informal sector outside the reach of insurance mechanisms, and for community financing. To the extent possible, resources should be raised from dedicated sources to eliminate competition, and to provide stable and growing sources of revenue. At the same time, there must be improvement in the targeting of public subsidies towards the healthcare of the poor. This implies taking three steps:

- Increase allocation for public health and primary and secondary healthcare, which is better utilized by low-income families.
- Utilize user fees at secondary and tertiary levels to reduce the price advantage of public services, reducing their attractiveness to the well off and simultaneously making arrangements for exemptions of the poor.
- Improve the efficiency of public services to encourage their greater utilization.

Various options for different categories of the population in different income groups need to be considered in the course of developing a framework. As far as the rich are concerned, voluntary private health insurance deserves government encouragement, but there is no justification for public subsidies such as the recent tax concessions. Increased competition would automatically spread the coverage of voluntary health insurance, leading to improved products and services. The State's role is essentially to develop an appropriate legislative framework, and to appoint a dedicated and independent regulatory authority that will monitor the insurance sector, and formulate procedures and regulations to help avoid well-documented market failures. But even in the absence of voluntary health insurance, the rich, given their financial resilience, could continue to depend on out-of-pocket expenses.

The objective for the middle income section is to cover all the employees in the formal sector via social insurance, primarily financed by employer and employee contributions. State participation should at best be nominal. People in the informal sector could join either voluntary health insurance schemes or community finance schemes wherever feasible. If none of these options is chosen, they could continue to rely on out-of-pocket expenses.

Schemes such as ESIS, CGHS, and employer-based schemes already cover the low-income formal sector, though ESIS and CGHS have demonstrated deficiencies of coverage and quality, as well as high administrative costs. These schemes could be replaced by social insurance, with the government playing facilitator and financier, but not necessarily provider of services. The services for social insurance could be contracted out; this would enhance efficiency and reduce costs. The manufacturing and services sector would grow with economic growth and industrialization, so that social insurance could play an increasingly important role. At present, approximately 10% of the population are covered by social insurance and employer-based schemes; this can be increased to around 21% of households, including all income groups, wherever social insurance is feasible.

An estimated 46.6% of the poor population is in the informal sector, and they deserve maximum State assistance since they are beyond the reach of social insurance. The preferred option is Community Financing Schemes. However, such schemes require strong local leadership and organizational capabilities, often provided by NGOs. Most current schemes do not receive any government support, but state governments could design a package of incentives that will encourage NGOs to develop such schemes in designated areas, with the government contributing a fixed premium for every below-

poverty-line (BPL) family covered by such schemes. Also, all donations to genuine community finance organizations should be exempted from tax. But most of the population would still need health cover by the State, calling for a more efficient primary and secondary healthcare system with a strong referral link. Moreover, even community financing schemes and access to public primary and secondary facilities do not provide financial risk protection to the poor against costs of hospitalization and serious illness. This requires the setting up of Sickness Funds in each district to directly reimburse such costs to the public or designated private facility. On current estimates, a fund to cover an approximate 300 million BPL population would require Rs.2,500 to Rs.4,000 crores annually.

The total health spending in 1998-99 is estimated at Rs.161 billion or Rs.16100 crores. This means the level of public investment will have to be more than doubled to reach the average of lower middle-income countries, or 2.2% of GDP. The strategy is to develop dedicated levies that provide a sustained source of finance to strengthen the health sector and insulate it, at least partially, from fiscal crises, emergencies and political upheavals.

Central Level:

Reallocation from General Revenues: Considering the tight fiscal position and the competing claims of different sectors, diverting significant resources from other sectors to health does not seem feasible. But a 50% increase, or roughly an additional Rs.2000 crores, can be made available -- partly from General Revenues and partly by reallocation from other programmes that have failed to make the desired impact.

Increased External Assistance: From 1990 to 1995, the average disbursement of external assistance to the health sector has been 216 million dollars or Rs.1000 crores – around Rs.10 per capita. Considering the Indian context – population size, levels of income and the burden of disease – the quantum of this assistance is woefully inadequate. But despite this, external assistance has played a key role in directing resources to priority areas. Meanwhile, in view of a better absorptive capacity, it would not be unrealistic to expect assistance to increase to at least three times in the coming years. The resulting yield would mean an additional Rs.2000 crores a year.

The performance of externally aided schemes could be greatly enhanced by reforms at both donor and recipient levels:

- Better project preparations involving full consultation with all stakeholders.

- Timely release of funds allowing advance preparatory action for procurement against the next year's allocation.
- Sufficient provision for maintenance of facilities created for the project.
- Identification, training and positioning of the project team before the project begins, and not shifting them during the project period.
- At least one year's preparatory time for all major projects to complete formalities such as land acquisition, preparation of building plans, finalization of technical specifications and development of training modules.
- Improvement of monitoring mechanisms.
- Simplification of procurement procedures, avoiding multiple references to, and approvals from, donor agencies.

Tax on Tobacco: This tax has two main components -- the basic excise duty, a central levy; and additional excise duty in lieu of sales tax, which is levied and collected by the central government on behalf of the states. This is a buoyant source of revenue with a mechanism already in place for the imposition of a cess. The linkage between tobacco and disease is well established, and taxation serves the dual purpose of reducing consumption and yielding resources. There is a strong case for dedicating at least part of the revenue to preventive and promotive health, particularly to controlling the risk factors for NCDs. Even a 15% cess could contribute at least Rs.1,000 crores to the health sector without disturbing existing sources of revenue.

Revenues from Disinvestment: The government's ambitious programme of disinvestment in public sector enterprises has had a slow start because of political pressures, resistance from trade unions and procedural difficulties. But the establishment of a separate ministry for disinvestment, and the successful privatization of BALCO despite political opposition, augurs well for rapid progress. The Budget for 2001-02 set a target of Rs.12,000 crores from this source. Out of this Rs.7,000 crores is earmarked for restructuring public sector enterprises, and the balance of Rs.5,000 crores for investment in infrastructure and social sectors. Although infrastructure is a high priority, there are many other sources to support it, including the cess on petroleum products and private investment. It is in this context that we urge earmarking at least Rs.2,000 crores annually from disinvestment revenue for additional investment in the health sector.

State Levies:

Levy on Excise: The rationale behind a dedicated levy on tobacco for health applies equally to a cess on state excise duties, which predominantly relate to taxes on alcohol consumption. Again, this is a buoyant source of revenue with an annual yield of about 15,000

crores -- and a 33% surcharge on existing excise revenue could yield 5,000 crores annually.

Property Taxes: There are three categories of property-related taxes. The first one, registration and stamps, is a tax on transfer of property, and yields an annual Rs.10,000 crores. A 20% surcharge could yield 2,000 crores annually. The second source is urban property tax, collected by local bodies. The estimated income, based on 1997-98 per capita estimates, works out to around 2,300 crores. This is a rapidly growing source and the present yield would exceed 2,700 crores. A 33% cess could provide Rs.900 crores per year for Sickness Funds and other healthcare services for the urban poor. The third source is land revenue, which yields around 1,500 crores a year; a 33% surcharge could yield 500 crores a year. Property taxes are currently both low and progressive, and could make a significant contribution towards the new mechanism of Sickness Funds. These funds could be created by a suitable cess on both rural and urban property as well as on their transfers, so that it takes into account both equity considerations and ease of administration and collection. The collections could be pooled state-wise, then allocated to district-level societies proportionate to the number of BPL families. The identified BPL family member would be given free treatment in public facilities and designated private facilities, and the costs charged directly to the Fund. These sources of earmarked levies could yield around 3,500 crores a year, sufficient to support Sickness Funds.

User Fees: This levy cannot be perceived only as a revenue raising mechanism. It discourages the overuse of public facilities by the affluent while correcting some distortions in the use of public facilities. Revenues generated from this source can be used to improve quality of care, in turn improving the utilization of these facilities. User fees can also involve the local community in managing public healthcare facilities, so that a sense of participation and ownership is fostered. The present yield from this source is small, but it is capable of considerable expansion, as indicated by new initiatives in MP and Rajasthan. There are, however, hurdles to a major expansion, and these include the lack of appropriate mechanisms to review user charges; the minimal level of cost recovery caused by low fee structure; the absence of mechanisms to exempt the poor; and the lack of adequate arrangements to ensure fund utilization at the point of collection. But again, recent state initiatives provide lessons that can be applied to overcome these weaknesses:

- The income from user fees should be credited to a hospital-based fund managed at the local level with the authority to review the charges.

- The income from user fees should be additional to the budget allocations for the medical facility.
- Use of the fund should be exclusively for improvements in the relevant medical facility by the local fund management committee, in accordance with state government guidelines.
- All BPL families should have identification cards to secure automatic exemption. Mechanisms should also be in place to consider the exemption of other indigent families at the discretion of the local committee.

In sum, while resources must be mobilized to change the health system through measures such as dedicated taxes, particularly property taxes, the critical guideline for mobilization is that the resources must be stable as well as sustainable. Since the object of the entire exercise is to provide financial risk protection, insurance as a mechanism must be promoted wherever feasible. So should community finance, which calls, however, for strong leadership from NGOs and local bodies. What happens then to those who do not have access to insurance or community finance schemes? It is for these weaker and disadvantaged sections that mechanisms such as Sickness Funds are necessary; and most of all, an improved primary and secondary health system that delivers care to those who need it most.

5. Health Systems

A. Public:

Our vast rural health infrastructure received substantial financial support during the 1980s, or the Sixth and Seventh Five Year Plan periods. But this substantial investment has not yielded optimal benefits: many institutions are not fully functional as a result of staff shortage and the lack of drugs and consumables. One of the major and persistent causes of a malfunctioning healthcare infrastructure in the rural areas is a critical shortage of key health manpower, particularly of doctors in public facilities. This is partly due to inadequate incentives and poor working conditions, and partly because the posting of doctors in rural areas suffers from a lack of transparency. The result is that the under-served areas, where even private sector facilities are not available, are completely deprived of any healthcare facilities.

The non-availability of key personnel in public health facilities is often cited as the main reason for under-utilization of public health facilities. But an analysis of manpower shortage at the primary level suggests that more than shortfalls of personnel, it is the organization and management of existing human resources that is the key to better performance. The lesson is clear: efficiency in the use of

existing resources should take precedence over mobilizing additional resources.

The deteriorating environment, the lack of safe drinking water and poor nutritional status, all conditions that affect disease burden and health outcomes, are poverty-related. These health hazards threaten the growing slum population in cities – as much as 30-50% of the total urban population. But in the absence of functioning institutional mechanisms, it is difficult to put the required coordinated and integrated action into practice. Divisions within the MHFW have also aggravated compartmentalization. The Ministry is now divided into three independent departments of health, family welfare and ISM. Since population control was considered a priority, an independent department of family planning was created even though public health and family planning services had to be delivered through the common rural health infrastructure. The emphasis on family planning targets transferred the entire rural health portfolio to that department, divorcing it from other health programmes. The result was poor utilization; the PHC, in many states, was in the public eye, only a family planning facility.

An analysis of disparities in health outcomes shows that certain states in India have consistently worse health outcomes. A cross-sectional regression analysis was carried out for 25 states to assess whether differentials in health service delivery capacity have a significant association with health outcomes. The analysis was based on three independent variables, namely female literacy, immunizations and use of ORT therapy in diarrhea episodes. Since MCH preventive services are mostly delivered in the public sector, it was concluded that public sector capacity is considered a relevant and critical determinant of health outcomes. Jean Dreze and Haris Gazdar advance the same hypothesis in an analysis of development experiences in Uttar Pradesh, Kerala and the southern states. The authors argue that the relevant determinant of the development status of these states is the reach and functioning of public services, and support this argument with a comparative picture of select public services. This reinforces our hypothesis that public health sector capacity in terms of provisioning of services is a critical determinant for improved health outcomes.

That access to health services is a key mechanism for better health outcomes is also indicated by utilization data: states that have high utilization rates reveal lower mortality rates. NSS data shows that the percentage of people who did not access healthcare for reasons of location is higher in the poor performing states. The analysis indicates a strong association between health outcomes and equity in the public financing of healthcare. Health outcomes appear to be strongly associated with higher per capita public health spending,

and with higher allocations to the secondary sector. Scarce financial resources are being inefficiently used, not only in terms of allocative patterns, but also in the management of fund flow and monitoring. Several of the problems confronting public health service delivery call for the reorganization and better management of existing resources. Access to healthcare is hindered not only by geographic, social and cost barriers, but also by inherent systemic and structural weaknesses of the public healthcare system:

- compartmentalized structures and inadequate definition of roles at all levels of care; inefficient distribution, use and management of human resources so that people have to contend with lack of key personnel, unmotivated staff, absenteeism, long waiting times, inconvenient clinic hours/outreach, service times, unauthorized patient charging;
- inadequate planning, management and monitoring of services/facilities; displaying insensitivity to local/community needs; ineffective or non-existent referral systems, resulting in under-utilization of PHCs, over-utilization of hospital services, duplication of services and cost-ineffective provision of services; inadequate systems to enforce accountability and assure quality;
- inefficient systems for purchasing drugs, supplies and services, which fail to ensure quality and value for money;
- inadequate attention to health education and public disclosure.

Setting priorities in health sector policy and planning is a matter of intense debate. International opinion emphasizes the bias in favour of hospital care and the need to reform health systems in favour of primary care. Our analyses suggest that the state must focus on both primary and secondary sectors simultaneously, linked as they are for the delivery of basic health services. The focus on secondary care in the context of referral linkages with the primary sector, and the welfare objective of insuring the poor against costs of illness, is considered as essential as the focus on primary care. Most important is reforming administrative structures to integrate primary and secondary levels through administrative and technical controls at the referral hospital level.

The capacity of the public health system to monitor morbidity, and to respond to changes in disease patterns, is greatly hampered by the lack of reliable epidemiological data. The current reporting systems are confined only to public facilities that deal with barely one-fifth of the illness episodes. Hence the huge under reporting, generating a sense of complacency. The model developed by the Christian Medical College, Vellore, and implemented in Kottayam District, Kerala, needs to be replicated as soon as possible all over the country to improve the quality of epidemiological data.

Another important area that has suffered neglect is public health as a discipline. Even the highest technical positions in public health, whether at central or state level, do not require a public health background; specialized institutions as well as faculties of Preventive and Social (Community) Medicine remain in an equally sad state of neglect. Unless public health as a field gets the recognition and importance it deserves, the planning of health systems will continue to over-emphasize curative services.

The foremost problem in designing an efficient health system is the top-down approach with negligible community participation and ownership. Is it possible, for instance, to conceive of bioenvironmental control of vectors, or improvement in sanitation and hygiene, without the active participation of the people making up the community? Similarly, the monitoring and supervision of peripheral health services from state and district headquarters has invariably failed, underscoring the need for active local involvement.

One of the ways to address this deficiency is decentralization of authority to local bodies (Panchayati Raj institutions). But the fact is that decentralization could have conflicting results without sufficient preparation of local bodies to take on this expanded role. The Kerala experience indicates that decentralization has to be preceded by a long period of planning, defining and clarifying responsibilities, capacity building and advocacy. Capacity building of local bodies as well as the community is an essential prerequisite to reap the full benefits of decentralization. It is evident that such devolution encourages local bodies to consider health as integral to other development activities, facilitating coordinated action on other determinants of health such as water and sanitation.

The states provide several examples linking the issue of community participation with institutional autonomy and delegation of powers to local committees to raise and use resources for improvements in medical facilities. The experiences of Madhya Pradesh and Rajasthan, for instance, show a marked improvement in the quality of services, availability of drugs and consumables as well as patient satisfaction. These are welcome initiatives; but they are yet to be converted into a comprehensive policy to secure community participation in all health programmes.

B. <u>Private</u>:

Without in any way underestimating the importance of the public health system, it must be recognized that the private sector has grown to be the main provider of curative healthcare. At the all-India level, the private sector currently dominates both outpatient and inpatient care: 82% of all outpatient visits take place in the private

sector. An important dimension to the utilization of in-patient care in the public and private health sector is the share between the rich and the poor. Overall for India, the percentage of the poorest quintile using private sector hospitalization facilities is, at 39%, almost half that of the richest at 77%. Tertiary care institutions, providing specialized and super-specialized care in the private sector, constitute only 1-2% of the total number of private institutions; and corporate hospitals, which have in recent times gained in visibility and publicity, actually constitute less than 1%.

The evidence is that the people of India, including the poor, make considerable use of the private health sector. But at what cost? This is a crucial dimension of the private health sector in India, unfortunately under-researched. NSS data reveals that the average cost of treatment in the private sector for rural inpatients is 2.1 times higher, and for urban inpatients 2.4 times higher, than in the public sector during 1995-96. Technology advances are usually associated with a decrease in costs, but the reverse holds true for the medical sector, where technological developments have been capital-intensive, making the provision of healthcare increasingly expensive. A proliferation of medical equipment and technologies in urban areas has led to excess capacities, and the consequent unnecessary and irrational use of these technologies.

In sum, rather than private providers developing into partners with the State in the achievement of national health goals, the technical quality of care provided in the private sector is often poor – ranging from poor infrastructure to inappropriate and unethical treatment practices, to over-provision of services and exorbitant costs, to delivery by unqualified providers. Information asymmetry among users, arising out of a lack of information and an inability to make sound judgements about available types of healthcare, compounds the problem. The natural corollary to the concentration of qualified practitioners and facilities in urban areas, and the limited spread of the voluntary sector, has been the rise of unqualified, rural medical practitioners. The estimated one million illegal practitioners are said to be managing 50-70% of primary consultations, mostly for minor illnesses, and, in this sense, form the *de facto* primary curative healthcare system of rural India. A clear policy promoting private health facilities in the under-served areas, along with a set of clearly defined incentives, would correct these imbalances.

Given the extent of private sector dominance in the healthcare system, any significant improvement in healthcare is inconceivable without the active involvement and cooperation of the private sector, particularly the voluntary sector. According to a rough estimate, the number of voluntary organizations working in healthcare areas is more than 7000. Despite the lack of comprehensive documentation

on the contribution of NGOs, there is no disputing the fact that NGOs have the potential to improve access, quality and equity of services, either through direct provision or through advocacy and other action. This potential to contribute substantially to public health goals has not been realized due to several reasons. Their limited size and spatial distribution is a major cause. That they are missing where they are most needed hinders effective partnerships with the public health system. The challenge is to find strategies that will facilitate a far more substantial participation by NGOs in the health sector, particularly in backward states and remote areas, and to ensure systems that will keep such participation accountable and transparent.

Public-private partnership would make a considerable contribution to the successful implementation of public health programmes. Also necessary are continuing medical education, and the active involvement of professional bodies – to disseminate standard treatment protocols for diseases such as TB and malaria, to check the irrational use of drugs, and to regulate unethical practices.

Equally important is the task of developing appropriate independent mechanisms for the regulation of the private sector – mechanisms that involve all stakeholders, set up and enforce standards, ensure quality control, transparency of charges, control unethical practices and promote accreditation systems. The challenge is to devise innovative mechanisms that address the acknowledged distortions and malpractices, yet do not stifle private initiative – so important for the expansion of healthcare facilities to meet growing demand. The legislations under consideration in Andhra Pradesh and Karnataka, and the initiative taken by Maharashtra in developing accreditation mechanisms, deserve commendation.

Finally, each state needs to work out the problem of unqualified practitioners with a view to their eventual elimination. The ban could be enforced straightaway in well-served areas; in the under-served areas, they will be gradually eliminated as alternative facilities get established. In the interim, the registration and training of such practitioners, limiting the scope of their use of allopathic drugs for treating minor ailments, needs to be attempted as a temporary measure.

6. Drug Policy and Regulations

The Indian pharmaceutical industry is already feeling the impact of globalization, even though the WTO mandated legislation to recognize product patents is to be brought into force only in the year 2005. The agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) came into force with the formation of the

World Trade Organization (WTO) in January 1995. TRIPS obliges all developing countries to make available 20 year patent protection for novel, non-obvious and useful inventions, whether products or processes, in all fields of technology including pharmaceuticals. Violations of TRIPS obligations can lead to trade retaliation or compensation to affected WTO members. India has so far recognized only process patents in pharmaceuticals, and legislation for compliance with WTO obligations is pending passage in Parliament. As of December 1999, only 16 WTO countries, including India, continued to exclude pharmaceuticals from product patent protection. India has no option but to fall in line; but the government should actively explore ways in which the advantages of the new regime can be maximized and the disadvantages minimized.

The public policy question will have to be resolved in such a way that a balance is maintained between the need to keep new drugs affordable to those who need them, while retaining strong incentives for the invention of new drugs and the development of new and better treatments. The selective use of compulsory licensing provisions for the manufacture of generic substitutes for patented drugs having major public health significance has to be explored with international cooperation. So far, the Indian pharmaceutical industry has paid scant attention to research because of the absence of product patent protection, and concentrated its energies on producing generic substitutes for foreign patented and branded products. But the Intellectual Property Rights Regime (IPR) is set to change with the introduction of product patents in conformity with WTO mandated regulations. The Indian pharmaceutical industry already commands a major advantage over its rivals in the West since the cost of bringing a new chemical entity into the market is estimated at $250-500 million in the US, but only $90-100 million in India. According to a recent study by the Administrative Staff College of India (*The Indian Pharmaceutical Industry*, May 2000), "India has the potential to become the hub of pharmaceutical research." In order to harness the resources and skills of the Indian pharmaceutical industry towards the neglected diseases of the poor, the government needs to develop an appropriate incentive framework.

At present, the administration of drugs and pharmaceuticals is divided between the Ministry of Chemicals and Fertilizers (MCF) that is responsible for drug policy; and the Ministry of Health and Family Welfare (MHFW) that sets standards and deals with quality control, the introduction of new drugs and the enforcement of relevant laws and regulations. This arrangement prevents the government from taking a holistic view that includes the interests of both the industry and the consumer. Often, the policy of one ministry is at cross-purposes with that of the other. As early as 1975, the J. L. Hathi

Committee recognized this dichotomy and suggested that an independent National Drug Agency be set up to take over all the drug-related functions performed by the two Ministries. The proposed NDA could be supported by a small cess on the manufacture and import of pharmaceuticals, conveniently collected along with excise and customs duties. Significant public sector support would be necessary to motivate the pharmaceutical industry to invest in R&D in diseases of the poor such as TB and malaria, and the proposed National Drug Fund could provide one such avenue of support. The current situation is unlikely to improve merely by tinkering with the existing system. The only option that would make a noticeable difference is an independent National Drug Authority, supported by adequate financial resources from the National Drug Fund.

Elsewhere in the Report, we have recommended greater decentralization and devolution of powers to the states. However, the indiscriminate licensing of drugs by the states, the poor enforcement of quality standards, and the open violation of laws regarding sale of prescription of drugs, compels us to suggest an enlarged role for the central authority. The proposed NDA, armed by a new law that provides for more stringent scrutiny before licensing, could weed out irrational combinations and ensure stricter enforcement. The National Drug Fund should be used primarily to support the NDA, upgrade public health laboratories, and strengthen the enforcement machinery. The unauthorized and irrational use of anti-microbials by unqualified practitioners and registered practitioners of other systems of medicine, a situation encouraged by the free sale of prescription drugs across the counter, has been a major factor in the development of drug-resistant bacteria. Similarly, the proliferation of over 20,000 manufacturers without the requisite infrastructure to monitor GMP, and the large-scale manufacture and sale of sub-standard and spurious drugs, pose a major health hazard. Only stringent laws that are effectively enforced can check these problems.

7. Health Research

India has great potential and unique capabilities in health research. Its acknowledged strengths in all knowledge-based activities, its infrastructure and trained manpower, its vast clinical material, rich bio-diversity, unparalleled heritage of traditional systems of medicine and a dynamic and technologically capable pharmaceutical industry all add up to this potential. But only a national health research policy that creates an incentive environment for both public and private sectors will help the country realize this potential to the fullest. Timely enactment of IPR related legislation would bring the present phase of uncertainty to an end. Next, a substantial increase of public investment in basic and strategic research is required, with a specific

focus on the neglected diseases of the poor. The international support for health research has so far been nominal – the estimate is 5% of the total health R&D expenditure in 1992-93. Indian potential in this area justifies a major increase in external assistance. A priority should be health policy and systems research, to date a neglected area except for the recent interest shown by the World Bank and some bilateral donors.

The lack of available expertise in disciplines such as health economics, health finance and epidemiology is a major constraint on health policy and systems research, and special efforts need to be made to train researchers in these fields. Research capacity should be strengthened – with the improvement of infrastructure, the training of scientists, and through new collaborations with institutions in the North and the South. In particular, capacity needs to be developed quickly to undertake clinical trials for new molecules likely to be introduced for the various communicable diseases. Existing public sector institutions could produce higher quality of research with more appropriate management structures. Most important, for both public and private sectors, is a network of alliances among academia, research institutions and industry. The utilization of basic and strategic research outputs by industry to take the process further toward product development should be the goal of such an alliance. The ICMR should develop suitable mechanisms to facilitate such an alliance, and the inter-mediation between research outputs from academia and research institutions, and the pharmaceutical industry along the lines of TDR in WHO. It is also essential to establish institutional mechanisms that will promote interaction between policymakers and programme managers on the one hand, and researchers on the other, for setting the research agenda and for utilization of research outputs.

8. Indian Systems of Medicine (ISM)

The term ISM comprises six different systems – ayurveda, siddha, unani, yoga, naturopathy and homeopathy – out of which only ayurveda, siddha and yoga are entirely indigenous. India has a rich heritage in ancient systems of medicine that make up a veritable treasure house of knowledge, and these systems can make a significant contribution to the healthcare of the population. But despite a vast parallel infrastructure of hospitals, dispensaries and teaching institutions, and over 6,00,000 registered practitioners, this potential has not been realized. Over 90% of illness episodes are treated by allopathy. Even registered practitioners of ISM treat patients with modern drugs though they are not authorized to do so, often with undesirable consequences. The failure to evolve the synthesized national system recommended by the ICSSR/ICMR Committee has prevented the use of even proven ISM remedies in

public healthcare facilities. Also, the vast army of ISM manpower has rarely been utilized for public health programmes. The failure to evaluate traditional remedies scientifically has prevented their wider acceptance in India as well as abroad. What is most important is for ISM to develop its strengths in providing relief in apparently incurable chronic ailments such as digestive disorders, asthma and arthritis. At the same time, ISM needs to popularize preventive practices such as yoga, which could be an important element in the strategies being evolved to cope with the threat of NCDs. Some recent initiatives of the new Department of ISM seem to address these deficiencies; but on the whole, this area requires priority attention to explore and realize its full range of possibilities.

9. Conclusion :

The above analysis clearly underscores the need for a quantum jump in the public investment for health, accompanied by wide-ranging reforms at every level. This can be achieved only with strong political will and commitment, which can in turn be generated only through a strong people's movement cutting across party affiliations. The first step is better awareness and the widest possible dissemination of information on health issues. It is only vigorous informed debate on health issues – in Parliament, in the state legislatures, in the media, and in various public forums – that will eventually grow and gel into a broader people's movement. It is in the context of this long and complex process that this Report seeks to identify, describe and analyze the current issues in Indian health and the future directions of change.

III. Future Directions: Summary of Recommendations

1. Communicable Disease Control:

- Acceleration of India's epidemiological transition by vigorous public policy to control communicable diseases; malaria control to focus on those areas with an API above 2; rapid expansion of DOTS so that the entire country is covered for TB control.
- Substantial increase of central funding without stipulation of matching contribution by the states.
- The central government to consider a more direct intervention in actual implementation, if necessary through trained personnel on contract in weak performing states; in well performing states, release of block grants against certain clearly defined deliverables to provide greater flexibility in the implementations of the programmes.
- Establishment of a comprehensive disease surveillance system in all districts with central funding for a period of ten years.

- Vigorous and sustained efforts to prevent the spread of HIV/AIDS, with focus on IEC and interventions involving high risk population following the example of Tamilnadu; simultaneously, arrangements for medical care of AIDS patients through clinical training in treatment protocols and sensitization of health workers on HIV/AIDS patients.
- Strengthening of the health system in high malariogenic areas, particularly tribal regions, for early detection and prompt radical treatment to reduce the reservoir of infection.
- Development of treatment protocols and regulations for co-opting the private sector in communicable disease programmes; this may include continuing medical education and active participation of professional bodies like the IMA.

2. Facing the Rising Threat of NCDs:

- Identification of a menu of core components to provide an 'essential package' of chronic care with possible extension to an 'optimal package'
- Integration of these services into various levels of healthcare.
- Development of evidence-based, context-specific and resource-sensitive clinical practice guidelines that can be integrated into various levels of healthcare to facilitate the use of low-cost, high-impact interventions.
- Modification of the training of healthcare providers of diverse categories to enhance skills relevant to chronic disease prevention, surveillance and management.
- Sequential prioritization of 'essential' elements for early implementation and 'optimal' elements for later integration.
- Vigorous efforts to control risk factors by sustained health education, community participation and legal action with regard to tobacco and alcohol.

3. Reduction of Infant and Maternal Mortality:

- Targeting of high IMR states first, and within states, high IMR districts and regions; all CHCs and 24-hour PHCs in high IMR districts and regions to be fully equipped to handle basic newborn care and referral.
- Focus on the disadvantaged and poorest groups; trained CHWs to be located in identified remote regions with a large proportion of disadvantaged groups such as Scheduled Tribes for the delivery of essential MCH services.
- Arrangements to effectively screen and identify all high risk cases, and ensure their deliveries in appropriately equipped health facilities; in general, promotion of institutional deliveries by providing appropriate facilities and incentives including emergency transportation.

- Strengthening antenatal care by screening every pregnant woman for anemia, hypertension, diabetes, urinary and reproductive tract infections, malaria, and TB.
- Convergent action at the cutting edge level between health personnel and anganwadi workers for ensuring full coverage of child health services.

4. Finance:

- Public health expenditure to be more than doubled to raise the level of public investment from the present 0.9% of GDP to at least the level of the average of lower middle-income countries (2.2% GDP); additional resources to be mobilized largely through dedicated levies to avoid competition from other sectors and to provide increasing and sustainable funding.
- Increase of allocation for public health and primary and secondary healthcare that is better utilized by low-income families.
- Differential planning and deployment of budgets in line with the extent of disease burden, economic backwardness of the state/region and poverty levels; the government to bear a special responsibility to ensure good quality care through appropriate incentives and strengthening of facilities in backward and poorly developed areas/states, since public sector facilities may be the only facilities available.
- Utilization of user fees at secondary and tertiary levels to reduce the price advantage of public services, reducing their attractiveness to the affluent and simultaneously making arrangements for exemptions of the poor.
- Setting up of systems of social insurance such as Sickness Funds to provide financial risk protection to the poor against serious illness and hospitalization.
- Coverage of employees in the formal sector with social insurance primarily financed by employer and employee contributions; social insurance to replace low coverage existing schemes, especially in the low-income formal sector, with services contracted out to enhance efficiency and reduce costs.
- Package of incentives to encourage NGOs to develop community finance schemes in designated areas, with the government contributing a fixed premium for every BPL family covered by the scheme.

5. Health Systems:

- Restructuring of Central Ministry of Health and Family Welfare so that it withdraws from day-to-day management and concentrates on its stewardship role by strengthening its planning, analytical and public health expertise.

- Restructuring of the health systems of the states based on three principles: (i) decentralized authority, responsibility and decision-making; (ii) integration of preventive, promotive and curative services; and (iii) local community participation.
- Removal of identified constraints and inadequacies at the primary healthcare level to improve their efficiency and utilization, and reducing the load on over-utilized hospital services by providing essential drugs, consumables and diagnostics, making arrangements for proper maintenance of facilities, and removing constraints on mobility of health personnel.
- Addressing manpower shortages by an appropriate combination of incentives, legislative measures, and management reforms: reservation of PG seats for those candidates in service with a record of rural service; making rural service compulsory for admission to PG courses; contractual appointments to fill vacancies; a transparent transfer policy that requires every doctor to work in rural areas by rotation for a prescribed period; preference for foreign training given to doctors with rural service records; better residential facilities, rural service allowance; allowing private practice only in under-developed areas where even private facilities are inadequate.
- Mapping the availability of health facilities in hilly regions and areas inhabited by tribal populations; the provision of mobile health teams and community health workers to cover identified gaps.
- Decentralization and devolution of powers to local authorities after careful preparation and adequate training.
- Delegation of administrative and financial powers to medical facilities to be exercised through local committees to promote efficiency, accountability and mobilization of resources.
- Institutionalization of coordination arrangements at different levels.
- Involvement of community self help groups and women's groups for people's participation in health programmes.
- Institutional arrangements for regulating the private sector with the participation of all stakeholders to set and enforce standards, control unethical practices, and ensure transparency of charges and non-denial of emergency care.
- Development of capacities for contracting out services to the private sector; promoting new partnering initiatives with the private sector for service delivery and management of public institutions.
- Development of an incentive package for the voluntary sector to set up facilities in the identified under-served areas.
- Promotion of accreditation networks for identified services through voluntary organizations/professional bodies.

- Elimination of unqualified practitioners in a phased manner, beginning with well-served areas.

6. Drug Policy and Regulations:

- Creation of an independent National Drug Agency to take over all drug-related functions, supported by a National Drug Fund financed by a small cess on the manufacture and import of pharmaceuticals; institution of a more stringent law to deal with the proliferation of sub-standard manufacturing units and irrational fixed dose combinations, poor laboratory facilities, sub-standard and spurious drugs, weak enforcement machinery, and open violation of law by chemists selling prescription drugs over the counter.
- Selective use of compulsory licensing to produce generic substitutes for patented drugs of public health significance, and to provide the necessary incentives and financial support to pharmaceutical companies for the same.

7. Health Research:

- Development of a health research policy to create an incentive framework to promote research, particularly on the diseases of the poor.
- Higher investment in development of infrastructure for basic and strategic research in the public sector, with changes in the management structures to promote quality research outputs.
- Development of alliances among academia, research institutions and the pharmaceutical industry to promote the utilization of research leads by the industry for product development; ICMR to develop capacities for such inter-mediation on the lines of TDR in WHO.
- Emphasis on health policy and systems research and reducing the deficiency of researchers by providing training avenues in epidemiology, health finance and health economics.
- Creation of an incentive environment for the pharmaceutical industry to invest in research through tax concessions, pricing incentives for new molecules, facilitating clinical trials and regulatory approvals, and supporting promising products for the neglected diseases of the poor with financial support from the National Drug Fund.

8. Indian Systems of Medicine:

- Development of a national health system incorporating the best of all systems; including proven remedies of ISM as first drugs of choice in the public healthcare system.
- Encouraging scientific evaluation of traditional remedies.
- Utilization of ISM manpower in public health programmes.
- Emphasis on the special strengths of ISM in treating chronic ailments such as digestive disorders, asthma and arthritis.
- Popularizing ISM practices such as yoga to prevent and treat NCDs.

1

Introduction

Background

The Commission for Macroeconomics and Health (CMH), appointed by the WHO in September 2000, held its second meeting in Delhi in April 2000. This meeting devoted a full day to the Indian experience in the health sector. Detailed presentations were made by the states of Kerala, Andhra Pradesh (AP), Karnataka, and Rajasthan. Taken together, they brought out the diversity of the socio-economic conditions, health outcomes and approaches in different parts of the country. It became apparent that this diversity, coupled with the relatively high quality of available data and standards of research, would enable India to make a significant contribution to the CMH exercise. The Chair of CMH explored funding possibilities for an India Study focused on the terms of reference of CMH (Annex 1.1). A proposal (Annex 1.2) was sent to the Bill and Melinda Gates Foundation in October 2000, which was approved in December 2000, paving the way for this study.

Scope and Objectives

The original intention was to study areas of relevance to CMH. But confining the study to a background paper for CMH would have also meant limiting interest among Indian policymakers. A comprehensive study of the Indian health sector had not been attempted since the 1946 Bhore Committee, and the support of the CMH and the Foundation provided a great opportunity to fill in this gap. Also, a new National Health Policy was being formulated, and a broader study of interest to policymakers could make a contribution to this process. Thus the present study was designed to cover the CMH terms of reference as well as all areas relevant to the ongoing health policy exercise.

The basic objective of this Report is to study the diverse experiences of Indian states – with their varying socio-economic and cultural settings, health systems and status – and draw lessons relevant to the CMH and Indian policymakers at both central and state levels. The Report is a country-specific study with an international dimension; it addresses the Indian health establishment for nationally relevant issues, and the CMH for lessons of global significance.

Focus

Though the study began with a broad mandate, it was soon apparent that an in-depth examination of the entire range of issues was impossible

within the limited time framework of the Report. The focus was then sharpened to health systems in the broadest sense of the term. WHR 2000 defines the health system "to include all the activities whose primary purpose is to promote, restore or maintain health." Thus the study pays maximum attention to analyses of the health system's operation in both public and private sectors. A major effort has been made to examine the financing mechanisms of the health system and their reform to provide financial risk protection to the poor. Given widespread poverty and huge income disparities, equity of access to health facilities has received special emphasis. *The core area of the Report – health systems – includes both health finance and equity.*

Methodology

The Gates Foundation gave the study a year to complete its work. But it was conducted in less than six months so that its findings and recommendations would be ready in time for the draft of the CMH report in August 2001. Obviously this imposed limitations on the study's methodology. It ruled out collecting new data or conducting field surveys, so that the analyses instead drew on existing literature and data. The study received considerable support from the ongoing studies commissioned by the World Bank in collaboration with the Government of India (Table 1.1). In particular, the first five studies and the synthesis report, *India: Raising the Sights – Better Health Systems for India's Poor*, (2001), were made available by the World Bank. The Bank document covers much the same ground as this report, with two significant points of difference.

- *Wider Scope*: This Report covers all critical aspects of the health sector.
- *Feasible Solutions*: Going beyond the identification of problems and the examination of available options, this Report suggests workable solutions, supported by the insights of those who have hands-on experience in the management of the Indian health system.

The study commissioned 19 papers, including intensive studies of the health systems of eight states: Andhra Pradesh (AP), Kerala, Madhya Pradesh (MP), Maharashtra, Orissa, Rajasthan, Tamilnadu (TN), and Uttar Pradesh (UP). The result is a wide spectrum of experiences, ranging from top performers (Kerala, TN), to good performers with significant recent success (Maharashtra, AP), to relatively poor health outcomes (UP, Rajasthan, MP, Orissa). These reports are brought together in the chapter on health systems, which examines the strengths and weaknesses of the Indian public health system.

Table 1.1
Studies of the Indian Health System 1999-2000

Title of Study	Main Research Question
Private Market Analysis	How can India take advantage of the private sector to meet social goals?
Distribution of Health Benefits and Costs	How well do public and private investments in health reach the poor?
Pharmaceutical Analysis	How can safe, effective, affordable drugs be made accessible to Indians?
Consumer Protection in Health: Legal Framework and Current Practices	How can consumers be more empowered over health issues?
Health Financing Options: Health Insurance	How can health insurance be used to improve equity and efficiency of health services?
Quality of Health Services	How can India systematically improve quality assurance in healthcare?
Hospital Reorganization (financed by DFID)	How can hospitals be organized to meet sectoral goals?

Source: **India: Raising the Sights – Better Health Systems for India's Poor**, World Bank, 2001

Structure

Chapters: Volume I of the Report comprises the executive summary and the chapters. Volume II contains appendices. Chapter 2 presents an overview of the current health scenario in India, the major issues and challenges. Chapter 3 delineates the roles of the federal government and the states in health, in the background of the ongoing liberalization process and economic reforms. Chapter 4 directly addresses the first TOR of the CMH – linkages among economic growth, poverty and health. On the strength of international experience and Indian data, improvement in health status is established as a significant factor in economic growth and poverty alleviation. Chapter 5 is concerned with the central issue of equity, presenting evidence of gross inequities in health status and access to healthcare facilities, and suggesting policies geared to narrow these disparities. Chapter 6 examines the private sector in health as it has evolved in India. Chapters 7 and 8 take on the unfinished agenda of communicable diseases, and maternal and child health, highlighting the avoidable burden of morbidity and mortality. Given the gravity of the HIV/AIDS threat, Chapter 9 examines it apart from other communicable diseases. Chapter 10 considers the future challenges of non-

communicable diseases, trauma and injury – likely to contribute increasingly to the burden of disease in view of the changing demographic and epidemiological profile. Chapter 11 deals with health finance, both public and private, including mobilization of additional resources. Chapter 12 supplements this discussion with the role of external assistance. Chapter 13 presents a synthesis of studies of public health systems conducted in eight states. Chapter 14 deals with Indian systems of medicine, their present role and future direction of development. Chapter 15 deals with drug policy and regulations, as well as the impact of the WTO-mandated intellectual property regime on drug prices in India. Chapter 16 focuses on health research and its potential. It addresses an important CMH concern (TOR 2), making a case for India's potential to develop improved tools for health delivery to the poor, given the appropriate policy framework.

Appendices: The Report contains six appendices. Appendix 1, **Restructuring the Ministry of Health and Family Welfare**, is based on the assumption that a reorganization of the Ministry of Health and Family Welfare (MHFW) should spearhead a meaningful reform process. Appendix 2 reproduces the background paper of Indrani Gupta et al **on Economic Growth, Health and Poverty**, which is summarized in Chapter 4. Appendix 3 traces the evolution of health policy in India, offering causes of present deficiencies and guidelines for future policy formulation. Appendix 4 provides additional information about the ancient system of medicine, ayurveda. Appendices 5 and 6 are detailed studies of health systems in AP and Kerala. Both cases are unique, the former for its dynamic political leadership, and the latter for its outstanding achievements.

Conclusion

Given the diversity of Indian experiences, the study recommendations cannot be prescriptive. Instead they suggest broad directions of reform – steps that must be taken if we are to address the wide-ranging distortions and deficiencies in the health system. These conclusions and recommendations will hopefully generate informed debate on health sector reform in India, while contributing to the CMH examination of global issues.

Annex 1.1
Commission on Macroeconomics and Health
Terms of Reference

The WHO established the **Commission on Macroeconomics and Health (CMH)** to critically assess and extend, where appropriate, the evidence base of the following topics:

- the nature and magnitude of the economic outcomes (income and productivity growth, poverty reduction and social protection) of investing in health;
- the economics of incentives for research and development for drugs, vaccines and other technologies that address diseases primarily affecting the poor;
- effective and equitable mobilization of resources (including reallocation of current public budgets) to finance control of major and specific health problems of the poor, and to develop and sustain health systems more generally;
- health and the international economy, particularly trade-related issues;
- costs and efficiency in the use of resources to improve health outcomes of the poor, including consideration of interventions and policies within and outside the health sector; and
- development assistance and health (including consideration of efficiency in the use of assistance to improve health and debt relief and external assistance for international public goods).

1. The CMH may add topics and it may choose to exemplify its findings with disease, country or regionally specific analyses. It will draw on and contribute to ongoing initiatives elsewhere.
2. The CMH will provide analysis to assist the WHO and the international community in their consideration of issues relating to health and development in low- and middle-income countries. Thus it is foreseen that the results of its work will be published by WHO and widely disseminated.
3. The CMH is intended to include macroeconomists from academia, governments and agencies. It may, in addition, include a health economist, a public health specialist, a biomedical scientist and a current or former health minister. Members will serve in their personal capacities but those from governments or agencies may designate alternates for some meetings. The Director-General of WHO will appoint the members and Chair of the CMH.
4. The CMH will complete its work by December 2001, unless the Director-General of WHO authorizes a later date.

Annex 1.2
Proposal for an India Study for CMH

Rationale

The principal objective of the CMH is to address a wider audience of policymakers on the important contribution that investments in health can make in ameliorating poverty in developing countries. CMH is not only expected to argue for higher investments in health but to make specific recommendations on where and how they should be directed to achieve optimal results. An important element of this exercise is the identification of policies and systems most likely to succeed and those best avoided. The wealth of experience available globally can guide CMH in this endeavour. But there are, in most cases, a host of variable factors contributing to the success or failure of any health investment, and it is not easy to isolate the key elements, given the variety of factors influencing the outcomes.

Admittedly, wide differences exist globally among developing countries, and what is good for one country may not work in another setting. Yet it seems possible to cull out from past experience valuable lessons with universal significance and validity, based on an in-depth study of a country as large and diverse as India, where health outcomes vary from levels comparable to middle-income countries at one end, to levels of Sub-Saharan Africa at the other. The country offers a wide range of experiences from totally state dominated health systems to a flourishing and increasingly important private sector. Not only does India have large numbers of the poor, it also bears the highest aggregate disease burden -- with a significant contribution coming from infectious diseases, the central problem in the poorest countries. The India Study could provide interesting insights into the complex issues being considered by CMH, while making a valuable contribution to the process of policymaking at a time when the national health policy is under review.

Objectives

The objective of the study is to provide the CMH with important inputs on the entire range of issues covered by its terms of reference, through in-depth study and analysis of the large variety of experiences in different states. A useful, and not in anyway less significant, spin-off of this report would be the contribution it could make to the current health policy formulation exercise of the Indian Government. The National Health Policy of 1983 is presently under review by the national government. India thus provides an ideal laboratory to test the validity and feasibility of various policy options for developing countries.

Focus

While the report will attempt to cover the range of issues being addressed by the CMH, the focus will be on key issues of major concern both to CMH and the Indian government. Examples include the mobilization of resources for health from both domestic and external sources; the enhancement of allocative and technical efficiency, the improvement of access and equity for the poor; the definition of the respective roles of the public and private sectors and the evolution of policies and instruments for their synergistic development; responses to new challenges like globalization, changing demographic and disease profiles and new epidemics such as HIV/AIDS. In particular, it will try to examine sustainable and affordable options for financing health care for the poor – by far the biggest challenge faced by policymakers in developing countries.

Methodology

The study will be launched with a conference of representatives of all the 14 major states presenting their experiences of and responses to major policy and health systems issues and challenges. The conference will conclude with identification of key issues for study, and selection of 3 or 4 states for intensive work. The states will be

identified keeping in mind the need to cover diverse conditions and circumstances as well as the responsiveness of the state administrations.

Following the conference, researchers will be identified to address and analyze key issues in the selected states with the fullest participation of state governments, local bodies and civil society. No new field study is proposed and the attempt will be to draw lessons from the analysis of existing data and studies, a broad range of consultations and field visits.

It is difficult at this stage to fix the number of studies but it should be confined to 4 or 5. The study reports will be presented at another conference of state health representatives where they will be discussed thoroughly. The draft report of this study will be prepared on the basis of these deliberations, and the report given its final shape in consultation with the national government, CMH members, and international and donor agencies.

Participants

The national and state governments would need to be closely involved with the study. Key inputs will also be provided by CMH members, co-chairs of working groups and international agencies such as the WHO and the World Bank. Wide-ranging consultations will also be organized with civil society representatives actively involved in health issues.

Time Frame

The total time framework proposed for the project is six months beginning November 1, 2000. The tentative schedule is as follows.

1.	Identification of key issues	November 1-15
2.	Conference of state representatives	November 15-20
3.	Selection of states and researchers	November 20-30
4.	Working out TORs for the studies	December 1-10
5.	Papers from the studies due	March 10
6.	Consultations with states and field visits	December 10 – March 10, 2001
7.	Preparation of the draft report	March 10-31, 2001
8.	Conference of state representatives	April 1-5, 2001
9.	Drafting of final report	April 5-30, 2001

Since the most complex and challenging issue is financing healthcare for the poor, and since sufficient expertise is not likely to be available within the country, an internationally renowned expert such as Professor Bill Hsiao could provide guidance for this aspect of the study. Needless to say, the CMH members, the co-chairs of working groups, and other international experts associated with the CMH, are expected to contribute handsomely to this exercise, and impart an international perspective to the study though it is confined to one country.

Conclusion

The Report will be based on high-level research and policy consultations, and is expected to provide inputs and insights to the CMH on a range of important issues. It should also assist the national government in the review of the National Health Policy – through the final report as well as through the earlier process of mutual consultation

and interaction with key players. The Report will present to the CMH analyses of Indian experiences on a variety of health related issues with global relevance. To national policymakers, it will offer a study of the Indian health sector with an international dimension, providing valuable inputs into the current health policy review exercise from a new perspective.

The Current Health Scenario: An Overview

Background

Writing about India is always a formidable challenge. With its endless diversity – of population, climate, topography, religious beliefs, languages and socio-economic and cultural settings – generalizations become difficult. Attempts at aggregations mask the wide differentials between and within the different regions. On the one hand, India has its rich heritage, brain power, entrepreneurial genius and vibrant democratic polity; today, it aspires to be an IT superpower. On the other hand, over a quarter of its population live in absolute poverty, and the country has the largest population of illiterates. The paradox is that different parts of India seem to live in different ages. This gap between India's acknowledged potential and its achievements has attracted comment from scholars around the world.

Demographic and Health Indicators

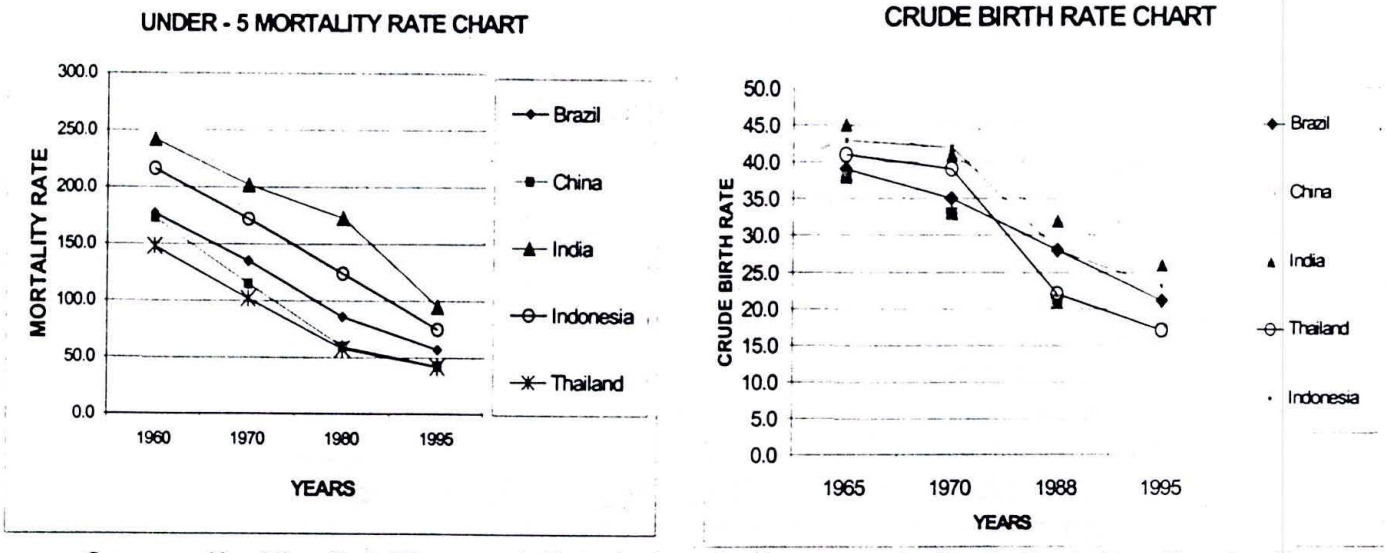
The health scenario also reflects this diversity in ample measure. Among the demographic and health indicators of 16 major states (Annex 2.1), Kerala compares favourably with most middle-income countries (1) and even some high-income countries in West Asia. But MP, Orissa, Rajasthan and UP are well below the average of low-income countries, and just above the levels of Sub-Saharan Africa (Annex 2.2). Together the different states represent the whole range of health outcomes within these two extremes. The indicators conceal the wide disparities existing within the states – between urban and rural areas (Annex 2.3), and between relatively developed areas, and remote areas inhabited by tribal and other marginalized groups. While metropolitan cities have what would be considered modern tertiary care facilities by international standards, people in many remote rural areas do not even have access to primary care. These disparities do not allow India to be placed in any well-defined category.

Among the Indian states, the remarkable success of Kerala has been attributed to historical factors contributing to high literacy and women's empowerment. But recent experience in TN, AP and West Bengal suggests that significant improvement is possible without accompanying progress in literacy and gender equality. Despite the disparities among the states, however, there are strong common features as well. All the states have followed more or less the same development and administrative model, and thus their health systems exhibit, in varying degrees, the same strengths and weaknesses. This common thread facilitates generalizations, though the extent of their application varies from state to state.

India and the World

India's health indicators are almost at the same level as the average of low-income economies (Annex 2.2). But with per capita income as the benchmark, India is at the level of Sub-Saharan Africa (Annex 2.4). India seems to have performed better in comparison with countries at the same level of per capita income; but obviously this comparison is unfair and misleading. With its knowledge base, its administrative and institutional strengths, and its growth potential, India is capable of much higher levels of achievement. Comparing India with countries with similar health outcomes and growth potential in the 1960s (Annex 2.5), seems more appropriate. A comparison with China, Brazil, Indonesia and Thailand for under-5 mortality and Crude Birth Rate (Figure 2.1), indicates a lower rate of progress despite initial advantages. India compares unfavourably even with low-income countries in terms of availability of health infrastructure and its utilization, as well as the overall disease burden (Tables 2.1 and 2.2). The combined factors of population and unsatisfactory health status also accounts for India's substantial contribution to global health problems (Table 2.3). The same trends are apparent in poverty reduction, sanitation, access to safe drinking water and literacy – all important determinants of health status (Annex 2.6). Though the proportion of the population below the poverty line has declined from 36% in 1993-94 to 26.10% in 1999-2000 (2), the overall picture indicates that social infrastructure in India has remained relatively neglected.

Figure 2.1
Under-5 Mortality and Crude Birth Rate: A Comparison



Source: **Health, Nutrition and Population Indicators, A Statistical Handbook**, Human Development Network, Health, Nutrition and Population Series, World Bank, 1999

Table 2.1
International Comparison of Health Manpower and Hospital Beds, 1990-1998

	Physician per 1000 population	Nurses per 1000 population	Midwife per 1000 population	Hospital beds per 1000 population
Indian public sector	0.2	-	0.2	0.4
India total	1.0	0.9	0.2	0.7
World	1.5	3.3	0.4	3.3
Low income countries	1.0	1.6	0.3	1.5
Middle income countries	1.8	1.9	0.6	4.3
High income countries	1.8	7.5	0.5	7.4

Note: Income category is defined by per capita GNP in 1999: low income countries < $755; middle income countries $756-9265; high income countries > $9265. Country income averages are unweighted.
Source: India data: (CBHI 1995 and MHFW 2000); Nurses and midwife data: WHO, 1999; All else: World Development Indicators, 2000. Reproduced from **India: Raising the Sights – Better Health Systems for India's Poor,** World Bank, 2001

Table 2.2
International Comparison of Health Service Utilization and DALYs Lost per 1000 Population, 1990-1998

	Inpatient admissions per capita per year (%)	Average length of inpatient stay (days)	Outpatient visits per capita per year	Disability Adjusted Life Years Lost (per 1000 population)
Indian public sector	0.7	14	0.7	-
India total	1.7	12	3.9*	274
World	9	13	6	234
Low income countries	5	13	3	256**
Middle income countries	10	11	5	
High income countries	15	16	8	119

Note: Income category is defined by per capita GNP in 1999: low income countries < $755; middle income countries $756-9265; high income countries > $9265. Country income averages are unweighted.
* Includes all visits to health providers, regardless of system of medicine
** Estimated for low and middle income countries combined
Source: India utilization data: 52nd Round NSSO (1998); DALYs: WHO, 1999; All else: World Development Indicators, 2000. Reproduced from **India: Raising the Sights – Better Health Systems for India's Poor,** World Bank, 2001

Table 2.3
India's Share of the World's Health Problems (in %)

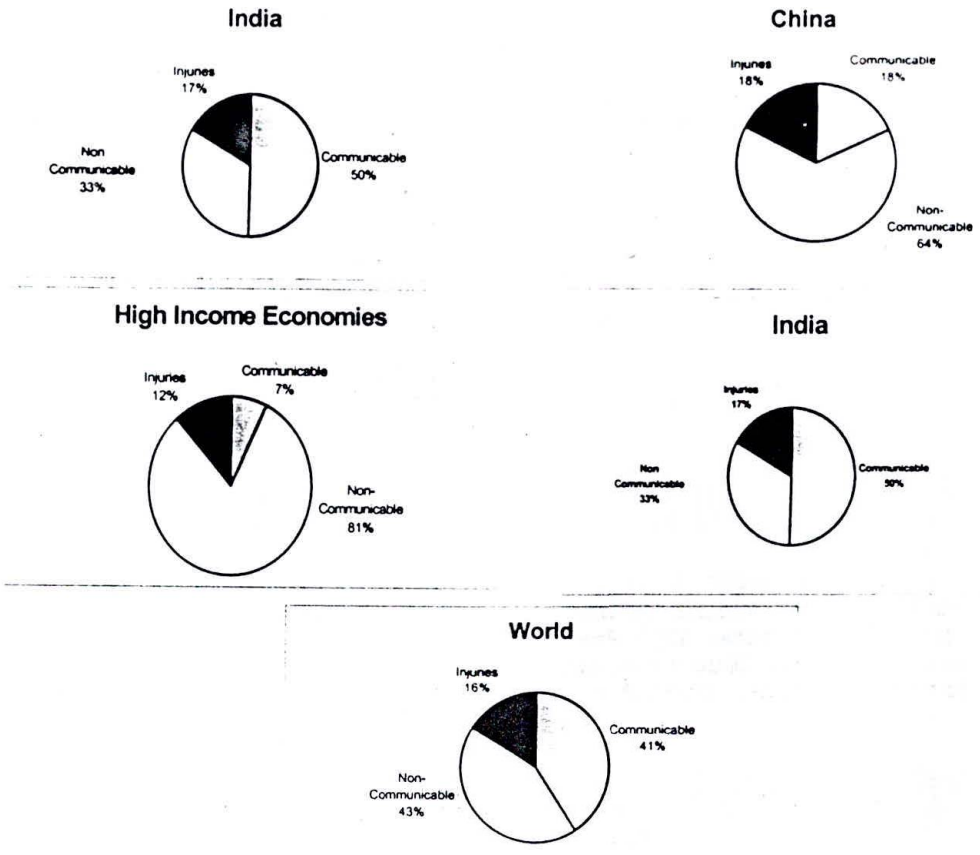
Population	People living in poverty (< 1 US$/day)	Total deaths	Child deaths	Maternal deaths	DALYs lost	Childhood vaccine preventable	Persons with HIV	TB cases	Leprosy cases
17	36	17	23	20	20	26	14	30	68

Source: World Development Indicators, 2000. WHO, 1999. Reproduced from **India: Raising the Sights – Better Health Systems for India's Poor**, World Bank, 2001

Burden of Disease 1998

The above disparities are also reflected in the burden of disease (BOD) estimates (3). The distribution of the BOD in 1998 between communicable and non-communicable diseases and injuries in India, China, high-income, low- and middle-income countries (Figure 2.2), highlights our failure to control communicable diseases. These account for 50.3% of the burden compared to 18.1% in China, and 43.8% in low and middle-income countries. The BOD estimates of 5 states (Table 2.4) present a similar picture; UP, for example, is almost at the same level as Sub-Saharan Africa in epidemiological transition. Communicable diseases account for 62% of the burden in UP, compared to 65.9% for Sub-Saharan Africa (4).

Figure 2.2
Burden of Disease by Cause – 1998



Source: **World Health Report 1999,** WHO, Geneva

Table 2.4
Burden of Disease – India and States

	CATEGORY	INDIA*	ANDHRA PRADESH	KARNATAKA	PUNJAB	WEST BENGAL	UTTAR PRADESH
% of DALYs Lost	Category 1	50.3	54.0	56.5	53.5	56.0	62.0
	Category 2	33.0	30.0	28.0	29.0	28.0	26.0
	Category 3	16.7	16.0	15.5	17.5	16.0	12.0

Category 1: Communicable Diseases
Category 2: Non-Communicable Diseases
Category 3: Injuries
* Data from **India: Raising the Sights – Better Health Systems for India's Poor**, World Bank, 2001
Source: **India : New Directions in Health Sector Development at the State Level, An Operational Perspective**, World Bank, February 11, 1997

Causes of Mortality 1998

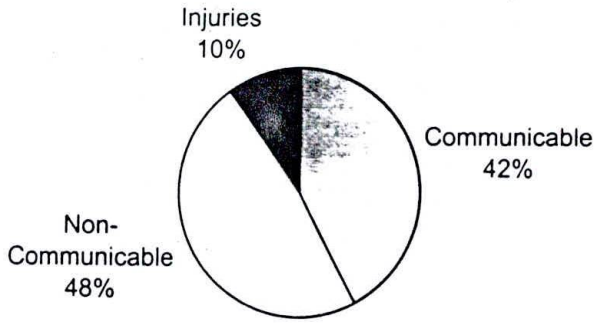
Listing 10 major and specific causes of death, the mortality data for 1998 (Table 2.5) brings out the disproportionate mortality share of communicable diseases in India. (See Figure 2.3 for the distribution of causes of mortality in different categories.)

Table 2.5
Top 10 Specific Causes of Death in India, 1998

	India		India / World
	(000)	% total	% of world
TOTAL POPULATION	982223		16.7
TOTAL DEATHS	9337	100	17.3
Ischemic heart diseases	1471	15.8	19.9
Acute lower respiratory infections	969	10.4	28.1
Diarrheal diseases	711	7.6	32.1
Cerebrovascular diseases	557	6	10.9
Tuberculosis	421	4.5	28.1
Road traffic injury	217	2.3	18.5
Measles	190	2	21.4
HIV / AIDS	179	1.9	7.8
Tetanus	165	1.8	40.3
Chronic obstructive pulmonary disease	153	1.6	6.8

Source: WHO, 1999. Reproduced from **India: Raising the Sights – Better Health Systems for India's Poor**, World Bank, 2001

Figure 2.3
Mortality by Causes for India - 1998

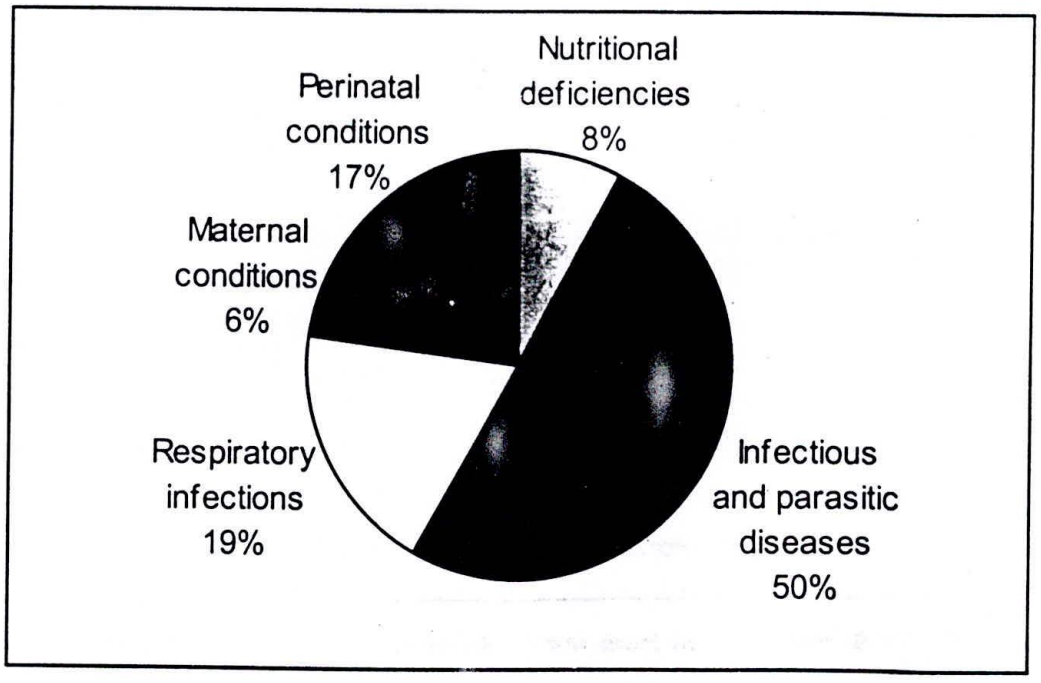


Source: **World Health Report 1999**, WHO, Geneva

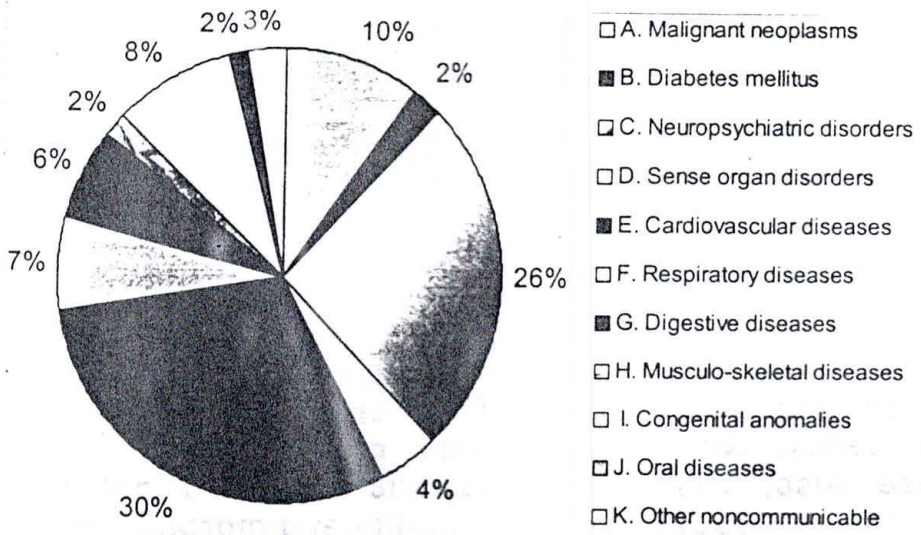
Communicable Diseases

The break-up of BOD estimates for communicable and non-communicable diseases (NCDs) for 1998 (Figure 2.4), indicates that the dominant communicable diseases are infections and parasitic diseases (49%), respiratory infections (18.9%), and perinatal conditions (17.3%).

Figure 2.4
Burden of Communicable Diseases India - 1998



Distribution of Burden of Non-Communicable Diseases India, 1998



Source: **World Health Report 1999**, WHO, Geneva

Among the communicable diseases, tuberculosis (TB) and malaria pose a special threat. The estimated total number of TB patients is 14 million; around one-third of all new cases, globally, are from India. India has been identified as a hot spot for MDR TB (5), which is difficult and expensive to treat. The emergence of MDR TB is primarily due to inadequate treatment and poor compliance by patients; but with India finally adopting the WHO-recommended DOTS programme (6), these conditions are being addressed. The programme was initially delayed by the World Bank because of procurement procedures, but it has since been expanded to cover a population of 350 million in 2000-2001, and is expected to cover the entire country by 2005 (7). The rapid extension and efficient implementation of the DOTS programme is crucial in reducing the risk of a dual epidemic of HIV and TB.

Malaria, brought down to negligible proportions in the 1960's under the National Malaria Eradication Programme (NMEP), came back into the picture in the 1970's with 6.47 million cases in 1976. Since then the malaria epidemic has been contained to 2-3 million cases a year, but worrying features persist (8). The proportion of the more dangerous parasite P. Falciparum has been steadily rising to almost half of all cases in 2001 (9). Also, an increasing number of reported cases indicate the resistance of parasites to drugs, and of vectors to insecticides. The more vulnerable North Eastern (NE) states and tribal areas are being given special attention and financial assistance on this count.

Maternal Health

The Maternal Mortality Rate (MMR) continues to remain at an unacceptable level of 408 per 1,00,000 live births, although there are statewise variations (10). Among the well-documented causes of such a level are the socio-economic status of women, the low proportion of institutional deliveries, and the non-availability of trained birth attendants (TBAs) in two-thirds of cases. Revamping the primary healthcare system, with an effective referral system for dealing with complications, is essential for the improvement of ante-natal and maternity care.

HIV/AIDS

The threat presented by the rapidly growing HIV/AIDS epidemic has not received the attention it deserves. The long gestation period between HIV infection and development of full-blown AIDS has led to a sense of complacency, while the infected population continues to spread the disease. Also, it is the opportunistic infections that get noticed; in most cases the root cause of both morbidity and mortality remains undiagnosed. India's high prevalence of sexually transmitted diseases (STDs) makes it particularly vulnerable to the AIDS threat.

The first case of HIV in India was detected in TN in 1986. The National AIDS Control Programme was drawn up in 1987; the National AIDS Control Organization (NACO) was set up in 1991 after the first loan from the World Bank was approved. The response to the programme was slow and uneven: most people thought international organizations and interested bureaucrats were diverting attention from more pressing health needs. The most important contribution of the programme has been sentinel surveillance, providing the pace and direction of the spread of infection. Another positive fallout has been heightened awareness regarding blood safety, detailed regulations for blood banks and attention to their enforcement. It has also led to the phasing out of professional donors in 1998, at least on paper. The programme has now entered Phase II with the World Bank providing more assistance in collaboration with USAID and DFID. The awareness level, however, is still low or uneven, indicating that IEC (Information, Education, Communication) remains a crucial element. According to NHFS II surveys (1998-99), only 11.2% in Bihar and 20% in UP had heard of AIDS, while some NE states, Kerala and TN show a high level of awareness ranging from around 87% to 93%. (See Chapter 8 on HIV/AIDS.)

On the basis of statewise HIV prevalence for 1998 (Table 2.6), the total estimated population infected in the year 1999 is 3.09 million, with a range of 2.47 to 3.71 million (11). Some commentators believe these are underestimates, and that around one per cent of the adult population (5 million) is infected (12). But by all accounts, the epidemic is spreading rapidly – in metropolitan as well as rural areas, through transporters and

migrant labour. In other words, if India is to avoid the kind of catastrophe that has befallen Africa, far greater efforts will have to be made to keep the epidemic at bay. Fortunately, we have a successful model in the state of TN, which has arrested the increase in the level of infection principally by concentrating on high-risk segments of the population, and innovative mechanisms for the implementation of the programme.

Table 2.6
HIV Prevalence in India 1998

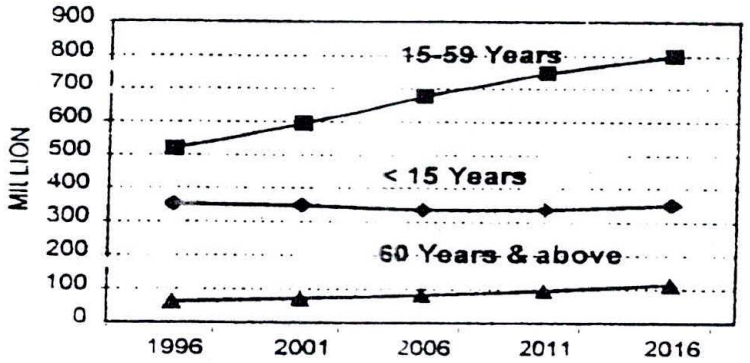
India/ States	Total number of HIV infected persons
Andhra Pradesh	567.078
Assam	29.153
Bihar	114.012
Gujarat	81.873
Haryana	34.287
Himachal Pradesh	3.318
Karnataka	309.772
Kerala	169.34
Madhya Pradesh	137.814
Maharashtra	747.049
Orissa	44.775
Punjab	43.734
Rajasthan	50.47
Tamilnadu	307.994
Uttar Pradesh	108.631
West Bengal	117.081
INDIA	2933.736
(Figures in thousand)	

Source: Annual Report 1999-2000, Ministry of Health and Family Welfare (MHFW), GOI

Demographic Transition

Fertility levels have been reducing slower than in many other countries, but the demographic transition, from high fertility/high mortality to low fertility/low mortality, has been taking place with varying speed in all states (Annex 2.7). According to Planning Commission estimates, the population will increase from 934 million in 1996, to 1264 million in 2016. These projections – based on the Crude Birth Rate and Crude Death Rates – decline from 24.10 to 21.41, and from 8.99 to 7.48 respectively, between the periods 1996-2001 and 2011-16. The result is that the net growth rate of population will reduce from 1.51% to 1.39 in the same period. This changing demographic profile has profound implications for health planners as well as economists. The next two decades will witness an increase in the 15-59 age group from 519 million to 800 million, with a significant reduction in the dependency ratio. The increase in longevity will almost double the population of the elderly (> 60 years), from 62.3 million in 1996 to 112.9 million in 2016 (Figure 2.5).

Figure 2.5
Projected Population of India

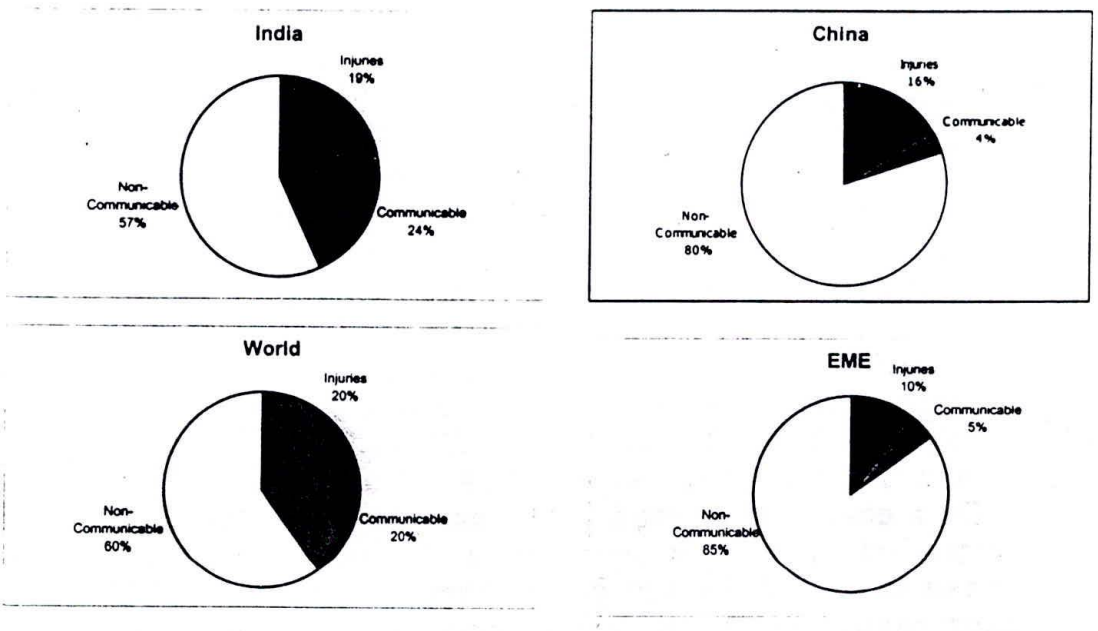


Source: Registrar General India, reproduced from Ninth Plan Document, Planning Commission, India

Burden of Disease Projections for 2020

Comparing the Indian distribution of communicable and non-communicable diseases and injuries to that of China, established market economies and Sub-Saharan Africa (Figure 2.6), the BOD projections for 2020 reflect the same trends (13). The proportion of communicable to non-communicable diseases is expected to almost reverse between 1998 and 2020, with the former dropping from 50.3 to 24.4%, and the latter rising from 33 to 56.5%. But China is expected to have a communicable disease burden of just 4.3% in 2020, not only less than the 7% estimate for industrialized countries in 1998, but also lower than their 5% projection for 2020.

Figure 2.6
Burden of Diseases – 2020



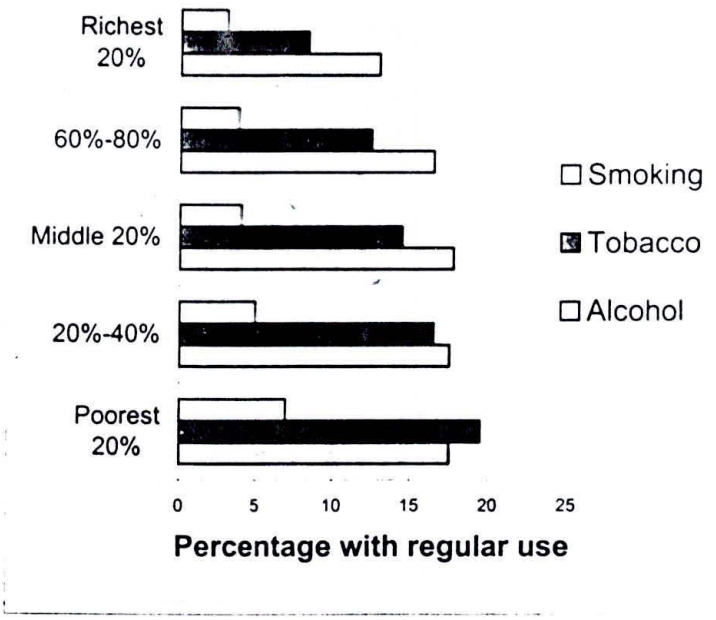
Source: **Health, Nutrition and Population Indicators - A Statistical Handbook**, Human Development Network, Health, Nutrition and Population Series, World Bank, 1999

The implications of this transition are as follows:

- high priority to the control of communicable diseases to avoid the double burden of communicable and non-communicable diseases (NCDs);
- strenuous and sustained efforts, including the use of yoga and naturopathy, to control the risk factors for NCDs caused by tobacco, alcohol and unhealthy lifestyles;
- the equipment of peripheral health institutions for early diagnosis of chronic NCDs and referral to secondary level institutions for treatment; and
- the development of cost-effective interventions, including equipment and training support, to deal with NCDs at the peripheral level.

The epidemiological transition is likely to affect the poor more for two reasons: their exposure to the major risk factors – tobacco and alcohol – is greater (Figure 2.7); and they lack the resources for the prolonged, expensive treatment many NCDs require.

Figure 2.7
Prevalence of Smoking, Tobacco, and Alcohol Use in India by Income Quintile 1995-96



Source: NSSO, 1995-96, reproduced from **India: Raising the Sights – Better Health Systems for India's Poor,** World Bank, 2001

Given the state-wise differentials in demographic transition, epidemiological transition also progresses at varying paces in different states. While Kerala and TN may be ripe for a shift of focus of the public health system to NCDs, other states may need such a change of emphasis only when they reach that stage.

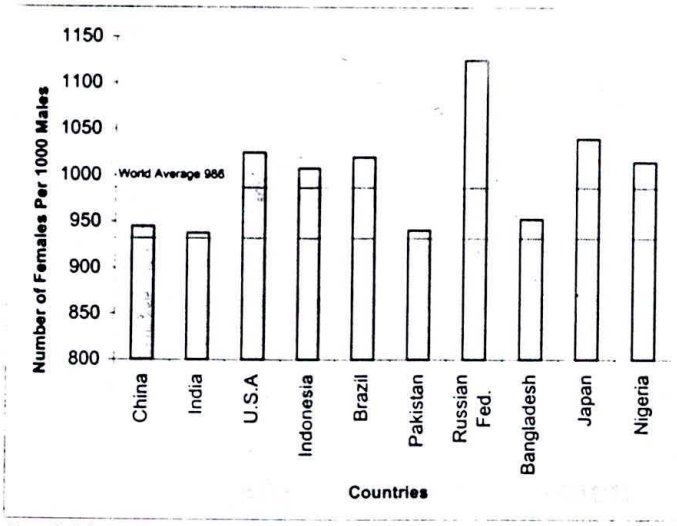
Key Factors Influencing Health Outcomes

Poverty, literacy and fertility are the three interlinked key areas that influence health outcomes, and Indian performance has been disappointing on all three fronts. A comparison with China reveals striking differences. The population below the poverty line is estimated at 26.1% in India and only 6% in China. Similarly, illiteracy rate is just 9% for males and 25% for females in China, compared to 24% for males and 46% for females in India. The TFR in China is 1.9 as against 3.2 in India (Annexes 2.6 and 2.7). *Thus poverty is both a cause and a consequence of poor health.* It is true that some states, such as TN and AP, have shown significant improvement in some demographic indicators without a corresponding rise in literacy. But the link between poor literacy levels, and a lack of awareness and poor health status, is well established. So is the impact of high infant and child mortality on fertility. The risk of loss of children is the biggest impediment to limiting the number of childbirths, particularly when offspring are viewed as the only available social security.

Gender Disparity

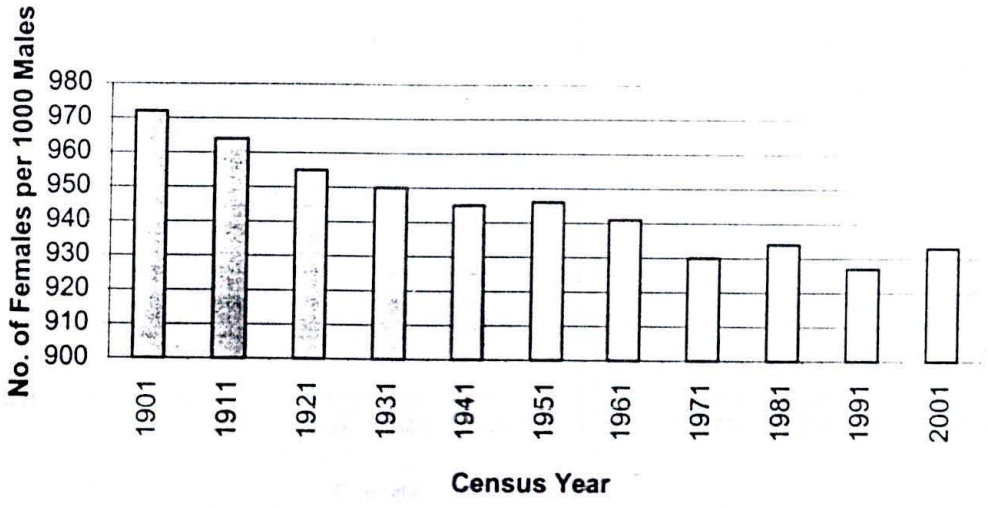
The reported decline in the sex ratio during the last century has been a legitimate cause for concern. The results of Census 2001 indicate that this trend has been arrested, and indeed, marginally reversed. However, the further decline in the sex ratio in 0-6 age group is a cause for serious concern. But international comparisons (Figure 2.8) demonstrate the still unsatisfactory situation (Figure 2.9), pointing to gender disparity and the consequent discrimination that underpins an adverse sex ratio.

Figure 2.8
Sex Ratio: International Comparisons



Sources: Census of India 2001, Provisional Population Totals, Registrar General and Census Commissioner, India

Figure 2.9
Sex Ratio in India (1901-2001)

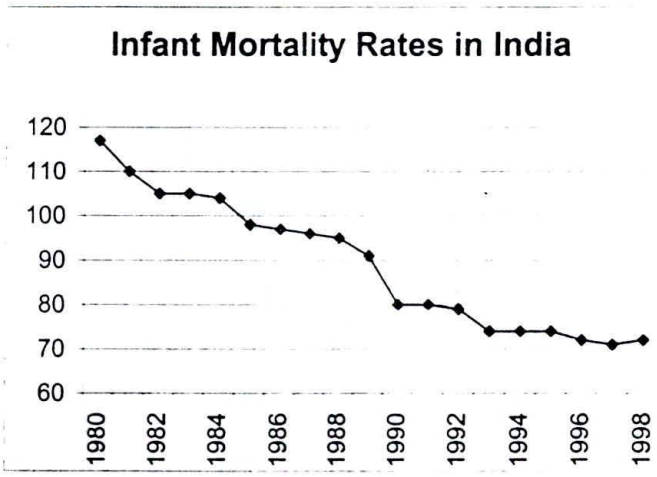


Sources: Census of India 2001, Provisional Population Totals, Registrar General and Census Commissioner, India

Progress since Independence

In the years since Independence, there have been significant gains in health status in India, but they do not compare favourably with those in many similarly placed developing countries. In isolation, Indian figures represent an impressive record. Life expectancy has gone up from 36 years in 1951 to 62 years in 1995 (14). Infant mortality rate is down from 146 in 1951 to 71 in 1997 (15) (Figure 2.10). Crude Birth Rate has been reduced from 36.9 in 1970 to 26.1 in 1998, and Crude Death Rate from 14.9 to 8.7 during the same period (Annex 2.5). (Figure 2.11 indicates, though, a worrying levelling off in the IMR since 1993.) These gains have been made possible by the growth and development of health infrastructure, efforts such as immunization to control communicable diseases, and improvements in determinants such as water supply and sanitation. Major success stories include the eradication of small pox and guinea worm; the extraordinary social mobilization for polio eradication; the near elimination of leprosy and the significant contribution of the National Blindness Control Programme in controlling cataract – induced blindness in selected states. The National Health Policy 1983 (16), set some targets for 1985, 1990 and the year 2000. A comparison (Table 2.7) indicates that despite impressive gains we are nowhere near targets, except for life expectancy, Crude Death Rate and polio immunization.

Figure 2.10
Infant Mortality Rates in India



Source: Registrar General (multiple years), reproduced from **India: Raising the Sights – Better Health Systems for India's Poor**, World Bank, 2001

Table 2.7
Select Goals Under National Health Policy and Achievement

Sl. No.	Indicator		Level as quoted in NHP	Goals			Achievement		Latest Available
				1985	1990	2000	1985	1990	
1	Infant Mortality Rate		125(1978)	106	90	<60	97	80	72(1998)*
2	Pennatal Mortality		67(1976)	--	--	30-35	53.8	49.6	42.5(1994)
3	Crude Death Rate		Around 14	12	10.4	9	11.7	9.6	8.9(1997)
4	Life Expectancy at Birth(yrs.)	Male	52.6(1976-81)	55.1	57.6	64	58.1	58.1	64.1(2001-06)
		Female	51.6(1976-81)	54.3	57.1	64	59.1	59.1	65.8(2001-06)
5	Crude Birth Rate		Around35	31	29.1	21	32.9	30.2	27.2(1997)
6	Growth Rate (annual)		2.24(1971-81)	1.9	1.66	1.2	2.07	1.87	1.66(1996-2016)
7	Pregnant mother receiving ante-natal care(%)		40-50	50-60	60-70	100	40-50	60('88)	65.4(98-99)
8	Deliveries by trained birth attendant		30-35	50	80	100	30-35	40-50('88)	35('99)
9	Immunization Status Coverage by %								
	TT(for pregnant woman)		20	60	100	100	80.6	78.16	78.7(1996-97)
	TT(for school children)	10 years	--	40	100	100	82	60.5	55.1(1996-97)
		16 years	20	60	100	100	92.7	86.45	47.6(1996-97)
	DPT(Children below 3 years)		25	70	85	100	96.2	98.19	89.3(1996-97)
	Polio(Infants)		5	50	85	100	93.9	98.86	90.7(1996-97)
	BCG(Infants)		65	70	85	100	47.3	101.51	97.1(1996-97)
	DT (New School Entrants 5-6yrs).		20	80	85	100	112	82	58.7(1996-97)
	Typhoid (New School Entrants 5-6yrs.)		2	70	85	85	70.3	62.6('88)	--

* Data obtained from Annual Report (1999-2000), MHFW, India
Source: Health Information of India 1995 & 96, Central Bureau of Health Intelligence, MHFW, forthcoming.

Rural Health Infrastructure

Our vast rural health infrastructure, which received substantial financial support during the 1980s (Sixth and Seventh Five Year Plans), is a major achievement. A three-tiered system, it has sub-centres for each 5,000 population, Primary Health Centres (PHCs) for each 30,000 population, and Community Health Centres (CHCs) for each 1,00,000 population. Lower norms meet the special requirements of hilly areas. The sub-centre is the most peripheral contact point between the primary healthcare

underreporting. Of the 11,25,000 practitioners registered with various system medical councils, only 1,25,000 are reported to be in government service (19). The balance consists of around a million registered practitioners of different systems in the private sector. The number of unqualified practitioners of various systems is also large, and according to a study done by UNICEF/SRI–IMRB in UP, their number practically equals that of registered practitioners (20). These comprise traditional practitioners of indigenous systems as well as quacks, and some studies show that all of them freely practice modern medicine (21), often with disastrous consequences.

Table 2.9
Health Care Manpower and Health Facilities in the Public and Private Sector in India

Doctors	Total Number (1998) (includes all systems) (CBHI)	1109853
	Population Per Doctor	880
	% age of Doctors in Rural Areas (1981) (Census)	41
	% age of all Doctors in Private Sector (Estimated)	80-85
Nurses	Total Number (1996)	867184
	Population Per Nurse	976
	Doctors Per Nurse (1996)	1.4
Hospitals	Total Number (1996)	15097
	Population Per Hospital	56058
	% age of Hospitals in Private Sector	68
	Estimated Total Number of Hospitals	71860
	Estimated Population per Hospitals	11744
	Estimated % age of Hospitals in Private Sector	93
Hospital Beds	Total Number (1996) (CBHI)	623819
	Population Per Hospital Bed	1357
	% age of Beds in Rural Areas	21
	% age of Beds in Private Sector	37
	Estimated Total Number of Beds	1217427
	Estimated Population per Bed	693
	% age of Beds in Private Sector	64
PHCs	Total Number	22975
	Rural Population Per PHC	27364

Notes: Estimates are from Duggal (2000) and Nandraj (Background Paper 6).The estimates for manpower are based on medical council lists. The estimates for the number of hospitals and beds are based on the extent of under-estimation in government (CBHI) data found in AP in a 1993 Census of all hospitals by the Director of Health Services and the Andhra Pradesh Vaidya Vidhan Parishad. They found 2802 hospitals and 42192 hospital beds in the private sector in AP as against 266 hospitals and 11103 beds officially reported by the CBHI in that year. The official (CBHI) data under-reported private hospitals by 10.5 times and beds by 3.8 times.
Source: **India: Raising the Sights – Better Health Systems for India's Poor**, World Bank 2001

Although the private sector has filled the critical gaps caused by the non-performance or overcrowding of public facilities, its rapid expansion has been characterized by concentration in urban areas and the continued neglect of under-served areas (Table 2.9 and Annex 2.3). Besides, the private sector is almost entirely unregulated. In the absence of any regulatory mechanisms or standards, there are serious complaints of poor quality, irrational drug use, overcharging and unethical behaviour. It needs to be noted, however, that regulating private practitioners in a country with multiple systems and inadequate standardization does present

system and the community. There were 1,37,271 sub-centres functioning in the country in November 1999, of which the centre financed 97,757, and the states the balance. The PHC is the first contact point between the village community and the medical officer, and there are 22,975 PHCs operational in the country. The PHC, as the name suggests, has facilities only for primary out-patient care with merely nominal arrangements for in-patients, while the CHC has facilities for secondary care, with specialists and in-patient beds. There are 2935 functioning CHCs (17).

But despite the fact that investment in this infrastructure has been substantial, it has not yielded optimal benefits. Many institutions are not fully functional due to staff shortage and non-availability of drugs and consumables. (See Table 2.8 for the reported availability of specialists and doctors in the rural health systems.)

Table 2.8
Availability of Health Manpower in Rural Health Institutions

A. Specialists :

1	2	3	4	5
Posts required as per norms	Posts sanctioned	Specialists in positions	Posts Vacant (2-3)	Shortfall (1-3)
11652	6556	3731	2825	7332

B. Doctors in PHCs :

1	2	3	4	5
Posts required as per norms	Posts sanctioned	Doctors in position	Posts Vacant (2-3)	Shortfall (1-3)
23179	29699	25418	4284	- 2186

Source: Health Information of India 1995–96, forthcoming

Posts sanctioned in excess of norms are generally in well-located PHCs to give doctors credit for rural service, aggravating the shortage in underserved areas. The problem is more grave than the vacancy position indicates: the data does not capture the large-scale absenteeism of doctors in rural areas. Government doctors practice privately with or without permission, and this means inadequate attention for patients in government institutions. *The overall result is the poor utilization and near-collapse of the rural health infrastructure, particularly the PHCs and CHCs, in most states* (18).

Growth of the Private Sector

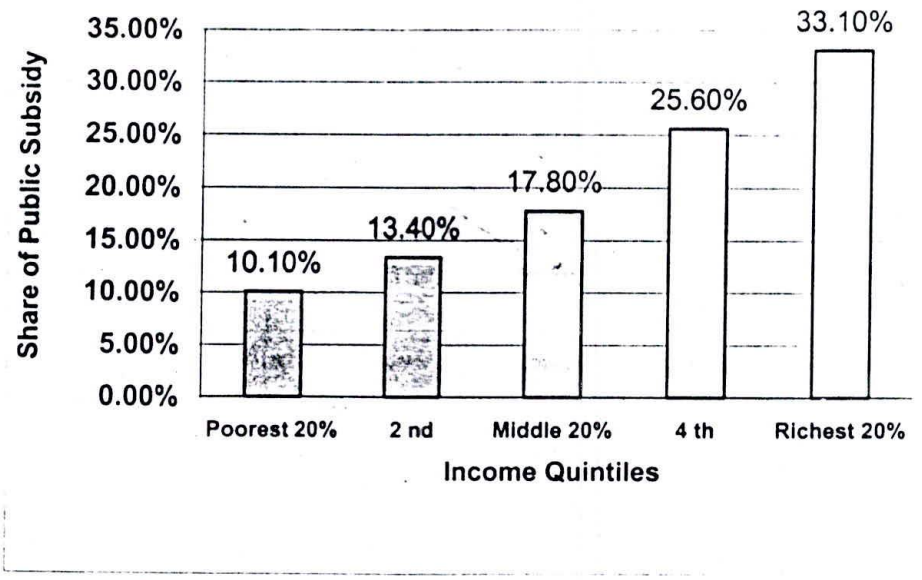
A look at the position of hospitals and hospital beds in public and private sectors (Table 2.9) suggests the rapid expansion of healthcare facilities in the private sector. But private sector data is incomplete, with substantial

considerable administrative complexities. The 'not-for-profit' private sector (NGOs and charitable trusts) has made a significant contribution to public health programmes such as family planning, HIV/AIDS, leprosy, blindness, and Maternal and Child Health (MCH), as well to the provision of healthcare to the poor, but their contribution has not been fully documented.

Equity

Despite decades of socialistic, welfare-oriented government goals, the health system is plagued with inequities, partly as a reflection of income disparities – aggravated, according to one view, in the post-liberalization period. But even the State-financed healthcare system is increasingly utilized by the relatively affluent sections of the population. A recent NCAER study establishes the raw deal the poor get from the public healthcare system (Figure 2.11), although there are substantial state-level variations (Table 2.10). Glaring differentials in health status indicators in different income groups, and health outcomes as per standard of living index (Tables 2.11 and 2.12) confirm inequities in healthcare and status.

Figure 2.11
Share of Public Subsidy for Curative Care Benefiting Income Groups



Source: **Who Benefits From Public Health Spending In India,** unpublished paper, NCAER, 2000

Table 2.10
Comparative State Equity Performance for Curative Care (Income Level)

Rank	State	Ratio of Curative Care Subsidy to Richest Versus Poorest Quintile	Concentration Index
1	Kerala	1.1	-0.041
2	Gujarat	1.14	0.001
3	Tamilnadu	1.46	0.059
4	Maharashtra	1.21	0.06
5	Punjab	2.93	0.102
6	Andhra Pradesh	1.85	0.116
7	West Bengal	2.73	0.157
8	Haryana	2.98	0.201
9	Karnataka	3.58	0.208
	All India	3.28	0.214
10	North East	3.16	0.22
11	Orissa	4.87	0.282
12	Madhya Pradesh	4.16	0.292
13	Uttar Pradesh	4.09	0.304
14	Rajasthan	4.95	0.334
15	Himachal Pradesh	5.88	0.34
16	Bihar	10.3	0.419

Source: Background Paper 18, reproduced from **India: Raising the Sights – Better Health Systems for India's Poor,** World Bank, 2001

Table 2.11
Health Status Indicators – Comparison Between the Poorest and Richest Quintiles of the Population, India, 1992-93

	Poorest 20 %	*Richest 20 %*	*Poor / Rich Risk Ratio*
Infant Mortality (Deaths under 12 months per 1000 births)	109.0	44.0	2.5
Under 5 Mortality (Deaths under 5 years per 1000 births)	155.0	54.0	2.8
Childhood Underweight (Percent below -2 sd z-score, weight/age, children under 4 years)	60.0	34.0	1.7
Total Fertility Rate (Births per woman age 15-49 years)	4.1	2.1	2.0

Source: Gwatkin et al, **Socio-Economic Differences in Health, Nutrition, and Population in India**, 2000. HNP Poverty Thematic Group of the World Bank, based on NFHS, 1992-93. Reproduced from **India: Raising the Sights – Better Health Systems for India's Poor**, World Bank, 2001

Table 2.12
Health Outcomes According to Standard of Living, India 1998-99

Standard of living index	Infant Mortality (per 1000 births)	Under Five Mortality (per 1000 births)	Total Fertility Rate	Children Underweight (% below -2 SD)	Children with anemia (%)	Children with acute respiratory infection in past 2 weeks (%)	Children with diarrhea in past 2 weeks (%)	Anemia among women (%)
Low	88.8	130	3.37	56.9	78.7	21	19.9	60.2
Medium	70.3	94.6	2.85	46.8	73.5	19.4	19.7	50.3
High	42.7	51.5	2.1	26.8	67.3	15.7	16.1	41.9
Low/High Ratio	2.08	2.52	1.6	2.12	1.17	1.34	1.24	1.44

Source: National Family Health Survey 1998-99 (IIPS 2000), Reproduced from **India: Raising the Sights – Better Health Systems for India's Poor**, World Bank, 2001

Poor and undependable public sector services in rural areas and their consequent under-utilization, and the cornering of secondary and tertiary care services in urban and metropolitan areas by the rich, leads to a skewed pattern in many states. The result is the diversion of a majority of patients to the private sector, now accounting for 82% of out-patient care and 56% of nondelivery hospitalizations (22). The bulk of the cost of treatment is met by out-of-pocket expenses, estimated at 84.6% of the total health expenditure (Annex 2.4). This has serious consequences for the poor: a World Bank analysis showed that direct out-of-pocket medical costs may push 2.2% of Indians to poverty in one year (23). Thus many episodes of illness remain untreated, and their proportion has increased significantly between the 42nd round (18%, 1986-87) and 52nd round (33%, 1995-96) of NSS. **The greatest failure of the Indian health system is its inability to develop a financing mechanism for the healthcare of the poor.**

Manpower Shortages

The critical shortage of key health manpower, particularly in public facilities, is explained by inadequate incentives, poor working conditions, and lack of transparency in postings, especially in rural areas. As many as 165 medical colleges produce 12,000 medical graduates and 4,139 postgraduates every year, yet shortages persist (24). There is also a critical shortage of specialists – surgeons, pediatricians, gynecologists and anesthesiologists – in government secondary institutions.

Public Health

Public health has also been neglected, both as a discipline and a profession. The highest technical position in public health, the Director General of Health Services (DGHS), does not necessarily require a public health background. Similarly, heads of public health departments in many states, the Directors of Health Services (DHS), often have medical, not public health backgrounds. In most states this also applies to the district

level. The neglected All India Institute of Hygiene and Public Health, Kolkata, run as a subordinate office of the Director General of Health Services, is the only institution devoted exclusively to public health. Departments of Preventive and Social Medicine/Community Medicine in medical colleges are often the weakest, and perceived by students as the least desirable choice. Naturally, despite policy pronouncements, public health issues receive low priority in the Indian health system (25).

Indian Systems of Medicine

More than 4000 years old, the holistic system of ayurveda also provides a way of life that can help prevent lifestyle related diseases. But traditional systems – ayurveda, siddha, unani, yoga, naturopathy – have not contributed significantly to the healthcare of the masses, despite their increasing appeal abroad and to the affluent at home. According to the 42nd Round NSS, 96% of illness episodes were treated with allopathic medicines. NCAER Household Surveys also confirm that 90.8% of illness episodes in rural areas received allopathic treatment; urban areas report just over a 2% higher share for allopathy. Thus the surmise of dependence on faith healers is overturned; they account for only 0.5% in rural areas and 0.2% in urban areas. Generally, the government-funded parallel infrastructure of traditional system health facilities and trained personnel are not utilized for either public health programmes or primary healthcare. There were reportedly 5,76,101 registered practitioners of Indian Systems of Medicine and Homeopathy in 1996 (26). The parallel and uncoordinated development of the two streams of healthcare indicates that no attempt has been made to synthesize different systems as suggested by the ICSSR/ICMR Committee 1981; nor has there been a serious, sustained effort to evaluate traditional remedies scientifically.

Coordination

Determinants of health status such as sanitation, drinking water, environment and nutrition, are outside the purview of health ministries and departments at central and state levels. There are no active and functioning institutional mechanisms for coordinated and integrated action. The deteriorating environment, the non-availability of safe drinking water and poor nutritional status, all conditions that affect disease burden and health outcomes, are poverty-related. These health hazards are faced by the growing slum population in cities – between 30% to 50% of the total urban population (26% according to 1991 census) (27). Delhi has at least 30% of its population (28) living in slums. The urban child population of Jammu, Delhi and Mumbai are vulnerable to increased levels of lead exposure (29). Similarly, a study (30) of the Moradabad brassware industry shows high respiratory morbidity due to chronic exposure to the fumes and dust of metals. The worst damage is obviously the impact of occupational and environmental hazards on children. Coordinated action could alleviate the condition of the most vulnerable sections of society,

but such **coordination is hampered by a multiplicity of agencies, and the fragmentation of responsibility.**

Divisions within the Ministry of Health and Family Welfare (MHFW) have aggravated compartmentalization. The Ministry is now divided into three independent departments – health, family welfare and Indian systems of medicine and homeopathy. With population control considered a priority, an independent department of family planning (later family welfare) was created, though public health and family planning services had to be delivered through the common rural health infrastructure. The emphasis on family planning targets transferred the entire rural health portfolio to that department, divorcing it from other health programmes. The result was poor utilization; the PHC in many states was, in the public eye, only a family planning facility (31). Separate departments give their respective programmes greater focus, but at the cost of coordinated functioning; the absence of a holistic view outweighs the advantages. Several committees and reports – such as the World Bank's *India: Policy and Finance Strategies for Strengthening Primary Health Care Services* (1995), the Expert Committee on Public Health Systems 1996, and the Committee on Restructuring of the Health Ministry (2000), have recommended the integration of all departments.

Epidemiological Surveillance

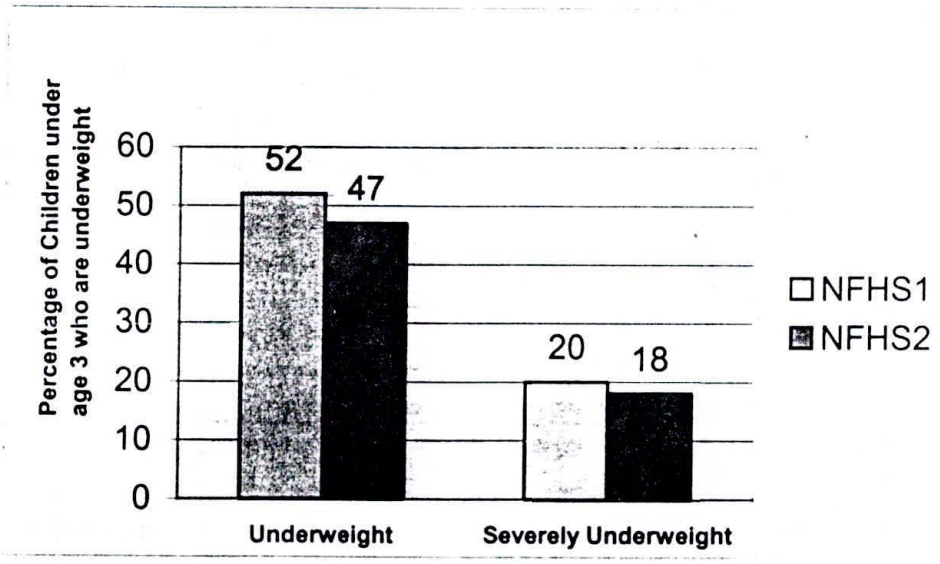
The near collapse of the surveillance system makes accurate estimates of the epidemiological situation difficult; the exceptions are HIV/AIDS and polio, which have special surveillance systems. The reporting in government documents is from public healthcare institutions, capturing only a fraction of illness episodes. In the words of the 1996 Expert Committee on Public Health Systems, "Surveillance data generated through the system and through various programmes are considered at best indicative of trend rather than the actual situation in the community... mortality and morbidity numbers reported are grossly underestimated." Clearly, a working, cost-effective epidemiological surveillance and vital registration system is an urgent priority.

Nutrition

Despite a nationwide programme for nutritional supplementation for pregnant women and children, available indicators present a pessimistic scenario. The latest NFHS-2 data (1998-99) shows 36.8% women with BMI (32) of 18.5 Kg/m^2 or less, indicative of chronic energy deficiency. Anemia in women varies from 41.9% in high-income groups to 60.2% in low-income families. 47% of under-3 children are underweight, and 18% are severely underweight; there has been a marginal improvement since NFHS-I (92-93) (Figure 2.12). Anemia among children is as high as 74% (Figure 2.13). The 1994 ban on the sale of edible non-iodized salt produced some results, but this ban was lifted in September 2000, despite protests from public health and scientific communities and international

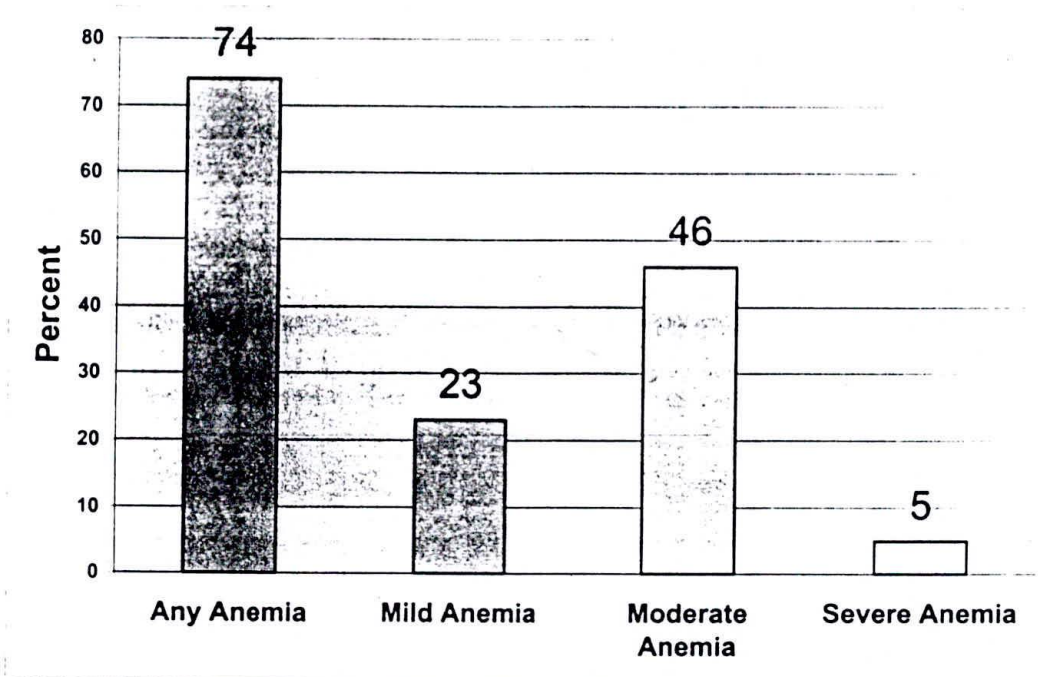
organizations.

Figure 2.12
Undernutrition in Children in India



Source: National Family Health Survey (NFHS-2) India, 1998-99

Figure 2.13
Anemia among Children



Source: National Family Health Survey (NFHS-2) India, 1998-99

Public Health Expenditure

Overall, the health scenario reflects persistent neglect by the State despite its socialistic model, and despite the close link between health

status and productivity in a poor country. Investments in health yield only medium or long-term gains, and this seems to have been at odds with short-term political gains. The consequence has been the inadequacy of public health expenditure – around 0.9% of GDP (33), below the low-income countries average (one per cent) and even Sub-Saharan Africa (1.7%) (Annex 2.4). Public health expenditure as a proportion of total government expenditure has declined over the years (Figure 11.1); only 12 countries in the world spent lower proportions on health (34). This has sometimes been attributed to the economic reform process (35). The economic reforms introduced in the nineties should have released more funds for investment in social sectors, following government withdrawal from investment in industry and to some extent infrastructure. But following a temporary stabilization in the early nineties, the fiscal situation deteriorated, eroding the government's ability to step up investments in health. The central government has, however, increased support to developmental health programmes by leveraging external resources (Table 2.13). The states, typically, account for around 75% of public health expenditure (36). Thus the states' financial health is crucial for general developmental outlays, as also for health. The combined gross fiscal deficits of the states, which ranged between 2.4% to 2.9% (1993-94 to 1997-98), increased to 4.2% in 1998-99, and to 4.9% in 1999-2000 (37). Rather than economic reforms, this can be linked to a lack of reforms in containing subsidies, privatizing losing PSUs and downsizing government. Fiscal crises have meant sharp reductions in the non-salary recurring expenditure in public health facilities, and quality has deteriorated even further. The increase in salary and pension liabilities subsequent to the recommendations of the Fifth Pay Commission has also aggravated the resource crunch (38). The combined fiscal deficits of the centre and the states are estimated at 10% of GDP (39). An analysis of trends in public spending (Figure 2.14) indicates a steady increase in per capita spending, but low overall levels. In current prices, total public-sector health expenditure was Rs161 billion (Rs165 per capita; US$ 3.9 or Rs97 at 93-94 constant prices) (40). Major variations among states (Figure 2.15) point to the increasing divide between rich and poor states.

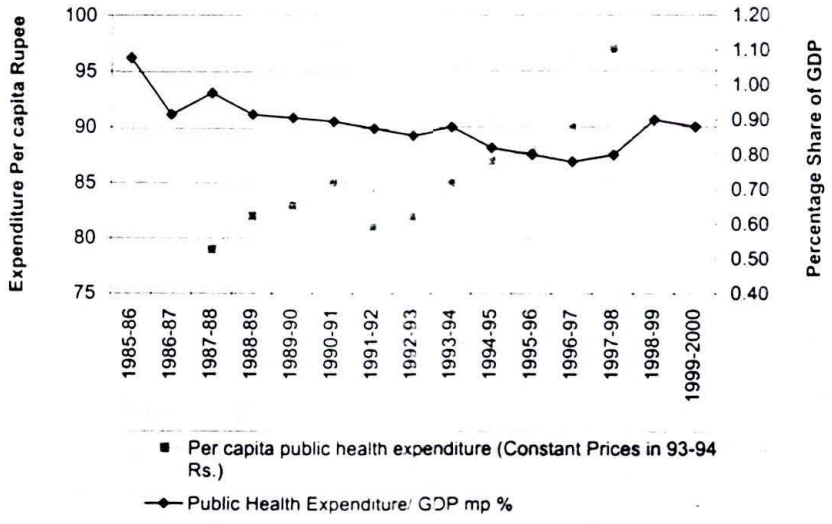
Table 2.13
Outlay for Health in the Central Sector (Actual Expenditure)

(Rs. Crore)

	1992-93	1993-94	1994-95	1995-96	1996-97(RE)
Total Centrally Sponsored Schemes	208.17	232.04	315.44	348.43	489.71
Total Purely Central Schemes	174.36	183.19	207.96	201.87	305.63
Grand Total	382.53	415.23	523.4	201.87	305.63

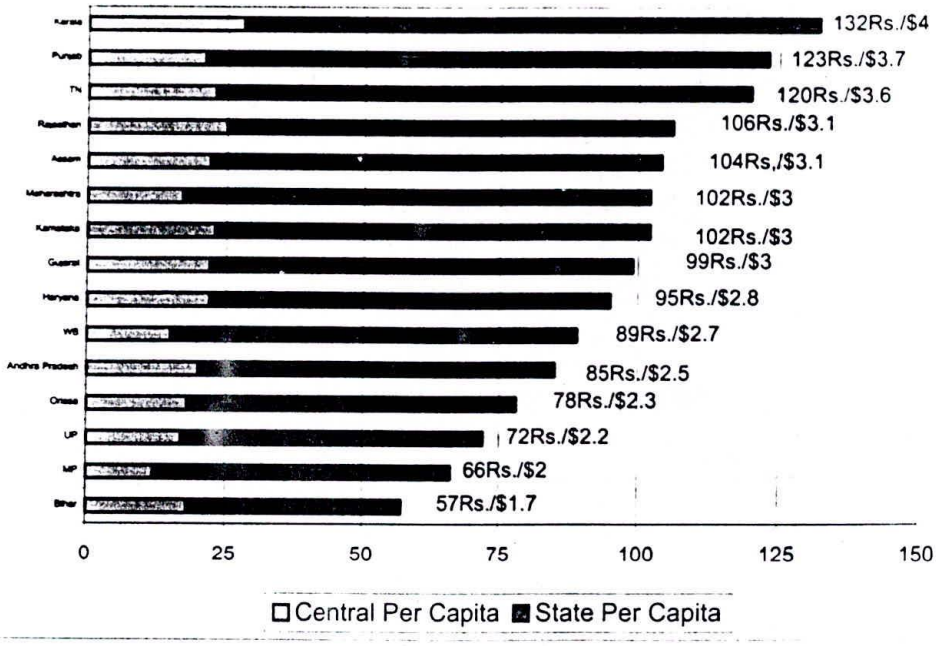
Source: Ninth Plan Document, Planning Commission, GOI

Figure 2.14
National Accounts, Public Sector Spending on Health



Source: Central Statistical Office; Ministry of Finance; Reserve Bank of India, reproduced from **India: Raising the Sights – Better Health Systems for India's Poor**, World Bank, 2001

Figure 2.15
State-Level Per Capita Public Spending on Health (Rs.), 1995-96



Source: **India: Raising the Sights – Better Health Systems for India's Poor**, World Bank, 2001

Conclusion

A great leap in levels of investment is imperative if we are to meet the epidemiological and systemic challenges facing the country. The ICCSSR/ICMR Committee suggested a public investment of 6% of GDP in health, analogous to the Education Commission's recommendation for that sector. India has traditionally spent much more on education, around 3.4% of GDP (38). Matching health outlays do not appear feasible, nor does matching public investment levels of high-income countries (6% of GDP). Aiming at the average level of lower middle-income countries (41) – 2.2% of GDP (42) – means just over double the outlay, to around $10 per capita. The World Development Report 93 calculated the cost of a minimum package of basic health services at $12 per capita for low-income countries at 1993 prices. Even with an investment of 2.2% of GDP, we would still fall short of that target. But higher financial resources must be accompanied by major structural reforms in the health system. Essential to the mobilization of additional resources and to systemic reform is increased popular awareness about health issues, an awareness that will generate the necessary political support.

Notes

1. Low Income ($760 and less), Middle Income ($761-$9360) and High Income Countries ($9361 and above) are defined on the basis of per capita incomes in 1998 in World Development Report 2000.
2. Economic Survey – 2000-2001. The comparability of the latest estimates with earlier data is, however, disputed on account of the change in methodology.
3. Although the concept of Disability Adjusted Life years (DALYs) used for estimating burden of disease is widely accepted by international organizations, there are some who question the reliability of these estimates. (See Ritu Priya 2001).
4. Ad Hoc Committee on Health Research, WHO 1996.
5. Multi Drug Resistant.
6. Directly Observed Treatment Short Course.
7. Note on TB epidemic from MHFW.
8. Annual Report – 1999-2000, MHFW.
9. NAMP – DGHS 2001.
10. Annual Report – 1999-2000, MHFW. MMR estimates are for 1997.
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14. Annual Report of the MHFW, 1999–2000.
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31. Ravi Duggal, For a New Health Policy, discussion paper.
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33. India: Raising the Sights – Better Health Systems for India's Poor, World Bank, 2001.
34. WHR 2000.
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36. World Bank 2001.
37. RBI Bulletin, October 2000.
38. Selvaraju et al 2001, background paper, 2001.
39. Finance Minister's Budget Speech, February 28, 2001.
40. World Bank, 2001.
41. WDR 2000.
42. WDR 2000 categorizes countries with per capita incomes between $761 and $3030 as Lower Middle Income Countries.
43. WDR 2000.

Annex 2.1

Demographic and Health Indicators - India and States

MAJOR STATE	MMR *	Life Expectency At Birth(1991-96) *		% of Birth Attended By Trained Health Personnel *	CBR ***	CDR *	IMR *	TFR **	Under - 5 Mortality Rate**
	1997	MALE	FEMALE	1999	1999	1995	1998	1995-98	1993-98
Andhra Pradesh	154	61.4	64.5	54	22.3	8.3	66	2.25	85.5
Assam	401	58.7	58.5	30.2	27.7	9.6	78	2.31	89.5
Bihar	451	60.8	60.1	13.8	31.1	10.5	67	3.49	105.1
Gujarat	29	60.9	62.7	41.6	25.3	7.6	64	2.72	85.1
Harayana	105	65.2	64.2	25.5	27.6	8	69	2.88	76.8
Himachal Pradesh	--	--	--	37.8	22.5	8.6	68	2.14	42.4
Karnataka	195	64.2	65.3	52.5	22	7.6	58	2.13	69.8
Kerala	195	68.6	75	96.6	18.2	6	16	1.96	18.8
Madhya Pradesh	498	59.2	58	24	30.6	11.1	97	3.31	137.6
Maharashtra	135	64	65.9	52.8	22.3	7.4	49	2.52	58.1
Orissa	361	60.1	58.4	20.9	25.7	10.8	98	2.46	104.4
Punjab	196	66.6	66.5	40.2	22.4	7.3	54	2.21	72.1
Rajasthan	677	60.5	61.3	21.8	31.5	9.1	83	3.78	114.9
Tamilnadu	76	62.3	63.1	76.3	18.9	7.9	53	2.19	63.3
Uttar Pradesh	707	57.1	52.8	16.8	32.4	10.4	85	3.99	122.5
West Bengal	264	61.9	61.9	37.4	21.3	7.7	53	2.29	67.6
India	408	60.6	61.7	35	26.1	8.7***	70***	2.85	94.9

Source : * - Annual Report 1999-2000, MHFW, GOI

** - National Family Health Survey (NFHS-2),1998-99.

*** - Annual Report 2000-2001, MHFW, GOI

Annex 2.2

Health and Demographic Indicators - India and World

COUNTRIES	CBR 1995	CDR 1995	TFR 1995	IMR 1995	< 5 MR 1995	MMR reported 1980-99*S-1	Life Expectancy at Birth (1999) S-2		% of Birth attended by trained health personnel (1995-2000)*S-1
							Male	Female	
Bangladesh	28.0	10	3.5	80.0	115.0	440.0	57.5	58.1	13
Brazil	21.0	7	2.4	45.0	57.0	160.0	63.7	71.7	92
China	17.0	7	1.9	35.0	43.0	55.0	68.1	71.3	67
Costa Rica	25.0	4	2.9	13.0	16.0	29.0	74.2	78.9	98
Cuba	14.0	7	1.7	9.0	10.0	27.0	73.5	77.4	100
Egypt, Arab Rep.	27.0	8	3.5	57.0	76.0	170.0	64.2	65.8	61
India	26.0	9	3.2	69.0	95.0	410.0	59.6	61.2	35**
Indonesia	23.0	8	2.7	52.0	75.0	450.0	66.6	69	56
Korea, Rep.	16.0	6	1.8	10.0	14.0	20.0	--	--	98#
Malaysia	27.0	5	3.4	12.0	14.0	39.0	67.6	69.9	96
Mexico	26.0	5	3.0	33.0	41.0	55.0	71	77.1	86
Myanmar	28.0	10	3.5	84.0	119.0	230.0	58.4	59.2	56
Nepal	37.0	12	5.3	92.0	131.0	540.0	57.3	57.8	9
Pakistan	38.0	9	5.3	91.0	127.0	--	62.6	64.9	19
Philippines	29.0	7	3.8	40.0	53.0	170.0	64.1	69.3	56
South Africa	30.0	8	3.9	51.0	67.0	--	47.3	49.7	84
Sri Lanka	20.0	6	2.3	16.0	19.0	60.0	65.8	73.4	94
Thailand	17.0	6	1.8	35.0	42.0	44.0	66	70.4	71#
Viet Nam	26.0	7	3.1	41.0	49.0	160.0	64.7	68.8	77
Zimbabwe	31.0	9	3.9	55.0	83.0	400.0	40.9	40	84
HIE	13.0	8	1.7	7.0	9.0	--	--	--	99
MIE	22.0	8	3.0	39.0	53.0	--	--	--	52
LIE	26.0	10	3.2	69.0	104.0	--	--	--	28
SSA	41.0	15	5.7	92.0	157.0	--	--	--	37
World	23.0	9	2.9	55.0	81.0	--	--	--	56

HIE : High Income Economies

MIE : Middle Income Economies

LIE : Low Income Economies

SSA : Sub-Saharan Africa

Source : Health, Nutrition, and Populatin Indicators:A Statistical Handbook, Human Development Network, World Bank - 1999

S-1 : The State of the World's Children 2001, UNICEF

S-2 : The World Health Report 2000,
Health Systems : Improving Performance, WHO

* Data refer to the most recent year available during the period specified in the column.

**Data obtained from Annual Report (1999-2000); MHFW, GOI

# Indicates data that refer to years or periods other than those specified in the column heading, differ from the standard definition, or refer to only part of a country.

Annex 2.3

Health Infrastructure of India and its States as on 01.01.1996

S. No.	States	Rural			Urban			Total		
		Hospitals	Beds	Beds per lakh of Population	Hospitals	Beds	Beds per lakh of Population	Hospitals	Beds	Beds per lakh of Population
1	Andhra Pradesh	883	10117	20.81	2007	35715	199.67	2950	45832	68.91
2	Assam	151	3949	19.82	117	8712	350.16	268	12661	56.49
3	Bihar	100	3018	4.02	228	26072	229.65	328	29090	33.68
4	Gujarat	179	5798	21.42	2349	57619	404.46	2528	63417	153.51
5	Haryana	8	543	4.38	71	6637	163.67	79	7180	43.61
6	Himachal Pradesh	19	549	11.63	38	4519	1006.46	57	5068	98.01
7	Karnataka	25	3015	9.70	268	35434	254.77	293	38449	85.49
8	Kerala	1443	44103	205.92	597	33096	430.94	2040	77199	265.30
9	Madhya Pradesh	245	6128	12.05	118	11959	77.96	363	18141	27.41
10	Maharashtra	469	10209	21.10	2646	68711	224.97	3115	78920	99.98
11	Orissa	287	5115	18.65	143	9769	230.67	430	14884	47.01
12	Punjab	75	2330	16.31	145	12491	208.43	220	14821	73.07
13	Rajasthan	14	1150	3.39	204	20037	199.04	218	21187	48.15
14	Tamilnadu	89	4235	11.51	319	44545	233.49	408	48780	87.33
15	Uttar Pradesh	83	2585	2.32	652	44693	161.90	735	47278	33.99
16	West Bengal	112	6352	12.87	287	48878	261.27	399	55230	81.13
17	India	4621	122453	18.50	10416	501366	232.36	15097	623819	73.71

Source : Health Information Of India (1995 & 1996), CBHI, MHFW. Census of India, 1991

Annex 2.4

Health Expenditure - India and World

COUNTRIES	Per Capita GNP	Per Capita GNP	Public Health Expenditure (% of GDP)	Per Capita Public Health Expenditure	Total Health Expenditure as % of GDP [S2]	Public Health Expenditure as % of Total	Out-of-pocket expenditure as % of Total
Bangladesh	350	1100	1.2	32	4.9	46	54
Brazil	4570	6160	1.9	208	6.5	48.7	45.6
China	750	3220	2.1	18	2.7	24.9	75.1
Costa Rica	2780	6620	6.0	377	8.7	77.1	22.3
Cuba	-	-	-	96	6.3	87.5	12.5
Egypt, Arab Rep.	1290	3130	1.7	32	3.7	27	73.1
India	430	1700	0.7***	11	5.2	13	84.6
Indonesia	680	2780	0.7	21	1.7	36.8	47.4
Korea, Rep.	7970	12270	2.3	-	-	-	-
Malaysia	3600	6990 *	1.4	85	2.4	57.6	42.4
Mexico	3970	8190 *	2.8	172	5.6	41	52.9
Myanmar	- **	-	0.4	10	2.6	12.6	87.4
Nepal	210	1090	1.2	11	3.7	26	74
Pakistan	480	1560	0.8	16	4	22.9	77.1
Philippines	1050	3540	1.3	48	3.4	48.5	49.1
South Africa	2880	6990 *	3.6	184	7.1	46.5	46.3
Sri Lanka	810	..	1.4	35	3	45.4	51.8
Thailand	2200	5840	2.0	108	5.7	33	65.4
Vietnam	330	1690	1.1	13	4.8	20	80
Zimbabwe	610	2150	1.7	62	6.2	43.4	38.2
HIE	25510	23440	6.0	-	-	-	-
MIE	2950	4080	2.4	-	-	-	-
Lower Middle Income	1710	3709.4	2.2	-	-	-	-
Upper Middle Income	4860	4606.3	3.0	-	-	-	-
LIE	380	2130	1.0	-	-	-	-
SSA	480	1430	1.7	-	-	-	-
World	4890	6200	2.5	-	-	-	-

* Estimate based on regression; others are extrapolated from the latest International Comparison Programme benchmark estimates.

** Estimated to be low income ($760 or less).

*** The latest estimates compiled by the World Bank seem to indicate a slight rise in public health expenditure as a percentage of GDP to 0.9%.

Sources : S1 - World Development Report 1999 / 2000

S2 - The World Health Report 2000

Annex 2.5

Demographic Indicators - India and World

COUNTRIES	CBR				CDR				TFR				IMR				UNDER-5 MORTALITY RATE			
	1965	1970	1988	1995	1965	1970	1988	1995	1960	1970	1980	1995	1960	1970	1980	1995	1960	1970	1980	1995
Bangladesh	47.0	48.0	40.0	28.0	21.0	21.0	15.0	10	7.1	7.0	6.2	3.5	156.0	140.0	133.0	80.0	247.0	237.0	207.0	115.0
Brazil	39.0	35.0	28.0	21.0	11.0	10.0	8.0	7	6.2	5.0	4.0	2.4	116.0	96.0	72.0	45.0	177.0	135.0	86.0	57.0
China	38.0	33.0	21.0	17.0	10.0	8.0	7.0	7	3.4	5.8	2.5	1.9	132.0	69.0	42.0	35.0	173.0	115.0	60.0	43.0
Costa Rica	35.0	33.0	27.0	25.0	8.0	7.0	4.0	4	7.0	5.1	3.7	2.9	74.0	62.0	20.0	13.0	124.0	85.0	29.0	16.0
Cuba	--	--	--	14.0	--	--	--	7	4.2	3.9	2.0	1.7	35.0	39.0	20.0	9.0	49.0	43.0	22.0	10.0
Egypt, Arab Rep.	43.0	40.0	34.0	27.0	19.0	17.0	9.0	8	7.0	6.1	5.2	3.5	179.0	160.0	112.0	57.0	--	235.0	175.0	76.0
India	45.0	41.0	32.0	26.0	20.0	18.0	11.0	9	6.6	5.8	5.0	3.2	165.0	139.0	119.0	69.0	242.0	202.0	173.0	95.0
Indonesia	43.0	42.0	28.0	23.0	20.0	18.0	9.0	8	5.4	5.5	4.4	2.7	139.0	119.0	93.0	52.0	216.0	172.0	124.0	75.0
Korea, Rep.	35.0	30.0	16.0	16.0	11.0	9.0	6.0	6	5.7	4.3	2.6	1.8	85.0	48.0	27.0	10.0	127.0	55.0	18.0	14.0
Malaysia	40.0	36.0	30.0	27.0	12.0	10.0	5.0	5	6.8	5.5	4.2	3.4	73.0	46.0	31.0	12.0	--	--	--	14.0
Mexico	45.0	43.0	28.0	26.0	11.0	10.0	6.0	5	6.8	3.5	4.6	3.0	92.0	74.0	52.0	33.0	134.0	111.0	76.0	41.0
Myanmar	40.0	--	30.0	28.0	18.0	--	10.0	10	6.0	5.9	5.1	3.5	158.0	129.0	110.0	84.0	--	179.0	134.0	119.0
Nepal	46.0	46.0	42.0	37.0	24.0	22.0	15.0	12	5.8	6.3	6.4	5.3	195.0	168.0	134.0	92.0	300.0	232.0	179.0	131.0
Pakistan	48.0	48.0	46.0	38.0	21.0	19.0	13.0	9	6.9	7.0	7.0	5.3	163.0	143.0	125.0	91.0	226.0	183.0	161.0	127.0
Philippines	42.0	38.0	31.0	29.0	12.0	11.0	7.0	7	7.0	6.4	4.9	3.8	80.0	67.0	53.0	40.0	107.0	82.0	69.0	53.0
South Africa	40.0	39.0	35.0	30.0	16.0	14.0	10.0	8	6.5	5.7	4.9	3.9	89.0	80.0	68.0	51.0	--	--	--	67.0
Sri Lanka	33.0	29.0	22.0	20.0	8.0	8.0	6.0	6	5.3	4.3	3.5	2.3	71.0	55.0	36.0	16.0	133.0	100.0	48.0	19.0
Thailand	41.0	39.0	22.0	17.0	10.0	9.0	7.0	6	6.4	5.6	3.6	1.8	103.0	75.0	50.0	35.0	148.0	102.0	58.0	42.0
Viet Nam	--	--	31.0	26.0	--	--	7.0	7	6.1	5.9	5.1	3.1	156.0	108.0	57.0	41.0	--	--	60.0	49.0
Zimbabwe	55.0	53.0	38.0	31.0	17.0	16.0	8.0	9	8.0	7.8	6.8	3.9	110.0	97.0	83.0	55.0	159.0	137.0	107.0	83.0
HIE	19.0	18.0	14.0	13.0	10.0	10.0	9.0	8	3.0	2.5	1.9	1.7	35.0	26.0	13.0	7.0	--	--	--	9.0
MIE	38.0	35.0	29.0	22.0	13.0	11.0	8.0	8	4.9	4.4	3.8	3.0	120.0	94.0	69.0	39.0	--	--	--	53.0
LIE	42.0	39.0	31.0	26.0	16.0	14.0	10.0	10	5.1	5.5	4.3	3.2	143.0	114.0	98.0	69.0	--	--	--	104.0
SSA	48.0	48.0	47.0	41.0	22.0	21.0	16.0	15	6.6	6.6	6.7	5.7	170.0	138.0	115.0	92.0	--	--	--	157.0
World	35.0	34.0	27.0	23.0	20.0	13.0	9.0	9	4.9	5.1	3.7	2.9	128.0	98.0	82.0	55.0	--	--	--	81.0

HIE : High Income Economies

MIE : Middle Income Economies

LIE : Low Income Economies

SSA : Sub-Saharan Africa

Source : - World Development Reports, World Bank - 1993

- Health, Nutrition, and Populatin Indicators : A Statistical - Handbook. Human Development Network, World Bank - 1999

Annex 2.6

Literacy, Health and Poverty Indicators - India and World

Countries	Year	Population below poverty line (%) *			Adult Illiteracy Rate (% of People 15 and above) 1997		% of Population with Access to Sanitation	% of Population with Access to Water	Prevalence of Child Malnutrition (% of Children < 5 Years)
		Rural	Urban	Total	M	F	1995	1995	1992-97
Bangladesh	1995-96	39.8	14.3	35.6	50	73	35	84	56
Brazil	1990	32.6	13.1	17.4	16	16	67	69	6
China	1996	7.9	<2	6	9	25	--	83	16
Costa Rica		--	--	--	5	5	97	100	5
Cuba		--	--	--	--		--	--	--
Egypt, Arab Rep.	--				35	60	70	84	15
India	1999-2000 #	27.09	23.62	26.1	24**	46**	16	85	53
Indonesia	1990	14.3	16.8	15.1	9	20	55	65	34
Korea, Rep.		--	--	--	1	4	100	83	--
Malaysia	1989	--	--	15.5	10	19	94	89	20
Mexico	1988	--	--	10.1	8	12	76	95	14
Myanmar	--				11	21	43	60	43
Nepal	1995-96	44	23	42	44	79	23	59	47
Pakistan	1991	36.9	28	34	45	75	30	62	38
Philippines	1997	51.2	22.5	37.5	5	6	77	83	30
South Africa		--			15	17	53	59	9
Sri Lanka	1990-91	38.1	28.4	35.3	6	12	75	70	38
Thailand	1992	15.5	10.2	13.1	3	7	96	89	--
Viet Nam	1993	57.2	25.9	50.9	5	11	60	47	45
Zimbabwe	1990-91	--	--	25.5	6	12	66	77	16

* On the basis of National Poverty Line

** Data obtained from Census of India 2001, Registrar General & Census Commissioner, India

Data Obtained from Economic Survey of India (2000-2001)

Source : Entering the 21st Century, World Development Report 1999 / 2000, World Bank.

Annex 2.7

Population Statistics - India and States

INDIA / STATES	Total Population (in Lakhs)	% Decadal Variation in Population	Total Population (in Lakhs)	% Decadal Variation in Population	Total Population (in Lakhs)	% Decadal Variation in Population	Total Population (in Lakhs)	% Decadal Variation in Population	Total Population (in Lakhs)	% Decadal Variation in Population	Population Projection (in Lakhs)
	1961	1951-61	1971	1961-1971	1981	1971-1981	1991	1981-91	2001	1991-2001	2016
Andhra Pradesh	359.83	15.65	435.03	20.90	535.51	23.10	665.08	24.20	757.27	13.86	886.23
Assam	1,083.73	34.98	146.25	34.95	180.41 *	23.56	224.14	24.24	266.38	18.85	325.02
Bihar	464.47	19.76	563.53	21.33	699.15	24.06	863.74	23.54	828.78	28.43	1323.05
Gujarat	206.33	26.88	266.97	29.39	340.86	27.67	413.10	21.19	505.96	22.48	593.38
Haryana	75.91	33.79	100.36	32.23	129.22	28.75	164.64	27.41	210.82	28.06	251.73
Himachal Pradesh	28.12	17.87	34.60	23.04	42.81	23.71	51.71	20.79	60.77	17.53	79.45
Karnataka	235.87	21.57	292.99	24.22	371.36	26.75	449.77	21.12	527.33	17.25	627.83
Kerala	169.04	24.76	213.47	26.29	254.54	19.24	290.99	14.32	318.38	9.42	368.77
Madhya Pradesh	323.72	24.17	416.54	28.67	521.79	25.27	661.81	26.83	603.85	24.34	1051.55
Maharashtra	395.54	23.60	504.15	27.45	627.83	24.54	789.37	25.73	967.52	22.57	1078.02
Orissa	175.49	19.82	219.45	25.05	263.70	20.17	316.60	20.06	367.06	15.94	410.23
Punjab	111.35	21.56	135.51	21.70	167.89	23.89	202.82	20.81	242.89	19.76	280.45
Rajasthan	201.56	27.83	257.66	27.83	342.62	32.97	440.06	28.44	564.73	28.33	714.13
Tamilnadu	336.87	22.30	411.99	22.30	484.08	17.50	558.59	15.39	621.1	11.19	698.66
Uttar Pradesh	737.55	19.78	883.42	19.78	1,108.63	25.49	1,391.12	25.48	1660.52	25.80	2428.61
West Bengal	349.26	26.87	443.12	26.87	545.81	23.17	680.78	24.73	802.21	17.84	962.31
India	4,392.35	21.51	5,481.60	24.80	6,833.29	24.66	8,463.03	23.85	10270.15	21.34	12635.43

* The population figure of Assam for 1981 have been worked out by interpolation as the 1981 census could not be conducted in Assam due to disturbed conditions.

Source : Census of India

Note: 1Lakh = 100 Thousands

The State Role in Health

Background

The lack of clarity about the State's (1) role, whether in the changing economic scenario or in health, has had a range of negative consequences. First, there has been a gross mismatch between available resources and stated goals, which has inevitably, led to the erosion of accountability and morale, as well as the inadequate monitoring of performance. Second, there has been a lack of prioritization, contributing to the misallocation of limited resources in response to political and other pressures. Finally, state interventions have been stretched to areas best left to the private sector, resulting in financial and human resources being spread too thinly for impact. Given an overburdened, under-motivated and inefficient health system, these consequences can mean almost total breakdown.

Role of the State

The State's role has been actively debated, particularly in the context of globalization and economic liberalization. One school of thought is that excessive State intervention has stifled private initiative, creating a burgeoning bureaucracy and fiscal imbalances. With inefficiency and corruption eroding public confidence, leading commentators have suggested limiting State role to essential functions such as defense, law and order and external relations (2). Economic reforms over the last decade have liberalized an over-regulated economy, and increased the role of market forces and competition. This recent experience has raised the expectation that an increased role for market forces could remedy the ills of the health system.

Focusing on the role of the State in a changing world, the 1997 World Development Report (WDR) identifies five fundamental State tasks:

- establishing a foundation of law;
- maintaining a non-distortionary policy environment including macroeconomic stability;
- investing in basic social services and infrastructure;
- protecting the vulnerable; and
- protecting the environment.

Of the failure of State-dominated development strategies in the developing world and the decisive shift in favour of market mechanisms, World Bank President James Wolfensohn says, "Many have felt that the logical end point of all these reforms was a minimalist state. Such a state would do no harm, but neither could it do much good." (3)

Suggestions for a bigger role for the private sector in health do not always recognize that the private sector already plays a dominant role in India; and that it is, unlike the industrialized world and many developing countries, almost entirely unregulated with many negative consequences. Amartya Sen points out that "while the case for economic reforms may take good note of the diagnosis that India has too much government interference in some fields, it ignores the fact that India also has insufficient and ineffective government activity in many other fields, including basic education, health care, social security, land reform, and the promotion of social change." (4)

WDR 1993 examined the rationale of government role in health, identifying three economic rationales for government action.

- The poor cannot always afford healthcare that promotes productivity and well being. Publicly financed investment in health can lead to the alleviation of poverty and its consequences.
- Some health-promoting actions are pure public goods or create large positive externalities. Private markets would either not produce them at all, or produce too little.
- Government intervention can improve how these markets in healthcare and health insurance function, thus raising welfare.

WHR 2000 describes government role as *stewardship*, listing three basic tasks:

- formulating health policy – defining vision and direction;
- exerting influence – approaches to regulation; and
- collecting and using intelligence.

The specific areas of State intervention in public health recommended by WDR 1993 are :

- immunization;
- school-based health services;
- information and selected services for family planning and nutrition;
- programmes to reduce tobacco and alcohol consumption;
- regulatory action, information, and limited public investments to improve household environment; and
- AIDS prevention.

Despite the lack of unanimity over the State's role in healthcare, there seems to be agreement that universal access and equity in a poor country are dependent on the State's provision, or financial support, of basic healthcare for the poor. Protecting the vulnerable is considered a core function of the State; and publicly financed healthcare is an important tool in poverty alleviation. But what services should the State provide or support, and how?

In the WDR 93 package of essential clinical services, five groups of interventions are listed on the basis of their cost-effectiveness, each addressing large disease burdens:

- services to ensure pregnancy-related care (prenatal, childbirth, postpartum);
- family planning services;
- tuberculosis control;
- the control of Sexually Transmitted Diseases (STDs); and
- care for common childhood illnesses (diarrheal diseases, acute respiratory infections, measles, malaria, acute malnutrition).

Circumscribing State intervention only on the basis of cost considerations has serious moral, ethical and equity implications. What happens, for example, if a poor child has a cancer that does not yet have cost-effective treatment? State mechanisms that protect the poor from the financial consequences of illness – through risk pooling and prepayment schemes — must be put in place. The WHO Director General, Dr. Brundtland, says: "Health Systems are not just concerned with improving people's health but with protecting them against the financial costs of illness. The challenge facing governments in low income countries is to reduce the regressive burden of out-of-pocket payment for health by expanding prepayment schemes, which spread financial risk and reduce the specter of catastrophic health care expenditures." (5)

Even without directly providing these interventions or supporting them financially, the State has to put in place institutional arrangements that deliver services to the targeted population, particularly the poor and vulnerable. In our present situation, the State cannot escape the responsibility of directly funding and providing most public health interventions and clinical services. *The objective then is to encourage the role of facilitator wherever possible, so that eventually the State's predominant role moves from provider to facilitator, financier and regulator, 'less to row and more to steer.'*

In sum, the essential functions of the State in health are as follows.

Stewardship functions:

- Formulating health policy; defining its vision and direction.
- Regulating and framing laws, setting standards and enforcing them.
- Monitoring the main determinants of health and demographic indicators and evaluating the impact of health related interventions.
- Collecting and using health intelligence for epidemiological surveillance and policy formulation.
- Guiding and overseeing the health system for universal access, equity, quality and consumer satisfaction.
- Mobilizing resources and facilitating a health finance framework that ensures fairness and financial risk protection.

- Planning and encouraging the development of human resources for health.
- Mobilizing public opinion and promoting popular participation in public health activities.

Public health interventions:

- Providing and promoting public goods (6), such as health research, health education, sanitation, safe drinking water, protection of the environment, and the control of risk factors such as tobacco and alcohol.
- Arranging the delivery of merit goods (7) that benefit the individual but have large externalities – immunizations, control of infectious diseases, family planning services and nutrition.
- Arranging clinical services for disadvantaged sections, including services for pregnancy care; childhood illnesses such as diarrheal diseases and acute respiratory infections; and all other forms of primary and secondary healthcare with a referral mechanism for tertiary care.

Constitutional Provisions

The Indian constitution does not list health as a fundamental right. The recommendatory Directive Principles of State Policy enjoin the State to raise nutrition level and improve public health (Article 47). But many court rulings have interpreted the fundamental right of protection of life and liberty (Article 21) as inclusive of the right to health, implying State obligation to protect citizens from medical negligence. The State concentrated on the development of health infrastructure because of its welfare-oriented goals, the near absence of rural health facilities, an insignificant private sector presence in modern medical facilities, and the recommendations of the 1946 Bhore Committee. Thus the State emerged as the main provider of healthcare.

The roles of the centre (8) and the states must be defined in the light of constitutional provisions. The Indian constitution divides all State functions into three lists: the union list, the concurrent list and the state list. The union and state lists comprise subjects exclusively under the jurisdiction of the centre and the states respectively; the concurrent list represents subjects where both have concurrent jurisdiction, but where central laws always prevail over state laws in the event of a conflict. Under Article 252, the resolution of two or more state legislatures empowers the centre to frame laws, even for subjects in the state list; but these become applicable only on adoption by the state legislature. Central legislation on state subjects have been frequent, to encourage legal uniformity, and to take initiatives in areas important for the country as a whole (9).

The constitution places 'public health and sanitation, hospitals, and dispensaries' in the state list. But some related activities – medical

education, drugs, family planning, the control of the spread of communicable diseases from one state to another, mental health and the medical professions – are in the concurrent list. The only areas of exclusive central jurisdiction (the union list), are institutions of national importance in medical education and research. But the centre has played a dominant role in all aspects of health, mainly because of its financial clout in a centrally planned economy. The Five Year Plans have determined strategy, priority and allocation of resources for development. Though these plans were nominally formulated in consultation with the states, they generally reflect policy perceptions of the Planning Commission and the concerned Central Ministries. The states receive annual block development assistance for development activities, but the centre exerts considerable influence on allocations because of annual plan consultations. In the numerous centrally sponsored schemes, the centre provides full or partial funding and programme content; only implementation is left to the states. These schemes include the control of major communicable diseases (HIV/AIDS, TB, malaria, leprosy), and even some non-communicable diseases (cancer and blindness). Many public health activities (family planning, maternal and child health) and a significant part of rural health infrastructure, are supported by such schemes. Increasing external assistance, usually channeled through the centre, has enhanced the central role. With economic liberalization, there has been a perceptible shift in center-state relations – in the state's favour – over the last decade. The deregulation of industry, the delegation of powers to the states in many economic spheres, and the increasing role of the private sector, have all reduced state dependence on the central government. This has encouraged new initiatives by the states in health finance, decentralization and public-private partnerships. The donor community is also encouraging this trend by directly negotiating projects with the states (with central approval), for example, the World Bank – supported health systems projects in five states.

But the centre remains a dominant actor in the health sector. A clear demarcation of central and state roles has never been attempted, not even by the only national policy on health, the 1983 National Health Policy. The result is an overlap between the two roles: the centre not only dictates the development agenda but often engages itself in day-to-day programme management. This has stifled state initiative and diverted the centre's attention from its more important functions of stewardship.

Roles of Central and State Governments

The Report on the Restructuring the Ministry of Health and Family Welfare (July 2000) defines the core functions of the Central Ministry as follows.

- Setting national goals for citizens' health status, delivery of health services, achieving zero growth population in different regions in definite time frames.
- Monitoring progress towards goals.
- Formulating national policies, strategies and investment priorities to achieve goals.

- Developing national systems of control of major communicable and non-communicable diseases.
- Developing national programmes of medical education, training and research, including the establishment and control of some nationally important institutions.

In summary, the main functions constituting central and state roles are as follows.

Central Government

1. Stewardship
   - Formulating health policy, defining vision and direction;
   - Framing laws, setting standards, arranging enforcement;
   - Monitoring the determinants of health and demographic indicators, evaluating performance of health interventions;
   - Collecting and using health intelligence for epidemiological surveillance and policy formulation;
   - Promoting inter-sectoral coordination to achieve health goals;
   - Guiding and overseeing the health system to achieve universal access, equity, quality and consumer satisfaction;
   - Mobilizing public opinion and support and promoting active popular participation in public health activities.
2. Health Finance:
   - Mobilizing resources and facilitating a fair health financing framework that ensures financial risk protection;
   - Mobilizing external aid and channeling to priority areas.
3. Manpower Development:
   - Planning human resources for health and developing an appropriate incentive system to motivate and retain health workers in priority areas.
4. Health Research:
   - Promoting and supporting relevant health research in public and private sectors.
   - Establishing institutional mechanisms for analyses of research inputs and utilization for health policy and programmes.
5. Public Goods:
   - Promoting and supporting health education, sanitation, safe drinking water, better environment, control of the risk factors of tobacco, alcohol and unhealthy life styles.
6. Merit Goods:
   - Planning and supporting delivery of merit goods such as immunizations, control of communicable diseases, population control and nutrition.
7. Public Health:
   - Arranging technical expertise to guide and oversee state programmes.

8. Drugs and Pharmaceuticals:
   - Developing policy framework to ensure availability of essential drugs at affordable costs;
   - Standardization, quality control and their enforcement;
   - Encouraging rational drug use.
9. Food Standards:
   - Creating standards and regulations and enforcing them.

This list is illustrative, not exhaustive. With its enormous political and financial clout, the centre can persuade the states to make the health system respond to identified national objectives, and provide the necessary technical expertise, information, and financial resources for the achievement of these goals. The states would be involved with many of these issues at the micro level, their main concern the actual management of health systems and implementation of health programmes.

State Governments

1. Stewardship:
   - Planning and overseeing the health system.
   - Framing state laws and enforcing central and state regulations.
   - Epidemiological surveillance and response to epidemics.
   - Monitoring health indicators and evaluating performance of public interventions.
   - Promoting coordinated action by health related agencies to achieve convergence and mutually reinforcing programmes at the cutting edge level.
2. Health Finance:
   - Mobilizing resources, allocating state and central resources to meet priority objectives.
   - Developing, managing and regulating health financing system to meet stated objectives.
3. Manpower Development:
   - Planning development of health manpower and providing institutional facilities.
4. Public and Merit Goods:
   - Implementing programmes for efficient access to public and merit goods.
5. Public Health:
   - Setting up and managing institutional framework for implementations of public health programmes at different government levels.
6. Drugs and Food Standards:
   - Enforcing laws and regulations.
   - Rationalizing procurement and distribution of public sector drugs.
7. Healthcare services:
   - Providing or funding essential healthcare services, primary and secondary, targeted at the poor.

- Developing an effective referral system for tertiary care for the poor with a supporting financing mechanism.
- Regulating private sector accountability and consumer satisfaction;
- Developing partnerships with the private sector to provide healthcare services and support public health programmes.

Conclusion

The centre's involvement in the routine management of various programmes and institutions has hampered the effective discharge of its role as steward. This is partly due to structural weaknesses (10). The National Health Policy 1983, the only policy exercise post-Independence, contains good ideas and intentions, but does not examine human and financial resource requirements, management structure and institutional frameworks that would translate these into action. Initiatives to regulate the private sector's growth and development have been largely haphazard and unplanned. A health finance system to ensure equity and risk protection has not been evolved. Central capacity, in respect of policy analysis and public health expertise, remains limited. Like the centre, the states exhibit structural weaknesses. Dependent on the centre, used to playing only the role of implementers, the states have lost initiative and developed a routine management style. There have been some developments towards restoring the position assigned to the states by the Constitution. The 73rd and 74th amendments of the constitution (1992) formally recognized and defined the role of local bodies, the municipalities, and the panchayats. This has encouraged some states to delegate many responsibilities, including health, to these local institutions, with far-reaching consequences for health systems in the future.

Clarifying the role of the State in health is only a first step. With the present levels of State investment, at $3 to $4 per capita (11), no system can be expected to perform. A major effort to mobilize resources from both external and domestic sources is required to achieve the necessary higher levels of state investment. Meanwhile, a comprehensive health sector reform initiative should direct resources to priorities and raise utilization efficiency; restructuring the central health ministry and state-level departments would provide the management and institutional frameworks to carry out assigned functions. Above all, a high level of political support and popular participation are required to make this exercise a success.

Notes

1. The concept of the State is broader than that of the government and includes legislatures and autonomous para-statal institutions. The State as a concept is distinguished here from the states of the union by using the capital letter S.
2. For a fuller discussion see Bimal Jalan, India's Economic Policy: Preparing for the 21st Century, 1996.
3. James D Wolfensohn, Foreword, World Development Report 1997.
4. Jean Dreze, Amartya Sen, India – Economic Development and Social Opportunity, 1995.
5. World Health Report 2000, Message from the DG.
6. Public goods are interventions that do not benefit individuals directly, but benefit the community as a whole.
7. Merit goods are interventions that benefit the individual, and also have large externalities, thus benefiting the community.
8. The term 'centre' here denotes the federal or union government.
9. The central legislation on organ transplants is a good example of central legislation on a subject in the state list.
10. For a fuller discussion see Appendices, The Restructuring of the Ministry of Health and Family Welfare.
11. 1993-94 constant prices, World Bank, 2001.

4

Economic Growth, Poverty and Health

Introduction (1)

The model of development in the post-colonial period rested on the belief that economic growth was a sufficient condition for removing poverty and triggering development. The realization of the lack of an automatic linkage between growth and poverty elimination led to the stepping up of affirmative action, through massive poverty alleviation and employment generation programmes. However, the limitations of this strategy began to surface with the inequitable access to social goods that continued to persist despite improved incomes. In addition to income increases, adequate social investment and consumption – at the macro level and by individual households at the micro level – were seen as essential prerequisites for people to live longer and healthier for the greater accumulation of wealth. Thus the evolution of the definition of *what constitutes progress* brought to the foreground the interconnectivity between economic growth, poverty and social goods, namely health adding new dimensions to the understanding of development economics.

For a better understanding of the factors that influence growth and human development, a great deal of research has recently been conducted on the nexus between health and economic growth on the one hand, and health and poverty on the other. With most research based on household data, there is a good body of knowledge available to establish the link between health and poverty; and through that, the link between good health and a better quality of life. However, the absence of any substantial research taking time series data to assess the impact of economic growth on health, has been a serious handicap in arriving at any conclusive evidence of the hypothesis that economic growth contributes to good health and vice versa.

This chapter will review some of the empirical evidence available in international research to understand the extent to which economic growth, poverty and health influence each other; it will also assess the centrality of health to the process of higher economic growth and poverty alleviation. The understanding of such evidence is critical to developing countries like India, particularly in helping them restrategize their development policies to ensure that the "conception of development... goes much beyond the accumulation of wealth and the growth of gross national product and other income related variables" (2), a line of thinking that seems dominant among economic planners.

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Economic Prosperity and Good Health

If development must, as argued by Amartya Sen, be "primarily concerned with enhancing the lives we lead and freedoms we enjoy... the freedom from avoidable ill health and from escapable mortality" (3), then it is important to understand the connection between economic development and health. This link is illustrated by the African American example, citizens of the richest and the highest health-spending country. Their survival prospects, in terms of longevity of life, are comparable to, if not less than, that of the people of China, or Kerala in India. This indicates that beyond incomes, good health is also influenced by other factors such as access to medical care facilities, education, prevalence of violence and so on (4).

While there is substantial evidence available to establish the strong statistical connection between longevity of life and income levels, such evidence also seems to suggest that this connection works particularly through two variables: public spending on health and increase in incomes among the poor (5). This takes us to the next important aspect, of how the gains of economic growth are being used, suggesting that such outcomes are the result of the gains being shared equitably and on life enhancing activities such as health, nutrition and education. For example, South Korea and Taiwan achieved much higher levels of life expectancy than other countries with a similar GNP growth such as Brazil, countries that have wide income disparities, unemployment and relatively poor public health systems. The example of South Korea is also relevant for another reason – longevity of life resulting in the reduced dependency ratios. Usually countries with high fertility and high mortality not only have a reduced labor force, but also lower productivity. In the case of South Korea, reduced dependency ratios were accompanied by policies aimed at exploiting this "demographic dividend" for accelerating growth rates, by harnessing the increased workforce through new technology, investment in education and human capital development and exploiting global markets. Studies of Bloom, Canning and Malaney (in press) also show that such interaction of demographic influences with human and physical capital development can "lead to a virtuous cycle of growth, enabling a country to break free of the poverty trap."

Though there are many examples of longer life expectancies consequent to economic growth, there is little evidence as yet to suggest a causal relationship. In other words, it is not as if longer life spans automatically cause increases in incomes or vice versa. Thus it is not usually easy to correlate periods of high growth with lengthening life spans. As argued by Richard Easterlin, richer societies can have improved health, but it is not

"inevitable as health shifts are influenced by other factors, such as the role of health technologies."

As in the case of individuals, so also in the case of countries. Evidence indicates that the poorer countries have lower life expectancies and poorer health indices. An econometric exercise of 31 countries showed that had the life expectancy in these countries been 10% higher in 1990, there would have been a positive effect on income growth, and a modest negative effect on income inequality. The result would have been that 30 million would have been lifted out of poverty by 2015. Russia is yet another example of the impact of poor economic growth and political instability on health, reflected in reduced life expectancy and premature deaths.

The health-wealth connection is, however, most well amplified in the impact that a healthy workforce has on increasing overall productivity – higher outputs, less absenteeism on account of illness, less expenditure on health bills by employers, higher foreign direct investment and higher savings. Thus, though there may be no direct link between longevity of life and economic growth, no one can doubt the existence of a strong relationship and interdependence between the two.

Health, Nutrition and Poverty

The world over, ill health disproportionately affects the poor, leading to higher morbidity and mortality. The physical body is the poor man's main asset. Ill health due to disease or injury triggers a spiral of chain reactions – loss of work, deprivation of earnings and expenditures for medical treatment, often supported by borrowings. This, along with reduced financial capacity to restore earlier health status, lower productivity and earnings, and the burden of debt repayments, inevitably push low-income families into the poverty trap. Studies of TB patients in Bangladesh and Uganda demonstrate these devastating consequences on the family as a result of the earning member contracting TB.

An examination of adult anthropometric measures such as height, weight and body mass index (BMI), and illness patterns on labor productivity as measured by wages, showed that height and mortality were inversely related, resulting in a reduced number of productive working years (6). Similarly, short height and low BMI result in chronic morbidity in midlife and male deaths in late life (Fogel, 1994). Basically, increased height and better productivity is the cumulative impact of parental nutrition and childhood nutrition over the course of the life cycle, underscoring the importance of access to nutrition early in life. In Ghana (7), height was found to affect wages – a one cm. increase resulted in an 8% increase in hourly wages for men and 7% for women. Leiburstein (1957) and Mirrlees

(1975) show that the link between human energy intake and nutritional deficiencies significantly affects people's ability to work; they indicate a positive relationship among earnings, productivity and energy intake (8).

Thomas and Strauss (1998) perceive health as an important determinant of productivity. They argue that the marginal productivity of good health is likely to be higher in lower income countries because of the predominance of infectious diseases, and correspondingly higher infant and childhood mortality. This is in contrast to industrialized societies that experience higher levels of morbidity among older age groups. Lower income countries are also more labour dependent, and hence must value a healthier workforce to maximize production in these settings. A study in Indonesia found that men with anemia were 20% less productive than non-anemic men. Another study, in which the education variable was controlled, showed that height, BMI, energy and protein intake had a positive effect on wages. In fact, the study showed that taller men and women earned higher wages even if less educated. In sum, there are thresholds to health status below which functioning and productivity are seriously impaired. Thus targeting the poorest for improved health would yield maximum dividends in terms of incomes. It is equally true that there is a positive causal link between incomes and nutritional status as improved incomes enable accessing food and nutrition.

Another important variable with a positive effect on health and wages is schooling. Leslie and Jamieson (1990) showed how school performance is affected by ill health. A late start in schooling, inadequate learning and unequal participation of girls were found to be on account of seven possible health grounds: nutritional deficiencies, helminth infections, other infections, disabilities, reproductive and sexual problems, injury and substance abuse. This study also shows that prenatal iodine deficiency causes permanent mental retardation and chronic iodine deficiencies severe mental impairment. A similar study conducted in Bolivia found that programs providing iron and iodine supplementation to nutritionally deficient girls improved their cognitive functions and school performance. Thus increased investments in child health could benefit better education, in turn leading to higher productivity and earnings at individual and societal levels.

Geography and demography are also variables that link economic performance and health, life expectancy and mortality levels. Geography is linked to disease burden, due to the impact of tropical climates and age structures on health status. Studies show that lower mortality and higher levels of life expectancy have statistically significant effects on incomes and growth. An analysis of 5 countries by Bhargava showed that good health resulted in increased productivity due to lower sick leave and increased savings. Similarly, empirical country-specific estimates of the

effects of adult survival rates on national incomes generated estimates of the contribution of health to economic growth. Jamieson's study showed that in India, income per capita grew at 2% during 1965-90 and adult survival rate improved by 20%. 13% of income growth was on account of improved health. A sample of 58 countries showed that of the 2.4% per capita increase in incomes, 8% was due to increase in adult survival. At another level, a study of England during 1780-1979 showed a 30% increase in per capita income because of improvements in health and nutritional status.

Of special concern is the devastating impact of malaria, TB and HIV/AIDS on the prospects of higher economic growth in developing countries. In different studies, Chima and Mills (1999), Malaney (1998), and Leighton and Foster (1993) demonstrated significant direct and indirect costs on the household in terms of reduced earnings on account of malaria. In Kenya, it was calculated that the total annual value of malaria related production loss was 2-6% of GDP; in Nigeria it was 1-5%. Malaria related costs as a percentage of total household costs for small farmers was 0.8-5.2% in Kenya and 7.2-13.2% in Nigeria. Several studies have demonstrated the economic impact of TB in Bangladesh, Uganda, South Africa and India, demonstrating significant direct and indirect costs to the household as well as to the health system. In Bangladesh, Croft and Croft (1998) estimated a mean financial loss of $245 or four months of household income for meeting the costs of medicines, fees, laboratory tests etc. Besides, seeking TB treatment resulted in several patients being forced to close down their businesses or stopping or reducing work, lower incomes, and the removal of children from school. Studies have shown a significant impact of HIV/AIDS on GDP: if AIDS treatment is financed by savings and afflicted workers' productivity is reduced by 50%, the net loss is in the region of 0.8% of GDP in Tanzania and 1.5% in Malawi (Cuddington and Hanscock). Assuming only 50% being treated from savings, the impact on annual GDP growth in Sub-Saharan Africa is about 0.9% (Over). The findings of these studies on three communicable diseases are significant for India with its high morbidity and mortality on account of malaria, TB and HIV/AIDS.

Lessons Learnt

International experience seems to corroborate the Indian experience. (See Appendix 2, paper by Indrani Gupta and Arup Mitra commissioned specially for this report.) Gupta and Mitra examine the complex relationships among health, other non-health consumption, consumption goods, public spending on medical care, and total income, to seek answers with regard to three issues – the impact of increased health expenditures on health indicators; the impact of improved health indicators on investment and growth; and the linkages, if any, between

poverty and health. Taking state-level data for health status for the years that data on poverty estimates was also available, variations across states and time between poverty and health indicators were plotted and examined. States were grouped for each health indicator taking five yearly averages of growth into account. The exercise brought out the following significant insights:

- **a strong association between IMR and poverty**, both reducing alongside increased growth in most states;
- **strong linkage between CBR and poverty** in some states, though association in the poorest states (Bihar and Orissa) seem marginal;
- **improved life expectancy and decline in morbidity associated with improved growth rates**;
- overall, a positive suggestion that **growth did reduce poverty and result in improved health indicators**, despite state variations on degree of association among growth, poverty and health indicators.

The trends and associations were tested by econometric analysis, and controlled for other exogenous variables possibly influencing each of these variables. The first variant took each of the endogenous variables to influence the other two; the second demonstrated a causal connection running from growth to poverty to health; and the third variant estimated impact of growth and health on each other, then together on poverty. The results of such modeling showed that

- **per capita public health expenditure is unambiguously and positively related to health status: higher per capita health expenditures improve health status in all three equations;**
- **poverty is reduced with improved health**;
- **there is a positive linkage between growth and health status on a two-way basis**;
- **higher growth improves health status; better health status reinforces trends in income growth.**

On the basis of empirical analysis, the paper by Gupta and Mitra concludes that *though there has been a decline in Indian poverty, further reduction would depend on a significant improvement in health conditions.* This improvement is contingent on a substantial increase in health investment among other exogenous variables, namely literacy and industrialization – yielding higher growth as well as better quality of life. *It appears to be clear that if India is to reduce poverty and achieve accelerated growth, investments in health and education will have to be substantial.*

5

Towards Equity in Health

Introduction

The concept of equity, based on social justice, is concerned with narrowing the gap between the rich and the poor. The measurement of such gaps or inequities has moved beyond the narrow definition of incomes and consumption expenditures to cover a set of basic human needs. The first concrete expression of this new generation of analytics was the Human Development Index (HDI), followed by the Gender Development Index (GPI) and the Human Poverty Index (HPI). The HPI is a powerful tool to measure inequality and evaluate development in terms of the numbers who die before the age of forty, are illiterate, lack access to safe water and sanitation, and have a disproportionate percentage of underweight children below the age of five. The resulting body of empirical evidence demonstrates that the overall economic growth per se does not necessarily mean good health, or a better quality of life for all.

The reduction of socio-economic inequalities has been the cornerstone of development planning in India. Article 38 of the Constitution provides for the State to "strive to minimize inequalities in income and endeavor to eliminate inequalities in status, facilities and opportunities..." Between 1950 and 1990, the political agenda was vigorously pro-poor. Attempts were made to implement policies such as land reform, affirmative action of quotas and the mechanism of Special Component Plans (1), and poverty alleviation programmes to liquidate rural debt, ban bonded labor and fix minimum wages (2). Such efforts reduced poverty from 54.4% in 1973-74 to 35.57% in 1993-94 (3), though in gross terms, 320 million continue to be below the poverty level (4). Recent NSSO estimates (5) show a sharp decline of people below the poverty line to 26.10%, but these estimates are being disputed because of a change in methodology.

Equity and Health

The 1978 Alma Ata Declaration was the first international effort to mobilize global commitment to reduce gross inequalities between and within countries, by exhorting governments to strengthen primary health systems and assume responsibility for an acceptable level of health for their people (6). In India, the post Alma Ata period saw the rapid expansion of rural primary health facilities. This increased access among rural populations and accelerated investments in preventive and promotive health – access to water, immunization, ante-natal care and female literacy. Literacy increased from 43.5% to 62% during 1981-97; so did access to safe water in rural areas from 73.9% to 92.5% during 1990-98 (7). Morbidity and mortality due to vaccine preventable diseases reduced. But despite these developments, and despite policy pronouncements and international resolutions, goals

continue to be expressed in terms of societal averages that hide wide epidemiological differentials (8). Disproportionate numbers of the poor suffer from pre-transition diseases. On an average, 12% of income is spent by the poor on healthcare, as against 2% by the rich (9). Ill health means the loss of daily wages or even loss of work. Chronic illness or hospital treatment may call for liquidation of meagre assets, even pledging the child in dire cases: between 1986 and 1996 (10) those sick but not availing treatment for financial reasons increased from 15% to 24% in rural areas, and doubled from 10 to 21% in urban areas. Evaluation reports of the Department of Rural Development also indicate that health expenditure, particularly for hospital treatment, is the second major cause of rural indebtedness. *All this evidence reveals the nexus between ill health and deprivation – the poor become ill and illness makes them poorer – and calls for public policy that ensures access to health services as an integral component of poverty alleviation strategies.*

Inequity is multidimensional, hence the need to assess relative inequities among three broad groups: those below the poverty line, marginalized groups (SC/STs), and women. Since inequity is due to income differentials as well as societal prejudices, analysis based solely on income criteria would be incomplete. The SC/ST (11) populations serve as a sensitive indicator for inequity – the most socially and economically marginalized sections of the population, they face the double burden of social exclusion and poverty. They comprise 22% of the total population, but have a higher proportion of families below the poverty line; 81% (12) are landless labor with practically no assets. Similarly, women command a lower social value, reflected in the family's lower expenditure on their healthcare, or delays in referral, denial of treatment or underreporting. Thus, typically, an SC/ST woman could face the triple disadvantage of income, caste and sex.

Differentials in Health Status

A review of data collected in NFHS II, NSSO surveys and sample studies carried out from time to time clearly indicates the extent of inequity in health status. The data for important indicators highlights differentials in levels of mortality among children of disadvantaged sections compared to others, for rural and urban areas (Tables 5.1 and 5.2). Data also reveals differentials in malnutrition and health status among SC/ST women compared to others (Tables 5.3 and 5.4), and differentials in the prevalence and nature of illness among rich and poor, urban and rural (Table 5.5). NHFS II shows that SC/ST children, at greater risk, record 1.3 to 1.7 times more deaths than others. Data indicates that STs are at greatest risk of early death followed by SC children (Table 5.1). Rural SC/ST children die in larger numbers than their urban counterparts, mainly due to the lack of timely care.

Table 5.1
Health Indicators among SC/ST and Others (Rate per 1000)

Mortality Indicators	SC	ST	Others
NeoNatal	53.2	53.3	40.7
Post Neo Natal	29.8	30.9	21.1
Infant <1 year	83	84.2	61.8
Child Mortality1-5	39.5	46.3	22.2
Under 5 Years	119.3	126.6	82.6

Source: NFHS II

Table 5.2
Differentials In IMR and Under-5 Mortality according to Rural /Urban Social Group

Indicator	Rural	Urban	Indicator	Rural	Urban
Under 5 Mortality Rate/1000			Infant Mortality Rate /1000		
SC	127.3	84	SC	88.1	60.4
ST	131.4	79.6	ST	86.9	57.6
OTHERS	93.1	5.7	OTHERS	69.3	43.5

Source: NHFS II

When data in Table 5.2 is correlated with incidence of cough, fever, and moderate/severe diarrhea (no significant variations between different social segments), factors like malnutrition surface to influence chances of survival among SC/ST children. Over the years, there has been an improvement of the Body Mass Index (BMI) and Chronic Energy Deficiency (CED) (13), yet malnutrition among women continues to be severe, particularly among disadvantaged sections (Table 5.3). The three parameters pertaining to height, body mass index and hemoglobin level influence outcomes of pregnancies. The data on these nutritional conditions offer explanation for a higher risk of maternal mortality, the birth of low-weight babies with long-term health consequences, and failed pregnancies.

Table 5.3
Nutrition Levels among SC/ST Women

Category	%Women<145cm	%Women<18.5kg/m	% Anemia
SC	17	42.1	56
ST	13.5	46.3	64.9
Others	10.9	30.5	47.6

Source: NFHS II

Data clearly indicates that tribals as a community are most at risk. This is corroborated by information from the Tribal Research Institute in AP (1995): maternal mortality among tribal women was 8/1000, double the state average of 4/1000; IMR ranged between 120-150 per 1000 among different tribal groups against the state average of 72/1000; and Crude Death Rate (CDR) among some tribal groups was as high as 15 per 1000 compared to 9 for the state (14). The estimate is that 75% of children are stunted or wasted, and Pf malaria rate was 18/1000, accounting for 75% of malarial deaths in the state. These wide differentials are not surprising since tribals live in geographically isolated forest areas and suffer poor access to facilities, information and participation. The SCs are slightly better off, but a 1992 NCAER study shows the wide differentials in health status and outcomes among the poor, in particular the SCs. Persistent societal prejudices also appear to affect their access to health facilities (Box 5.1). A survey of 18,000 households conducted by the NCAER in 1990 (Table 5.4) indicated a higher prevalence of ailments such as gastroenteritis, respiratory infections, fever, aches and pains, accounting for more than 50% of total morbidity among urban and rural poor.

Box 5.1
Health Status of SC Population in Rural Tamilnadu

Sample size: 1472 households of whom 1381 were SC's
(Details at Annex 5.1)

Socio-Economic Features :
65% men and 71% SC women were wage labour, earning Rs.15 and & Rs.7 respectively per day. The rest had an average of 1.1 acre land.
75% lived in one room tenements and only 5 had toilets.
90% depend on public wells and taps for water.
56% illiterate, and of 78% of women illiterate.

Health Status :
75% Home Deliveries against 41% for the state.
61/1000 pregnancies were miscarriages against 28.4 for others.
31% of women had reproductive health problems against 22% for others and 1% for the rich.
60% women did not seek treatment.
Of the 209 deaths under the age of 5, 48% were newborn infants and 36% were deaths of children between 1-12 months due to diarrhea, measles, jaundice, fevers and chest infections etc.
32% of children reported illness on the day of the survey; 47.2% suffered from respiratory infections: 20% not taken for treatment and 23% treated at home.

Source: Sundari, T K Sundari, CDs, Trivandrum 1992 (15)

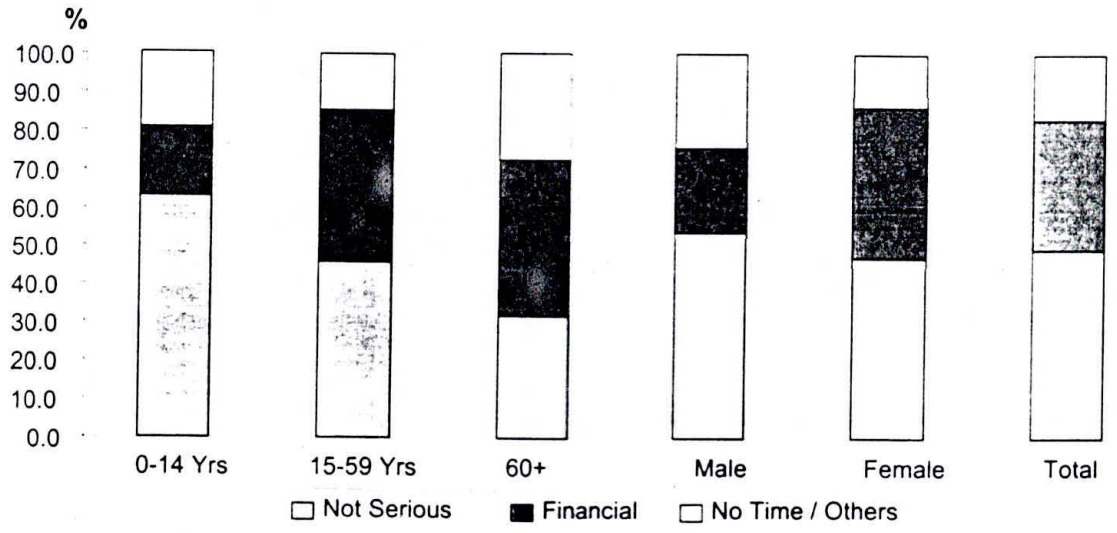
Table 5.4
Prevalence of Illness 1990

Category	Rural per 1000	Urban per 1000
Poor<Rs.12,000	87.42	77.2
Rich>Rs.56,000	47.25	57.62
Total	79.06	67.71
Women	59.8	46.62
Men	105.34	88.07

Source: Household Survey of India, NCAER 1990

The NCAER survey shows a reduced prevalence of illness among women, but since most investigators were men, this is more indicative of underreporting. Though information is inadequate regarding differentials in morbidity among rich/poor and urban/rural, the study also showed that wage earners suffered disproportionately in rural areas with a morbidity rate of 94.05/1000, much higher than any other category. A recent NCAER survey of 2000 households in Delhi and Chennai slums showed that women suffered more from body pains and nutritional disorders, including weakness, dizziness, anemia and non communicable diseases, compared to men. Children accounted for 80-90% of morbidity due to infectious diseases requiring inexpensive treatment. The high prevalence of infectious diseases among slum populations was explained by living conditions – such as open drains and the lack of waste disposal systems. The largest data sets on morbidity levels income quintile, sex and social category wise is available in the 52nd Round of the NSS. As in other low-income countries, data indicates that reporting of illness increases with income: reporting of chronic and acute illness was three times higher among the richest 20% than the poorest 20%. Morbidity is largely self-perceived, and the ailment is either not recognized unless it disrupts the ability to work, or downplayed because of the expense of treatment. This is particularly true of women; it is the perception of "not serious" followed by financial reasons that influence the decision to seek care (Figure 5.1).

Figure 5.1.
Reasons for Not Taking Treatment, % by Age and Sex



Source: **NCAER**, 2000

Differentials in the health status of the poor and socially marginalized sections show the inadequate and incomplete nature of disaggregated data, and that a majority of their ailments are easily curable with timely medical attention and a little money. Yet unsatisfactory public facilities force the poor to spend their meagre earnings on private healthcare.

Public Health Facilities: Differentials of Access and Utilization

Even among the lower percentages of the poor who eventually do take treatment, data shows that of the total illness episodes treated during the last 15 days of survey, the poorest 20% quintile obtained treatment three times less than the richest 20% quintile (52nd Round of NSS). In the case of hospitalization, the differential was six times (16). Utilization reflects access. The differentials between the rich and the poor were substantial in terms of the rate of treatment availed during the last 15 days of survey and rate of hospitalization, linking rate of utilization to income. Similarly, the striking differentials between states (Tables 5.5 and 5.6), show Bihar at one end with the largest number below the poverty line, and Punjab at the other end with the lowest number.

Table 5.5
Rate per 1000 of Treatment during last 15 days

State	POP<BPL In millions	%BPL Families	QI	QV	Total
Bihar	49	55	14	36	24
Punjab	25	12	63	94	72
All	**320**	**36**	**28**	**61**	**42**

BPL = Below Poverty Line; Q = Quintile; All = the whole country
Source: 52ND NSSO From BIA Study OF NCAER, 2000

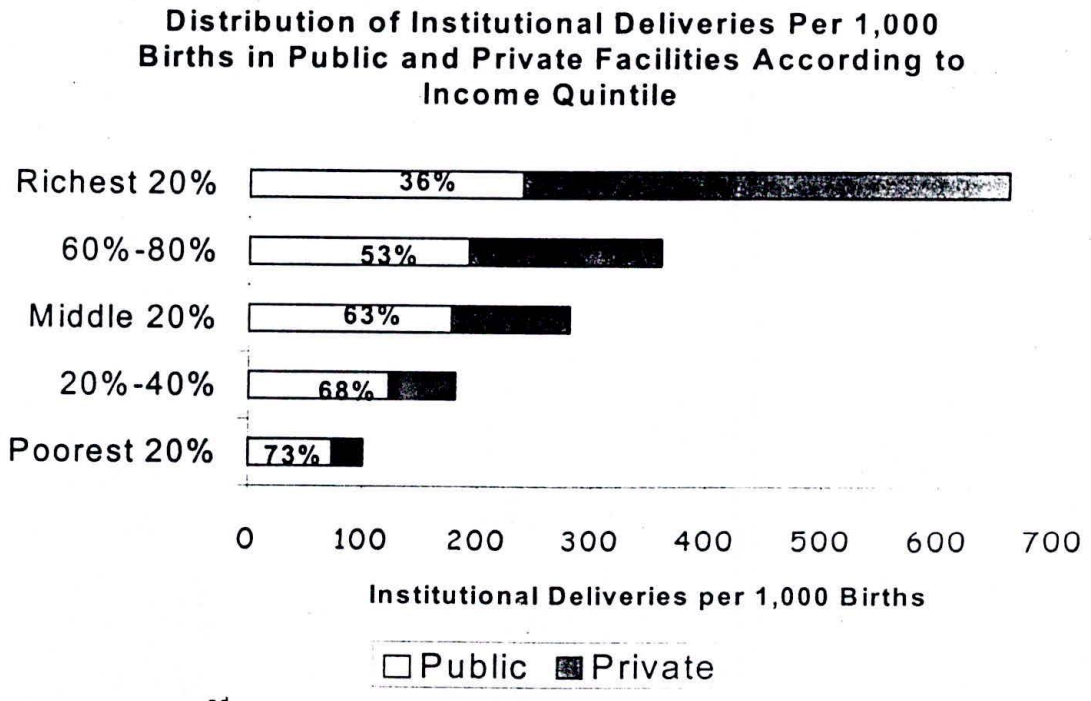
Table 5.6
Rate per 100,000 of Hospitalization

State	POP<BPL in millions	%BPL Families	QI	QV	Total
Bihar	49	55	198	1728	722
Punjab	25	12	754	2998	1622
All	**320**	**36**	**563**	**3447**	**1653**

Source: 52nd NSSO From BIA Study of NCAER, 2000

A further disaggregation of the data on utilization of public facilities for hospitalization and deliveries (Figures 5.2 and 5.3), shows that 20% of the poorest utilize public hospitals for treatment and deliveries two times more than the 20% of richest.

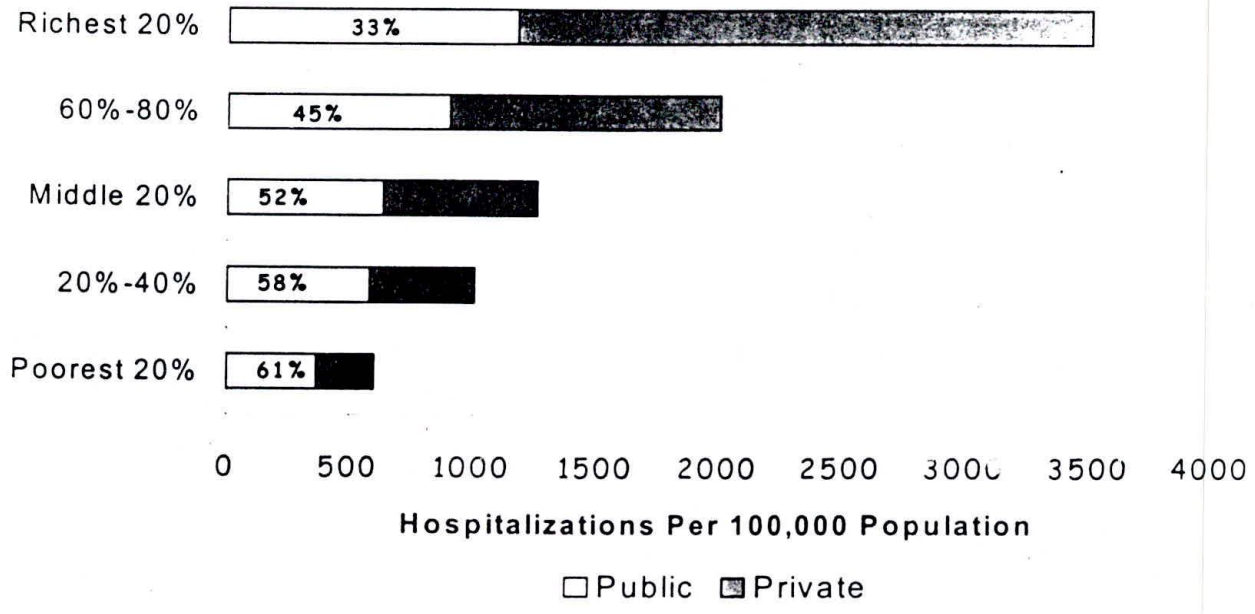
Figure 5.2
Share in Utilization of Public and Private Facilities For Deliveries



Source: NSSO 52nd Round.

Figure 5.3
Share in Utilization of Public and Private Facilities For Hospitalization

Public and Private Sector Hospitalization Rates by Income Quintile



Source : **NSSO** 52nd Round

While the utilization of public hospitals for deliveries and hospitalization by the richest 20% quintile is only 36% and 33% respectively, compared to 73% and 61% by the poorest 20%, their share of inpatient treatment is nearly six times more than the poorest (Table 5.7). This suggests that even the rich resort to government hospitals for care requiring long term hospitalization. The gradual decline in the use of public facilities for outpatient treatment is disturbing. Though the overall utilization for all fractile groups is barely 19%, the utilization by the poorest 2' % is particularly low (Bihar 5.5%, HP 6.1%, Haryana and Karnataka 9.9%, MP, 11.4%, Orissa 13%, and Rajasthan 10.5%). The utilization of public facilities for outpatient treatment by the poorest two quintiles is only about 15%, compared to 24.2% by the richest 20%. The position of inpatient treatment is dismal in almost all states. Barring Kerala, Maharashtra, AP and TN, the poorest 20% have a low percentage of utilization. In Bihar, MP, Orissa and Rajasthan, the richest 20% have utilized more than 50% of total inpatient days, a finding to be viewed against the fact that these are among the poorest states, accounting for nearly 100 million of the poor.

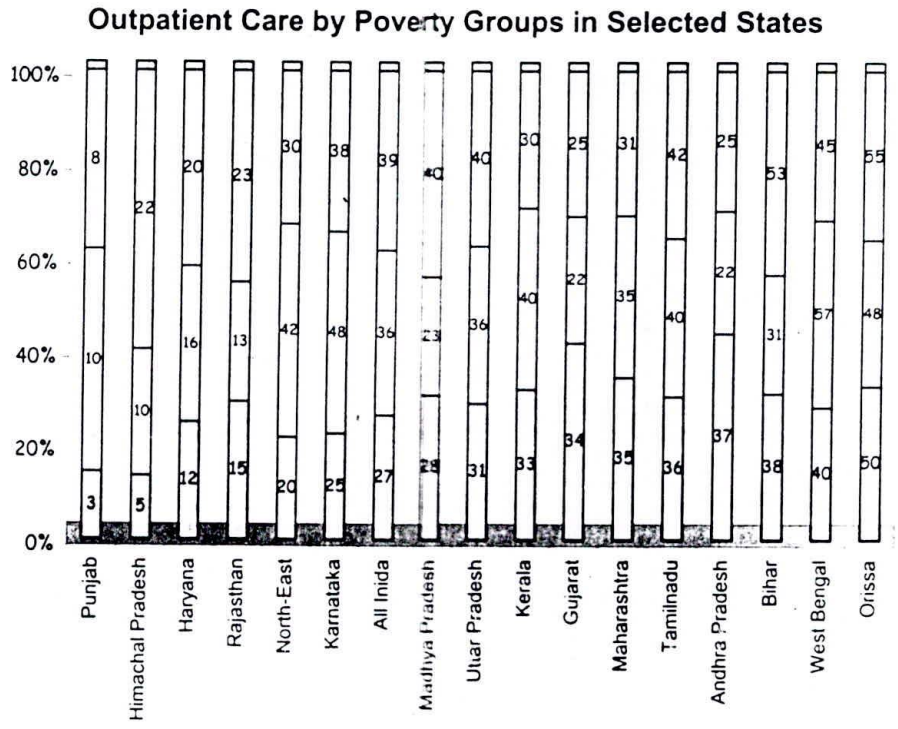
Table 5.7
Percentage Utilization of Treatment in Public Facilities for OP & IP

Name of the State	% of Out Patient Treatment			% of In Patient days		
	QI	QV	Total BPL	QI	QV	Total BPL
Andhra Pradesh	21.0	15.3	29.0	10.3	36.6	17.1
Bihar	5.5	30.5	35.2	1.7	64.9	16.8
Gujarat	28.1	12.1	26.3	6.9	20.5	11.4
Haryana	9.9	29.9	10.1	11.4	42.1	6.6
Himachal Pradesh	6.1	27.1	5.3	6.8	42.4	6.5
Karnataka	9.7	25.6	33.5	5.6	41.5	17.2
Kerala	25.6	17.8	34.5	18.6	25.9	28.0
Madhya Pradesh	11.4	26.4	25.3	3.1	50.3	22.5
Maharashtra	22.2	16.6	34.0	13.7	24.6	32.1
North East	17.9	18.9	34.3	8.1	42.9	15.8
Orissa	13.0	26.0	49.3	6.8	56.5	28.6
Punjab	19.2	33.3	2.7	5.6	46.9	0.5
Rajasthan	10.5	39.8	12.1	8.4	59.2	11.1
Tamilnadu	18.8	19.5	36.1	10.0	27.4	29.0
Uttar Pradesh	15.5	30.9	32.3	6.6	44.6	13.0
West Bengal	20.8	26.7	44.0	7.1	32.7	29.9
All India/ Cases/days/million	**1.03**	**1.64**	**2.1**	**0.05**	**0.34**	**0.19**
All India	**15.2**	**24.2**	**31.1**	**6.6**	**38.5**	**21.7**

Source: NSSO 52nd Round, from the BIA Study of NCAER, 2001 All India Total Days/Visits of utilization in Public Facilities (Rural and Urban): OP =6.78 million; IP = 0.885 million

Based on inpatient and outpatient utilization levels of the poor in different states (Figures 5.4 and 5.5), the total costs of services have been apportioned among different income quintiles to assess benefits from such public expenditure. NCAER analysis indicates that disparities in distribution of benefits (subsidies) are most skewed in Bihar, Orissa, Rajasthan, and UP. The states where the benefits were most equitably distributed between the poorest 20% and the richest 20% were TN, Kerala, Maharashtra and Gujarat. The differentials were most marked in hospitalization, even in a relatively equitable state like AP, with the results skewed in favour of the rich. This is significant in view of the fact that it is hospitalization that hurts the poor most (Annex 5.1).

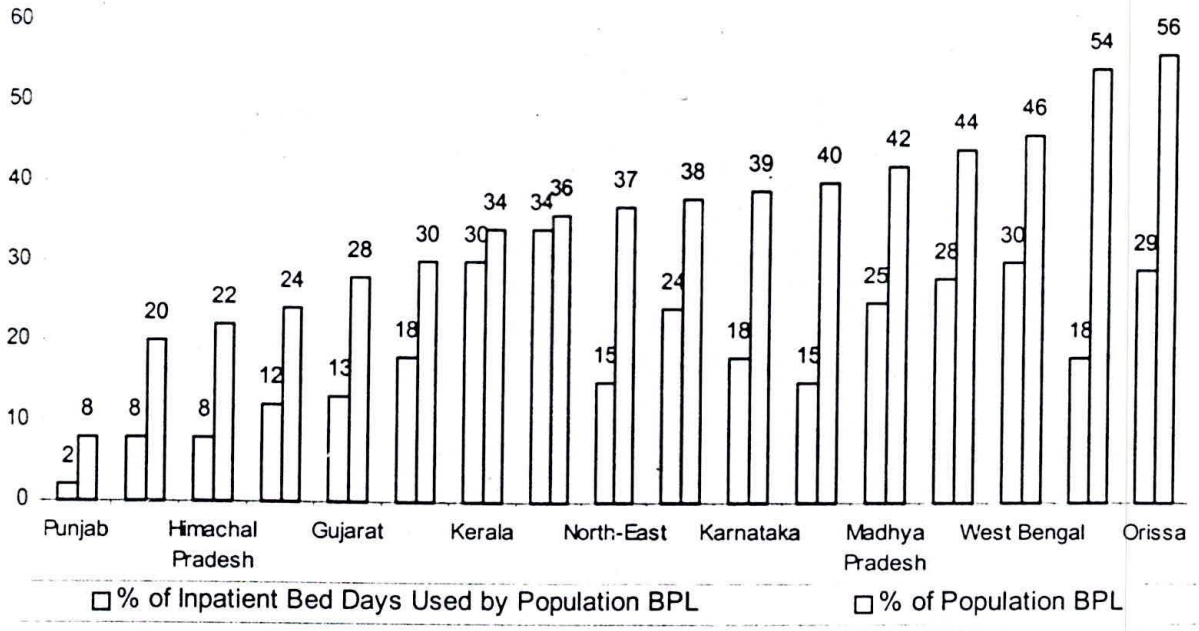
Figure 5.4
Outpatient Care by Poverty Groups in Selected States



□ % Population Below the Poverty Line
□ % outpatient visits at Primary Care Clinics by population Below the Poverty Line
□ % outpatient visits at Public Hosp by population Below the Poverty Line

Source: Ajay Mahal et al, **The Poor and Health Service Use in India**, 2001

Figure 5.5
Share of Inpatient Days by Poverty Groups in Selected States



Source: Ajay Mahal et al, **The Poor and Health Service Use in India**, 2001

In monetary terms (Benefit Incidence Analysis based on 52nd NSSO), the NCAER quantified utilization of public facilities: less than 10.2% of total government investment on health went to the poor, 31% to the rich (See Figure 2.12, and Tables 2.12 and 2.13. Chapter 2).

NSS data shows that the poor utilize public sector facilities for inpatient treatment and very little for outpatient treatment; while the rich tend to use the private sector hospitals more, though when they do use the public hospitals, they tend to use them for longer periods of time. However, this is an area that needs further analysis, and the attempt to draw inferences about some states being more equitable than others needs to be read with some caution till more information is made available.

Barriers to Access

In the Indian context, the poor face numerous barriers to their access to public facilities: lack of information on availability and location of services; physical barriers (distances, difficult terrain); lack of transportation; the lack of financial resources; and insensitive or unreliable treatment in public hospitals. Of all these, the biggest barriers are prohibitive costs in the private sector, and poor responsiveness to needs in the public health system.

Cost of Care: Data on the unit cost of treatment per episode in hospitals/outpatient clinics, particularly in the private sector, is not available. Hence the comparison of costs incurred in public and private facilities is based on expenditures ("out-of-pocket" spending category) indicated by surveyed households. The NCAER's Benefit Incidence Analysis (BIA) of data from the 52nd Round of the NSSO, its 1993 survey of 33,000 households to estimate expenditure of the poor on healthcare, and some other isolated studies carried out at different points of time all indicate the following trends.

- The poor spend a disproportionately higher percentage of their incomes on health services than the rich.
- More than three-quarters of spending is on minor ailments, infectious and communicable diseases.
- The poor delay seeking treatment to avoid expenditure; nearly a fifth do not avail treatment for financial reasons.
- Borrowings and interest bearing loans are important financial sources for healthcare for the poorest; the proportion reduces as income increases.
- One episode of hospitalization can wipe out family assets.

The 52nd Round NSSO shows that expenditure incurred, particularly for inpatient treatment, has increased in both rural and urban areas during 1986-96. While the expenditure on outpatient treatment has remained constant, and even declined marginally, the costs of hospital care have more than doubled in urban areas. Hence the sharp decline in overall utilization of

public health facilities, for hospitalization from 60% to 44%, and for outpatient treatment 26% to 19% (Table 5.8).

Table 5.8
Costs of Care – Constant Prices 1986-87 (Rs.) Treatment / Episode

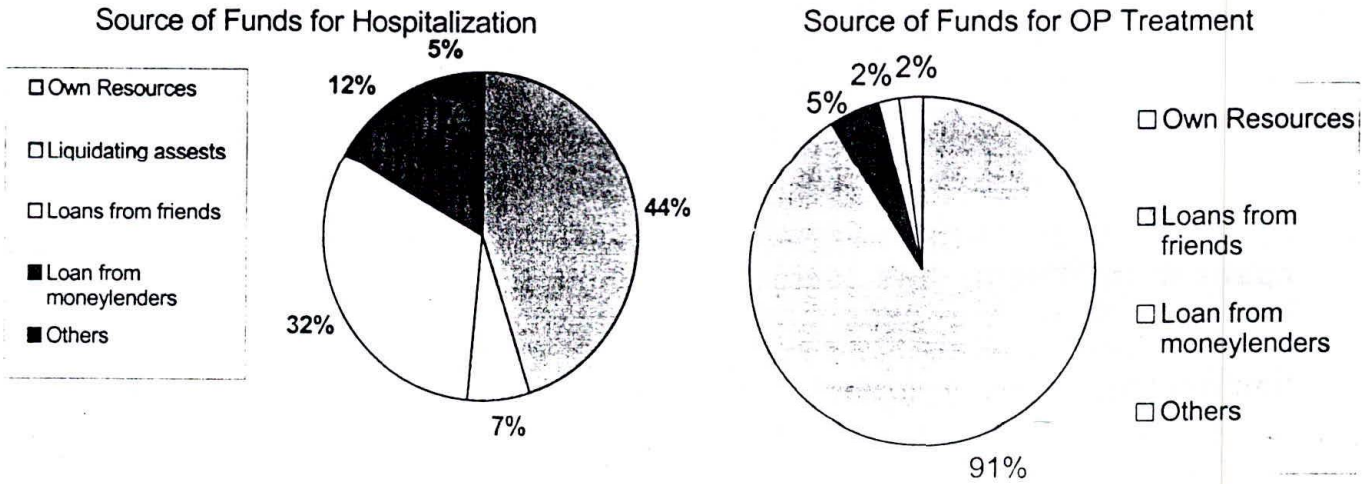
INDICATOR	RURAL		URBAN	
	1986-87	1995-96	1986-87	1995-96
OP PUBLIC	73	48	74	64
OP PRIVATE	78	74	81	81
ALL	**76**	**69**	**79**	**78**
IP PUBLIC	722	912	653	963
IP PRIVATE	1156	1886	1570	2344
ALL	**886**	**1404**	**1007**	**1720**

Source: CSO, GOI

With the poverty line at Rs.244 in rural areas and Rs.352 in urban areas, and with per capita annual consumption at Rs.2395 in rural areas and Rs.3320 in urban areas, the poor are being heavily charged indeed for private inpatient treatment, as much as 3-6 times more than their income.

According to the 52nd NSS, the average total expenditure per episode of hospitalization by all quintile groups in the private sector was Rs.4300 in rural areas and Rs.5344 in urban areas. (For state-wise differentials see Annex 5.2). This is double the figures for public hospitals (Rs.2080 rural, Rs. 2195 urban). A study of slum populations in Delhi and Chennai indicates strategies used by the poor to meet health bills (Figure 5.6).That the poor utilize services fully when they are efficient and involve no or minimum out-of-pocket expenditure is illustrated by immunization (93%), antenatal care (74%), inpatient bed days (66%) and the percentage of delivery-related inpatient bed days (63%). Utilization of public and private hospitals for trauma care is a gray area: the Intensive Care Unit costs more than an average of Rs.2000 per day (17).

Figure 5.6
Source of Funds for Medical Care



Clearly, it is capacity for resource mobilization that determines the source, frequency and nature of health seeking behaviour among the poor. Again, in view of the marginal difference in costs for treatment of minor ailments, the poor tend to go to the ubiquitous Rural Medical Practitioners (RMPs). The RMPs are easily accessible because of flexible payment terms, willingness to treat on credit, delivery of drugs at the doorstep, and willingness to transport the patient in case of need to a private doctor in town – for which the RMP gets a commission from the doctor, abiding gratitude from the patients, and further bonding with the poor household (18). These subsystems of health financing are critical to understanding why RMPs, legally debarred from "practicing", cannot be replaced with trained medical doctors by regulation alone.

Poor Responsiveness in Public Facilities: The market share of PHCs is less than 8% (19), down from 29% in 1986. The non-availability of doctors or drugs, rude behavior, corrupt practices, long waiting periods, unsuitable timings, unclean surroundings and lack of privacy explain the reluctance to use PHCs. Their quality of treatment and indirect costs force the poor to choose private practitioners or deny themselves treatment. This situation of free but unreliable, poor quality care, versus local practitioner or self-medication, is acute in tribal areas. Often they do not have a choice: in 1994-95 most hospitals in tribal areas of AP did not have basic facilities (a labor room or a laboratory), and had ANMs who did not know 7 out of the 11 procedures required for conducting a safe delivery (20).

Lessons Learnt: Four lessons emerge with clarity:

1) **Health policy is not adequately pro-poor in programme content or in the allocation of budgets and other resources.**
2) **In the absence of a pro-poor focus, the rich receive a disproportionately higher subsidy.**
3) **More than half the country's population is unable to meet the increasing costs of care, entailing widespread economic hardship to families.**
4) **Inequities are exacerbated among and within states and within sub populations, due to the inherent limitations of markets in rectifying imbalances.**

A Pro-Poor Policy Framework: The health sector has not developed the approach of economic sectors where the poverty-equity debate resulted in the development of indicators (21). The traditional focus has been on diseases of poverty (22) and maternal and child health (MCH) to address the problem of inequity, because disaggregated data on the health status of those below the poverty line, SC/ST, women and migrant labor is not available on a regular basis. The absence of relevant epidemiological and disaggregated data is a major constraint in evaluating the equity dimensions of budgetary allocations, as well as the nature and content of programmes being implemented in the health sector. The consequence has been low priority to pro-poor interventions.

For example, a 1997 TRC study in Chennai covering 304 TB patients (23), showed that the average direct and indirect costs incurred by the patients were about Rs.1443 and Rs.3610–4100 respectively. The average debt incurred by a TB patient was Rs.2079. 70% of the patients expressed mental agony caused by the disease's economic impact on the family. About 12% of the children discontinued schooling, and another 8% took up employment to support the family. Illness reduced activity levels by at least 30-35%; on an average, about 85 workdays were lost. Extrapolating this information to quantify the resulting impoverishment would justify raising priority for the TB programme, and increasing budgetary allocations from the existing 10% of the central budget (24), to double the amount (25). Using such information in programme design would help include components that provide safety nets for the affected families, instead of confining intervention to treatment and drugs, and that too for those who come to public facilities. Though disease control has such wide externalities and hurt the poor so disproportionately, they do not command the budget allocations they deserve: for all five National Disease Control Programmes (26), the per capita release from the centre to the states is about Rs.3.5 on average. Also, Bihar and UP, (with 100 million families below the poverty line), get a meagre Rs.2.28 and Rs.1.3 respectively (Table 5.9).

Table 5.9
Per Capita Releases by Centre to Select States under National Disease Control Programmes during 1998-00

STATE	%BPL FAMILIES	TOTAL AMT RELEASED/ Rs. (million)		PER CAPITA/Rs.	
		98-99	99-00	98-99	99-00
Bihar	55	223	273	2.26	2.79
UP	41	297	398	1.79	2.40
Orissa	49	181	225	5.12	6.34
MP	43	277	376	3.54	4.81
Rajasthan	22	299	230	5.69	4.38
ALL	320	3456	4439	3.52	4.5

Source: Department of Health, GOI

Public Facilities for Whom? Evidence suggests that public policy falls short in addressing the special needs of the poor. This is reflected in inadequate budgetary allocations for areas affecting the poor; in insufficient attention paid to the functioning of public facilities; and in the disproportionate attention paid to the management of a few city-based hospitals. On the grounds that health is a state subject, the central government has failed to develop a comprehensively articulated policy on primary healthcare. Such

systemic neglect of the health concerns of the poor has become a virtual tax on the impoverished, leading to the inequitable consumption of public subsidies.

Markets as an Efficient Allocator: Its abysmally poor public health spending makes India one of the lowest health spending countries in the world. With a predominantly private health system, the payment system is fee for service – an inflationary practice that also increases the vulnerability of the poor. The process of globalization is yet another destabilizing force to be reckoned with: India is expected to face an increase in drug prices after 2005, though this refers mainly to patented drugs, even now out of reach of the poor. If left uncorrected, globalization – and accompanying high cost advanced technology facilities with foreign investment – will widen already unacceptable healthcare disparities between rich and poor. The urgent need then is to ensure that such developments go hand in hand with affirmative action to upgrade access, and the quality of healthcare provided to the poor. The establishment of islands of excellence is likely to raise costs and generate pressure for investments in the latest technologies in public facilities. This is not to suggest that public hospitals need not be modernized, or that they should not strive to be at the technological forefront; but to reiterate that *the government must intervene effectively and decisively with a package of incentives and disincentives that are directed to correct the potential distortions of an unbridled global market.* Such an interventionist role of the government is justified not only for the purpose of ensuring equity, but also to protect public health due to the large externalities it entails, and the market failures that are so typical to the health sector.

Future Directions

Solutions to the inequities of the Indian health system call for restructuring the delivery system and modes of financing; no one should be denied care for inability to pay. A comprehensive review of the health system could begin with the following indications of future directions.

- **An outright substantial increase in public health spending**: Health budgets at the state and central levels must be increased in relative and absolute terms. Increased budgets must be allocated to address the health needs of the poor, with a higher priority given to the control of communicable diseases, to MCH, to promotive and preventive health, and to improving the functioning of the primary and secondary healthcare systems. This is particularly applicable to low-performing states such as UP and Bihar, where the overall health spending is low, where public facilities are poor, and the presence of the private sector is weak.

- **Promotion of the third sector**, namely the charitable, not-for-profit sector through tax breaks and subsidized inputs such as power,

water, land and concessional credit, particularly in backward regions

- **Adequate safeguards and incentives in the Insurance Bill** towards low cost community insurance programmes, run on the principles of risk pooling by local bodies/NGOs or autonomous government hospitals

- **Restructuring the public health system to increase accountability**: Available resources should be reallocated to backward states, areas, regions, and to disadvantaged sections within; and policy attention must be shifted from running hospitals or sanctioning medical colleges.

- **MIS for data on health indicators for the poor and vulnerable** for basing policy formulation and programmatic interventions on such disaggregated data

- **Improving public sector efficiencies and utilization through the correct mix of inputs**; linking upgradation of facilities with reform in hospital management and financing systems;

- **Social insurance (sickness funds) to provide financial risk protection to the poor against serious illness and hospitalization costs in the private sector.**

- **Differential planning and deployment of budgets by government** in accordance with the extent of disease burden, economic backwardness of the state/region and poverty levels

- **Incentives, regulations and redressal mechanisms:** non-denial of emergency care; transparency in the pricing of services, systems of medical audit to minimize exploitation or malpractice.

Notes

1. The Special Component Plan is a mechanism to earmark a proportion of the budget and physical achievements equivalent to the population of the disadvantaged sections of society, to be used for the exclusive benefit of these sections, namely SC and ST who constitute 16% and 8% of the population.
2. These were a part of the 20 Point Programme implemented at the district level and monitored at state and central levels.
3. Poverty estimates for 99-2000 based on 52nd Round NSSO of consumer expenditure suggests that the percentage of population below the poverty line is 26.10. However, the figure of 35.57 is being used to be consistent with the figures used during Round NSSO.
4. Economic Survey – 1999-2000, GOI. Based on NSS Consumer Expenditure of 50th Round (93-94).
5. Economic Survey 2000-2001, GOI based on NSSO 1999-2000.

6. II and V of the Declaration of Alma Ata.
7. Planning Commission, 2001.
8. D. Gwatkins' study showed that the world's 20% poorest died on account of pretransition diseases and before reaching 15 years of age almost 8 to 10 times more than the top 20% of the richest (The Poor: When and How Do They Die, 1977).
9. NCAER Study of HDI – 2000.
10. Savrekhshana, GOI March 2000.
11. Various Articles of the Indian Constitution provide for special protection to be extended to SC/ST, particularly in matters of education, employment etc.
12. Census 1991, Planning Commission.
13. The percentage distribution of BMI has shown an increase from 42.1% in 1975-76 to 50.5% in 1996-97, and CED has come down from 55.6% to 45.5% during the same period among adult males. (Planning Commission Review of the Ninth Plan)
14. Tribal Research Institute, Government of Andhra Pradesh, 1995-96.
15. Social Inequality and Access to Health: Study of SC Population in Rural TN by TK Sundari, CDS, Trivandrum, 1992.
16. A caveat would be in order. The fractile grouping of NSSO is based on the expenditures incurred on health and therefore does not specifically indicate the level of poverty except by inference. This has to be borne in mind as the detailed survey reports in the utilization of the secondary hospitals in AP showed that 75% of the patients were all persons below the poverty line.
17. Tulasidhar, Utilization of Hospitals, 1995.
18. Sujatha Rao et al, Health Financing of PHC in AP, 1997.
19. 52nd Round NSSO, also corroborated by studies by Alex George and NCAER.
20. A Mimeo on the skill assessment of ANMs working in tribal areas prepared for the Government of AP, 1994.
21. The concept of Below Poverty Line (BPL), for instance, that has enabled the targeting of beneficiaries in government programmes.
22. Pertain to communicable diseases and reproductive health, as they are believed to affect the poor disproportionately as opposed to lifestyle diseases.
23. R. Balambal et al, Economic Impact of TB on Patients and Family, TRC, Chennai, 1997.
24. TB was allocated Rs.1100 million out of a total Plan budget of Rs.12778 million for the year 2000-2001 to the Department of Health.
25. The estimated deficit for covering the whole country is Rs.1000 million. (Joint Review of TB by WHO).
26. National Programmes for the control of malaria, TB, leprosy, HIV/AIDS, blindness.

Annex 5.1

Distribution of Net Public Sector Subsidies by Level of Care by Quintile Category, Combined for Rural & Urban

Name of the State	Type of facility	QI	QII	QIII	QIV	QV	Total (in Rs. Million)
Andhra Pradesh	Short Hospitalizations	18.1	17.0	16.6	30.5	17.8	1229
	Hospitalizations	14.8	14.4	15.0	25.5	30.4	2053
	PHC & Others	20.5	21.6	35.5	15.2	9.2	263
	Immunizations	29.3	23.0	21.5	17.9	8.4	158
	Total	16.3	15.7	17.4	23.9	26.7	2474
Bihar	Short Hospitalizations	3.1	12.9	19.1	27.4	37.5	586
	Hospitalizations	2.3	8.3	12.5	21.8	55.1	949
	PHC & Others	7.2	8.5	31.6	25.6	27.2	68
	Immunizations	20.7	21.7	21.3	18.3	18.0	91
	Total	4.1	9.4	14.4	21.8	50.3	1108
Gujarat	Short Hospitalizations	17.9	24.4	17.8	21.4	18.4	663
	Hospitalizations	12.4	16.9	38.6	14.8	17.3	1189
	PHC & Others	26.9	15.6	27.1	21.4	9.0	149
	Immunizations	28.4	25.1	20.0	17.7	8.8	93
	Total	15.0	17.3	36.2	15.6	15.9	1431
Haryana	Short Hospitalizations	18.6	17.4	13.3	19.5	31.2	464
	Hospitalizations	12.7	11.9	12.7	27.0	35.7	677
	PHC & Others	13.8	22.6	25.8	19.4	18.5	59
	Immunizations	21.4	25.7	23.3	19.8	9.7	80
	Total	13.5	13.7	14.4	25.9	32.5	796
Himachal Pradesh	Short Hospitalizations	6.4	11.1	18.0	24.5	40.0	474
	Hospitalizations	6.4	11.0	12.6	23.9	46.1	675
	PHC & Others	21.2	15.2	22.7	24.0	17.0	45
	Immunizations	18.9	22.7	20.5	24.8	13.1	12
	Total	7.5	11.4	13.4	23.9	43.8	732
Karnataka	Short Hospitalizations	10.1	17.8	23.3	28.5	22.3	1148
	Hospitalizations	7.6	14.2	18.9	24.1	35.2	1803
	PHC & Others	17.1	31.3	20.7	15.5	15.4	216
	Immunizations	22.5	26.6	26.3	17.9	9.8	101
	Total	9.3	16.4	19.5	22.9	32.0	2120
Kerala	Short Hospitalizations	28.1	20.9	24.3	15.8	11.1	2490
	Hospitalizations	21.7	23.3	17.8	17.3	19.9	3921
	PHC & Others	28.3	11.7	30.4	14.8	14.7	393
	Immunizations	30.8	23.7	22.4	12.8	10.4	34
	Total	21.9	23.0	18.2	17.2	19.7	4049
Madhya Pradesh	Short Hospitalizations	8.6	9.3	12.2	32.3	37.7	1601
	Hospitalizations	6.4	9.2	12.5	29.1	42.8	2179
	PHC & Others	17.2	22.5	29.4	18.8	12.1	302
	Immunizations	24.1	21.1	20.9	19.1	14.8	172
	Total	8.8	11.5	15.0	27.3	37.4	2653
Maharashtra	Short Hospitalizations	16.8	17.6	22.7	27.3	15.5	1728
	Hospitalizations	13.1	13.5	21.3	32.1	19.9	2624
	PHC & Others	35.6	24.8	23.4	7.0	9.2	387
	Immunizations	30.4	23.2	23.9	14.0	8.6	172
	Total	16.8	15.4	21.7	28.1	18.0	3183
North East	Short Hospitalizations	9.5	11.3	19.4	22.5	37.3	1099
	Hospitalizations	9.0	10.9	17.7	21.0	41.2	1387
	PHC & Others	19.9	23.5	20.2	21.9	14.5	346
	Immunizations	23.3	21.0	18.8	22.0	15.0	51
	Total	11.6	13.6	18.2	21.2	35.3	1784

Name of the State	Type of facility	QI	QII	QIII	QIV	QV	Total (in Rs. Million)
Orissa	Short Hospitalizations	7.8	16.2	20.4	17.3	38.3	950
	Hospitalizations	8.6	13.6	15.5	11.8	50.5	1605
	PHC & Others	11.2	23.2	20.6	22.6	22.4	240
	Immunizations	24.4	27.9	18.6	15.7	13.3	64
	Total	9.4	15.3	16.3	13.3	45.7	1909
Punjab	Short Hospitalizations	11.6	16.1	18.1	20.1	34.1	412
	Hospitalizations	11.5	15.1	18.5	29.7	25.2	447
	PHC & Others	30.4	30.6	15.7	19.0	4.3	39
	Immunizations	31.2	24.5	20.4	14.9	8.9	49
	Total	14.7	17.1	18.5	27.6	22.2	535
Rajasthan	Short Hospitalizations	7.2	12.6	12.0	23.1	45.1	1085
	Hospitalizations	8.8	9.5	10.8	19.7	51.2	1425
	PHC & Others	10.1	26.6	21.6	11.0	30.6	130
	Immunizations	23.0	21.4	21.3	20.9	13.3	86
	Total	9.6	11.5	12.2	19.1	47.6	1841
Tamilnadu	Short Hospitalizations	19.5	18.2	24.1	22.6	151.5	2203
	Hospitalizations	13.7	20.1	20.7	25.4	20.1	3177
	PHC & Others	22.8	14.1	20.5	18.8	23.8	209
	Immunizations	30.8	25.5	18.6	17.2	7.9	125
	Total	14.8	19.9	20.7	24.7	19.9	3511
Uttar Pradesh	Short Hospitalizations	12.4	11.9	17.2	20.0	38.5	1764
	Hospitalizations	8.1	8.1	12.3	30.3	41.2	2875
	PHC & Others	17.4	13.1	11.6	16.5	41.4	384
	Immunizations	22.1	21.5	20.0	20.9	15.6	297
	Total	10.2	9.8	12.9	28.1	39.0	3537
West Bengal	Short Hospitalizations	12.6	13.0	20.0	26.8	27.5	2163
	Hospitalizations	9.2	18.0	19.3	22.9	30.7	3260
	PHC & Others	22.5	25.5	16.0	18.2	14.9	283
	Immunizations	25.6	24.6	19.6	19.9	10.2	120
	Total	11.0	18.8	19.0	22.4	28.8	3662
India	Short Hospitalizations	11.1	14.3	20.6	26.4	27.6	20083
	Hospitalizations	8.4	13.0	18.2	26.9	33.5	30252
	PHC & Others	20.3	20.7	21.7	20.3	17.0	3196
	Immunizations	23.7	22.2	22.0	19.6	12.5	1687
	Total	10.2	14.1	18.7	26.0	31.0	35138

Source: Ajay Mahal et al, **Who Benefits from Public Health Spending In India**, Benefit Incidence Study, NCAER, 2001

Annex 5.2
Average Total Expenditure (Rs.) Per Hospitalization by Type of Hospital for Rural and Urban Areas of 15 Major States

State	Rural			Urban		
	Govt. hospitals	other hospitals	All	Govt. hospitals	other hospitals	All
Andhra Pradesh	2070	7822	6428	1310	7080	4886
Assam	2092	2003	1945	2201	7102	3790
Bihar	3488	4069	3860	2804	4512	3724
Gujarat	1465	3285	2663	1897	4185	3327
Haryana	2667	3496	3224	8888	5087	6537
Karnataka	1791	4100	2997	1564	4502	3593
Kerala	1616	2805	2293	1527	2254	1927
Madhya Pradesh	2207	3842	2191	1678	3889	2774
Maharashtra	1529	3836	3089	1439	5345	3997
Orissa	1681	2583	1641	2142	11829	3868
Punjab	3645	6171	4988	5436	6130	5712
Rajasthan	2634	3971	3038	2544	4949	3149
Tamilnadu	751	4333	2840	934	5827	3934
Uttar Pradesh	4237	4521	4349	5191	6515	5896
West Bengal	1500	4303	1957	1348	7836	3217
India	2080	4300	3202	2195	5344	3921

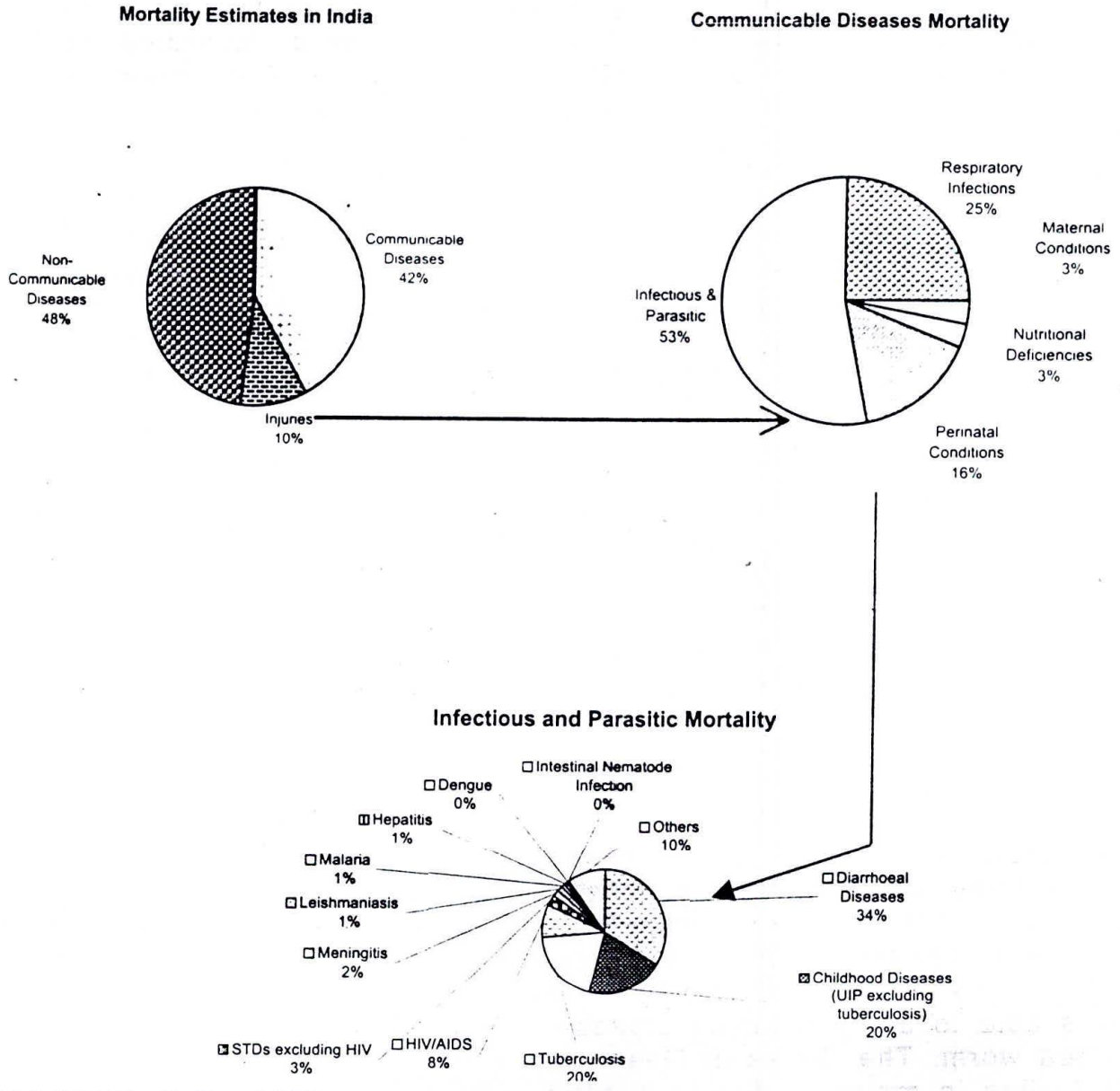
Source: Ajay Mahal et al, **Who Benefits from Public Health Spending In India**, Benefit Incidence Study, NCAER 2001

Communicable Diseases

Introduction

Communicable and infectious diseases constitute a major cause of premature death in India, killing over 2.5 million children below the age of 5 and an equal number of young adults every year. Despite the remarkable progress achieved in the overall quality of life, and despite a reduction in absolute poverty, the proportion of total deaths on account of communicable diseases, maternal and perinatal conditions and nutritional deficiencies continues to be unacceptably high at 42%.

Figure 6.1
Mortality and Morbidity Estimates, 1998



Source: **World Health Report** 1999

Between 1950-1990, there was a significant improvement in health indicators, mainly because of rising incomes and expanding access to healthcare. But a range of non-health determinants – environmental pollution, unsafe water, improper water management, poor sanitation practices, malnutrition, behavioral attitudes, illiteracy, climatic conditions and poverty – continue to be responsible for the persistence of pre-transition diseases. The successful control of these diseases, which are dynamic, resilient, and driven by a complex network of ecological, social, political and economic factors, demand the skilful negotiation of all these factors by an efficient public health system.

Since the global eradication of small pox, 30 new pathogens have been identified, including HIV/AIDS, Hepatitis C and E, and new strains of *Vibrio cholerae*. The resurgence of infections, and of malaria, dengue and TB in forms difficult to control or treat, and the exponential rate of the development of HIV/AIDS, have all imparted a new sense of urgency to disease control. With most infections not responding favorably to commonly used and economical anti-microbial agents, the management of these infections has become difficult, long, and expensive.

While current efforts will ensure the elimination of leprosy and polio within the next five years, environmental and social factors impose severe constraints on the eradication of malaria, TB or HIV/AIDS. Thus *efforts will have to be aimed at reducing disease transmission, minimizing drug resistance, and reducing mortality and morbidity; this is an economic imperative as it is the poor who suffer the most.*

This chapter assesses the disease burden in India caused by the principal diseases – malaria, TB and leprosy, and examines the strategies formulated to contain them. It also identifies the programmatic issues for future direction of policy. These disease control programmes are currently under implementation throughout the country as Centrally Sponsored National Programmes, with substantial funding from the central government. HIV/AIDS and childhood diseases will not be covered here as they have been dealt with separately in the relevant chapters.

Disease Burden: An Overview

Infections and parasitic diseases accounted for 34.6% of the total 269 million DALYs lost, and 33% of 9.3 million deaths in 1998 (1). India's burden of disease (BOD) on account of communicable diseases is more than three times that of China's, and accounts for 23.3% of total global DALYs lost. From the very First Five Year Plan, the control of communicable diseases has been a priority. Despite limited technical manpower, weak health infrastructure and modest financial resources, India was able to bring down its disease load, and eradicate small pox and guinea worm. The Cause of Death time trends for 1961-99 show an overall decline in mortality due to infectious and parasitic diseases and

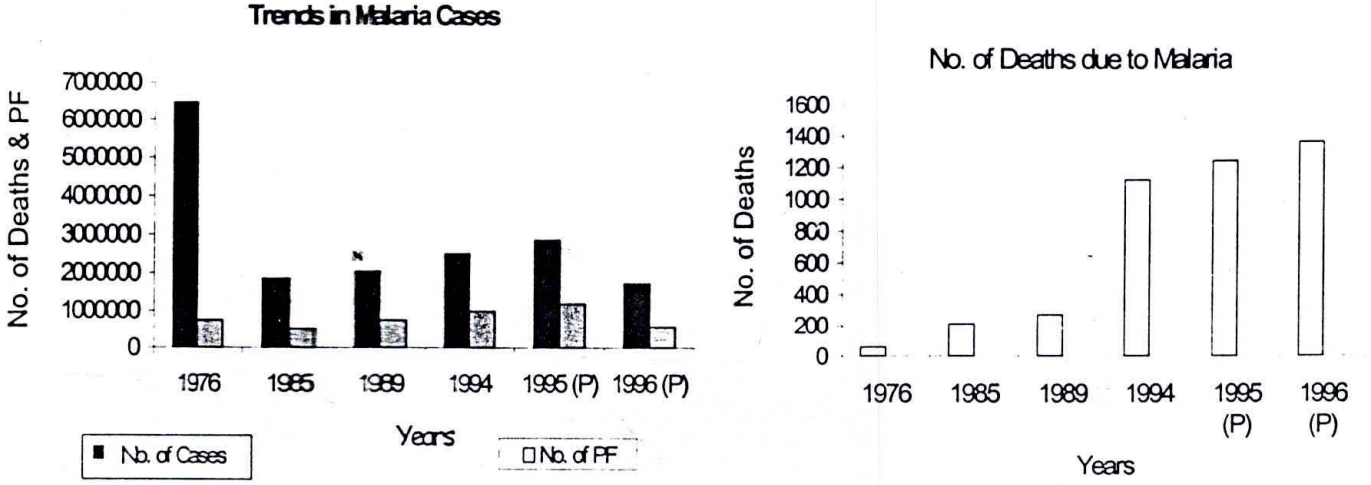
Control Strategies of Major Causes

Malaria and Other Vector Borne Diseases

Malaria: Initial efforts aimed at malaria eradication brought down the caseload from an estimated 75 million to a record 0.1 million cases, and negligible deaths. But various financial, administrative, technical and logistic factors ensured that this success was short-lived. Constraints included the disbanding of malarial teams to assign them duties such as family planning; the failure to supply several recurrent critical components that states were to provide (4) under the pattern of assistance; reports of drug and insecticide resistance, particularly from Assam; and an overall sense of complacency, affecting the required level of vigilance. These and other factors contributed to the resurfacing of malaria in 1976, to a high of 6.47 million cases. The Modified Plan of Operation was launched in 1977 to contain the disease, with the 3 main objectives of preventing deaths, reducing morbidity, and consolidating gains. By 1984, malaria was brought down to about 2.18 million cases. Efforts towards a further reduction were not successful due to vector and parasite resistance to conventional insecticides and drugs respectively in some high endemic areas, environmental changes caused by development activities such as irrigation projects, and rapid urbanization.

1994 once again witnessed several focal outbreaks of malaria, resulting in high mortality due to a multiple set of reasons: poor disease management (5), increasing malarial risk factors, and an overall failure of the health system caused by the gradual depletion of trained personnel (6). The data is not complete enough to be conclusive but it seems fairly clear that the emergence of parasite resistance to drugs and vector resistance to insecticides is a key factor. A major cause of concern is that between 1995 and 1999, Plasmodium falciparum (Pf), the more dangerous strain of malaria, increased from 38.84% to 49.96% (7).

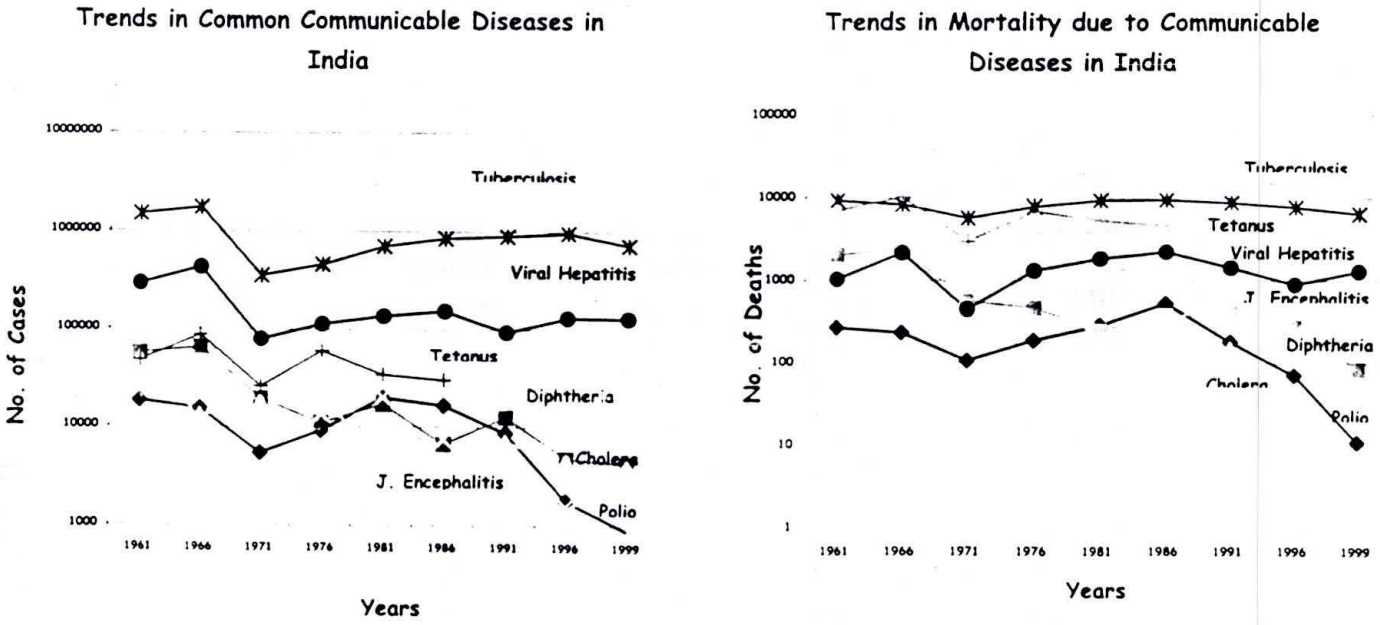
Figure 6.4
Number of Cases and Mortality On Account Of Malaria – Trends



Source: GOI Annual Report 1996-96, DGHS, New Delhi

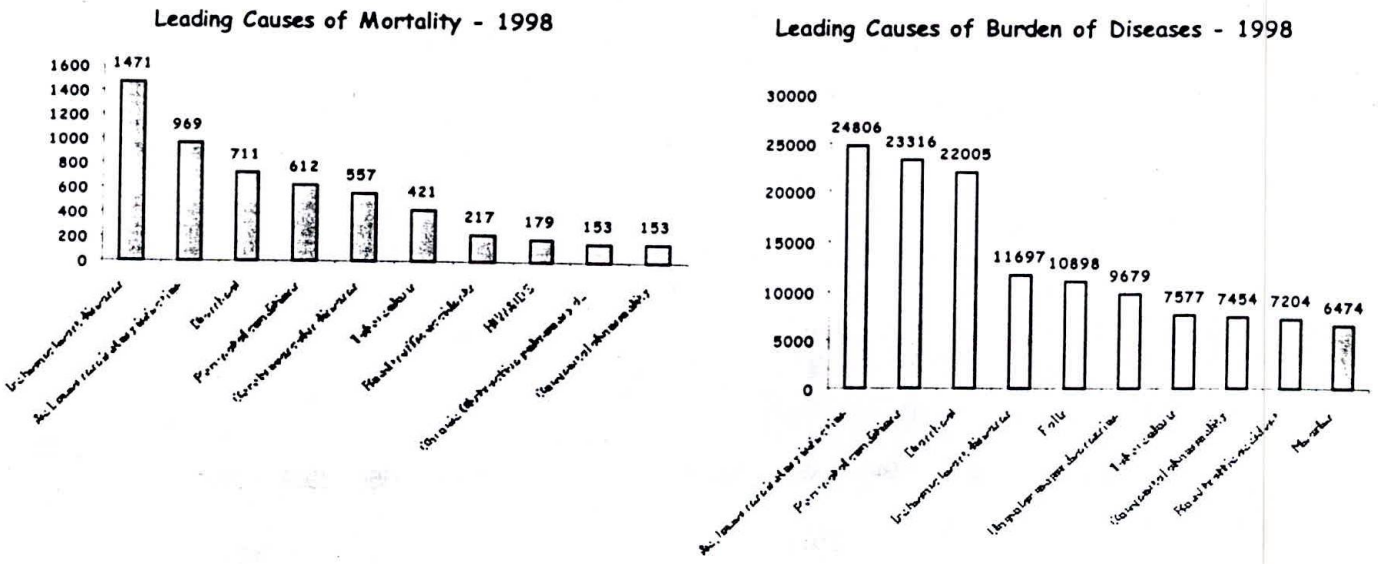
digestive disorders (2), except in the case of TB and respiratory infections (Figure 6.2). There has been some reduction in overall morbidity and mortality. Of the ten leading causes of BOD and mortality, almost 50% were on account of respiratory infections, diarrheal diseases, TB and measles (Figure 6.3).

Figure 6.2
Trends in Morbidity and Mortality on account of Communicable Diseases



Source: **DGHS**, GOI, India (3)

Figure 6.3
Leading Causes of Mortality and Burden of Disease 1998



Source : WHR, 1999

The average caseload (8) of about 2 to 3 million malarial cases hide the wide state differentials in disease prevalence. Overall, ten states account for 93% of the total disease burden (Annex 6.1). While MP, Orissa, Rajasthan, Bihar, AP and Maharashtra account for over 80% of total caseload, MP and Orissa alone account for 50% of mortality.

On the basis of recommendations from an expert committee, high-risk malarial areas within high endemic states were identified for more focused control measures. A three-pronged strategy was drawn up, now being implemented throughout the country under the National Anti-Malaria Programme (NAMP). 29 cities/towns, 318 districts, 10% of PHCs and about 24,844 villages (roughly a population of 200 million) were identified as high-risk (9), on the basis of the following parameters:

- a doubling of SPR (Slide Positivity Rate) for 2-3 years and an SPR of 5% or more;
- proportion of Pfalciparum (Pf) malaria more than 30%;
- chloroquin resistant Pf;
- tropical aggregation of labor and new settlements.

The main strategy objective is the interruption of disease transmission by

- early detection and prompt radical treatment to reduce the reservoir of infection;
- the reduction of the vector population through selected vector control, using anti-adult and antilarval measures (use of DDT, Malathion and synthetic pyrethroids in DDT- and malathion-resistant areas); and
- the enhancement of community based action (bio-environmental control and personal prophylactic measures).

This strategy is being implemented as a centrally sponsored scheme under three different packages of assistance.

1) In the NE states, the centre provides 100% assistance to cover insecticide and drug supply, spray operations, contingencies for POL and other operational expenses.
2) In non high-risk areas, the package is based on a 50:50 sharing basis, with the centre providing drugs and insecticides, but no operational expenditures.
3) In the high endemic areas, 100% central assistance is provided under the World Bank-assisted Enhanced Malaria Control Project (EMCP). This project provides synthetic pyrethroids in triple resistance pockets, impregnated bed nets for personal protection, rapid diagnostic kits and Artimisinin injections, vehicles, microscopes, consumables and supplies, and funds (for contracting lab technicians, IEC and social mobilization activities).

The EMCP covers the 100 most endemic districts in AP, Orissa, Jharkhand, Gujarat, MP, Chattisgarh, Maharashtra and Rajasthan, and 19

cities/towns, all of which together account for 90% mortality. Over 90% of Pf malaria cases occur in tribal areas that are vulnerable to environmental factors, weak health systems, poor communications and above all, extreme poverty. The EMCP strategy reflects the shift from NAMP reliance on chemical control to integrated methods. The three specific initiatives of EMCP are epidemic planning for rapid response to inter-sectoral coordination, strengthening of institutional management, and personal protection through the use of medicated acts. In addition, meteorological data regarding rainfall, temperature and humidity, along with epidemiological information, are being monitored for the first time since 1997, to assess mosquitogenic potential and forewarn states. EMCP has been under implementation only since 1997; it had a slow start for operational reasons and is now getting into gear.

The urban malaria vector *An. stephensi* breeds in stored water and domestic containers; construction activities and the aggregation of labor also provide a conducive environment for breeding. Implemented in 131 towns, the strategy for tackling urban malaria consists of early case detection and treatment; recurrent anti-larval measures through conventional larvicides in towns; minor engineering methods such as source reduction, channelization and deweeding; and biological control using larvivorous fish at appropriate breeding sites. Under the Urban Malaria Scheme, the central government provides the states with larvicides and a 2% Pyrethrum extract on a 50:50 sharing basis, with the states meeting operational costs. Since 1994, the NE states receive 100% grant aid from the central government. The success rate has not been promising: from 1997 to 1999, malaria-positive cases have increased from 174,000 to 289,000 cases, and the proportion of Pf cases has doubled from 15,627 cases to 53,619 (10). TN, West Bengal and Delhi accounted for more than 80% of this increase.

NAMP also covers other vector borne diseases – leishmaniasis or Kala azar, lymphatic filariasis, dengue haemorrogic fever and Japanese encephalitis.

Kala azar: This disease was controlled with mass insecticidal spraying in 1958 but resurfaced due to the lack of insecticidal pressure on the vector population. Reappearing in 4 districts of Bihar in 1974, it spread to become endemic in 36 districts of Bihar, and 10 of West Bengal. Nearly 101 million are at risk; the annual average is about 15,000 cases and 200 deaths. The number of cases declined from 1993 to 1996, but increased again in 2000. The Kala azar strategy consists of the interruption of transmission through vector control by residual spraying in affected areas; early diagnosis and treatment in PHCs; and community participation. The central government provides the entire requirement of Sodium Stibo Gluconate vials, pentamidine vials, Amphoteracin-B and DDT. Subsequent to the report of a recent Expert Committee, efforts are underway to eliminate this disease in a time-bound manner. Control

efforts have been tardy partly because of weak implementation. Health system deficiencies are already high in the endemic areas, and the capacity for optimal utilization of assistance low. However, the time-bound control of this disease will be enhanced if the new drug Miltifocin proves to be successful.

Lymphatic Filariasis: After a marginal decline, the rate of this disease has increased from 1.01 per thousand in 1989, to 2.33 in 2000. During the same period, the microfilarial rate decreased from 2.02 to 1.11. About 29 million people are estimated to be disease carriers, and another 22 million non-infective. The National Filaria Control Programme provides assistance to all 18 endemic states (454 million people); the most endemic being AP, Orissa, UP, West Bengal, TN, Kerala and Bihar. Originally conceived as an urban programme, anti-filarial measures are being implemented through the 206 Filaria Control units and 199 clinics. Since 1994, the anti filarial drug Diethycarbamazine (DEC) is available in rural PHCs for the treatment of acute and chronic cases of filariasis. Since 1997, a pilot project to study the feasibility of Annual Single Dose DEC mass drug administration is in operation in 13 districts of 7 states. The central government provides larvicides and anti-filaria drugs, while operational and equipment costs are borne by the states. The strategy – vector control, environmental engineering and antiparasitic measures – has not led to any appreciable reduction in disease rates (Table 6.1), despite the mass single annual dose administration of DEC in 13 pilot districts. The co-administration of DEC and Albendazole for the elimination of lymphatic filariasis in a few districts of Kerala, Orissa and TN, is now being considered. The strategy consists of early case identification and treatment in view of the absence of effective chemoprophylaxis or cost effective vaccines.

Table 6.1
Number of Filaria Cases and Disease Rates 1989-2000

Year	No. of Persons examined	Blood smear positive for microfilaria	MF Rate	No. of filaria cases	Disease Rate
1989	2953375	59658	2.02	29829	1.01
1994	3960013	47427	1.2	37720	0.99
1997	2620615	30317	1.15	21012	0.80
1998	2492788	22046	0.88	26142	1.04
1999	2381377	16534	0.70	16643	0.70
2000 *	1202828	13293	1.11	28032	2.33

Source: NAMP, GOI

Japanese Encephalitis (JE): This vector-borne disease is prevalent in about 65 districts in 10 endemic states; the annual caseload is about 2500 and 500 deaths, mostly of children below the age of 5. Nearly 90% of cases are reported from AP, UP, Karnataka and West Bengal, with 50% of deaths consistently reported from AP and Karnataka since 1997. But JE is spreading to non-traditional areas: in 1996 Kerala reported 105 JE cases and 31 deaths, and the numbers have been steadily increasing in

the last four years. Control strategies continue to focus on early diagnosis, case management, vector control (two rounds of residual insecticidal spraying), fogging by malathion insecticide, segregation of pigs and promotion of personal prophylaxis. While high costs limit the use of vaccination, no effective chemoprophylaxis or curative drugs exist. But vaccination as prophylaxis continues to be an option, as early reports of trials in highly endemic areas indicate safety as well as high levels of protection.

Dengue Hemorrhagic Fever (DHF): There was an outbreak of DHF in 1996 in 9 states: 16,517 cases and 545 deaths. Preventive action has brought down the caseload to 605 and about 7 deaths in 2000; intensive training and standardized patient management have helped reduce case fatality by 50%. Inadequate epidemiological information, however, hinders drawing definitive conclusions.

There are five essential problems in the implementation of the vector control programme:

- weak and dysfunctional health system; poor surveillance in endemic areas;
- delayed supply of inputs due to time consuming procurement procedures; weak logistic monitoring;
- limited involvement of community and local bodies;
- inadequate allocation and delayed release of recurring budgets;
- inadequate research on vector and human behavior, anthropological and operational issues, drug and parasite resistance.

Tuberculosis (TB)

The ICMR nationwide survey of TB conducted between 1955-59 covered 40% of the population and indicated an active TB prevalence level of 1.5%. These estimates continue to be used. Given the socio-economic changes over the past five decades, a new nationwide study to estimate the rate of Annual Risk Infection (ARI) has been launched by the National Tuberculosis Institute and the TRC (11) Chennai. This should enable a more accurate estimation of TB prevalence. India accounts for one-third of global TB, and the largest number of persons suffering from active TB. Thus available estimates are that about 2.2 million persons are added each year to the existing load of about 15 million active TB cases; of these, about 800,000 are smear positive (infectious), and about 450,000 die (12). TB is the leading cause of death among women in the reproductive age group of 25-44 years, more deaths than those due to all the causes of maternal mortality. TB accounts for almost 7.57 million DALYs lost (WHR 1998). 20% of 15 year olds are reportedly infected with the bacteria (13). Since every sputum-positive case has the potential to infect 10-15 individuals in a year, and since TB is one of the important opportunistic infections of HIV, it is feared that *deaths due to TB can go up to 4 million (14) in the next decade if not controlled.*

The National TB Programme (NTP) was launched in 1962, and an impressive infrastructure of 446 District TB Centers, 330 TB Clinics, 764 hospitals (15), and 47,600 beds was established. These hospitals diagnose nearly 1.3 million patients and treat 250,000 sputum positives every year. But despite an annual expenditure of about Rs.300 crores (16), double what is spent on the National TB Programme covering the whole country, the outcomes are unsatisfactory due to poor diagnosis, the administration of dangerous regimens and the lack of patient evaluations or follow-up. Despite expert committee reviews in 1975 and 1988, the TB programme languished for want of a credible strategy and political and administrative support, as well as low resource allocation not exceeding Rs.20 crores per year. An exhaustive review of the National TB Programme (NTP) was taken up in 1992 and the findings showed

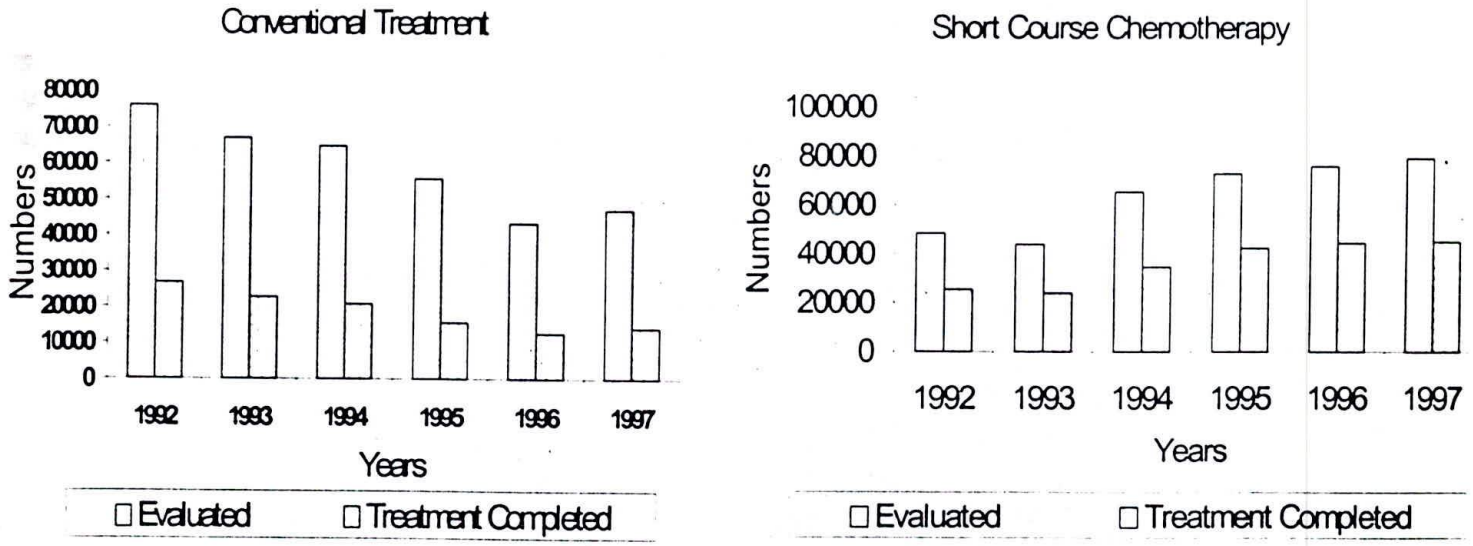
- completion of treatment by less than 40% of patients;
- an inadequate budget and a chronic shortage of drugs, enough only for one-third of detected cases;
- an emphasis on x-ray diagnosis, resulting in inaccurate diagnosis, centralization to TB district centers, and more expense;
- poor quality sputum microscopy, due to poorly trained technicians and non and irregular supply of consumables;
- a multiplicity of treatment regimens, administered primarily by an unregulated private sector; and
- insufficient managerial capacity and weak technical leadership.

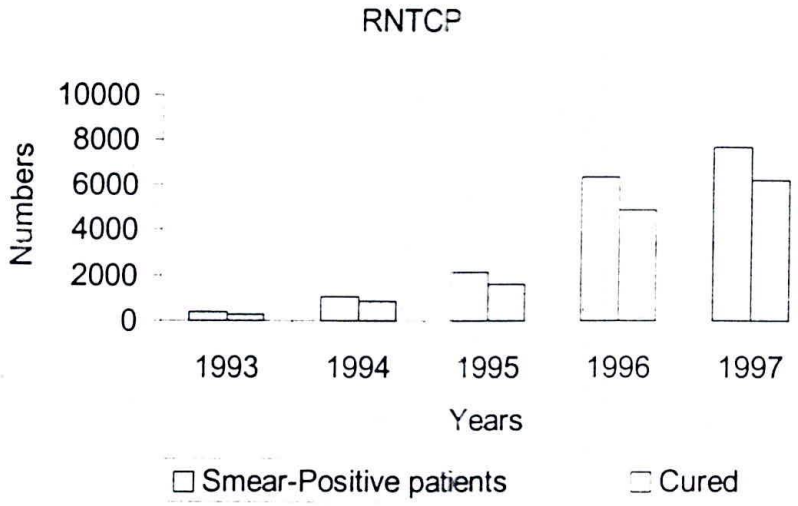
The WHO extended technical support to pilot test the DOTS (Directly Observed Treatment, Short-course) strategy to detect at least 70% of sputum-positive patients, and cure at least 85% (17). Based on these reviews, and the results of controlled pilot projects, the Revised National TB Control Programme (RNTCP) was formulated with the DOTS strategy as its cornerstone. The DOTS strategy is based on 5 principles: case detection among patients spontaneously attending health facilities, primarily by the microscopic examination of sputum; ensuring adequate drug supply; the administration of Short Course Chemotherapy (SCC) under direct observation; systematic monitoring and accountability for every patient diagnosed; and political will. The DOTS strategy is now implemented under the RNTCP in about 200 districts covering 350 million people. External funding support of about Rs.746.76 crores (18) has been mobilized; TB Units are being established at subdistrict level for every 500,000 people. Each unit oversees the work of 5 microscopy centers, with a trained laboratory technician in each, and provided with state-of-the-art binocular microscopes and reagents. Units are given a vehicle each, and funds to meet recurring costs and ensure close supervision of quality, reliability, and prompt reporting by microscopy centers. Most critical to this strategy is the high priority given to microscopy – as the appropriate technology to identify patients most likely to spread TB and most likely to die if untreated.

About 0.5 million persons have been treated under DOTS during 2000; there has been a qualitative improvement in diagnosis, with a 1.2 ratio of smear-negative pulmonary TB for every case of smear-positive TB. The cure rate has doubled from less than 40-80%, though not uniformly. The death rate has also been reduced to 4%, compared to at least 20% under the NTP. These achievements of RNTCP, over a short three-year implementation period, are due to the quality training given to health staff; the increasing involvement of NGOs; improved management systems and the standardization of treatment regimens according to patient typology to ensure the uninterrupted supply of drugs in patient-wise boxes; the increased availability of sufficient funds with district societies; and intensive monitoring (19). The DOTS strategy is to be expanded throughout the country by 2005, and successful implementation will improve cure rates, reduce mortality, prevent multi-drug resistance, and prove effective on HIV infected patients.

The NTP is implemented along with RNTCP in the remaining parts of the country with the central government providing drugs for short-course chemotherapy. The results continue to be poor in these districts, for want of adequate inputs, irregular supply of drugs, low budgets, poor supervision and weak monitoring (Figure 6.5).

Figure 6.5
Evaluation and Completion of Treatment under Conventional, Short Course Chemotherapy and RNTCP





Source: DGHS, GOI

The expansion of DOTS to cover the country by 2005 is a priority. The achievement of this goal will depend on how soon and how well constraints are overcome. It will depend on the required infrastructure – microscopy centers, trained personnel, and the regular supply of drugs (20) and funds – being ensured. Finally, it will also depend on the mobilization of political and administrative will. Thus despite the impressive results of RNTCP, the future scenario of TB control appears grim because of

- low coverage: DOTS covers only about 20-25% of TB patients; expansion is constrained by weak institutional capacity, low budgets and the dangers of MDR due to unplanned expansion;
- the weak involvement of civil society and the community;
- the weak health system, particularly in urban areas without primary healthcare infrastructure;
- unsupervised private practitioners following their own lines of treatment, contributing to MDR;
- the implementation of multiple systems of TB control (conventional, SCC and RNTCP), with different financing mechanisms; and
- the threat of a dual epidemic: HIV/AIDS and TB as an opportunistic infection are likely to increase the number of cases substantially.

Leprosy

Available estimates indicate a leprosy caseload of about 2 million cases, of which 20% are infectious (21). 50.39% are multibacillary, 37.28% are other bacillary, and 12% are single skin lesion cases. In the two MLEC surveys conducted in 1998 and 2000, 4.63 and 2.13 lakh new cases were detected. Systematic efforts to eradicate leprosy by March 2000 have had success in about 24.64% of the country; in the other 15%, the prevalence rate is between 1 and 2/10,000. The only states with a high prevalence of leprosy now are Bihar, MP, UP, Orissa and West Bengal. Only 12 districts

have a prevalence rate of more than 20/10,000; 9 are in Bihar, 2 in Orissa and one in MP. Bihar has the highest number of MB cases, while Orissa has the highest number of single skin lesion cases. The National Leprosy Elimination Programme was launched in 1965, when prevalence rate was 57 per 10,000 persons. The programme, which was strengthened with the introduction of Multi Drug Therapy (MDT), is vertically driven. Implementation is through an impressive infrastructure of 778 Leprosy Control Units, 907 Urban Leprosy Centers, 5744 Treatment Centers and 350 Mobile Leprosy Treatment Units. The control strategy includes active case finding, MDT and the rehabilitation of cured cases for economic productivity. Its strength has been low treatment costs, verticalized implementation structure up to the sub-district level, and the active participation of about 300 NGOs. Disease elimination stage has been reached in 10 states; nearly 8.9 million persons have been cured in the last two decades. At the current level of implementation, leprosy elimination (prevalence of less than 1/10,000) is likely in most parts of the country in a few years. The programme, however, must be sustained to ensure that the disease does not resurface. Accordingly, in areas where leprosy is less than 1/10,000, the programme is being integrated with the PHCs with staff provided at the district level for monitoring.

Other Infections

Acute diarrhea, dysentery, worm infestations and digestive tract infections are soil-transmitted, or caused by the consumption of contaminated water. Hence the need to promote community hygiene and healthy living is imperative. Comprehensive health education that cuts across sectors is the key to eliminating these diseases; the campaign to eradicate guinea worm demonstrates the success of this strategy. The high morbidity and mortality of water- and sanitation-related diseases continue due to the absence of such convergence at the field level. Data on the prevalence and spread of *helminth diseases* (roundworm and hookworm) are not routinely monitored at the state or central levels, and documentation is weak, though roundworm is known to cause ascaris pneumonia and serious illness, and hookworm to cause anemia. The fatality caused by these soil-transmitted parasites may not be substantial, but they pose a serious health hazard to small children (22). In 1999-2000, the National Institute of Communicable Diseases carried out pilot studies to estimate the prevalence and intensity of soil-transmitted helminths among 9-10 year old children in 7 ecological zones of the country (Table 6.2).

Water-related and helminth diseases have a debilitating impact on the immunity system, particularly in the malnourished. Hence the need to make adequate investments in health education as well as water supply, sanitation and sewage systems. Locally elected bodies must be involved in the maintenance of water supply sources. Since poor children suffer most with infections affecting physical and mental growth, investments in community level chemotherapeutic interventions must be considered.

Table 6.2
Percentage Prevalence Of Soil Transmitted Helminths in Pilot Study Areas !999-2000

State of Study Area	A. Lumbricoides	T. Trichuria	Hookworm
Haryana	1.37	0.37	0
Rajasthan	4.7	0.9	4
Sikkim	30.7	4	4.3
Karnataka	21.7	0.6	0.6
Maharashtra	13.3	2.85	0.6
Kerala	15.1	21.5	3.8

Source: NICD, GOI

Sexually Transmitted Diseases (STDs): HIV/AIDS has highlighted the importance of STDs, which make a significant contribution to the BOD. There are a reported 3.6 million HIV infected persons, and an even larger number suffering from various STDs. A comprehensive strategy is being implemented nationwide to contain these diseases. An emerging concern is the rapid spread of hepatitis, particularly Hepatitis B (HBV). HBV is known to cause chronic hepatitis, later developing into cirrhosis of the liver or liver cancer. Those in the productive age group of 35-60 years are most at risk. Like HIV, HBV is transmitted through unsafe injections and transfusions, sexual contact, child to child transmissions and from mother to baby at birth. But unlike HIV/AIDS, though 50-100 times more infectious, it is curable. Studies based on laboratory findings in hospitals indicate that the prevalence of chronic HBV is in the 2-10% range, classifying India as a country with intermediate to high endemicity. These studies also show that the HBV antigen among pregnant women ranges between 12-47%, with most studies showing 18% or less. An estimated 15-25% HBsAg carriers die prematurely due to the long-term consequences of HBV infection. Thus in each birth cohort in India, over 1.5 million persons develop this infection, and about 200,000 die of it (23). Another study has estimated that 4% of the population are chronically infected with the HBV, and about 30 to 40% have serological markers indicating past infection with this virus (24). These studies predict that 20% of the 40 million chronic carriers will eventually die of liver cirrhosis or primary liver cancer. The treatment costs for hepatitis through interferon or lamivudine therapy, or liver transplants, are prohibitive; and hepatitis vaccination as prophylaxis is gaining importance in the private sector, and to a limited extent, in the public sector, where this service is available for the protection of health personnel working in hospitals.

Programmatic Issues

Technical strategies for disease control seem to be efficacious and affordable, yet India continues to struggle to bring down disease incidence. The wide gap between policy statements, technical prescriptions and actual implementation persists. While gross deficiencies in the primary healthcare system explain much of the unsatisfactory

implementation of disease control programmes, correcting shortcomings would certainly improve implementation quality.

Need to intensify rigour in programme monitoring: Preliminary studies (25) carried out by the MRC and ICMR indicate a range of factors contributing to the poor implementation of the malaria programme: poor supervision; poor monitoring of drug quality and improper storage facilities; the lack of evidence-based planning of malaria control activities; and the lack of coordination among different sectors and research inputs. Vector control activities seem particularly affected by

- the untimely procurement of insecticides;
- low limits for the payment of wages and the non-availability of recurring budgets to engage labor for spraying operations;
- the lack of systems for the evaluation of insecticide application equipment; inadequate monitoring of insecticide resistance against malaria; lack of evidence-based data on vectors responsible for malaria transmission and transmission period;
- the lack of evidence for the introduction of new insecticides; and
- the lack of control on the free availability and use of anti-malarials; delayed slide examinations and lack of information on the status of drug resistance.

A field survey of the TB programme under the SCC was conducted by the All India Institute of Hygiene and Public Health, Kolkata, in an estimated population of 8.6 million with 37,703 reported cases, and about new 23,457 cases in 2000–2001 (Box 6.1). With Short Course Chemotherapy being implemented in 70% of the country, close monitoring is essential to ensure the timely supply of drugs and consumables. World Bank funding under DOTS has enhanced programme quality, but it has also led to the neglect of the ongoing strategy in non-DOTS areas, entailing implications of drug resistance.

Box 6.1
Findings of TB Survey by AIIHPH, Kolkata

- **Sample size – 540 TB patients of whom 70% were illiterate**
- **In 28% of the centers, laboratory reagents and ethambutol were inadequate;**
- **In 42% of the centers supplies of rifampicin, pyrizinamide and streptomycin were inadequate;**
- **Drug regimens were being adapted to suit the actual availability of the drugs;**
- **Though defaulters in one center was as high as 13.6%, action to retrieve the patient by letter or visit was rare;**
- **Default registers were not available in 71% of the centers, lab registers in 42% and transfer forms were inadequate in about 28%;**
- **Client satisfaction was also low as 50% of the patients felt that the timing of the center was not convenient;**
- **Default usually happened during the 4th – 7th month, due to toxicity of drugs / side effects.**

Inadequate budgets and their poor utilization: *The central budget allocation for the control of communicable diseases, as a percentage of total health budget, has gradually reduced during the period 1988-2001, from 58% to 47%. This is a matter of grave concern.* Under-funding is most acute in the malaria control programme, with no real increase in budget utilisation over the past few years. From 1992-93 till date, the programme has not been able to incur an average expenditure of more than Rs.150 crores, the highest being Rs.193 during 2000-2001. While allocations do not get spent, the malathion needed in North Eastern states resistant to DDT is not provided. Similarly, partly for want of funds and partly due to environmental concerns, the supply of DDT is only half of the technical demand (26). An analysis of the causative factors and of areas of high endemicity suggest an "epidemiological polarization." A mapping of disease occurrence across geographical areas and sub populations establishes a convergence of illness, poverty, malnutrition, the denial of access to basic needs, and low economic development. Not surprisingly, the least developed states of Bihar, UP, MP, Rajasthan, Orissa and Assam account for the highest percentage of morbidity and mortality due to communicable diseases. The programme deficiencies in these states are aggravated by their inability to provide the required recurring costs under the package of assistance.

The lack of adequate recurring budgets leads to a disruption of activities. Inadequate resources present a problem in other states as well; the analysis of budgetary allocations in a good-performance state like TN, showed that during 1995-96 and 1996-97, the percentage of allocation for public health fell from 40% to 38.7%. The budget allocated for disease control constituted only 15.4% and 18.1% of the total public health budget respectively, and about 6–7 % of the total health budget (recurring and non-recurring) (27). The central share is also low – only about 7.6% of the total budget for disease control. To ensure timely availability and quicker absorption of funds, state and district level sócieties have recently been constituted under each disease control programme. Funds are released to these societies directly by the centre. This has led to a higher absorption of funds, but not to effective programme decentralization. The quality and pace of implementation continues to be a problem, with non-availability of the requisite technical expertise, of adequate delegation of powers needed to take timely decisions, and a lack of flexibility in spending.

Need for involvement of private practitioners: 80% of OP care is provided by private practitioners, making their involvement in the control of major communicable diseases such as TB and malaria an obvious requirement. A study (28), conducted on the role of private practitioners in the resurgence of malaria in Mumbai, showed that practitioners had poor qualifications, and adopted diagnostic and treatment practices inconsistent with guidelines. Few of those practicing in low-income areas relied on peripheral blood smear tests for diagnosis. They commonly resorted to injectible anti-malarials and broad-spectrum antibiotics for

febrile patients, with the justification that patients could not afford a blood smear test or a full prescription.

Delayed procurement and poor monitoring of logistics: Timely procurement and supply of inputs affects implementation of all national programmes; central procurement appears to be an advisable option for economy of scale. In the best of cases, the average time required for the procurement process is not less than 6-8 months; starting the process a year before is not possible because the budget is not sanctioned. With more flexibility, the centre can procure in cases where state governments make a specific request, or lack institutional capacity. Besides procurement, delivery and utilization, close monitoring, and inventory control to ensure timely diversion of surplus stocks to deficit areas, need to be given equal attention.

Need for Comprehensive Surveillance System: Planning and programme formulation based on partial data may lead to faulty design. The poor enforcement of compliance to report notifiable diseases (29) is a serious gap. The wide difference in the quantum of "missing data" can be gauged from a review of two districts, where surveillance teams have been trained in field epidemiology and provided with computers. In Udaipur, Rajasthan (population 2.08 million), information against the list of notifiable diseases is collected only from government facilities; in Kottayam, Kerala (population 1.82 million) (30), information is received from both public and private facilities. (See Table 6.3 for reported cases for 2000). Misreporting, delayed reporting and underreporting from government facilities are aggravated by lack of infrastructure. Udaipur has no public health laboratory, while Kottayam has laboratory facilities for cholera, viral hepatitis, dengue, meningococcal meningitis, typhoid fever, diphtheria and water bacteriology. The absence of a surveillance system affects the ability to recognize early warning signals, and take timely measures in the event of disease outbreaks.

Table 6.3
Case Reporting of Major Diseases –2000

Disease	Kottayam	Udaipur
Acute Watery Diarrhea	43344	11933
Cholera	103	1
Measles	571	12
Acute Respiratory Infection	647470	22583
Pneumonia	1114	467
Pulmonary Tuberculosis	1062	298
Total All Cases	2.26 million	0.16 million

Source: NICD, GOI

Low priority to health education and community involvement: Health education has always occupied a lower priority in Indian public policy: its allocation under different programme budgets, taken together, is not more than 1-2% of the annual health budget. A lack of information is one of the major barriers to the effective access of services. The Polio Pulse

Campaign is an example of how people change behavior in response to information. An activity associated with health education is the securing of social support to enable the effective implementation of disease control measures. The inclusion of health concerns with water and sanitation programmes, adult literacy, poverty alleviation and developmental projects is limited. So is the co-option of local bodies and NGOs to share responsibility, except in the cases of the leprosy and HIV/AIDS control programmes. For example, in a highly community based and localized programme such as malaria, the involvement of local bodies is almost non-existent – whether in introducing bio-environmental control methods, or ensuring compliance to sanitary laws, or providing the required administrative and political leadership. Such involvement of the community and local bodies, at both village and town levels, is emerging as an imperative for effective malaria control.

Impact of Campaigns: Campaigns cost money; they can also distort priorities and exhaust the staff. Even so, there has been a growing tendency to use campaigns even for routine tasks. Campaigns can be useful, but they need to be applied selectively, as a means to mop up residual cases. In one state for example, the entire health staff was busy for two months with one campaign after another – the catch up round, the 3rd round of the polio pulse, family health awareness, tetanus. Needless to say, this affected routine work such as malaria surveillance or leprosy.

Frequent Shifts in Programme Priorities: The Leprosy Control Programme has been successful mainly because of the sustained implementation of strategy. Frequent policy changes have an adverse impact on a programme: the TB programme first advocated long-term conventional treatment, later introduced Short Course Chemotherapy, and has now introduced the DOTS. All three run concurrently and none is fully provided for.

Policy Issues: Future Directions

On the basis of the analysis of programmatic issues, recommendations for future action include the following.

- ***Revise public policy for quick epidemiological transition:*** Policy revision must aim to ensure, in the short term, the elimination of leprosy and Kala azar, and the control of malaria, HIV/AIDS and TB, targeting a drastic reduction in mortality. A focus on areas with an API above 2 will help malaria control; bringing the entire country under DOTS rapidly will help TB.

- ***Increase total quantum of funds:*** Central funding to the states is at present Rs.3-5 per capita for all four major communicable disease control programmes. A substantial increase is required for these, and 100% central assistance is required for the control

programmes of vector borne diseases, TB, HIV/AIDS and leprosy in high endemic areas, covering all non-recurring and recurring costs to fill critical gaps.

- ***Consider a more direct central intervention in actual implementation:*** If necessary, the deployment of trained personnel, on a contractual basis, will offset poor institutional and managerial capacity for programme implementation in weak performance states. In states with the capacity to implement and monitor, bulk grants, subject to certain deliverables, may be released. The release of bulk grants to the states will impart a greater sense of responsibility and accountability, besides developing capacity and providing operational flexibility. Proper utilization must be ensured through close monitoring of the agreed outcomes, based on performance indicators.

- ***Revise procurement systems suitably:*** The central government must consider the decentralization of procurement to states and districts by developing requisite capacity. It may, however, continue to procure equipment, consumables, drugs, and pesticides only on the specific request of state governments, or where it is unviable for the states to procure.

- ***Consider the inclusion of hepatitis vaccination in UIP:*** Though hepatitis does not kill, it contributes to disease load that is expensive to treat; also, the vaccine is now more affordable.

- ***Invest on improving public health institutions and enhance the quality of laboratory support***

- ***Establish a comprehensive surveillance system:*** A high priority in all districts, this should be done with central funding for a period of 10 years.

- ***Develop protocols and regulations to co-opt the private sector into reporting and treatment in disease control programmes***

- ***Increase investment and put a set of incentives in place:*** This will improve the functioning and accountability of the health system; incentives and disincentives will help worker motivation and discipline.

- ***Undertake more evidence-based research:*** The priority is drug and insecticide resistance, given the exorbitant costs of alternatives. Operational research on programmes and management-related problems will enable corrective action.

- ***Strengthen technical units related to disease control:*** This should be done at both central ministry and state levels to enhance the capacity for impact assessment studies. A critical mass of trained epidemiologists is the highest priority at the district level.

- ***Monitor and supervise at close intervals:*** This should be substantially intensified at centre, state and district levels.

- ***Focus on HIV/AIDS:*** This will help control associated infections that may become unsustainable for the health system to cope with later.

- ***Improve routine functioning of primary healthcare system:*** This must ensure the full integration of implementation of communicable disease control programmes with the primary health system and referral units.

- ***Focus on Health EIC programmes:*** Popular participation and empowerment can be strengthened with more intensive use of mass media channels, as well as interpersonal communication.

Notes

1. World Health Report (WHR), 1999.
2. Ramana, Peters and Sastry, Health Transitions in India: Issues and Challenges, (forthcoming).
3. Given difficulties in reporting and surveillance, trends in reported cases should not be assumed to accurately reflect trends in incidence.
4. Under this package, states are to provide resources for all recurring expenditures such as travel grants for the malaria worker, wages for the sprayer, procurement of sprayers, POL, maintenance and repair of equipment and consumables etc.
5. Again, a system fault due to the inconvenient siting of facilities, impractical distances for workers to travel, and non-release of travel costs -- making it unsustainable and demoralizing for the workers.
6. According to the latest data available, only an estimated 61% of laboratory technicians and 63% of Male Health Workers' posts have been sanctioned and over 25% of the Primary Health Centers have no laboratories. Add to this the factors of vacancies and absenteeism.
7. NAMP, DGHS, GOI, 2001.
8. Malaria and Its Control in India -- Country Scenario, March 1999, GOI.
9. Ibid.
10. NMAP, GOI, 2001.
11. Tuberculosis Research Centre (ICMR institution).
12. Joint TB Programme Review, India, February 2000, SEARO, WHO.
13. TB India 2001, RNTCP Status Report, DGHS, GOI
14. Ibid.
15. The Revised NTCP: A Status Report on First 100,000 Patients, lead article by Dr. Khatri published in Ind.J.Tub, 1999, 46,157.
16. TB India 2001, DGHS, GOI.
17. In the 50's and 60's, TRC, Chennai first demonstrated the safety and efficacy of domiciliary treatment, the effectiveness of intermittent chemotherapy and the feasibility of direct observation of treatment (TB India 2000, RNTCP Status

Report, DGHS, GOI). Internationally, however, the DOTS strategy is attributed to the work of Dr. Styblo.

18. Rs.604.86 Cr. from the World Bank, Rs.110 cr. from DFID; and Rs.31.9 cr. from DANIDA.
19. Joint TB programme Review – India, Feb 2000 by SEARO, WHO.
20. "The problem of default is closely linked to the poor administration of the programme....prescriptions to buy from the market and advice to come again to collect drugs not available are the two most demoralizing factors for those who leave a days' wage or borrow money at usurious interest to reach the PHC...more often treatment is discontinued not because they do not wish to take it but because they have no other options. ...Migration to other places is search of work is another problem, for the poor cannot live on tablets and need sustenance as well." Report on Multisectoral Approach to Health in UP, Chandramouli, UNDP, 1999.
21. DGHS, GOI.
22. The Global Parasite Control for the 21st Century – A Report of the Working Group on Global Parasite Control, Govt. of Japan. May 1998.
23. Craig Shapiro and Charu Prakash, Hepatitis B in India: Burden of Disease Analysis July 2000, SEAR, WHO.
24. Kane and Miller, Routine Hepatitis B Immunization in India, 1997.
25. Situation Analysis of Malaria in Tumkur District of Karnataka by the Malaria Research Center, 2000.
26. DDT, till recently listed as one of the persistent organic pollutants by the UNEP, which put a constraint on the extent of its utilization. The quantity of DDT to be used in a particular year is also as per mandate of a High Level Inter departmental Committee under the chairmanship of the Secretary, Health, GOI.
27. Government of Tamil Nadu.
28. Vijay Kamat, Private Practitioners and their Role in the Resurgence of Malaria in Mumbai, CEHAT.
29. "...Notification of a list of diseases is legally required in Tamil Nadu State (Madras Public Health Act, 1930)...hardly anyone complies with this requirement because there has been no system of enforcement....rural health centers did not report non vaccine preventable diseases...Physicians, both in government and in private institutions, face no consequences for not reporting disease...In the absence of action people lose interest in reporting." Jacob John et al, Disease Surveillance at District Level: A Model for Developing Countries in Lancet 1998; 352; 58-61.
30. The Kerala Model of Surveillance is based on the model developed by the CMC Vellore, Tamil Nadu. "The success and sustainability of this model is because it includes simplicity in reporting procedures (just a postcard with 14 notifiable diseases printed) low budget, private sector participation, regular feedback of information through bulletins and interventions consequent on reporting." Jacob John et al, Public Health, in Lancet 1998; 352; 58.

Annex 6.1

Malaria Cases in Selected North-Eastern States, 1995-99

S.No	States/UT	Year	Positi. Case	P.f Case	P.f %	Percent increase (+)/decrease (-) Positive Cases	Percent increase (+)/decrease (-) P.f Cases	Deaths due to Malaria
1	Arunachal Pradesh	1995	51115	7512	14.70			8
		1996	48667	5686	11.68	-4.79	48.03	15
		1997	53196	6730	12.65	9.31	-4.08	14
		1998	49554	6935	13.99	-6.85	6.34	12
		1999	58243	10263	17.62	17.53	26.66	11
2	Assam	1995	230702	145153	62.92			202
		1996	176622	107742	61.00	-23.44	-25.77	58
		1997	123650	76548	61.91	-29.99	-28.95	27
		1998	94645	54769	57.87	-23.46	-28.45	34
		1999	131048	83064	63.38	38.46	51.66	111
3	Manipur	1995	4652	2161	46.45			17
		1996	2151	927	43.10	-53.76	-57.1	3
		1997	1742	801	45.98	-19.01	-13.59	1
		1998	1306	631	48.32	-25.03	-21.22	1
		1999	2662	1399	52.55	103.83	121.71	8
4	Meghalaya	1995	24920	12174	48.85			48
		1996	26968	14230	52.77	8.22	16.89	45
		1997	22237	10910	49.06	-17.54	-23.33	11
		1998	17618	8510	48.30	-20.77	-22	2
		1999	14798	9153	61.85	-16.01	7.56	5
5	Mizoram	1995	17600	10771	61.20			55
		1996	10840	6248	57.64	-38.41	-41.99	20
		1997	11021	6990	62.70	1.67	11.88	41
		1998	10137	6422	63.35	-8.02	-8.13	56
		1999	14437	9575	66.32	42.42	49.1	73
6	Nagaland	1995	4661	991	21.26			0
		1996	3091	663	21.45	-33.68	-33.1	0
		1997	2825	806	28.53	-8.61	21.57	0
		1998	1989	423	21.27	-29.59	-47.52	0
		1999	4396	202	4.60	121.02	-52.25	12
7	Tripura	1995	12503	9103	72.81			16
		1996	9843	7112	72.25	-21.27	-21.87	16
		1997	18122	15491	85.48	84.11	117.81	10
		1998	12595	10507	83.42	-30.5	-32.71	5
		1999	14408	11889	82.52	14.39	13.15	1

Malaria Cases in High Risk States, 1995-99

S.No	States/UT	Year	Positi. Case	P.f Case	P.f %	Percent increase (+)/decrease (-) over last year		Deaths due to Malaria
						Positive Cases	P.f Cases	
1	Andhra Pradesh	1995	98103	40803	41.63			8
		1996	127814	60402	47.26	30.41	48.03	15
		1997	129577	57939	44.71	1.38	-4.08	14
		1998	118800	61611	51.86	-8.32	6.34	12
		1999	129020	78039	60.49	8.60	26.66	11
2	Bihar	1995	86722	55627	64.14			50
		1996	104680	64859	61.96	20.71	16.60	100
		1997	74676	49470	66.25	-28.66	-23.73	37
		1998	114958	75825	65.96	53.94	53.27	34
		1999	131898	79881	60.56	14.74	5.35	131
3	Madhya Pradesh	1995	483563	223718	46.26			28
		1996	500574	221080	44.17	3.52	-1.18	55
		1997	451552	211537	46.85	-9.79	-4.32	56
		1998	475098	247196	52.03	5.21	16.86	26
		1999	527510	289187	54.82	11.03	16.99	50
4	Maharashtra	1995	368796	131602	35.68			189
		1996	317416	83669	26.36	-13.93	-36.42	111
		1997	204969	55230	26.95	-35.43	-33.99	98
		1998	165985	48004	28.92	-19.02	-13.08	32
		1999	137712	33898	24.62	-17.03	-29.39	46
5	Orissa	1995	369777	317204	85.78			271
		1996	458554	395896	86.34	24.01	24.81	362
		1997	421928	364723	86.44	-7.99	-7.87	377
		1998	478056	408509	85.45	13.30	12.01	349
		1999	483095	407942	84.44	1.05	-0.14	399
6	Rajasthan	1995	250780	45027	17.95			70
		1996	300547	72329	24.07	19.84	60.63	90
		1997	272670	19554	7.17	-9.28	-72.97	4
		1998	76438	10030	13.12	-71.97	-48.71	0
		1999	53154	5875	11.05	-30.46	-41.43	0

Malaria Cases in Selected States, 1995-99

S.No	States/UT	Year	Positi. Case	P.f Case	P.f %	Percent increase (+)/decrease (-) over last year		Deaths due to Malaria
						Positive Cases	P.f Cases	
1	Gujarat	1995	191028	44932	23.52			9
		1996	143817	32091	22.31	-24.71	-28.58	6
		1997	159652	37849	17.35	11.01	17.94	37
		1998	106825	18531	16.56	-33.09	-51.04	3
		1999	64130	10671	60.49	-39.97	-42.71	7
2	Karnataka	1995	285830	39287	13.74			28
		1996	219198	32416	14.79	-23.21	-17.49	13
		1997	181450	43546	24.65	-17.22	34.33	7
		1998	118712	26333	22.18	-34.58	-39.33	3
		1999	97274	21416	22.02	-18.05	-18.67	11
3	Kerala	1995	11878	553	4.66			4
		1996	11653	657	5.64	-1.89	18.81	12
		1997	8265	659	7.97	-29.07	0.30	10
		1998	7439	1064	14.30	-9.99	61.46	7
		1999	5141	568	11.05	-30.89	-46.62	7
4	Tamilnadu	1995	92375	5463	5.91			2
		1996	80586	4011	4.98	-12.76	-26.58	7
		1997	72424	3049	4.05	-10.13	-23.98	2
		1998	63915	2303	3.60	-11.75	-24.47	2
		1999	56355	2281	4.05	-11.81	-0.96	2
5	Uttar Pradesh	1995	105235	7367	7.00			0
		1996	169364	20974	12.38	60.94	184.70	0
		1997	134362	11023	8.20	-20.67	-47.44	11
		1998	112291	5407	4.82	-16.43	-50.95	0
		1999	99362	6434	6.48	-11.51	18.99	0
6	West Bengal	1995	91014	17226	18.93			140
		1996	87686	14725	16.79	-3.66	-14.52	56
		1997	155209	23545	14.70	77.01	59.90	74
		1998	132088	25156	19.04	-14.90	6.84	77
		1999	227480	72755	31.98	72.22	189.22	144

Source : NMAP, DGHS, MHFW, GOI

Annex 6.2

Performance of the RNTCP by States (Provisional figures as of March 2001)

States	Popn. Covered (in lakhs) by RNTCP by 31.12.00	% of state covered by RNTCP by 31.12.00	Total Cases treated in 2000	New S+ve cases treated in 2000	Annual detection rate		Ratio of S+ve to S-ve patients	3-months conversion rate of New S+ve patients (%)	Success rate of New S+ve patients (%)
					New S+ve patients	Total cases treated *			
Andhra Pradesh	58	8	6444	2632	45	111	0.8	87	8
Assam	12	5	1440	649	54	120	0.5	83	
Bihar	110	15	4698	1567	20	61	1	94	8
Delhi	118	100	23907	7979	68	203	0.7	85	8
Gujarat	380	81	34849	14082	[illegible]	139	0.6	84	
Haryana	48	24	4161	1589			0.8	80	
Himachal Pradesh	43	72	6098	2319	68	190	0.6	92	8
Karnataka	141	28	6035	2661	28	66	0.6	87	
Kerala	319	100	15652	6699	27	62	0.6	88	8
Madhya Pradesh	40	8	5216	1988	54	142	1	85	
Maharashtra	282	32	26575	8677	46	140	1.2	86	8
Manipur	10	50	1759	614	61	176	1.2	93	8
Orissa	69	20	9632	4385	71	158	0.7	91	8
Rajasthan	497	96	39919	16984	89	220	0.7	89	8
Tamilnadu	225	37	14985	5644	46	121	0.9	81	8
Uttar Pradesh	189	13	14756	6093	64	154	0.8	86	9
West Bengal	330	43	29009	10529	36	99	1.1	87	8
Total	2871+	30	245135	95091	47*	126*	0.8	87	8

* Rate calculations include only districts implementing for all of 2000.

\+ Some districts which began implementing in December 2000 will report starting in 2001.

Source : National TB Control Programme, DGHS, MHFW, GOI

Annex 6.3

National Tuberculosis Control Programme

Statement Showing the States & Union Territory-wise Targets & Achievements with Regard to Condition of Sputum

States/ Uts	1997-98		1998-99		1999-2000		2000-2001	
	Target	Achievement (%)	Target	Achievement (%)	Target	Achievement (%)	Target	Achievement (%)
Andhra Pradesh	36480	63.81	36480	67.98	37310	66.72	37730	50.54
Arunachal Pradesh	509	97.25	509	81.53	520	79.62	600	62.67
Assam	12575	0.91	12575	15.63	12940	1.62	13100	0.94
Bihar	47335	7.88	473335	4.93	49060	14.23	49960	0.00
Goa	683	192.53	683	46.27	700	73.57	800	34.38
Gujarat	23100	192.30	23100	258.94	23780	146.81	24120	115.90
Haryana	9456	18.96	9456	60.00	9770	94.43	9920	78.24
Himachal Pradesh	2924	85.47	2924	10.33	2970	17.24	3360	0.00
Jammu & Kashmir	4346	24.30	4346	40.70	4400	12.11	4970	16.70
Karnataka	25030	79.24	25030	81.95	25720	78.71	26050	100.32
Kerala	15672	65.59	15672	19.68	15990	-	16130	4.36
Madhya Pradesh	37773	69.98	37773	44.43	39170	60.46	39880	54.84
Manipur	1077	66.30	1077	106.78	1110	91.17	1260	109.92
Meghalaya	1041	3.94	1041	32.66	1070	47.48	1220	54.51
Mizoram	407	32.92	407	55.53	420	71.19	480	70.00
Nagaland	717	23.43	717	73.64	740	86.89	840	40.71
Orissa	17413	15.83	17413	37.48	17770	68.13	17930	18.37
Punjab	11353	104.47	11353	95.28	11640	84.05	11900	75.5
Rajasthan	25361	24.92	25361	58.89	26320	87.21	26780	92.20
Sikkim	239	233.89	239	140.59	250	166.8	280	146.07
Tamil Nadu	30048	91.56	30048	99.74	30630	84.09	30890	42.28
Tripura	1617	32.84	1617	38.10	1660	59.10	1890	293.92
Uttar Prtadesh	79807	74.21	79807	71.86	83180	78.86	85060	73.83
West Bengal	37884	23.38	37884	18.38	38990	40.00	39500	9.42
A&N Island	165	161.82	165	152.12	170	123.53	190	139.47
Chandigarh	379	151.45	379	34.30	3390	5.90	440	3.18
D&N Haveli	82	-	82	0.00	80	233.75	100	0.00
Daman & Diu	60	-	60	0.00	60	255.00	70	242.86
Delhi	5000	263.2	5000	0.00	6090	441.89	6980	101.82
Lakshwadeep	31	-	31	0.00	30	0.00	40	12.50
Pondicherry	475	252.21	475	378.53	490	265.92	560	256.43
TOTAL	**472980**	**74.41**	**472980**	**668.06**	**488480**	**76.06**	**498590**	**60.8**

Source : National TB Control Programme, DGHS, MHFW, GOI

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Annex 6.4

Outcomes of Treatment According to Category of Cases under Revised National Tuberculosis Control Programme from 1993 to 1998 (First Quarter)

Year	New smearpositive patients evaluated	Cured (%)	Completed treatment (%)	Died (%)	Remained smearpositive (%)	Defaulted (%)	Transferred Out (%)
1993	392	70.7	4.3	8.2	0.5	11.0	5.4
1994	1058	81.3	0.9	3.9	3.0	6.4	4.5
1995	2138	75.1	3.2	3.3	3.6	7.8	7.0
1996	6345	76.5	2.7	3.6	4.1	10.2	2.9
1997	7672	80.5	1.4	3.5	3.4	8.7	2.5
1998-1st Qtr.	1989	84.4	0.9	3.7	3.0	6.6	1.4
Total	19594	78.9	2.0	3.6	3.5	8.8	3.2

Year	New smearpositive patients evaluated	Completed treatment (%)	Died (%)	Found smearpositive failed (%)	Defaulted (%)	Transferred Out (%)
1993	603	54.2	4.6	1.7	35.7	3.8
1994	651	74.2	2.3	1.1	20.3	2.2
1995	1264	74.9	3.6	0.9	15.9	4.7
1996	5538	79.1	3.6	1.6	13.1	3.0
1997	7099	84.4	2.9	1.6	9.7	1.4
1998-1st Qtr.	1916	87.3	3.7	1.4	6.7	0.9
Total	17071	80.8	3.2	1.5	12.3	2.2

Year	New estra-Pulmonary patients evaluated	Completed treatment (%)	Died (%)	Found smearpositive failed (%)	Defaulted (%)	Transferred Out (%)
1993	13	61.5	0.0	0.0	38.5	0.0
1994	169	92.3	1.2	0.0	4.1	2.4
1995	467	86.1	2.4	0.0	5.8	5.8
1996	1669	86.2	1.4	0.4	9.8	2.3
1997	2181	89.5	2.2	0.1	7.1	1.2
1998-1st Qtr.	616	92.4	1.8	0.5	4.4	1.0
Total	5115	88.4	1.8	0.2	7.5	2.0

Year	Relapsed smearpositive patients evaluated	Cured (%)	Completed treatment (%)	Died (%)	Found smearpositive (%)	Defaulted (%)	Transferred Out (%)
1993	44	52.3	6.8	9.1	2.3	22.7	6.8
1994	376	75.5	1.1	4.5	2.9	5.6	10.4
1995	433	59.4	7.4	5.1	3.5	16.6	8?
1996	838	62.2	2.9	4.3	11.0	14.0	5.7
1997	1023	69.7	2.9	7.0	5.6	11.0	3.1
1998-1st Qtr.	285	73.9	1.4	5.8	5.1	8.5	2.0
Total	2999	67.0	3.2	5.6	6.3	12.1	5.4

Year	Other retreatment patients	Cured (%)	Completed treatment (%)	Died (%)	Found smearpositive (%)	Defaulted (%)	Transferred Out (%)
1993	2	100.0	0.0	0.0	0.0	0.0	0.0
1994	217	43.8	20.7	8.3	8.8	14.7	3.7
1995	563	59.9	8.7	5.5	5.0	13.5	7.5
1996	1598	64.0	4.3	6.6	7.1	13.2	4.8
1997	2511	63.0	5.4	6.8	5.4	15.0	4.2
1998-1st Qtr.	557	65.7	7.2	5.7	4.1	14.8	2.1
Total	5448	62.5	6.2	6.6	5.8	14.3	4.5

Source : National TB Control Programme, DGHS, MHFW, GOI

Annex 6.5

Leprosy Case Detection Treatment and Discharge as on 30.03.2001

S.no	State/UT	Cases Discharged	Cases on record	No. of MB	Prevelance rate /1000 population
1	Andhra Pradesh	67445	28567	11272	3.77
2	Arunachal Pradesh	155	166	148	1.52
3	Bihar	142499	129926	76576	11.83
4	Goa	285	474	204	11.83
5	Gujarat	13071	8398	4958	1.66
6	Jammu Divn.	646	649	522	1.53
7	Kashmir Divn.	158	163	141	0.28
8	Karnataka	18325	11499	5782	2.18
9	Madhya Pradesh	44768	31060	18955	3.83
10	Maharashtra	40918	29947	14222	3.1
11	Orisa	52975	25871	13247	7.05
12	Tamil Nadu	44518	25449	10760	4.1
13	Uttar Pradesh	108681	71931	44810	4.12
14	West Bengal	55736	22396	15208	2.79
15	A&N Islands	63	112	69	3.15
16	Chandigarh	373	283	244	3.14
17	D& N Haveli	302	134	85	6.09
18	Daman & Diu	31	36	33	2.41
19	Delhi	4867	6211	3247	4.51
20	Lakshwadeep	63	23	13	3.83
21	Pondicherry	546	334	164	3.43
	TOTAL	**596425**	**393631**	**220660**	**3.71**
	Less Reported Cases of Prevelance Rate Per 1000 Population				
1	Assam	2988	2347	1907	0.88
2	Haryana	832	764	520	0.36
3	Himachal Pradesh	274	339	295	0.56
4	Kerala	4225	2874	1774	0.9
5	Manipur	260	207	89	0.87
6	Meghalaya	89	68	45	0.29
7	Mizoram	66	61	13	0.68
8	Nagaland	72	55	50	0.28
9	Punjab	1644	1267	956	0.52
10	Rajasthan	3104	4660	3018	0.83
11	Sikkim	42	48	38	0.89
12	Tripura	105	168	113	0.53
	TOTAL	**13701**	**12860**	**8818**	**0.63**

Source : National leprosy Eradication Programme, DGHS, MHFW, GOI

7

Maternal and Child Survival

Children below five and women in the reproductive age group (15-44 years) constitute 36.2% (1) of the Indian population. In terms of survival and well being, they also make up the most vulnerable group in society. Efforts to improve their survival rates and health status have a long history in India. Successive Five Year Plan documents have enunciated a strong maternal and child health (MCH) component, but from the third Five Year Plan period, the overriding focus has been population control. Even after the transition of the Programme from family planning to family welfare, and the launching of the Expanded Programme of Immunization in 1979, the Universal Immunization Programme in 1985, and the Child Survival and Safe Motherhood Programme in 1990, MCH services have frequently been crowded out by family planning. The programme again underwent a critical change at the policy level when the central government adopted the reproductive health approach proposed by the NDC Commission on Population and the International Conference on Population and Development (Cairo 1994), and dropped family planning targets.

This chapter examines the current status of maternal and child survival, and the causes hindering better performance on this count. It focuses on mortality, considers the key priorities of policies and programmes, and proposes options for interventions/programmatic improvements to achieve a reduction in mortality rates for women and children. The general morbidity of women and children can be addressed through general health services for the people, and should not clutter the targeted interventions specific to maternal and child survival. The recommendations made in this chapter should be viewed against this background. While we are aware that initiatives to address maternal mortality would simultaneously address perinatal and neonatal mortality, we have chosen to deal with maternal mortality and child mortality separately for focus and clarity.

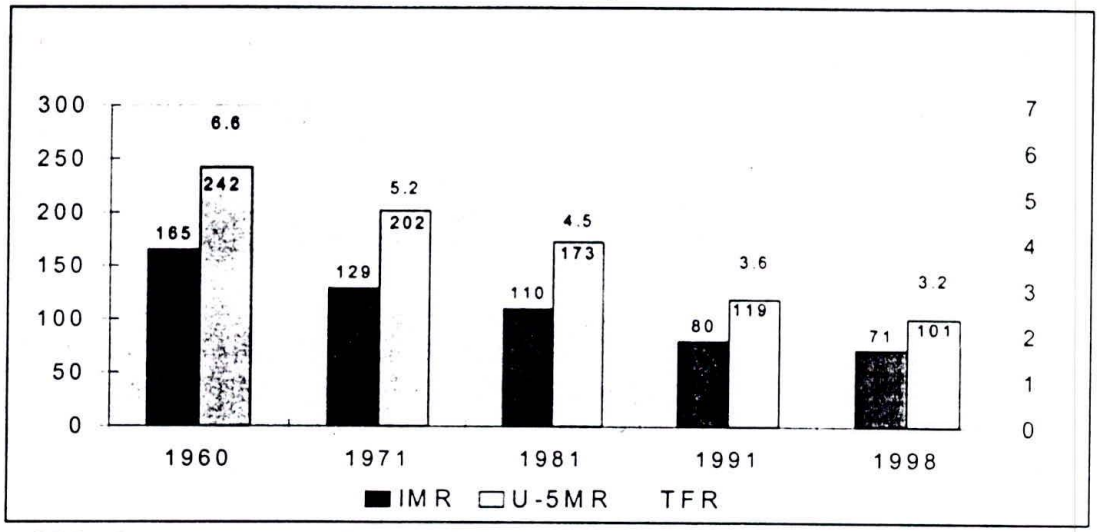
Fertility and Maternal and Child Survival

Key demographic indicators used to assess the efficacy of initiatives for MCH include Total Fertility Rate (TFR); Infant Mortality Rate (IMR); Under-5 Mortality Rate; and Maternal Mortality Ratio (MMR). TFR, IMR and under-5 mortality show a positive trend (Figure 7.1). All three indicators show a reduction by about a half between 1970 and 1999. MMR figures are not available over a time period, but available figures, though considered unreliable, indicate the enormity of the problem. There is adequate evidence worldwide that a poor society can get caught in a vicious 'fertility-mortality' trap, in which high fertility rates lead to high

mortality rates and vice-versa. NFHS 1 and NFHS 2 (2) have revealed that high fertility, coupled with early and frequent childbearing, has grave consequences for the survival rates of mothers and children. A significant proportion of births in India is high-risk (3) because

- *One-fifth of fertility is contributed by women aged 15-19 years.* Children of very young mothers have an infant mortality rate (IMR) almost one and a half times higher than for mothers in their twenties; yet half of Indian women in the age group 20-24 have their first child before the age of 20.
- *One-fourth of births in the age group 15-19 is within 18 months of a previous birth.* The IMR for births within 24 months of a previous birth is almost three times higher than births after an interval of four years or more.
- *More than a quarter of births is of order 4 or more.* Children at higher birth orders have a higher risk of dying during infancy, and the risk increases with birth order.

Figure 7.1
TFR, IMR & U-5 MR by Time Periods



Source: SRS of various years, Census, NFHS (Under-5 mortality for 1991 covers1988-93).

Maternal survival is similarly affected. The pregnancy pattern in India – "too early, too many and too close together" – enhances the risk of maternal mortality and complications. Research findings indicate that maternal deaths could be reduced by 25-40% if all unwanted pregnancies are prevented. If childbearing is confined to the age group 20-29, MMR would be reduced by 11%. The elimination of the 5th and higher order of birth would reduce MMR by about 4%(4). The need to raise the age at marriage, delay the first child, and ensure a minimum period of 3 years between children, cannot be over-emphasized.

Fertility preferences are conditioned by various factors, not the least being gender preferences, over-compensation for high infant/child mortality rates, and children being seen as economic providers. NFHS 2

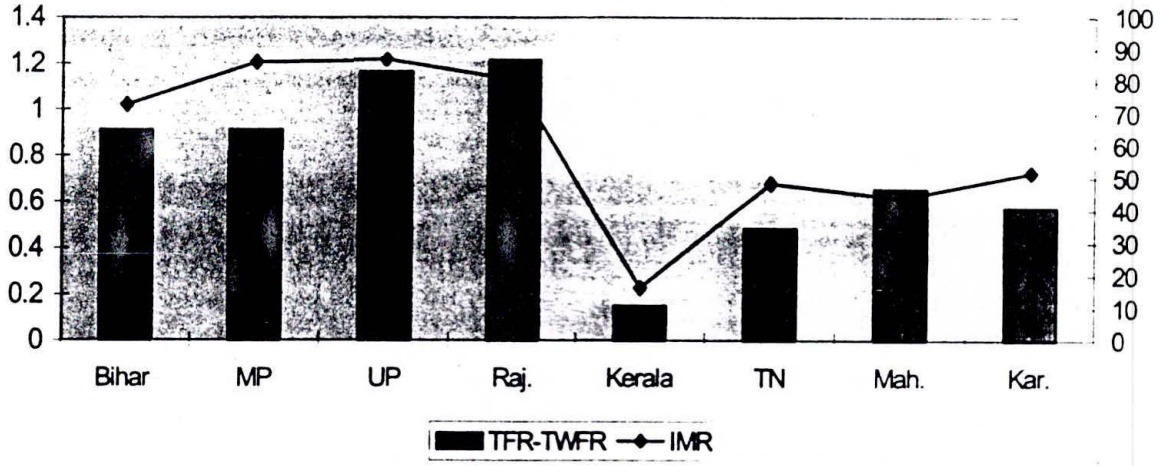
(1998-99) reveals that the current perceived ideal family size is 2.7 children, only a slight reduction from 2.9 children in NFHS 1 (1992-93). As many as 33% of Indian women want more sons than daughters, and only 2% want more daughters than sons. The consequences, understandably, are adverse for the replacement level of fertility and reduction in mortality. The percentage wanting more sons than daughters is highest in UP (53%), Bihar (48%) and Rajasthan (48%), and lowest in Kerala (15%), Karnataka (13%) and TN (10%) (5).

While fertility impacts strongly on mortality rates, the converse – that infant and child mortality is a major determinant of fertility rates – is also true. Poor households facing a high rate of infant and child mortality tend to have a larger number of children. High fertility rates and childbearing patterns also have a bearing on age structure, showing a high youth dependency ratio (6), as high as 67.2 in India (7), weighing heavily on per capita national income. High fertility rates also have a direct bearing on human capital formation, with lower investments by parents in each child's education and health. Gender differentials get further accentuated. Thus high fertility has several adverse consequences for economic and social development.

Family Planning Programme Review

The TFR in India has shown a consistent decline from 6.6 in 1960 to 2.85 in 1997, a reduction of almost 60%. However, inter-state differentials are enormous: the southern states, Maharashtra, Gujarat and West Bengal show a fairly rapid decline in both fertility and infant mortality; while Bihar, UP, Rajasthan and MP, accounting for over 40% of the country's population, have the highest maternal and child mortality as well as fertility. *Family planning, the major intervention for fertility reduction, must also be recognized as an intervention for reducing infant and maternal mortality.* NFHS 2 revealed that 25% of births included in the TFR are unwanted. If these unwanted births could be eliminated, fertility would drop to replacement levels, while promoting maternal and child survival. **An analysis of the level of unwanted births and IMR in the states reveals the positive association between the two: the lower the level of unwanted births, the lower the mortality.**

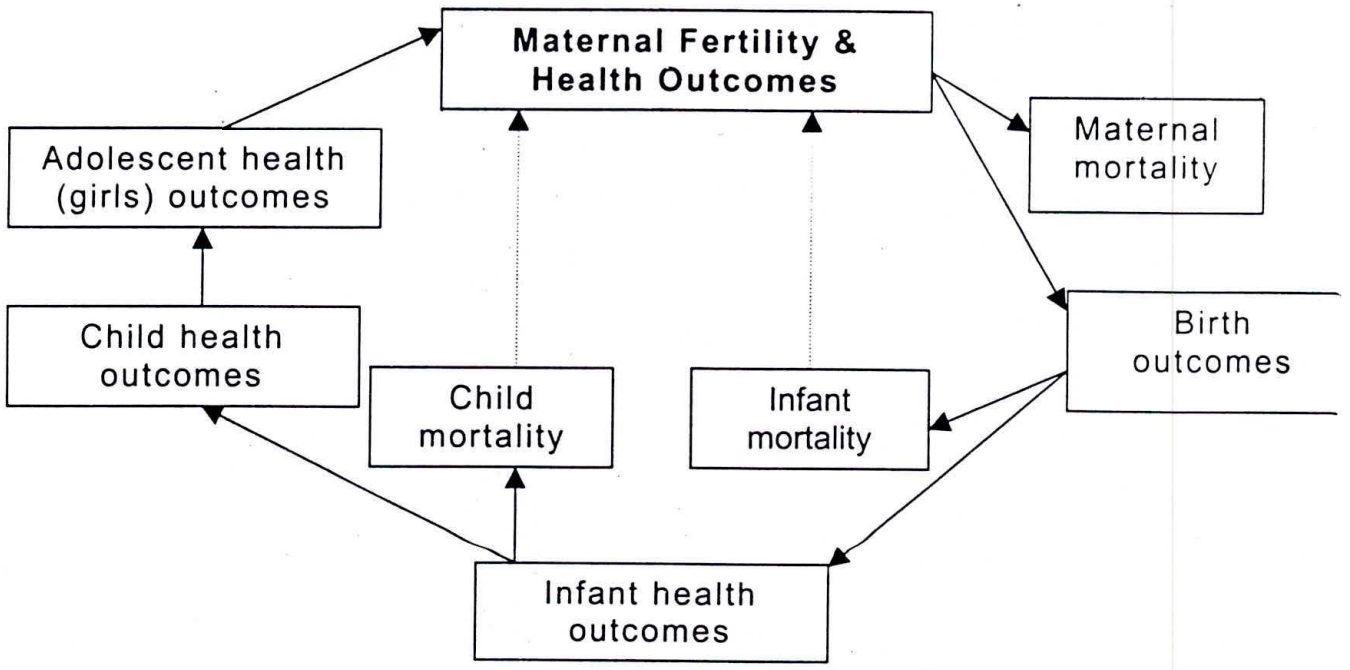
Figure 7.2
Excess Fertility and IMR



TWFR : Total Weighted Fertility Rate
Source: NFHS-2

Meeting unmet needs for family planning services through efficient programme management will lead to fertility reduction, a necessary condition (though not sufficient), for reducing IMR and maternal mortality rates in India. A clear understanding of maternal and child survival and the fertility cycle is central to developing a more effective strategy to reduce maternal and child mortality, as well as fertility (Figure 7.3).

Figure 7.3
Framework



Maternal Survival and Well Being

Though reliable national and state estimates of maternal mortality are unavailable, the existing estimates reflect the relative neglect of women's health in India. The latest NFHS 2 estimate is 540 deaths per 100,000 live births (8), compared to 350 among low and middle-income countries (9). The 1998 Sample Registration Survey places MMR at 407 per 100,000 live births, apparently an underestimate given the variations in state estimates. Even at this rate, more than 100,000 Indian women die of pregnancy related causes every year, which is about 18% of total global maternal deaths. India compares unfavourably with most other countries in the egion (Figure 7.1). In addition to deaths, many women are disabled by complications of pregnancy and childbirth.

Table 7.1
MMR by select country

Country	MMR
Korea	30
Sri Lanka	30
Malaysia	34
China	95
Pakistan	340
Indonesia	390
India	**440**
Bangladesh	850
Nepal	1500

Source: **The State of the World's Children**, UNICEF, 2001

Determinants of Maternal Mortality

Maternal mortality can be broadly divided into direct and indirect obstetric deaths. The relative share of causes of Indian MMR shows that about three-fourths of maternal deaths are direct deaths and one-fourth indirect (Table 7.2). The major direct causes are hemorrhage, obstructed labour, infection or sepsis, toxemia and unsafe abortions. Indirect causes include women's health status: nutrition (anemia, height, weight); infections and parasitic diseases (malaria, hepatitis, TB); chronic conditions (diabetes and hypertension); and prior history of pregnancy complications.

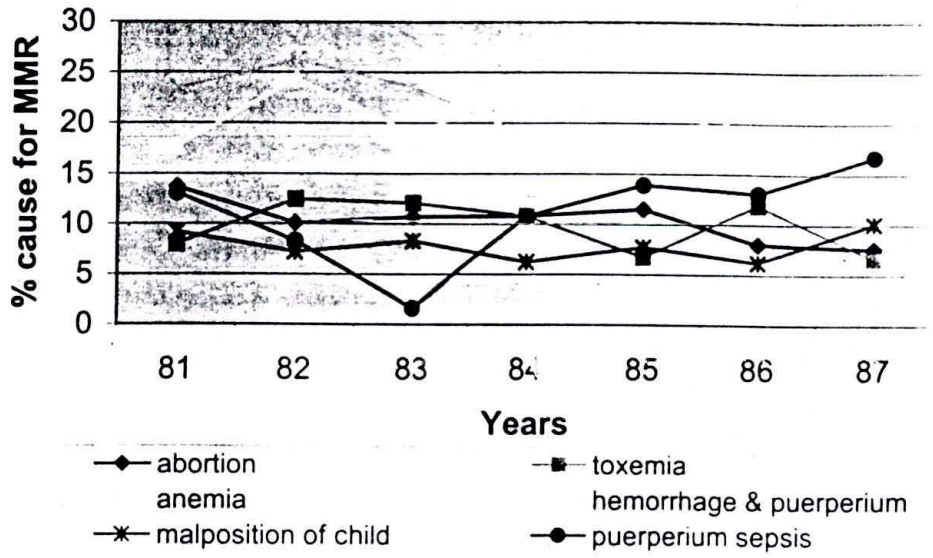
Table 7.2
Causes of Maternal Mortality

Direct Causes		
	Hemorrhage	29.65%
	Puerperal complications	16.1%
	Obstructed Labour	9.5%
	Abortions	8.9%
	Toxemia	8.3%
Indirect causes		
	Anemia	19%
	Pregnancy with TB/ malaria/ viral hepatitis / others	8.4%

Source: SRS, 1998, Registrar General, Census of India

The trend of major causes of maternal death in rural India over a period of time (Figure 7.4) shows no significant improvement. Hemorrhage and sepsis top the direct cause list, and anemia the indirect. Abortion-related deaths show a downward trend (possibly because of lack of information), while toxemia and malposition of the child remain almost at the same level.

Figure 7.4
Causes of MMR



Source: Survey on Causes of Death, **Radical Journal of Health**, vol 1:2

A number of socioeconomic and cultural factors (distant determinants) operate through a set of intermediate determinants (health status, reproductive status, access to health services, extent of utilisation of health services), to determine the level of maternal mortality in a given population. All these determinants must operate through a sequence of three outcome components: a pregnancy, a complication and the treatment of the complication (10). **All interventions to reduce maternal mortality must therefore aim at reducing pregnancies to the extent possible; preventing complications in pregnancy and childbirth; and improving the outcomes for women with complications** (11).

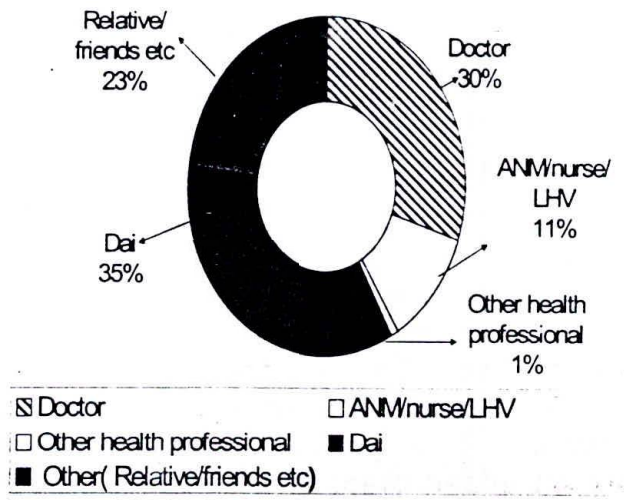
Family planning services can reduce pregnancies, and complications in pregnancy and childbirth can be prevented by comprehensive antenatal care, deliveries in health institutions or by trained health professionals, safe abortion services, and the improvement of the nutritional, health and socio-economic status of adolescent girls and women. However, neither interventions to reduce pregnancies, nor to prevent complications, will eliminate maternal deaths: 15-20% of pregnant women develop complications, most of which cannot be predicted. Thus the effective management of obstetric complications is the most important intervention measure in preventing maternal deaths, as borne out by the experience of

the developed countries in reducing maternal mortality. In India, with 66% home-based deliveries, effective screening for obstetric complications and getting the woman to medical care in time are critical. A study (12) in Anantapur (AP) reveals that about half the women who were transported died on the way to hospital, underlining the direct relationship between maternal mortality and distance from health centre. The mortality level is lowest where a PHC is located, followed by where a sub-centre is located (13).

Performance Review

In the sixties and seventies, maternal health services within the Indian MCH programme focused on ante-natal care and safe deliveries. Traditional Birth Attendants (TBA) such as *dais* were trained to improve delivery practices, and ANMs to identify and refer high-risk cases. But the MMR remained high despite these interventions, and research showed that Emergency Obstetric Care (EOC) was required to reduce the MMR. In consequence, the Safe Motherhood initiatives of the CSSM Programme were begun to promote institutional deliveries, and the management of obstetric emergencies, in addition to essential obstetric care – the early registration of pregnancy, a minimum of 3 ante-natal check-ups, the provision of safe delivery services and post-natal care. The implementation of these two components remains tardy; NFHS 2 also rates the performance on essential obstetric care as unsatisfactory. Only 65% of mothers received ante-natal check-ups, 67% received 2 or more doses of tetanus toxoid, 58% received IFA supplements, 34% of deliveries were institutional, and 42% of deliveries were assisted by a health professional (Figure 7.5). State disparities are huge: Goa, Kerala and TN consistently rank in the top five, while UP, Bihar and Rajasthan show a consistently poor performance.

Figure 7.5
Assistance at Delivery



Source: NFHS-2

A review of programme interventions vis-à-vis the major causes of maternal mortality helps assess adequacy and efficacy. The most common cause of maternal deaths in India is post-partum hemorrhage, which is sudden, unpredictable and most dangerous in an anemic woman, hence the importance of screening for anemia and high-risk conditions, and access to EOC including blood transfusion. But in the current safe motherhood initiatives, screening for complications and EOC are still inadequate. NFHS 2 puts high-risk identification at 36%, but there is no information regarding hospitalisation of these cases. Most of the 1748 first referral units (FRU) for EOC are not fully functional. Nor is the staff adequately trained or the supply of essential equipment timely. 82% of the posts of obstetricians and gynecologists in FRUs remain vacant (14).

Puerperal Sepsis, the next major cause of maternal deaths, is most often a consequence of poor hygiene during delivery. Over 70% of deliveries are conducted at home in unsafe conditions, in 142 districts in 15 states of the country (15). The earlier mass training of *dais* has not yielded results as the *dai* was expected to learn from the ANM, who conducts a minimal number of deliveries. Of the 42% of deliveries assisted by a health professional, only 11% were by the ANM/LHV/nurse. In UP and Bihar, deliveries by health professionals were 22% and 23% respectively. Only 17% of non-institutional deliveries were followed by a check-up within two months of delivery. In UP and Rajasthan, it was less than 10%. Clean deliveries and quick detection, and the management of infection during the postnatal period, can substantially reduce mortality due to puerperal sepsis.

Obstructed labour is often associated with a woman's age (very young mothers), parity (first births), and short stature (16). Such cases need to have deliveries in institutions, again underscoring the need for high-risk screening and referral. Other barriers to accessing care are illustrated by a micro study conducted in UP (17): only 36% of "high risk pregnant referrals" by the area PHC were actually taken to an institution for delivery. Women who did not benefit from referral services cited financial reasons as a major factor for non-use.

Death after induced abortion is yet another cause for frequent maternal deaths. The Medical Termination of Pregnancy Act, 1972, enhances the access of MTP facilities to women in need. But the required infrastructure has not been built, and poor knowledge of the provisions and elaborate procedures involved have prevented women from seeking MTP from the public healthcare system. Though the private sector is also eligible to provide services, the licensing process has been mired in procedural delays and politicking. The ratios of population to centre are very high; centres also have an urban bias, forcing rural beneficiaries to often resort to risky unqualified practitioners. Given the inadequacy of MTP centres, the illegal to legal abortion ration could vary between 3: 1 to 8:1 (18). Toxaemia is estimated to account for over 8% of maternal deaths. The

recording of blood pressure during antenatal check-ups and treatment for hypertension could substantially reduce mortality due to this cause. NFHS records that only 55% of pregnant women in rural areas had their blood pressure checked.

Several studies have revealed that anemia is a major contributing cause of deaths: a micro study (19) reported anemia as the major contributor to 20-40% of maternal deaths; NFHS 2 revealed disturbing levels of anemia among women (52% with some anaemia). Moderate and severe anemia among pregnant women (28%) is almost double that of non-pregnant women (16%). India has the largest number of women in the world with severe anemia, and the safe motherhood initiative has covered only 58% of births (20) with iron and folic acid supplementation. Also, the programme distributes supplements universally, regardless of individual hemoglobin levels. Routine oral iron supplementation has not been shown to reverse severe anemia, and the most rational approach would be to detect and correct anemia among younger and non-pregnant women.
The programme review reveals strategic gaps in addressing the major causes of maternal mortality. The current RCH Programme has additional elements to address gaps: 24-hour facilities at PHCs and CHCs to encourage institutional deliveries; assistance for transport for disadvantaged families; blood supply at FRUs, and expanded services for MTP and treatment of Reproductive Tract Infections and Sexually Transmitted Infections, malaria, TB and other infections of pregnant women. Since these interventions are in the initial stages of implementation, it is too early to assess their impact.

Future Strategic Directions

The National Population Policy has set an ambitious goal of reducing MMR to less than 100 per 100,000 live births by 2010. While a host of socio-economic, environmental and behavioural factors impact on maternal mortality, the focus on medically driven interventions is based on world-wide evidence that **the key to reduction in maternal mortality is institutional capacity for the provision of timely and appropriate medical care.** Such institutional capacity can be established in a relatively short time frame, and for this, the following strategies become critical:

- **Generation of political commitment to goal:** There is political sensitivity to high child mortality rates but not maternal mortality, mainly because of lack of information on maternal mortality levels in states. Dissemination of regular and reliable statistics on maternal deaths at national and state levels will increase sensitivity to the issue and help planning and prioritisation.
- **Urgent need to establish systems to estimate MMR at regular intervals:** A reliable database is critical to planning and priority setting. A good civil registration system recording all births and deaths, could be the basis for such a system

- **Prioritise interventions for maternal mortality in high infant mortality districts; target poorest sections with least access to essential and emergency obstetric care; reallocate resources to reflect priorities:** NFHS 2 estimates MMR at 619 for rural India as compared to 267 in urban India; rural ratios are typically 2 to 3 times higher than urban ratios, a situation with significant policy relevance. Since cross-country comparison of data reveals a strong correlation (r=0.87) between maternal and infant mortality (21), it would be appropriate to prioritise interventions for maternal mortality in the high infant mortality districts.
- **Effective screening for high-risk**: The key strategy is to effectively screen and identify all high-risk cases and ensure that all such cases deliver in an appropriately equipped health facility. Cases for EOC should be reduced to emergencies arising in labour; ANM skills in screening and risk identification must be upgraded; PHC medical officers must be held responsible for screening and identification of high-risk cases, and follow-up for delivery at an institution. Monitoring systems at PHC, district and state level have to be so instituted as to follow up on each and every high-risk case identified, including those who move to their mothers' place for delivery, to ensure they actually deliver in an institution.
- **Promotion of institutional deliveries:** All CHCs must be made fully operational to handle institutional deliveries. The initiative in a few states to convert certain PHCs into 24-hour units equipped for institutional deliveries improves access, but given the non-resident status of PHC doctors, the introduction of a cadre of trained nurse midwives for PHCs must be considered, particularly in high MMR districts. The initiative of providing transportation charges to and from the health institution is an effective motivational strategy for institutional deliveries. Sepsis accounts for over 10% of maternal deaths and institutional deliveries can reduce the possibility of infections. While the focus across states should be on promoting institutional deliveries, in districts where home deliveries are high, strengthening midwifery services through training of ANMs and dais is critical. Anganwadi workers must also be drawn in to ensure cleanliness during home deliveries, to recognise the danger signals requiring referral, and to co-ordinate for transport if the need arises.
- *Provision of effective emergency obstetric care:* Haemorrhage is the major cause of maternal mortality, accounting for some 30% of deaths. The focus of the safe motherhood initiative to address this cause should be provision of effective EOC at conveniently located facilities. If this is to happen, radical steps must be taken to combat the non-availability of specialists, if necessary through the introduction of short-term diploma courses for MBBS doctors in anaesthesiology, emergency obstetrics and paediatrics. Systematic efforts must be made to improve the supply of blood at FRUs, or ensure transportation to facilities where it is available. Where public sector facilities for EOC do

not exist, contracting out of services to the private sector, if available, must be considered.

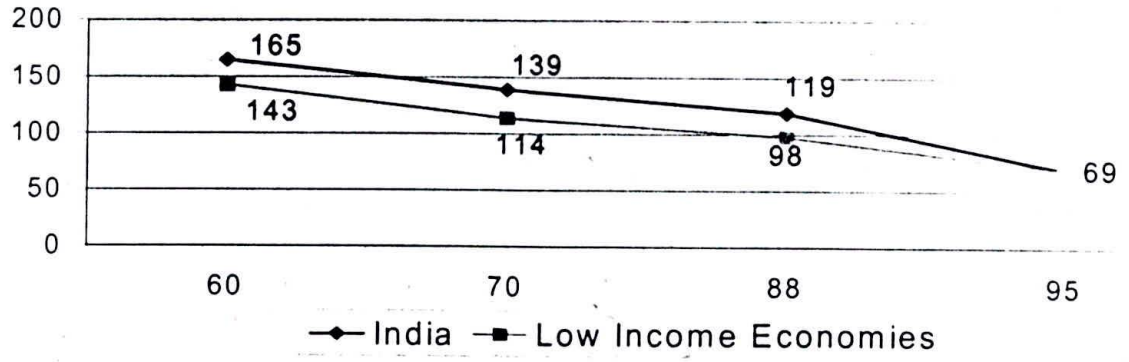
- **Availability of emergency transportation:** A corpus fund is being placed with gram panchayats under the RCH programme, and systems should permit for easy access. It must be made compulsory for the ANM to inform the gram panchayat in writing of the high-risk women who will need transportation, and the anganwadi worker involved to ensure transportation. Referral pathways should be well defined, facility-wise services clearly mapped, demarcated, and publicised, so that patients are reached to the appropriate referral services with the least possible delay. Transport funds or a vehicle must be provided to PHCs and FRUs for emergency cases.
- **Increase number of approved facilities for MTP in both public and private sectors:** All public health facilities that have gynaecologists, from the district hospital down to the CHC, must be equipped as MTP centres. Approval procedures should be simplified to increase private sector facilities. ICMR trials have shown the safety and efficacy of RU 486 and prostaglandin for non-surgical MTP up to 8 weeks. Phased introduction of the programme must be taken up quickly, starting with Medical Colleges and District Hospitals.
- **Screening and identification of anaemic women:** Anaemia causes around 19% of maternal deaths. Intervention must be supported with adequate nutrition during pregnancy, and not merely restricted to the supply of IFA tablets. Women identified as malnutritioned by health personnel must be followed up through the ICDS programme of nutritional supplements for pregnant women. IFA tablets should be strip-packed to improve compliance.
- **Comprehensive antenatal care:** Every pregnant woman must be seen at least once by a doctor and screened for anaemia, hypertension, diabetes, urinary and reproductive tract infections, malaria and TB. If laboratory support is not available in the facility, private services must be contracted and funds provided by the RCH programme. Antenatal care and immunisation sessions at PHCs should be so organised that every woman is screened step by step – height and weight, urine and blood tests, followed by screening by the doctor, as is done in Indonesia and Sri Lanka. This can easily be organised, with specific duties at every counter being allotted to PHC personnel, including the supervisory cadre.
- **Involve women and community in implementation of interventions:** The current programme has a limited component of community participation, so important in promoting institutional deliveries, ensuring timely referrals and reducing maternal deaths. When a woman has an emergent pregnancy related complication, she is at the mercy of those around her to ensure her access to a medical facility. The programme must involve the community and women themselves in planning and implementing interventions, so that their explicit needs are taken into account.

- **Effective supervision and monitoring:** Safe motherhood initiatives have not been subject to regular monitoring like family planning and immunisation. Institutional deliveries in health institutions, caesarians and EOC cases in referral units must be closely monitored. Every maternal death must be subjected to an audit as in the case of the Tamilnadu model, where protocols have been clearly defined, district-level investigation teams set up, and monthly reporting systems to the district and state-level RCH Committees established.

Child Survival

The Indian performance on the key indicators of child survival, IMR and under-5 Mortality Rate has been, significant. The rate of decline in infant and child mortality has been slightly better than the average in other low-income countries (Figure 7.6). But a comparison of IMR and under-5 mortality rates with other comparable countries such as Brazil, China, Indonesia and Thailand (Figure 2.1, Chapter 2) indicates India's less than satisfactory performance.

Figure 7.6
IMR of India Vs. Low-Income Economies



Source: **Health, Nutrition and Population Indicators**, World Bank, 1999

Despite the notable long-term reduction in infant and child mortality, data for recent years indicates the rate of decline is slowing down (Table 7.3).

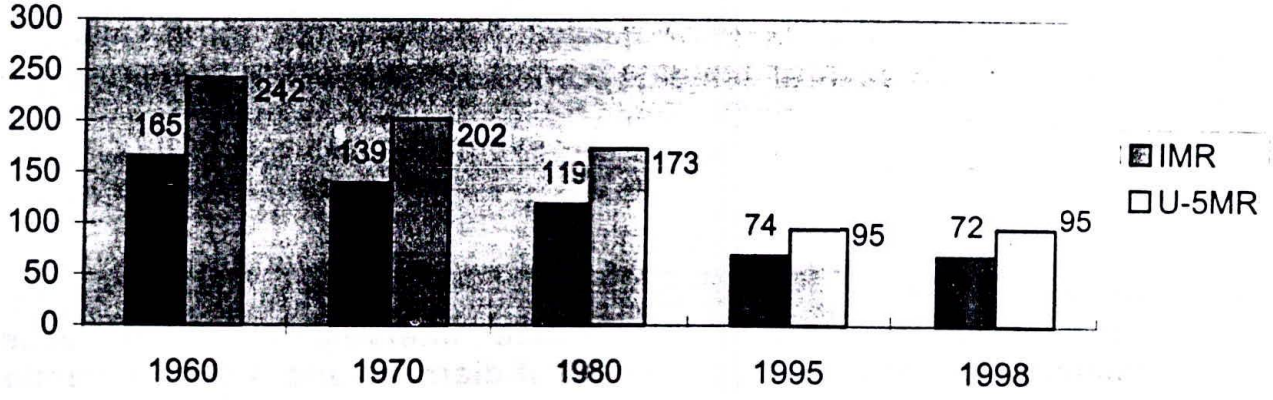
Table 7.3
Percentage Decline in Infant Mortality and Under-5 Mortality, 1971- 98

Period	% Decline in Infant Mortality	% Decline in Under- 5 Mortality
1971-81	14.7	20.6
1981-91	27.3	35.7
1991-98	10.0	15.1

Source: SRS, Registrar-General, Census of India

The tempo of decline in IMR and under-5 mortality achieved in the decade 1981-1991 has not been sustained, and has shown a disturbing tendency to plateau during the last 4 years. The IMR has been hovering around 72 and under-5 mortality around 95 per 1000 live births during the last few years (Figure 7.7).

Figure 7.7
IMR and Under-5 MR



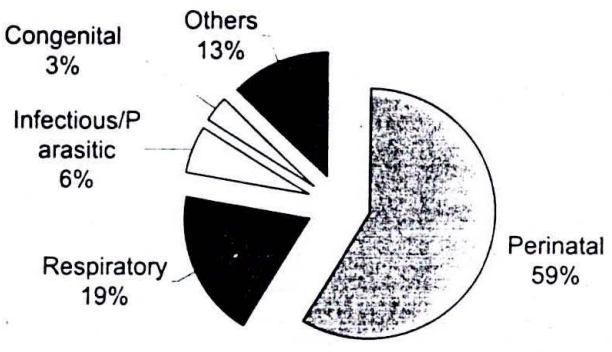
Source: SRS, various years, State of the World's Children, UNICEF.

Progress has been uneven across states: 20 states and union territories achieved the national goal of 60 for IMR, by the year 2000. Kerala's IMR of 14 and under-5 mortality of 19 per 1000 live births is comparable to figures in developed countries; while MP, Rajasthan, UP and Orissa are comparable to some countries in Sub-Saharan Africa (Annexes 2.1 and 2.2, Chapter 2).

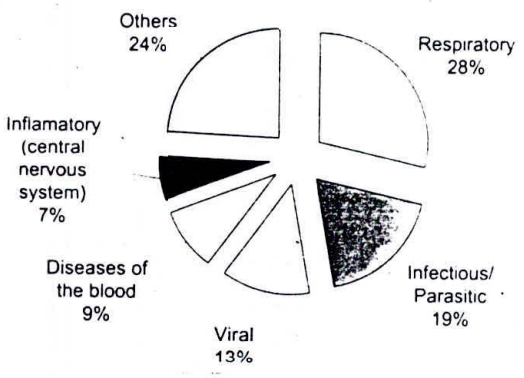
Determinants of IMR and CMR

Figure 7.8
Major Causes of Deaths of Infants and Children in India

Major Causes of Infant Deaths in 1996



Major Causes of Child Deaths in 1996 (1-4 yrs.)



Source: SRS, Registrar General, Census of India

Child mortality determinants have been the subject of many studies, and income determinants (per capita income), are shown to have an inverse relationship with IMR. However, non-income factors have a more significant impact in lowering IMR (22). One study has analyzed non-income factors contributing to a decline in IMR as proximate factors (non-medical factors and medical care during pregnancy, at birth and the post-natal period); maternal factors (age, parity and birth intervals), and household and community factors (water, sanitation and housing) (23). Though there is a lack of data on the relative importance of these determinants, several studies conclude that access to an essential package of MCH services can significantly reduce high IMR and child mortality (24).

Perinatal / Neonatal/ Post-Neonatal Determinants: Post-neonatal mortality has declined more and faster than perinatal mortality (28 weeks of gestation to first 7 days after birth), and neonatal mortality (28 days after birth). This is because programme interventions have focused on immunization and the management of diarrhea and ARI, interventions that address the major post-neonatal causes of death. Perinatal conditions account for a significant percentage of infant mortality. The perinatal mortality rate at the national level was estimated at 46 per 1000 births in 1991 and at 42 in 1998. Significantly, it has shown only a marginal decline during the decade. Neonatal mortality now accounts for two-thirds of infant mortality. Micro studies conducted across the country suggest that the causes of perinatal/neonatal mortality could be significantly different from the causes of post-neonatal mortality. The ICMR has identified risk factors that have a direct impact on perinatal deaths: the age of the mother, birth intervals less than 24 months, previous stillbirth/pre-term birth, untrained birth attendants, low birth weight and illiteracy. Given the relative importance of perinatal/neonatal determinants in child survival, effective interventions to address these causes must be implemented to achieve significant declines in infant mortality.

Nutritional determinants: Undernutrition is estimated to be a major contributory factor in over 50% of child mortality. The synergistic relationship between undernutrition and mortality is clearly revealed by the fact that those states that have high mortality rates are also generally those with high levels of undernutrition (Table 7.4).

Table 7.4
Nutrition Status by State

State	Under -5MR	Weight for age below 2 SD
Bihar	105.1	54.4
Madhya Pradesh	137.6	55.1
Uttar Pradesh	122.5	51.7
Rajasthan	114.9	50.6
Orissa	104.4	54.4
Tamil Nadu	63.3	36.7
Maharashtra	58.1	49.6
Kerala	18.8	26.9
Source: NFHS -2		

The nutritional status of children is strongly related to maternal nutrition status, which reflects in infant birthweight. Poor recording of birthweight under the programme has led to the lack of reliable figures on the percentage of low birthweight babies (Table 7.5). The effect of maternal anemia on perinatal mortality was reported in a study conducted in the Government Hospital, Patiala (Table 7.6).

Table 7.5
Percentage Distribution of Births by Weight

Birth weight	% Distribution
< 2.5 Kg	5.7
2.5 Kgs or more	19.4
Don't know	4.8
Not weighed	70.1

Source: NFHS-2

Table 7.6
Anemia as a Contributor to Perinatal Mortality

Severe anaemia	65/1000 live births
Moderate anaemia	49/1000 live births
Healthy	19 /1000 live births

Source: Aditi Iyer, Women's Reproductive Health, 1998

Standard of Living and Household Determinants: Children from households with a low standard of living are twice as likely to be undernourished, and have double the mortality rates as children from households with a high standard of living (Table 7.7).

Table 7.7
Health Outcomes by Standard of Living

Standard of living Index	IMR	Under –5 MR	Children under weight for age	
			% below 2SD	% below 3SD
Low	76.1	130	56.9	25.3
Medium	51.5	94.6	46.8	16.5
High	33	51.5	26.8	6.7

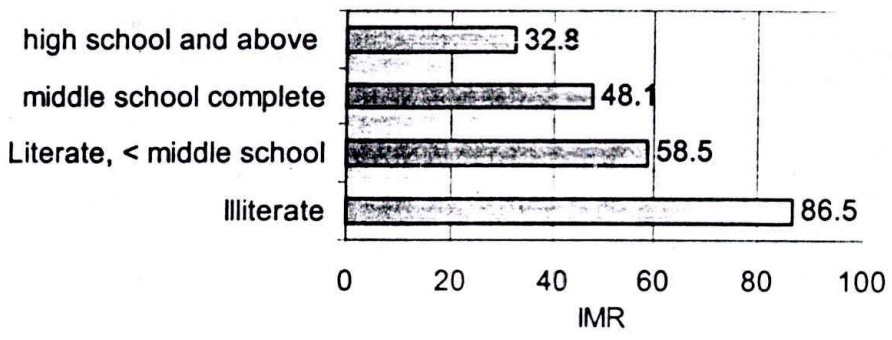
Source: NFHS -2

Undernutrition generally sets in during the first two years of life. The most vulnerable age group has been identified as 6 months to 2 years, the "period of perpetual hunger" when the child is dependent on another person for feeding. NFHS 2 findings indicate that only 55% of infants under 3 months of age are exclusively breast-fed; only 33% receive complementary feeding in the age-group 6-9 months; half the children in rural areas and 38% in urban areas are underweight and stunted; and 75% of children aged 6-35 months are anemic. Relating undernutrition with childhood diseases, the Independent Commission of Health in India states that "every infection is a potentially fatal illness," and the risk of death is doubled for the mildly undernourished child, tripled for the moderately undernourished child, and may be as many as 8 times for a severely undernourished child. While 77.9% of households in India have access to piped water or from a hand pump, only 36% have access to a toilet facility (25). The water supplied, especially through hand pumps, is

not always safe, and diarrheal diseases continue to be a major cause of mortality. Providing improvements in water availability could reduce diarrhea morbidity by 17-25 %, while improving excreta disposal could reduce it by 22-36%. Also, a child in a household that uses clean fuels for cooking has over 50% less health hazard than a child in a household using dung or wood.

Maternal determinants: Apart form maternal nutritional status, levels of female literacy and age of marriage have a strong association with child survival. The more educated the mother, the less the hazard for the child (Figure 7.9).

Figure 7.9
Mother's Education and IMR



Source: NFHS-2

Gender differentials: Gender disparities in health outcomes in India are prominent and disturbing. Since their biological resilience is higher, girls begin with lower mortality rates than boys during the first month of life. But from the post-neonatal period to 5 years, girls have higher mortality rates. Girls also have higher levels of malnutrition that place them at higher risks of both illness and death (Table 7.8).

Table 7.8
Female and Male Health Outcomes and Social Indicators

Indicator	Male	Female
NNMR	50.7	44.6
Post NNMR	24.2	26.6
IMR	74.8	71.1
CMR	24.9	36.7
Underweight for age (below 2 SD)	45.3	48.9
Attending primary school	85.2	78.3
Attending secondary school	80.2	67.0
Fully immunized	43	41

Source: NFHS-2

Gender discrimination also surfaces when it comes to the child's access to medical attention and care. An IIPS study (1995) found that compared

to 29% males, 39% of female under-fours displaying symptoms of pneumonia were not given treatment, either through healthcare providers or at home. New forms of discrimination accompany technology: prenatal diagnostic techniques are misused for sex selective abortions. The most tragic figure of the 2001 census is the sex ratio for children under-6: from 962 girls (1981 census), it was down to 945 (1991 census), and is now 927 (2001 census).

Performance Review: Table 7.9 indicates the goals set for child survival in the National Health Policy of 1983, the current status and the recently set goals for 2010 under the National Population Policy, 2000. No goal set for the year 2000 has been achieved overall for India, but individual states have not only met but also surpassed goals.

Table 7.9
Demographic Goals vs. Current Status

Indicator	1983 Health policy goal for 2000	Current status	National Population Policy goal for 2010
IMR	Less than 60	70	30
CMR (0-4)	Less than 10	23.9(1996)	-
Perinatal Mortality	Less than 35	44(1996)	-
Immunization against 6 vaccine preventable diseases	85%	42%	100%

Source: Health Policy 1983, National Population Policy 2000, MHFW

The package of services for child survival under the Child Survival and Safe Motherhood initiative include essential newborn care, immunization, appropriate management of diarrhea and Acute Respiratory Infections (ARI), and iron and Vitamin A prophylaxis. NFHS records the performance of India and the states in terms of coverage under programme interventions: essential newborn care is a neglected component of the programme; immunization coverage has improved between NFHS 1 and 2, from 36% to 42% of children being fully immunized. Yet the fact that only 4 out of every 10 children are fully immunized in the country, a matter of great concern. States as usual show wide disparities, from TN (89%) to Bihar (11%). States with good coverage levels invariably have lower mortality rates than poor performers. Immunization coverage is significantly influenced by the mother's education and by the standard of living of the household. However, effective and efficient programme management can counter the negative effects of these factors, as shown by TN's achievement of the highest immunization coverage despite an unimpressive female literacy rate of 58% (26).

Five doses of Vitamin A are expected to be administered to children under the age of 3; 65% of children received the first dose but coverage for the remaining doses fell to 23.2% in 1998-99. Though iron and folic acid tablets are also administered to counter iron deficiency anemia, NFHS 2

records an unacceptably high anemic level of 74.3% among children under the age of 3. The intervention obviously needs a review.

The child survival programme has also focused on the management of diarrhea and ARI, two major killers accounting for over 50% of child mortality; but NFHS 2 records the unsatisfactory treatment performance on both counts. 62% of mothers know about Oral Rehydration Salts (ORS) (up from 43% in 1992-93) but only 27% have actually used them; no Oral Rehydration Therapy (ORT) was given to 52% of affected children. Of the 19% of children who suffered from ARI, only 64% received treatment from a health facility or provider.

This review reveals that child survival programmes have focused on post-neonatal mortality. *Left to ANMs and TBAs, the critical interventions for neonatal mortality, essential newborn care, and low birthweight, remain largely undelivered.* The neglected areas of programme provision, monitoring and supervision have again been highlighted under the RCH programme, though yet to be operationalized through specific interventions.

Future Strategic Directions

There is an urgent need for new approaches and priorities in the overall strategy to reduce under-5 mortality. Such a need is clearly indicated by the near-stagnation of infant and child mortality in the last few years, the relatively large share of neonatal mortality, and the regional variations and inequities in child survival and health outcomes.

- **Political commitment and policy focus on high IMR states/districts and disadvantaged groups:** *A* key advocacy strategy to gain political support (as in the case of MMR) is regular and reliable reporting on levels of infant and child mortality by district and region. Policy must also focus on the poorest groups who have the worst mortality and health outcomes.
- **Policy emphasis on interventions to address perinatal and neonatal mortality:** *Antenatal care, safe delivery and quality newborn care* are key requirements for reduction of perinatal/neonatal mortality. All CHCs and 24-hour PHCs should be fully equipped to handle basic newborn care, and to transport emergencies to the nearest referral hospital where a pediatrician is available. Again, ANMs must be involved in screening, and referral for institutional delivery, when fetus weight is low. Guidelines and treatment protocols must be designed to address low birthweight for every level of care and staff trained accordingly.
- **Training of ANMs, *dais* and anganwadi workers:** The training of ANMs, *dais* and anganwadi workers in clean deliveries, newborn care and the management of infections will have to continue in districts where home delivery is high. The Anganwadi worker should be specifically trained in first day care of the newborn, to ensure referral

and transportation of babies weighing less than 2.2 kgs, those suffering from hypothermia/fever, convulsions, or signs of asphyxia.

- **Timely medical interventions to control infections of the newborn:** That this plays a major role in reducing NNMR is borne out by an intervention implemented in a district of Maharashtra between 1993-98 (27). The most important medical causes of NNMR were found to be sepsis, meningitis and pneumonia, and a home-based package was designed to manage these infections (US $5.3 per neonate), administered through village-based, trained health workers. The study results are phenomenal, with a reduction in the NNMR by 50%. The female health worker is the key in the delivery of the planned action. The ICMR is undertaking operational research to explore the possibilities of replicating this experiment; if replicable, the current RCH programme must make provision for this intervention in high IMR districts. The anganwadi worker could also be trained to deliver this package with an extra remuneration per case.

Box 7.1

Interventions to Lower Neonatal Mortality

NNMR Intervention- Maharashtra by SEARCH

Background

The team developed a package of home-based neonatal care, including management of sepsis (septicemia, meningitis, and pneumonia) and tested it in the field with the hypothesis that it would reduce NNMR by at least 25% in 3 years.

Methods

39 intervention villages and 47 control villages were selected in Gadchiroli district and baseline data was collected for 2 years (93-95).

Neonatal care was introduced in the intervention villages (1995-98).

Village health workers from the community were trained in neonatal care. They made home visits and managed birth asphyxia, premature birth or low birthweight, hypothermia and breast-feeding problems. They also diagnosed and treated sepsis.Assistance was provided by trained TBAs. Health education and fortnightly supervisory visits were also provided.

Other workers recorded all births and deaths in the intervention and control area (1993-98) to estimate mortality.

Findings

In the 3rd year, 93% of neonates received homebased care.

The neonatal, infant and perinatal mortality in the 3rd year showed a net reduction of 62%, 46% and 71% respectively.

Case fatality in neonatal sepsis declined from 16.6% to 2.8% over 3 years.

Homebased neonatal care cost US $ 5.3 per neonate.

Interpretations

Homebased neonatal care, including management of sepsis, is acceptable, feasible, and has reduced neonatal and infant mortality by nearly 50% in the undernourished, illiterate, rural study population. The approach could reduce NNMR substantially.

Source: Abhay Bang et al, **Effect of Homebased Neonatal Care and Management of Sepsis on Neonatal Mortality,** SEARCH, Lancet, 1999

- **Peripheral trained community health workers for delivery of essential MCH services:** This is essential in identified remote regions where disadvantaged groups such as STs are located. The time span for preventing infant and child mortality is very often short, and the presence or absence of a trained health worker (anganwadi worker or community health worker) can mean the difference between life and death. AP has trained and appointed 8500 tribal girls in every habitation in the scheduled areas of the state for the delivery of basic health services, with an honorarium of Rs.300 per month. Given the

positive impact of this measure, the state proposes to expand this initiative to other remote regions of the state. The RCH Programme must consider the inclusion of this critical component.

- **Effective supervision and monitoring systems to improve coverage levels:** Given unsatisfactory coverage levels, the post-neonatal components of the child survival programme provide cause for concern. Again, AP has initiated a pilot computerized name-based registry system for monitoring immunization coverage. The system will track each child by vaccine and by due date; information will be available online, from the PHC up to the state directorate and secretariat. The system can be expanded to cover other interventions for MCH. Another key to improved immunization coverage levels is the convergence of services between ICDS and health personnel, and a fixed day programme for outreach services.
- **Examine the feasibility of the campaign mode to improve coverage levels:** Given the low coverage of Vitamin A and iron prophylaxis, a campaign mode on the lines of the pulse polio immunization campaign could be considered. Orissa has implemented Vitamin A prophylaxis through a campaign mode every 6 months. To save on costs, one dose is given every year with the Pulse Polio Campaign, and the other after 6 months through an individual campaign. The state reports coverage of over 90% compared to the earlier 40%. This effort has not yet been independently evaluated for coverage and cost-benefit, but it appears to be a good model for replication.
- **Define specific prevention and treatment protocols for major causes of childhood death:** This applies to ARI, diarrhea, measles, malaria in some areas, and undernutrition, and staff at each level of care must be trained to deliver services.
- **Key support strategies for ANMs:** ANMs are the key functionaries in the delivery of MCH services, and support strategies should include (i)training to improve skills, (ii)mobility, and (iii)communication facilities. The mobility of the ANM is critical to effective delivery of her work. The ANM must be encouraged, as in Tamilnadu, to acquire a motorised two-wheeler, on a soft loan basis, taught to drive it, and be given a reasonable allowance or allotment of fuel per month. In fact, driving a two-wheeler must be made a compulsory component of the ANMs training in all the training schools in the country. An evaluation study of the Tamilnadu scheme shows that ANMs were able to save up to 60% of their time on travel, covering 3 to 4 villages a day compared to 1 to 2 villages a day (28). Additionally, the ANM must be provided with a telephone facility, which will enable her to respond quickly to emergencies, manage her work schedule more effectively, and keep in closer touch with the community she serves.
- **Promote required convergence:** This can be done by delivering the training package to the ANM, the anganwadi worker/community health worker, and the *dai,* as a team. Convergent action at the cutting edge level – by utilizing the services of the anganwadi worker for follow-up during pre-, peri-, intra- and post-natal periods for newborn care and

full coverage of child health services – will harness synergies in service delivery and ensure a better coverage (29).

- **Infant and child death audits to investigate and report on causes of death:** Current performance indicators and evaluation do not take infant and child deaths into account. Performance evaluation focuses on programme coverage, and the ANM is, by and large, held solely responsible. The performance evaluation of supervisory staff, the Medical Officers of PHCs, the sub-district and district-level medical officers must include the incidence of infant and child deaths under the civil registration system.
- **Systems to monitor and check the misuse of technologies:** Although appropriate Authorities have been formed, the Prenatal Diagnostic Techniques Act to prevent and control misuse is a non-starter in most states. Wide publicity among the medical fraternity and the public must aim at concerted action to prevent this continuing tragedy.
- **Identify priority targets for health and the nutritional status of schoolchildren and plan interventions:** Data in micro studies reveal that school children are plagued by health and nutrition problems such as TB, helminthic infestations, parasitic worms, and deficiencies in iron, iodine and vitamin A. Health check-ups and supplements can be easily delivered in a school setting: In Gujarat, 3 million primary school children receive a midday meal which includes vitamin A, an iron supplement, and an anti-worm drug.
- **Address interrelated dependent variables in long term strategies:** The experiences of countries which have undergone a rapid reduction in under-5 mortality suggest that reduction below a level of 30 per 1000 live births implies change in interrelated dependent variables, such as female literacy, female age at marriage, sanitation, water supply and indoor air pollution. Long-term strategies must address these variables.

In summary, the gaps identified in this review, the policy options, and specific strategies to address the gaps are indicated in Box 7.2. It is not our claim that it is comprehensive or state specific. However, it will, hopefully, facilitate design and planning for the rapid reduction of maternal and child mortality at the national and state level.

Box 7.2

A. Policy

Focus	Operation
1. Area: Focus attention on states/districts/ regions with high maternal and child mortality rates 2. Poverty: Focus on poorest and disadvantaged groups 3. Cause of death: Prioritise interventions to address cause of mortality	1. Political support: Generate political commitment. 2. Demand generation: mobilise local communities for improved health/nutrition seeking behaviour. 3. Management: • Identify critical gaps and implementation bottlenecks and plan feasible solutions. • Reallocate resources to reflect priorities • Empower providers through training, mobility and logistics • Institute systems for regular/reliable data at state & district level. • Promote convergence between health and nutrition services

B. Interventions

Maternal survival	Child survival
1. Meet unmet needs for contraception 2. Focus on maternal anemia and nutrition 3. Provide effective • Essential Obstetric Care • Emergency obstetric care & • MTP services 4. Increase institutional deliveries 5. Improve access & referrals through • transport networks • placing trained community health worker/ anganwadi worker/dai • incentive strategies	1. Pregnant woman's care and clean and safe delivery as in maternal survival. 2. Improve maternal supplementary feeding to address low birth weight 3. Prioritise focus on neonatal care and management of infections 4. Emphasise focus on breast feeding and complementary food practices 5. Improve immunisation coverage 6. Treat childhood illness

C. Long term measures

1. Improve female literacy
2. Increase age at marriage
3. Improve household environment
   - Fuel
   - Water
   - Sanitation
4. Reduce gender inequalities
5. Reduce poverty

Notes

1. Computed from NFHS 2.
2. National Family Health Survey, 1992-93 & 1998-99.
3. NFHS 2.
4. J. Trussel and A.R. Pebley, 1984, The Potential Impact of Changes in Fertility on Infant, Child and Maternal Mortality, Studies in Family Planning, 15(6) November/December.
5. NFHS 2.
6. Youth dependency ratio is defined as the number of persons in the age group 0-14 years per 1000 persons aged 15-59 years.
7. Census of India 1991.
8. NFHS 2, 2000.

9. World Bank 1997.
10. James McCarthy and Maine, A Framework for Analysing the Determinants of Maternal Mortality, 1992, Studies in Family Planning, 23(1), January/February.
11. K. Balasubramanian, Improvement of Maternal Survival in India: Issues and Strategies for Intervention, News Bulletin, Vol 4, SRC, Osmania University, Hyderabad.
12. J.C. Bhatia, A Study of Maternal Mortality in Anantapur District, Andhra Pradesh, India, IIM, Banglore, 1988.
13. The key findings of the study on MMR and causes in Anantapur district, Andhra Pradesh, 1988 are that out of a total of 391 deaths, 333 were in rural areas, 58 in urban. Only 44.6% deaths matched with government records; maternal deaths in total female mortality (15-49 years) was 36%. 40% deaths were at home, about 11% on the way to hospital. Deaths were lowest where a PHC is located, followed by a sub-centre. 1/5th of family members of MMR cases indicated non-comprehension of the seriousness of patient's condition. Causes of maternal death: sepsis (36%), haemorrhage (12%), eclampsia (9%), severe anemia (9%); surviving women made more ante-natal visits: on examination of data collected by an expert obstetrician, 40.8% deaths were definitely preventable, 37% possibly preventable, 22.2% not preventable; over 50% of cases could have been averted by treating infection (20%), early shifting of patient and treatment (19%), treatment of anemia (12%).
14. Aditi Iyer, Women's Access to Healthcare, CEHAT, Bombay, 1988.
15. Training of Traditional Birth Attendants, MHFW, 2001.
16. David Rush, Nutrition and Maternal Mortality in the Developing World.
17. Aditi Iyer, Women's Access to Healthcare, 1998.
18. Aditi Iyer, Women's Reproductive Health, 1998.
19. David Rush, Nutrition & Maternal Mortality in the Developing World, American Society for Clinical Nutrition, 2000.
20. NFHS 2.
21. K. Balasubramanian, Improvement of Maternal Survival in India, IIHFW, 2000.
22. Mariam Claeson et al, Reducing Child Mortality in India, World Bank, 1999.
23. Jain and Visaria, Infant Mortality in India: Differentials and Determinants, 1988.
24. Jain and Visaria 1988, Ghai 1985, Pratinidhi et al 1987, Bhargava 1991, Sandell et al 1985.
25. NFHS 2.
26. Census 1991.
27. Abhay Bang et al, Effect of Homebased Neonatal Care and Management on Neonatal Mortality, Lancet, 1999.
28. V.R. Muraleedharan, Public Healthcare System in Tamilnadu: A Critical Overview of its Strengths and Weaknesses, IIT, Madras, 2001.
29. The Review of the ICDS programme by Independent Commission on Health, 1998: ICDS was initiated in 1975 in 33 blocks and now covers 3702/5239 blocks. It covers 1.76 crore children. Services include supplementary nutrition to children, pregnant women in the last trimester and lactating mothers; immunization; health check-ups; referral services; non-formal education; nutrition and health education. The worker at the cutting edge is the Anganwadi worker (AWW) who operates from the Anganwadi centre (AWC). ICDS has benefited women and children, but allocated money and infrastructure need better utilization. Operation of AWCs during late afternoon hours to enable more mothers and young children to take benefit should be considered and the AWWs' responsibilities prioritized. The emphasis on ICDS as a nutrition improvement programme must give way to an MCH and development programme in partnership with health services. (Source: Child Health, VHAI).

Annex 7.1
Infant Mortality Indicators by Residence, India, 1971-1998

Year	Infant mortality rate			Neo-natal mortality rate			Post neo-natal mortality rate			Peri-natal mortality rate		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
1971	129	138	82	75.2	80.6	45.4	54.2	57.4	36.6	53.4	56.7	35.6
1976	129	139	80	77.0	83.0	49.0	52.0	56.0	31.0	66.8	76.6	43.7
1981	110	119	63	69.9	75.6	38.5	40.5	43.5	24.0	54.6	58.8	31.5
1986	96	105	62	59.8	65.5	36.2	36.6	39.1	25.8	48.1	51.8	32.7
1990	80	86	50	52.5	57.4	30.9	27.2	28.9	19.5	48.4	51.7	34.0
1991	80	87	53	51.1	55.4	32.2	29.3	31.3	20.6	46.0	49.1	32.7
1992	79	85	53	50.0	53.6	33.0	29.4	31.4	20.0	47.5	50.3	34.0
1993	74	82	45	47.1	52.3	28.4	25.5	28.2	15.8	44.2	47.9	31.0
1994	74	80	52	47.7	52.0	32.6	26.0	27.5	19.6	42.5	43.4	38.7
1995	74	80	48	48.1	52.3	29.2	25.9	27.5	19.0	44.6	47.6	31.2
1996	72	77	46	47.0	50.0	28.0	25.0	27.0	17.0	44.0	46.0	32.0
1997	71	77	45	46.1	50.5	26.2	25.1	26.5	19.0	43.2	46.3	29.1
1998	72	77	45	45.0	49.0	27.0	27.0	28.0	18.0	42.0	45.0	29.0

$$\text{Perinatal mortality rate} = \frac{\text{Number of still births and infant deaths of less 7 days during the year}}{\text{Number of live births and still births during the year}} \times 1000$$

Source: Registrar General (1999). Compendium of India's Fertility and Mortality Indicators 1971-1997 (Based on the Sample Registration System), Office of the Registrar General, New Delhi

Annex 7.2
Infant and Child Mortality by Background Characteristic, India

S. No	Background Characteristic	NFHS-1 (1992-93)				NFHS-2 (1998-99)			
		Neo-natal mort.	Post-neonatal mort.	Infant mort.	Under 5 mort.	Neo-natal mort.	Post-neonatal mort.	Infant mort.	Under 5 mort.
1	**Mother's Education**								
	Illiterate	60.6	40.0	100.6	140.5	55.3	31.2	86.5	122.8
	Literate, <middle complete	38.8	23.7	62.5	83.9	40.5	18.0	58.5	75.8
	Middle school complete	37.6	18.5	56.1	64.8	33.7	14.4	48.1	58.1
	High school and above	25.3	11.9	37.2	43.2	24.3	8.5	32.8	37.1
2	**Caste/Tribe**								
	Scheduled Caste	63.1	44.2	107.3	149.1	53.2	29.8	83.0	119.3
	Scheduled Tribe	54.6	35.9	90.5	135.2	53.3	30.9	84.2	126.6
	Other Backward class	NA				50.8	25.2	76.0	103.1
	Others	50.6	31.6	82.2	111.5	40.7	21.2	61.8	82.6
3	**Medical Maternity Care**								
	No antenatal or delivery care	57.5	39.3	96.8	145.8	53.6	35.5	89.1	NA
	Either antenatal or delivery care	41.2	22.5	63.7	85.1	35.8	19.0	54.8	NA
	Both antenatal & delivery care	29.8	14.5	44.2	56.8	22.2	11.8	34.0	NA
4	**Place of Delivery**								
	Public Health Facility	40.3	18.7	59.1	77.2	NA	NA	NA	NA
	Private Health Facility	27.5	11.0	38.5	42.3	NA	NA	NA	NA
	Home	46.5	30.9	77.5	114.3	NA	NA	NA	NA
5	**Religion**								
	Hindu	55.0	35.4	90.4	124.0	50.4	26.7	77.1	107.0
	Muslim	47.1	29.6	76.6	106.3	38.0	20.8	58.8	82.7
	Christian	32.6	17.3	49.9	68.4	29.8	19.4	49.2	68.0
	Sikh	27.7	19.5	47.2	64.8	38.0	15.3	53.3	64.9
	Buddist	36.6	19.8	56.4	99.3	39.5	14.0	53.6	66.9
6	**Standard of Living Index**								
	Low	NA	NA	NA	NA	55.8	33.1	88.8	130.0
	Medium	NA	NA	NA	NA	47.0	23.4	70.3	94.6
	High	NA	NA	NA	NA	30.9	11.8	42.7	51.5
7	**Total**	**52.7**	**33.7**	**86.3**	**118.8**	**47.7**	**25.3**	**73.0**	**101.4**

Note : In NFHS-2, medical care includes (I) antenatal care received from a health worker, (ii) delivery assistance given by a doctor, nurse, trained midwife, or other health professional, and (iii) postnatal care received in a health facility or at home within two months of delivery. The three categories under medical maternity care in NFHS-2 are (1) No care (2) One or two types of care (3) all three types of care.

In NFHS-1, caste status was classified into 3 categories: 1) scheduled caste 2) scheduled tribe and 3) others. In NFHS-2, caste status was grouped into 4 categories: 1) scheduled caste 2) scheduled tribe, 3) other backward class and 4) other

Source: 1. IIPS (1995). National Family Health Survey, India, 1992-93. Bombay: IIPS.

2. IIPS and ORC Macro (2000). Natinal Family Health Survey (NFHS-2), 1998-99, India. Mumbai: IIPS.

Annex 7.3

Maternal Care Indicators, India and Major States, 1998-99

India/State	Percentage who received all recommended types of antenatal care (1)	Percentage of births delivered in a medical institution	Percentage of deliveries assisted by a health professional (2)	Percentage of non-institutional deliveries with a post partum check-up within two months of birth (3)	Percentage of non-institutional deliveries with a post partum check-up within two days of birth (3)
India	20.0	33.6	42.3	16.5	2.3
Andhra Pradesh	35.6	49.8	65.2	44.9	1.6
Bihar	6.4	14.6	23.4	10.0	1.4
Gujarat	25.0	46.3	53.5	10.4	1.6
Haryana	20.8	22.4	42.0	15.7	2.5
Jammu & Kashmir	30.7	35.6	42.4	27.6	1.1
Karnataka	41.5	51.1	59.1	35.3	3.6
Kerala	64.9	93.0	94.0	27.4	7.5
Madhya Pradesh	10.9	20.1	29.7	10.0	0.5
Maharashtra	31.0	52.6	59.4	29.8	6.9
Orissa	21.4	22.6	33.4	19.2	2.2
Punjab	31.7	37.5	62.6	20.3	5.7
Rajasthan	8.3	21.5	35.8	6.4	0.5
Tamil Nadu	50.8	79.3	83.8	53.0	10.1
Uttar Pradesh	4.4	15.5	22.4	7.2	1.5
West Bengal	19.7	40.1	44.2	31.6	7.1

Note: Table includes only the two most recent births during the three years preceding the survey.

1. Three or more antenatal check-ups (with the first cjeckup with in the first timester of pregnancy), two or more tetanus toxoid injections, and iron and folic acid tablets or syrup for 3 or more months.
2. Doctor, auxiliary nurse midwife, nurse, midwife, lady health visitor or other health professional.
3. Based on births in the 2-35 months preceding the survey.

Source: IIPS and ORC Macro (2000). Natinal Family Health Survey (NFHS-2), 1998-99, India. Mumbai: IIPS.

Annex 7.4

Delivery Characteristics of Live Births, India, 1992-93 and 1998-99

Sl. No	Delivery Characteristics	NFHS-1 (1993-93)			NFHS-2 (1998-99)		
		Urban	Rural	Total	Urban	Rural	Total
1	**Birth weight**						
	<2.5 KG	10.0	1.9	3.8	10.8	4.2	5.7
	2.5 KG or more	28.0	5.8	10.8	40.3	13.4	19.4
	Don't know/missing	12.3	4.5	6.3	8.7	3.7	4.8
	Not weighted	49.7	87.8	79.1	40.2	78.6	70.1
	Total Percent	100.0	100.0	100.0	100.0	100.0	100.0
2	**Size of Birth**						
	Large	15.3	13.4	13.8	16.0	13.3	13.9
	Average	63.8	63.5	63.6	61.2	61.4	61.4
	Small*	20.0	21.4	21.1	22.5	24.9	24.4
	Don't know/missing	0.9	1.6	1.5	0.3	0.4	0.4
	Total percent	100.0	100.0	100.0	100.0	100.0	100.0

Note: Table include only the two recent births during the three years preceding the survey. The NFHS-1 include births during four years preceding the survey and NFHS-2 include births during three years preceding the survey

* In NFHS-2, the categories of small and very small are added and shown as 'small'

Source: 1. IIPS (1995). National Family Health Survey, India, 1992-93. Bombay: IIPS.
2. IIPS and ORC Macro (2000). Natinal Family Health Survey (NFHS-2), 1998-99, India. Mumbai: IIPS.

8

HIV/AIDS in India

Introduction (1)

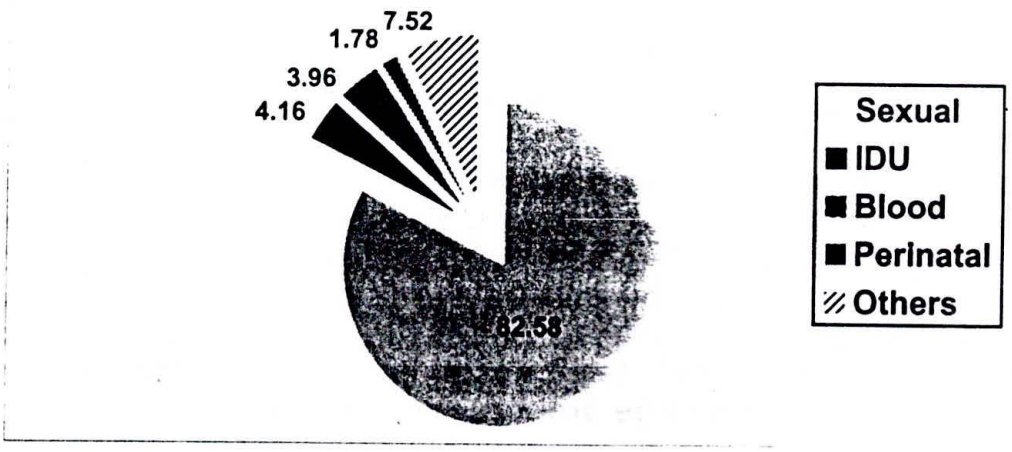
UNAIDS and the WHO estimate that by the end of the year 2000, the number of persons living with HIV/AIDS stood at 36.1 million, and the number of deaths since the start of the epidemic was 16.3 million. HIV is today the single largest infectious killer and the fourth leading cause of death in the world; it is a global crisis demanding action that cuts across all nations, all sectors and all strata of society (2). The numbers falling prey to the infection show no signs of abating, with 5.3 million new infections in 2000 alone. New infections are largely among the under-25 age group, including a large proportion of women.

Current Indian Scenario

HIV infection and AIDS cases were detected in 1986, first in Maharashtra, later in TN. In the year 2000, the number of Indians infected with HIV is estimated at 3.86 millions (3), exceeded only by South Africa. This number corresponds to a prevalence rate of around 0.7% of the general adult Indian population, quite low compared to the prevalence rates of 25% and over in South Africa, Zimbabwe and Botswana. HIV infections have been detected in all the states and union territories of India; infections are no longer confined to high-risk behaviour groups such as commercial sex workers (CSWs) and transport workers, or only to urban areas. Epidemic proportions have been reached in some states. Since the epidemic is more than a decade old, mortality due to AIDS is increasing: nearly 300,000 Indians were estimated to have died of AIDS in 1999 alone (4).

Unprotected sexual intercourse is the predominant mode of HIV transmission, accounting for nearly 83% of the total (Figure 9.1). In NE states like Manipur and Nagaland, the predominant route of HIV transmission is the sharing of needles by intravenous drug users (IDUs), accounting for nearly 4% of the total. Transmission through blood and blood products accounts for another 4%. Nearly 2% of AIDS cases were due to perinatal transmission – from an infected mother to child during pregnancy. These figures are derived from confirmed AIDS cases reported to the National Aids Control Organisation (NACO), cumulatively from 1986.

Figure 8.1
Routes of HIV Transmission in India (1986-2001)

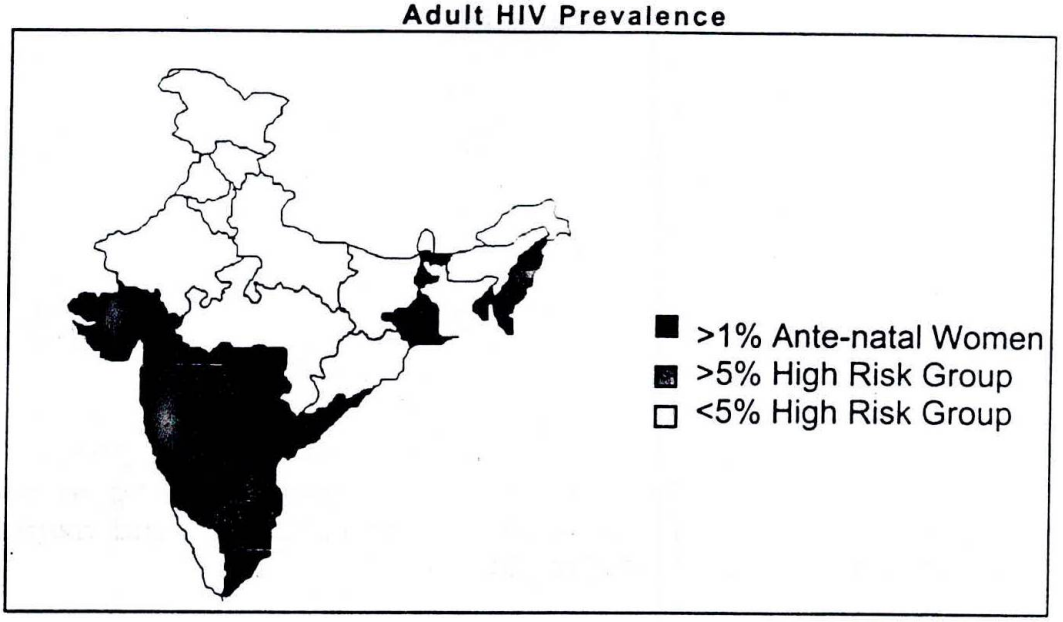


Source: NACO, 2001

As of March 2000, 11,251 cases of full-blown AIDS have been reported to NACO, of which 79% are males and 21% are females. This is only a fraction of AIDS morbidity in the country, reflecting both the stigma and the ignorance surrounding the infection. Widespread discrimination against HIV infected people hinders their access to healthcare. The low-income levels of most of the infected preclude widespread use of highly active anti-retroviral therapy (HAART). Consequently, morbidity and mortality of those infected continues to be high (5).

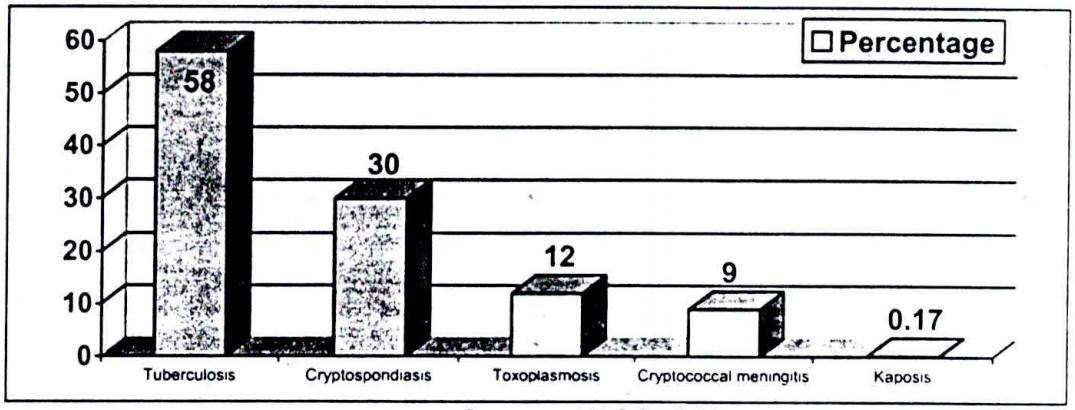
AP, Maharashtra, Karnataka, TN, Manipur and Nagaland are currently classified as high prevalence states where infection levels have crossed the one per cent mark among ante-natal women, considered a proxy for the general population. Data for 2000 clearly shows the great variation in the severity of the HIV epidemic among the states: the ANC prevalence ranges from zero in Assam, Haryana, Kerala, Meghalaya, Punjab and Arunachal Pradesh, to 2% or over in Mumbai City and AP. HIV prevalence among CSWs in Goa and Mumbai is well over 50%. The prevalence among IDUs ranges from 64% in Manipur, to less than 5% in Karnataka, Meghalaya and West Bengal (6). Thus HIV infection trends are characterized by wide regional variations (Figure 8.2), and simultaneous epidemics due to differing transmission routes: heterosexual epidemics in Maharashtra and the southern states, and an IDU epidemic in Manipur. **Nearly two-thirds of the opportunistic infection among AIDS patients is TB, portending a dual epidemic in the future** (Figure 8.3). Already there is evidence from Mumbai City regarding the increasing role of TB as a cause of death among AIDS cases (7).

Figure 8.2
Adult HIV Prevalence



Source: NACO, 2001

Figure 8.3
Opportunistic Infections among AIDS Patients



Source: NACO, 2001

Several factors increase Indian vulnerability to a devastating AIDS epidemic: widespread poverty; illiteracy; poor nutritional and health status; social inequalities based on caste and gender; inadequate health infrastructure; taboos about the subject of sex; lack of political commitment; and a persistent denial of the AIDS epidemic in many states. Without the immediate and sustained implementation of control measures, the adult HIV prevalence rate could be 5% within the next 5 years – a total of nearly 25 million HIV infected people by the year 2006, roughly equal to the number of current infections in Sub-Saharan Africa (8).

Government Response to the Epidemic

Funding: The government responded soon after the first reported case in 1986. In the initial years of the epidemic, AIDS prevention efforts were

confined to "hot spots" – Maharashtra, TN, Manipur and selected big cities. Since 1992, the World Bank has been funding a countrywide National AIDS Control Project. The first phase of this Project (1992-1999), with an IDA credit of US $84 million, focused on strengthening blood banks, STD clinics, surveillance systems and increasing awareness. The program was implemented through State AIDS Cells, functioning under the apex body, NACO. Targeted interventions among high-risk behaviour groups were implemented only in a few states; care and support activities received little attention in the first phase. With more information about the epidemic since the mid-1990s, and learning from the experience of the first phase, the second phase of the Project was launched in 1999 with an IDA credit of US $190 million. It focuses on targeted interventions among high-risk behaviour groups. In terms of management, state-level autonomous societies have been established, resulting in the easy and timely transfer of funds, increasing decentralization and ownership of the project by the respective states (9).

In addition to the World Bank, state-level AIDS control projects are also being implemented by several bilateral donors such as USAID of the US government (TN and Maharashtra), DFID of the UK government (AP, Gujarat, Kerala and Orissa), and CIDA of the Canadian government (Karnataka and Rajasthan). For 1999-2005, the World Bank outlay is Rs11,550 million, that of USAID Rs1,660 million, and of DFID Rs1,040 million. (47 Indian rupees equalled one USD in April 2001.) While the World Bank project, implemented through NACO, covers the whole range of prevention, care and capacity building, bilaterally funded projects focus on the prevention of sexual transmission of HIV. There is a good degree of coordination between the World Bank-funded and bilaterally-funded projects and government sponsored programs.

Programme Management: Management capacity is a critical requirement for a complex program like AIDS control. The initial model of State AIDS Cells within the Medical Department of state governments, headed by a senior medical professional, did not produce results. A breakthrough was made in TN in 1994, when the Tamil Nadu State AIDS Control Society (TNSACS) was set up as an autonomous body with delegated financial and administrative powers. The change in leadership, from a medical professional to a general administrator, ensured a broad, evidence-based prevention and control approach rather than a medical approach to the program. Today, many states (AP, Maharashtra, Bihar, Gujarat, Kerala, West Bengal), have general administrators heading the projects, facilitating inter-sectoral collaboration with other departments, and paving the way for a wider support base in prevention and control.

Programme Components

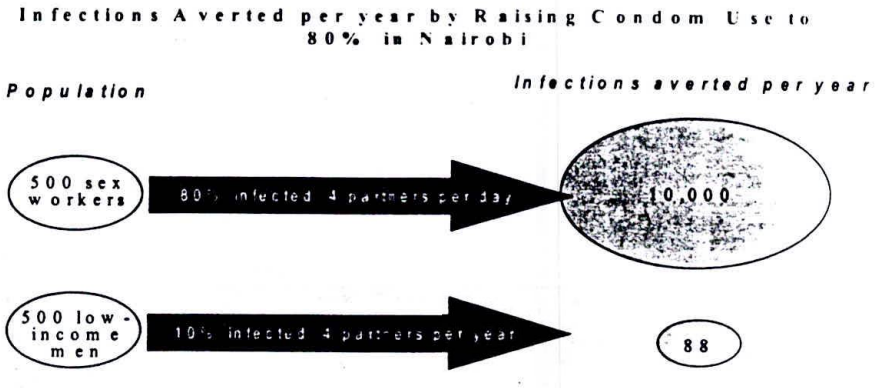
Surveillance: In 1986, the government set up an HIV sero-surveillance system to establish the presence of HIV infections in specific geographical areas and population groups. At its full implementation level

in the early 1990s, there were 71 designated sero-surveillance centres functioning. But this system was not designed for measuring trends in the infection rates, and NACO established the sentinel surveillance system in 55 centres in 1994. These centres focused on two population groups: STD clinic attendees as a proxy for high-risk groups, and ante-natal clinic (ANC) attendees as a proxy for the general adult population. By testing a fixed number of blood samples at 12-month intervals by the "unlinked-anonymous" method, the trend in HIV prevalence among these two population groups could be tracked. The number of sentinel surveillance centres has grown over the years, and during the latest round in 2000, samples were drawn from 232 centres, more than four times the original number in 1994. Similarly, the number of population groups sampled has also increased, and now covers CSWs, IDUs and men who have sex with men (MSM).

The USAID-funded AIDS Prevention and Control (APAC) project in TN has also conducted one round of a survey of community prevalence of STDs and HIV, and is in the process of doing the second round (10). This survey indicates that *the actual community prevalence of HIV is nearly twice the level indicated by ANC prevalence data from sentinel surveillance.* This has serious implications for the healthcare system; it also makes improved surveillance mechanisms imperative to track prevalence rates and facilitate action.

Targeted Interventions for High-Risk Groups: Evidence from successful AIDS control projects around the world, including some from India, indicates that intervention programs by peer educators among high-risk groups are the most effective in containing the rapid spread of HIV.

Figure 8.4
Rationale for Targeted Interventions among High-Risk Groups



Source: **Confronting AIDS**, World Bank, 1999

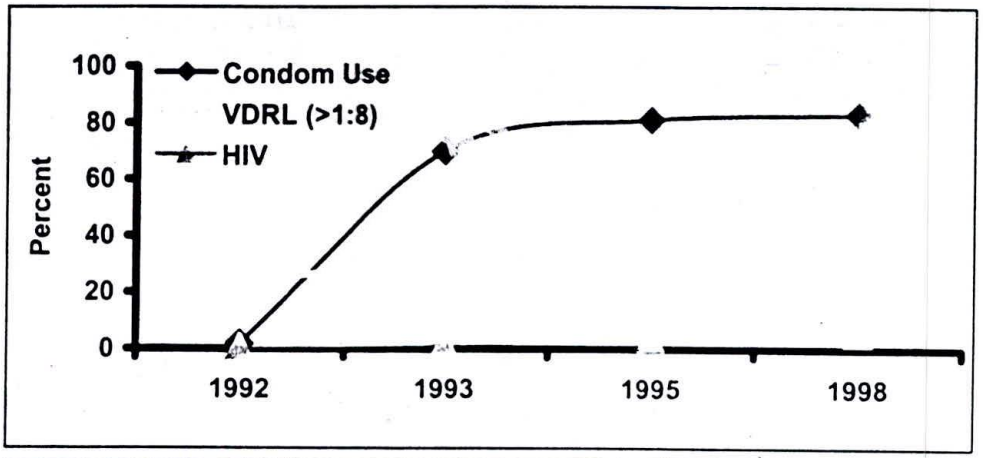
This approach, now central to prevention efforts in India, clearly shows the rationale behind the interventions among core-transmitter groups such as CSWs, rather than among a widely dispersed group like the male clients of CSWs. Lessons learnt from successful Indian projects, such as

the Sonagachi Project of Kolkata (Box 8.1), have been utilized in designing and implementing similar intervention projects in other parts of India.

Box 8.1
Sonagachi Project

The STD/HIV Intervention Project in Sonagachi, Kolkata, is one of the best examples of targeted interventions among sex workers. The project, implemented by an NGO, organized CSWs into informal groups and empowered them with negotiating skills for promoting condom use with their clients. Condom use has increased from 0% in 1992 to over 70% in 1993-94, and sustained these levels thereafter. VDRL positivity has also reduced from over 20% in 1992 to 5% in 1998. This has ensured that the HIV prevalence rate among CSWs in Kolkata has remained at around 5%. In stark contrast, HIV prevalence rates among the CSWs in Mumbai rose rapidly from below 5% in the early 1990s to over 50% by 2000.

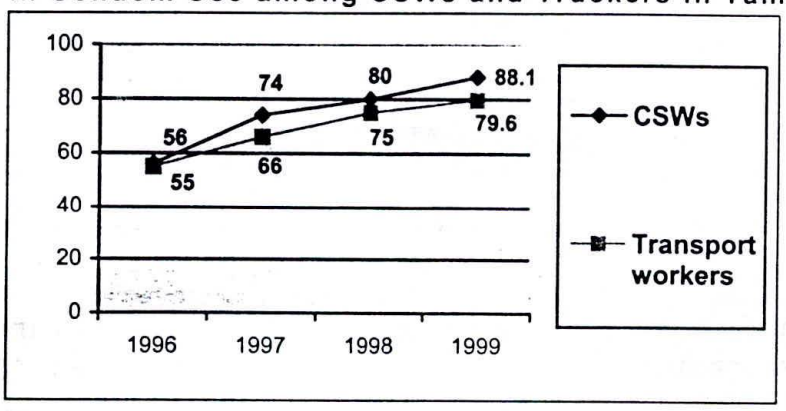
Impact of Interventions



Source: NACO.

The APAC project (TN) has conducted five annual rounds of behaviour sentinel surveys (BSS) to track changes in knowledge and behaviour of certain high-risk groups (CSWs, transport workers and factory workers). These surveys indicate rapid behaviour change among CSWs and transport workers in terms of condom use (11). Condom use among CSWs has risen sharply from around 55% in 1996 to nearly 90%, and among truckers to nearly 80% by 1999.

Figure 8.5
Trend in Condom Use among CSWs and Truckers in Tamil Nadu

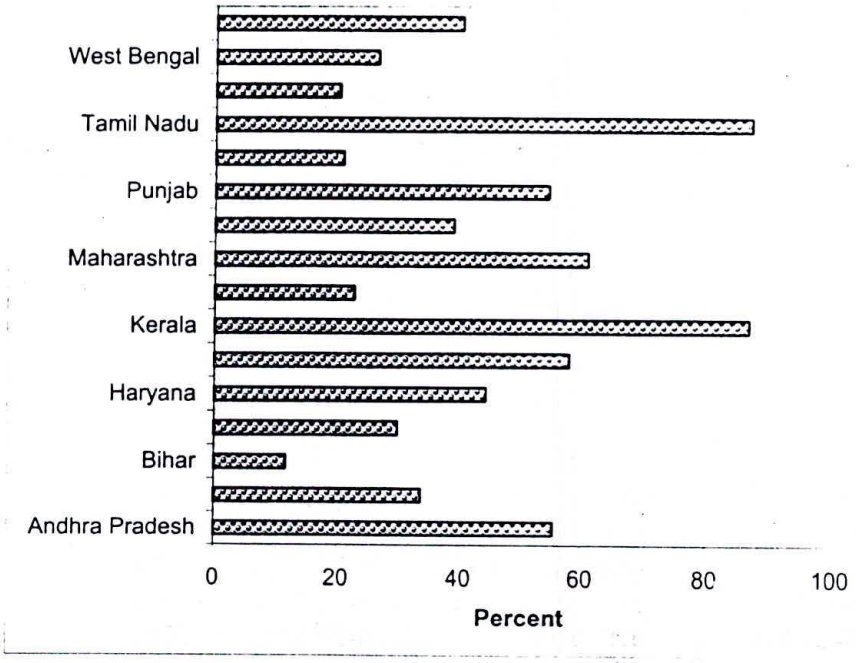


Source : APAC, 2000.

Following the Sonagachi model, one study among CSWs in AP has shown that condom usage among CSWs has gone up to 73%, their knowledge of STDs and AIDS has risen to 92%, and all of them know where they can access services in case of need. Similarly, interventions initiated with prison inmates (considered a high-risk group) in 11 prisons in AP, have shown significant results in bringing about behavioural change among primary stakeholders and their spouses, and in identifying and curing infections such as TB and STDs/RTIs. The very nature of the targeted interventions among high-risk groups requires implementation through carefully selected and trained NGOs, and this is the pattern followed in states.

Awareness Campaigns: While raising awareness level alone is not enough to change behaviour, knowledge about modes of transmission and methods of prevention ensure the success of intervention programs. TN has been a pioneer in implementing highly effective awareness campaigns since the early nineties, resulting in almost universal knowledge levels (12). (See Figure 8.6 for percentage who have heard about AIDS by state.) Several states are now implementing similar AIDS awareness programmes. AP has involved celebrities like film and sports personalities and even roped in religious leaders to talk about HIV/AIDS and condom usage. Several organizations of the major religions have also involved themselves in awareness generation and care and support initiatives.

Figure 8.6
Percentage Who Have Heard about AIDS by State



Source: National Family Health Survey (NFHS-2) India, 1998-99

Sexually Transmitted Diseases (STD) Control: There is strong evidence to show that the presence of STDs in sexual partners may increase

transmissibility if one of the partners is HIV infected. Since heterosexual transmission is the predominant mode of transmission in India, controlling STDs has been a priority intervention in the programme since its inception. Government STD clinics have been strengthened, and health workers trained in the syndromic approach to diagnosing and treating STD patients. A significant intervention for prevention and control of RTI/STDs has been the Family Health Awareness Campaigns launched in May 1999 in select districts, and now held countrywide every year. Separate camps for men and women are held in each village by doctors or paramedics, and the attendees are counselled and referred for treatment. During the last round in June 2000, 42.7 million persons attended the camps, of which 23.6 were women, 3.65 million were referred for treatment, and 1.86 million were treated.

Blood Safety: The first phase of the World Bank funded project focused on blood safety. This, coupled with a Supreme Court order in 1999 prohibiting paid blood donors, and laying down stringent guidelines for licensing of blood banks, has resulted in the share of blood-borne HIV infections falling sharply from about 8% in the mid 1990s, to about 4% in 2000. The second phase of the project continues this emphasis, and transmission through this route is expected to fall further.

Care and Support of People Living with HIV/AIDS (PLWA): With over 99% of Indians not infected by HIV, prevention continues to be the predominant focus of the HIV/AIDS control programme. But about 3.86 million Indians live with the virus, and providing care and support to them is also an essential component. Current care programs consist of palliative treatment and treatment of opportunistic infections, free of cost at government hospitals. The largest number of AIDS patients in India is treated at the Government Hospital for Thoracic Medicine at Tambaram, a suburb of Chennai in TN. Several support groups of HIV positive people such as the Indian Network of Positive People (INP+) have been formed and nurtured by the TNSACS in their formative years. AP has also been supporting such clubs, termed the People's Positive Network, and has facilitated one of them in Vishakapatnam to organise a Care and Support Centre to address the needs of similarly affected persons.

Indian pharmaceutical firms now offer hope to millions of affected persons in poor countries by offering AIDS drugs at $350 a year for every patient, compared to western market prices of almost $10,000 to $12,000. But even at this reduced rate, the total cost for each patient per year for both drugs and monitoring of side effects, would work out to over Rs.40,000. Assuming that only around 20% to 30% of the infected require therapy, this would mean an annual expenditure of Rs 3400 to Rs. 4300 crores every year (13). Even if coverage was limited to one-third of those requiring treatment, assuming that the rest could afford private services, the public health system would not be able to afford the cost. However, the ethical issue remains: can the infected be abandoned to certain death

when a proven therapy, made more affordable recently, is available? A broad-based consultation was held in April 2001 with representatives of the central government, the WHO and pharmaceuticals to discuss this issue. The broad consensus was that even at the currently reduced prices, HAART could not be made a part of the government's AIDS Control Programme yet. What needed to be urgently included in the Programme were research initiatives, preparatory to mass application, on the following issues:

- the appropriate stage of HIV infection at which HAART should commence;
- the optimal combination, dosage and periodicity of the therapy;
- the most appropriate methods of delivering HAART on a mass scale;
- the appropriate protocol for monitoring patients in a mass application; and
- the benefits of HAART in areas facing a dual epidemic of HIV and TB.

It was agreed that NACO, in collaboration with the ICMR, should take up multicentric trials to prepare for HAART as a public health intervention, as and when drug prices and resource availability make the therapy a feasible option.

Socio-Economic Impact of the Epidemic

The current low level of HIV prevalence in India has not yet led to any adverse macro-economic impact. However, in select pockets where HIV prevalence is very high, there is evidence of adverse effects on families and communities. Well known examples are the CSWs of Mumbai, the IDUs of Manipur and the transport workers of Namakkal in TN. Since the epidemic will worsen before it eventually levels off, it would be advisable to plan for these situations. This inevitable cycle in a HIV/AIDS epidemic is well documented in Africa: infections, followed by morbidity, stigma, mother-to-child transmission, mortality and orphans. India would do well to learn from the African experience and prepare for the future.

Lessons Learnt and Future Directions

The HIV/AIDS epidemic in most parts of the country is at an early stage, though spreading rapidly; so there is still a window of opportunity to contain the epidemic within manageable levels.

- ***Evidence-based approach:*** The development of a reliable database drawing from different kinds of surveys and surveillance systems, and a mapping of high-risk or core-transmitter groups, are essential in the design and implementation of targeted interventions among these groups – the key strategy for AIDS control. The relative success in containing the epidemic in Thailand and TN is largely due to this approach.

9

Non-Communicable Diseases

Introduction (1)

Among the health transitions, the most pervasive change has been the rising burden of non-communicable diseases (NCDs). NCD epidemics are emerging or accelerating in most developing countries (2), and cardiovascular diseases (CVD), cancers, diabetes, neuropsychiatric ailments and other chronic diseases are becoming major contributors to the burden of disease (BOD). Health transition, whereby NCDs become the dominant contributor to BOD, is principally due to a combination of demographic and lifestyle changes resulting from socioeconomic development. Demographic transition is characterized by changes in population age structure with fertility decline and aging population. As more individuals survive to middle age, the years of exposure to the risk factors of chronic disease increase. Simultaneously, urbanization, industrialization and globalization are often accompanied by undesirable lifestyle alterations: a diet rich in saturated fat, salt and excess calories, decreased physical activity, addictions such as tobacco and alcohol, and the augmentation of psychosocial stress. Thus both the dose and duration of the risk factor exposure increase, resulting in larger numbers manifesting lifestyle-related diseases and their consequences.

Recent evidence suggests that impaired fetal nutrition – reflected in small birth size – results in a programmed susceptibility to adult cardiovascular disease, diabetes and some cancers. Migrant Indians have also been shown to have excess rates of coronary heart disease (CHD) and diabetes in comparison to other ethnic groups, indicating a magnified response to environmental change. As India experiences health transition (5, 6), these factors will have an adverse effect on the future burden of NCDs and present a major public health challenge. Hence *the existing health systems will need to be reoriented to deliver the expanded mandate of primary and secondary healthcare involving the prevention, surveillance and management of chronic diseases.*

Changing Burden of Disease and Equity Issues

Even at the present stage of health transition, India contributes substantially to the global burden of NCDs. In 1990, India accounted for 19% of all deaths, 16% of all NCD deaths, and 17% of all CVD deaths in the world. CVD in India alone accounted for around 2.4 million deaths, in contrast to nearly 3.2 million CVD deaths in all the industrialized countries together (2). An even greater cause for concern is the early age of these deaths in India compared to those in the developed countries. More NCD deaths in India occur in middle age (35-69 years) than in industrialized countries, where they occur largely in old age

(>70years). Even as overall NCD burdens rise sharply by 2020 (Figures 2.2 and 2.7), a disproportionate loss of lives in midlife will continue to constitute a major burden (Table 9.1). In India, 52.2% of all CVD deaths in 1990 occurred before the age of 70 years, in contrast to 22.8% in the EME countries (2,5) (Table 9.2).

Table 9.1
Midlife Mortality due to NCDs in India

Cause of Death	Percentage of Cause-Specific Mortality Occuring in the Age Group of 30-69 Years	
	1990	2020
Total NCD	**48.9**	**51.3**
Cardiovascular	48.2	47.7
Malignant Neoplasm	64.6	69.2
Neuropsychiatric	40.6	39.6
Total Injuries	**36.3**	**52.8**
Unintentional	34.0	52.0
Intentional	45.0	56.4

Source: CJL Murray, AD Lopez, **The Global Burden of Disease**,1996

Table 9.2
Early Mortality due to NCDs in India

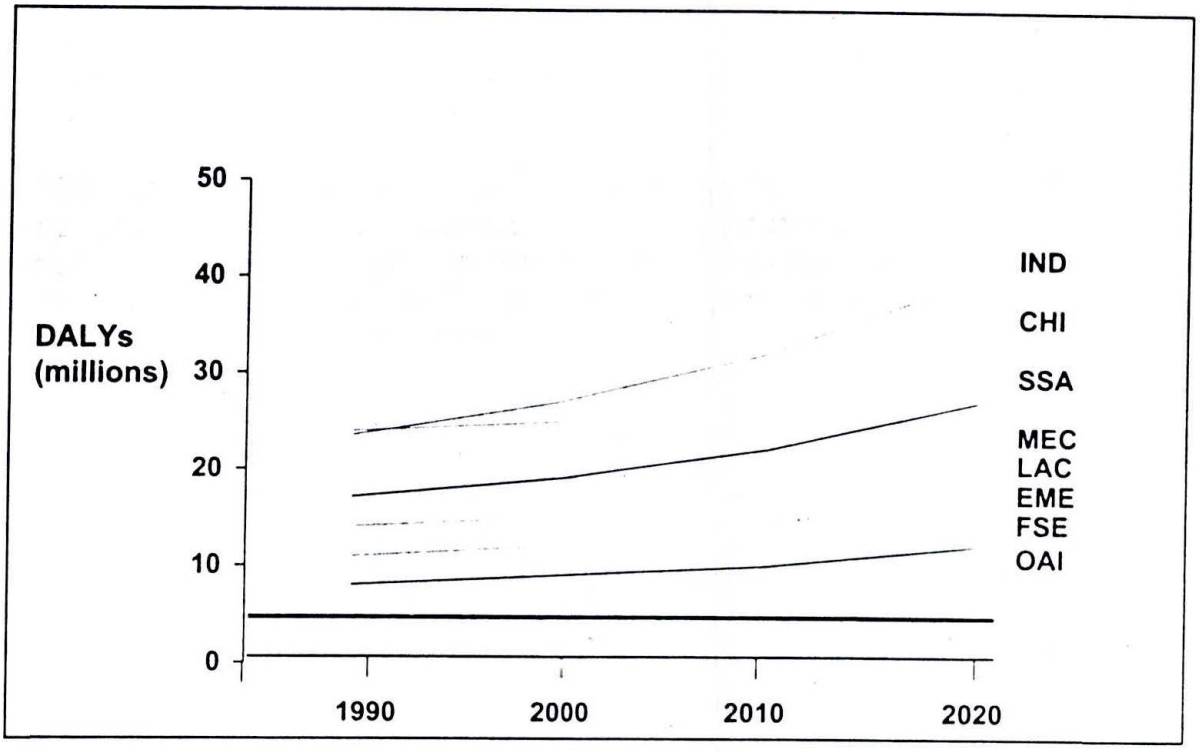
Age Profile of NCD Deaths (% of NCD Deaths in each Age Range)				
Age at Death	**India 1990**	**EME 1990**	**India 2020**	**EME 202**
<30 yrs	12.2	3	4.1	0.6
30-69 yrs	48.9	23	51.3	24.8
>70 yrs	38.9	74	44.6	74.5

Source: **Global Burden of Disease Study**, 1996

Diabetes has a high prevalence in urban and migrant Indians: urban estimates in adults over 35 years are in the range of 16-20%, while corresponding rural estimates are around 4%. As the quality of dietary habits and physical activity decreases and obesity increases, diabetes becomes a greater contributor to NCD. The number of persons in the world with diabetes is expected to rise from 19.4 million in 1995 to 57.2 million, even as India leads the global table for the number of diabetics (10). These estimates are based on older and higher cut-off values for the diagnosis of diabetes, and also do not take into account the category of impaired glucose tolerance; hence the overall BOD attributable to diabetics and pre-diabetics may be even higher than those projected.

There will also be a sharp rise in disability adjusted years (DALYs) lost due to NCDs between 1990 and 2020. This is illustrated by the rise in the DALY loss attributable to CVDs, where India will be the global leader (Figure 9.1). The CVD spectrum in India principally comprises CHD, cerebrovascular disease (stroke) and rheumatic heart disease (RHD), with the first two rapidly advancing, and the third slowly receding as health transition proceeds. The principal cancers are those occurring in the lung, cervix, breast, oral cavity and the gastrointestinal tract.

Figure 9.1
Burden of CVD 1990-2020



IND=India; CH=China; SSA=Sub Saharan Africa; MEC=Middle Eastern Crescent LAC=Latin America; EME=Established Market Economies; FSE=Former Socialis Economies; OAI=other Asia and Islands

Source : C.J.L. Murray and A.D. Lopez, **The Global Burden of Disease**, 1996

While these estimates (present and projected) are based on a variety of data sources of limited coverage and uncertain validity, they are the best available estimates from a globally acknowledged data source (the GBOD study). Some Indian investigators have questioned the estimates for 1990, based on independent secondary analysis and modeling (11); however, the differences are not substantial. While the precise dimensions of the epidemic may be difficult to gauge at present, the directions of its growth are indisputable. The prevalence/incidence of various NCDs for 1998 has also been estimated for India based on various published studies from different regions (11) (Table 9.3). These estimates may be relatively conservative, as suggested by the

comparison with the diabetes prevalence estimates of the WHO. Even then, about one-fifth of the population would have at least one of these selected NCDs.

Table 9.3
Estimated Number of Cases of Selected NCDs in India, 1998

Disease	Prevalence / Incidence	Number of Cases	% of Total Population
All Cancers	Prevalence	2 million	0.2
Heart diseases (IHD, HT, Stroke, RHD)	Prevalence	65 million	6.6
Respiratory diseases	Prevalence	65 million	6.6
Diabetes mellitus	Prevalence	13 million	1.3
Injuries	Incidence	7 million	0.70

Source: K. Anand, **Report on Assessment of Burden of Major Non-communicable Disease in India**, WHO, 2000

The lag period between exposure to risk factors of NCDs and their clinical manifestations make current mortality rates unsuitable for prospective public health planning, since they only represent past exposures over some decades. The present levels of risk factor exposure would be more meaningful in predicting future risk, and in driving public health policy. The rising levels of hypertension, diabetes, obesity, tobacco consumption and blood lipids in Indian population groups have been well documented in recent years (8-12). These also portend a major rise in future NCD burdens in India. Hypertension and diabetes are classified as diseases with distinct clinical identities, but are also risk factors for other diseases such as cardiovascular, renal, ophthalmic and neuropsychiatric disorders. Their disease burdens will be underestimated if they are only considered as hypertension and diabetes, without taking into account the death and disability they cause through coronary, stroke, blindness or renal failure outcomes. Their role as risk factors means a high priority status for public health interventions for their prevention and control. *An integrated programme for the control of tobacco, high blood pressure and diabetes will have a major impact on the downstream burdens of multiple NCDs.*

Disorders of mental health merit special attention because of the large burden of disability (DALY loss) resulting from them, even though they are not major contributors to mortality. The prevalence of major mental illness in the country has been estimated to be 1-2 per thousand, while minor mental illness occur in 5-10% of the population, as per various estimates. The GBOD study estimates that neuropsychiatric disorders contributed to 7.0% of total DALY loss that occurred in 1990 in India, and would account for 12.6% of the total DALY loss projected to occur in 2020. Mental disorders contribute to the burden of mortality too, through suicides – estimated to occur at a rate of 11 per 100,000. Poverty has been linked to high burdens of mental disorders, with about 80% of suicides occurring in the lower socioeconomic strata. The indications are that women bear a high burden of these disorders (Figure 2.8). Again, alcoholism is also more widely prevalent among the poor.

Injuries are currently estimated to contribute between 9-11% of total deaths in India, and also account for significant morbidity, disability and economic losses. For every fatal injury, at least 10 persons are hospitalized, and nearly 50-100 receive emergency care. But under-reporting of injuries affects these estimates, and better data gathering systems are urgently required to identify both injury burdens and main contributory factors with accuracy. Among injuries, traumatic brain injuries, burn-related injuries, agricultural injuries and orthopedic injuries contribute most to disability and death. With the causes of these injuries varying widely from farm implements to road traffic accidents, the burdens are high in both rural and urban settings. Domestic violence has also been identified as a significant contributor to both injuries and mental ill-health, but the magnitude of the problem has not been adequately studied.

Social Impact of NCDs

Death or disability due to NCD in productive middle age results in major economic burdens on affected individuals, their families and society as a whole. The management of established NCDs (diagnosis and therapy) is often technology-intensive and expensive. Individual as well as societal resources are already being drained at a disproportionately high level by the tertiary care management of NCD, often drawing scarce resources away from the unfinished agenda of infectious disease and nutritional disorder control.

Though NCD epidemics usually originate in the upper socioeconomic strata, they diffuse across the social spectrum, with the social gradient ultimately reversing so that the poor become the predominantly afflicted. Indeed, *in the more mature stages of these epidemics, the poor are often the worst afflicted in terms of disease, and the most marginalized in terms of care.* This historical experience of the developed countries where NCD epidemics matured over the past half-century, is likely to be replicated in developing countries in the coming half-century. Studies show that the social gradient for CVD has already begun to reverse in some population groups in India, especially in large urban settings (7). Tobacco consumption is also higher in rural populations compared to the urban, and among the poor compared to the rich (Figure 2.8). Thus the future risk of tobacco-related NCD is likely to be higher in these groups (8-9).

These post-transitional diseases also have macro and micro economic impacts which may prolong the high burden of pre-transitional diseases in developing country settings. The loss of persons in middle life, either to death and disability, cripples development, and perpetuates social conditions that foster communicable and nutritional disorders. **The twin agendas of healthcare, mandated by pre- and post-transitional diseases, are not competitively exclusive, but are synergistically**

complementary. The goal of extending healthcare benefits across an expanding life span requires that these two agendas be harmonized in India.

Much of these economic and health burdens could be obviated by short-term and long-term strategies:

- *Short-term strategies* call for low-cost screening for the early detection of NCDs as early interventions effectively alter the natural history of disease, also the use of readily available low-cost, high-impact interventions for secondary prevention and clinical care.
- *Long term investment* in population-based prevention strategies would prevent the acquisition or augmentation of risk in low-risk populations, and also reduce risk in populations already affected by health transition.

Strategies: Focus on Prevention and Low Cost

Traditional Public Health Approaches: The exorbitant costs of treating chronic diseases make prevention the most cost-effective option and suitable strategy for India. Traditional public health approaches to NCD control consist of i) a high-risk strategy targeting those with high-level risk factors and employing interventions to reduce them, usually with drugs; and ii) a population strategy to reduce risk factor levels in the whole community, usually through lifestyle related measures (13,14). The first provides higher benefits to individuals at maximum risk, but since they comprise a small segment of society, there is no major impact on national morbidity or mortality. The population approach aims at relatively modest reductions in the risk for each individual, but cumulative community benefits are large – there are many more in the mild or moderate range of risk factor elevation than in the highest range. The two strategies are not mutually exclusive but are synergistically complementary. However, population-based and lifestyle-linked strategies are likely to prevent the acquisition or augmentation of NCD risk factors in transitional societies like India, while avoiding the economic and biologic costs of pharmacological risk reduction strategies practiced in the developed countries.

Box 9.1

Principles of Prevention Underlying Strategies for NCD Control

Principle 1: Risk operates in a continuum, not across arbitrary thresholds; Risk reduction benefits across the range.

Principle 2: Majority of NCD events arise in a population from the middle of the distribution (of a risk factor) than from its high end.

Principle 3: Co-existence of risk factors leads to interactive risk which is multiplicative.

Principle 4: The absolute risk of a major NCD event (e.g. CHD/Stroke) is dependent on the overall risk profile contributed by co-existent risk factors operating in a continuum.

Simultaneously, effective low-cost, case-management strategies are required for persons who manifest disease. Such technologies are available, but await widespread dissemination and application: oral aspirin administration in cases of suspected heart attack saves as many lives as the intravenously administered clot dissolving drug streptokinase (15). Information would empower the community to avail of technologies that are feasible for wide application and are cost-effective (Table 9.4).

Table 9.4
Effect of Treatment of 1000 Patients with AMI

	Premature Deaths Avoided	Cerebral Hemorrages Caused	Cost Per Life Saved
Aspirin	23	0	Rs. 152
Streptokinase	25	2-3	Rs.1,23,560

Source: Srinath Reddy, background paper, 2001

At the population level, programmes likely to counter a wide range of NCDs – especially CVD, diabetes, hypertension and some cancers related to saturated fat intake – consist of advocating i) a health promoting diet (calories appropriate to level of physical activity; moderation in intake of saturated fat, salt, refined sugar; high intake of fresh fruit and vegetables; fish rather than red meat in non-vegetarian diets); and ii) adequate and regular physical activity.

Tobacco Control: This is a major public health imperative providing the largest benefit for NCD prevention: it can effectively prevent diseases such as tobacco-related cancers, CVD and chronic obstructive airway disease. The estimate is that half of all current teenage smokers will eventually die of tobacco-related diseases, a quarter in middle age and a quarter at an older age. For those who die of tobacco related illnesses in middle age, the average loss of life expectancy compared to non-smokers is 20-26 years. Tobacco and AIDS represent the most rapidly growing causes of death; tobacco is the foremost preventable cause of death in the modern world (7), and clearly population-based control strategies are high priority. The success of population-based interventions, addressing the multiple risk factors common to many NCDs through lifestyle linked community programmes, has been demonstrated both in developed and developing countries (16, 17). Such population strategies require both 'bottom up' (community health education and empowerment), and 'top down' (legislation and regulation) approaches. **An enlightened policy and an empowered community can together stall the advance of the emerging epidemics of NCDs in India.**

At present, programmes for NCD control are non-existent, or functioning at a low level in India. The National Cancer Control Programme involves cancer registries at selected sites, and strengthening of facilities for clinical care (e.g. radiotherapy). Though pilot studies for the control of CVD and diabetes have been initiated, they have not had an impact on policy and programme development. Tobacco control has been given greater importance, but awaits the passage of proposed legislation and a vigorous public education campaign.

Mental Health: India was among the first developing countries to initiate a community-based mental health programme. Based on the Bellary model developed in Karnataka, the programme is now being implemented in 22 districts across the country. The National Mental Health Programme (NMHP) of India envisages active participation by NGOs and other community based organizations in the delivery of health services. The programme awaits extension to the hundreds of other districts that are not yet covered by it.

Injury Prevention and Management: The programmes need to be based on multi-disciplinary research – involving epidemiologists, clinical specialists, physiologists, behavioural scientists, engineers, lawmakers, and enforcement agencies such as the police and community groups; and multi-sectoral interventions – involving transport regulations, traffic safety, vehicle manufacturing, housing construction, emergency healthcare at various levels, and referral linkages. But such structured programmes are currently unavailable, and this area of healthcare has been limited to the provision of emergency care that functions with limited access and coverage.

Controlling Risk Factors at Different Levels of Care: Programmes for the prevention and control of NCDs must adopt a 'lifespan' approach, and attempt to reduce risk at stage of life through appropriate public health interventions. They also need to be variably integrated into different levels of healthcare – primary, secondary and tertiary. The principal functions of such a programme would be

- providing information and an enabling environment that increases community awareness and adoption of healthy living habits;
- early detection of persons with risk factors and cost-effective interventions for reducing risk;
- early detection of persons with clinical disease and cost-effective care to prevent complications;
- utilizing low cost-high yield technologies for acute care;
- secondary prevention to reduce risk of recurrent events; and
- rehabilitation and palliative care in cases where the disease is incurable or has resulted in complications.

Many of these activities can be performed in primary care settings – health education, blood pressure checks, tobacco cessation, chest pain

algorithms, and oral cancer screening. Some need to be strengthened in secondary care, such as the management of some cancers and the treatment of left ventricular dysfunction. In settings of tertiary care, the cost-effective use of technology will provide advanced care along defined guidelines. (See Annex 9.1 for operational components.)

Issues in the Delivery of Chronic Care

Since chronic care has many demands, and since available resources are restricted, efforts to optimize resources should include the following elements.

- **Identifying a menu of core components providing an 'essential package' of chronic care, with possible extension to an 'optimal package':** Resource constraints and the inception stage of programmes call for the identification of a set of essential components constituting the minimal agenda of chronic care. Components must be chosen on the basis of cost-effectiveness and impact on population attributable risk; prevalance rates (Table 10.3) could be the starting point. This list has to be customized for each regional context: in regions where stroke is the predominant contributor to cardiovascular mortality, algorithms for the management of stroke may need to be included in the 'essential' package of chronic care.

- **Integration of services into various levels of healthcare**: The expanded mandate of healthcare, involving the addition of chronic care to pre-existing services (MCH, population control, control of infectious diseases), can be delivered only when healthcare providers of all categories are adequately mobilized and involved at each level. The private sector is usually responsive to the needs of chronic care since such services are considered financially remunerative. However, imbalances in the type of care provided (arising from frequent use of high cost-low yield technologies) must be corrected. The public sector has to be more responsive to the needs of chronic care and the private sector more responsible in the use of resources.

- **Clinical practice guidelines**: The integration of evidence-based, context-specific, resource-sensitive guidelines into various levels of healthcare will facilitate the greater use of low-cost, high-impact interventions.

- **Provider training:** The modification of education and training of healthcare providers of diverse categories would enhance the skills relevant to chronic disease prevention, surveillance and management.

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- **Referral linkages and follow-up systems:** The establishment of efficient systems for referred care, linking primary care to secondary and tertiary levels of provider services for advanced forms of chronic care, and effective systems for subsequent follow-up care by all providers, will ensure the cost-effective, bi-directional movement of patients across the healthcare chain.

- **Providing patient education and promoting self-care:** Investing in patient education and encouraging self-care that reduces follow-up care will help overcome the constraints of limited healthcare provider resources. This requires investment in educational programmes but will prove cost-effective in the long-term management of chronic diseases.

- **Essential drugs and technology needs:** Any programme for chronic care must ensure the availability of essential drugs at affordable prices, and meet the technology needs of managing a variety of diseases. The advent of compulsory 'product patenting' under the WTO regime will restrict the scope of local production, but countries like India and Brazil have used 'process patenting' to build self-sufficiency in the production of many drugs including most essential drugs. These are available as generic drugs, at relatively low cost. The Indian pharmaceutical industry must be encouraged to invest more in research and development to produce new drugs for the local market. The technology required for the 'essential' package of care at the primary level would be easier to provide than more advanced technologies for secondary and tertiary care. South-South cooperation for technology exchange, international assistance for subsidising essential technology acquisition and guideline-based use of available technology will help developing countries to overcome the technology barrier. Well conducted research, involving the economic evaluation of various healthcare technologies, will aid decisions about cost-effective technologies at each level of healthcare, and the extent to which they should be deployed. The capacity for such research must be quickly established and integrated into the planning process at policymaking levels.

- **Situational Analysis:** Estimates of existing and required capacity for delivering chronic care to communities must guide the process of planning. Situational analysis based on qualitative and quantitative research methods will help identify key indicators. While planning for the delivery of chronic care to a community in any region, cognisance of capacity within that community to meet current chronic care needs – in terms of policy, programmes and infrastructure – is essential. The anticipated growth in 'capacity' (defined as a composite whole comprising these components), *vis a vis* the projected rise in

the burden of chronic diseases, would also need to be appraised. (See Annex 9.2 for suggested components of such a 'situational analysis' study.)

- **Customization:** The magnitude of different chronic diseases varies across geographical regions, social classes, gender and age groups. Within the broad framework of integrated chronic care, these varied needs have to be addressed through an appropriate mix of the most relevant and cost-effective interventions. Since disparities of socioeconomic status, gender and age result in a diversity of health status and variable access to healthcare, provisions for chronic care also need to be customized within a country. This applies, for example, to guidelines and algorithms for the detection and management of risk factors and disease states. Ideally, such a cost-effectiveness analysis should be generalized with a sectoral approach, seeking to evaluate a wide range of interventions and resource allocation options.

- **Influencing policymakers and health system managers:** Policymakers and health system managers at various levels must be sensitized to the potential impact of cost-effective chronic care interventions and the high costs of 'missed opportunities', so that they become motivated agents for improving the delivery of chronic care.

- **Overcoming the Barriers:** These operational priorities face several barriers to effective implementation: short supply and maldistribution of trained healthcare providers with a disproportionately large urban clustering of physicians and shortage of trained paramedics; inadequate knowledge and skills for providing chronic care in currently deployed primary care providers; ill defined roles of public, private and voluntary sectors in providing chronic care; and inadequate purchasing power among consumers for accessing chronic care. Some potential methods of overcoming these barriers are
  a) *community participation*: Integration of promotive and preventive care, early detection of risk factors and disease, and certain types of emergency care into the ambit of primary healthcare will be effective when the community is adequately mobilized to participate in these activities. The size of the Indian population has traditionally been viewed as the major constraint to the delivery of adequate healthcare. Facilitating community participation would mean the conversion of these numbers into abundant resources for the delivery of essential chronic care services.
  b) *broadening the base of providers in primary healthcare*: Using trained public health nurses, CHWs and

practitioners of traditional systems of medicine to deliver some services currently assigned to physician care providers in primary healthcare, will extend outreach at a lower cost. The existing strength of physician care providers is low or grossly maldistributed with selective urban clustering; while the need to provide essential chronic healthcare to underserved populations, especially in rural areas, is urgent. The current numbers and workload of MPWs reduce their availability for the delivery of chronic care services, hence a cadre of CHWs recruited from within communities could be considered. The feasibility of training such health care auxiliaries in the prevention and early detection of oral cancer and precancerous lesions has been demonstrated by studies conducted in parts of India and Sri Lanka (18). Similarly, the development of a cadre of public health nurses will help increase the number of primary healthcare providers with skills to deliver essential chronic care – such as counseling on health behaviors, detection and management of high blood pressure and diabetes, screening for common cancers, initial management of chest pain syndromes suggestive of acute coronary events, and management of acute asthmatic attacks.

c) *training and reorientation of existing primary healthcare providers to deliver chronic care services*: Present primary healthcare providers of different categories need to be retrained and their work schedules restructured. They must be supported by guidelines and equipped with the required knowledge and skills required to deliver the essential elements of chronic care. Time-motion studies must be conducted to examine how their current work schedules can be modified to accept this expanded mandate of healthcare, through the redefinition of their assigned work. Preparation of guidelines and management algorithms is essential to such retraining and redefinition of work.

d) *promoting public, private and voluntary sector mix and quality of care*: The delivery of chronic care in primary and secondary healthcare settings requires a partnership of public, private and voluntary sectors, with a definition of standards, the adoption of guidelines and the monitoring of practice patterns to ensure quality of care. Ensuring quality and definition of standards are relevant to all three sectors. Standards need to be defined on the basis of expert consensus and adopted through a process involving wide-ranging consultations among different categories of stakeholders. The development and adoption of guidelines, as well as periodic profiling of practice

patterns, along with technology audits, would help ensure reliable delivery of rational health care.

e) *healthcare financing*: Evolving a mix of public sector provision of free healthcare, social insurance and private insurance, will enable universal access to essential chronic care. The public sector cannot disengage itself from chronic care for equity considerations. Besides, public sector supply of good medical services can exert pressure on the high costs of private sector medical services. The public sector also fulfills a training and research mandate far beyond the capacity or the aptitude of the private sector in the developing countries.

f) *multi-disciplinary research*: This is required to inform policy and empower programmes for NCD prevention and control by i) identifying cost-effective and sustainable methods of applying available knowledge; and ii) generating new information required to bridge critical information gaps. Since the causation of most NCDs is multifactorial, research must integrate resources from epidemiology to social sciences and molecular biology to macroeconomics. Cost-effectiveness, feasibility for integration into primary healthcare and sustainability are key elements of potential interventions to be identified by research.

g) *inter-sectoral coordination*: The multiple determinants of NCDs also mandate efficient inter-sectoral coordination to generate and implement policies for NCD prevention and control. Health sector interventions in isolation will not impact on disease burdens of NCDs, especially if policies in other sectors are in conflict. Such harmonized interaction needs to be institutionalized through dependable mechanisms.

Conclusion: Prioritization of Interventions

Of the several operational components of chronic care, a process of prioritization must sequentially select 'essential' elements for early implementation and 'optimal' elements for later integration. The prevention and control of high blood pressure and tobacco consumption are high priorities, because of their high contribution to global burden of disease, as well as their relationship to multiple chronic diseases. *While planning the organization of health services, the center of gravity of chronic care delivery must be progressively shifted toward the base of the health care pyramid. The responsibility of delivering chronic care must devolve downwards – closer to the community and away from more expensive and less accessible health care stations.* This shift will be set in motion by strengthening the capacity for care by self, family, community, paramedic or traditional healer; encouraging guideline-based practice; and promoting a rational referral-follow-up pattern obviating the

need for frequent revisits to seconcary and tertiary care providers. Only such a shift can ensure a sustainable system of chronic care in India with the promise of extended coverage and containment of costs.

Notes

1. The chapter draws extensively from the background paper by K.S. Reddy, Professor of Cardiology, All India Institute of Medical Sciences, New Delhi.
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Annex 9.1
Implementation: Operational Components

Area	Essential Package (core components)	Optimal Package (other components)
PREVENTION	Tobacco Control (Taxation, Regulation, Education) Promotion of Healthy Diets (Production, Pricing, Consumer Empowerment) including the preparation and dissemination of national food based dietary guidelines Promotion of Physical Activity (Planning of cities and work-sites, community education) Mass media campaigns + targeted special group programmes for community health education School based programmes for 'Learning to Live Healthy'	Phasing out tobacco agriculture and industry (alternate crops and occupations) National Nutrition Policy (involving agriculture and industry) National Transport Policy (Pollution control and promotion of physical activity)
SURVEILLANCE	Tobacco Consumption Habits H/o Diabetes, Hypertension Blood Pressure Body Mass Index Waist circumference NCD mortality (by cause, age and sex) National Aggregate Indicators (e.g., production and consumption of tobacco, fruit and vegetables) Injury surveillance (incidence; mortality)	Blood lipids (total cholesterol, HDL cholesterol) Diabetes (by blood chemistry) Health Beliefs Dietary Consumption Patterns Physical Activity Patterns NCD Morbidity (Disability)
SCREENING	'Opportunistic' screening for: - Tobacco consumption - High Blood Pressure - Overweight - Central Obesity - COPD - Cervical cancer - Oral cancer - Common mental disorders - Common eye problems - Common orodental problems	'Targeted' Screening for: - Diabetes - Dyslipidemia - Other Cancers - Transient Ischemic Attacks

Annex 9.1 (contd.)

Area	Essential Package (core components)	Optimal Package (other components)
MANAGEMENT	Clinical Algorithms for: - Acute myocardial Infarction - High Blood Pressure - Congestive Heart Failure - Diabetes - Transient Ischaemic Attacks - Childhood Leukaemias - Other cancers (eg., oral, breast, cervical) - COPD - Initial care of injuries - Depression - Epilepsy	Clinical Algorithms for: - Angina - Dyslipidemia - Stroke - Other cancers - Other mental disorders - Obesity - Advanced care for multi-organ injuries
HEALTH SYSTEMS	Integrate core components of prevention, surveillance, screening and management into primary and secondary health care Strengthen Health Provider Education (Learning and Skills relevant to NCD control) Enhance the knowledge and decision making ability of health care managers in the elements of NCD control Implement essential drugs policy for provision of NCD related drugs	Strengthen Quality Assurance in NCD related health care delivery Perform technology audits to identify and correct inappropriate use of expensive technologies Strengthen the production and distribution of cost-effective drugs and devices for NCD care in collaboration with industry.
RESEARCH	Strengthen capacity for research relevant to NCD control through national and international partnerships (Implementation Research, to effectively apply available knowledge)	Support innovative research in the etiology of NCDs (as relevant to Indian Population Groups) and for the identification of new technologies which are contextually cost-effective

Annex 9.2

Assessment of National Capacity: Questions for Situational Analysis

1. **What is the current capacity, within a defined community setting, for community participation in programmes related to the prevention and control of NCDs?**
   (health beliefs; access to information; networking within the community; partnerships with external agencies; availability, affordability, acceptability of and access to promotive, preventive and therapeutic health care)

2. **What is the current capacity, within the provincial/regional health care delivery system, to provide promotive, preventive and therapeutic health care, as relevant to prevention and control of NCDs in that community?**
   (currently operational programmes: content, resources, outreach; *health care providers:* numbers, training, skills, motivation, time; *resources for essential care:* community health education, essential drugs, equipment, guidelines, patient education; *referral linkages and follow-up services; surveillance systems)*

3. **What is the current capacity, within the provincial and national policy framework (regulation, legislation, taxation), to provide a supportive environment for people, patients and providers to adopt practices conducive to the prevention and control of NCDs in that community?**
   (tobacco control; food and nutrition; education; drug production, pricing and supply;
   resource allocation; urban planning; health care financing; media)

4. **What are the critical deficiencies in the capacity for and major barriers to the prevention and control of NCDs, in the perception of (a) community representatives, (b) health care providers (c) health administrators and (d) policymakers? What are the prioritised solutions recommended by each of these groups?**

5. **What is the required augmentation of capacity that is considered (a) desirable and (b) feasible, by policymakers, to meet the projected rise in needs for the prevention and control of NCDs over the next twenty years?**

Adapted from the project protocol of
Initiative for Cardiovascular Health in the Developing Countries
(www.ichealth.org)

10

Private Healthcare in India

Introduction

It is, in a sense, inexplicable that the private sector in health in India, which has always played a significant role in health service delivery, has been largely overlooked by Indian policymakers while formulating policy, plans and strategies towards achieving the 'health for all' goal. According to some estimates, well over half the available health services were being provided by the private sector even as early as the 1950's (1). Evidence from studies in 1963 reveal that most illness episodes in rural areas were treated by private providers and that only around 10% of the population used government facilities (2). The idealism and faith of early planners that the public sector could indeed 'provide all things to all people', coupled with the low visibility of the private sector and its low involvement with western medicine, might explain this initial oversight. Managing private sector providers is undoubtedly among the most complex stewardship tasks of government, but turning a blind eye to the growing influence of the private sector has proved expensive, whether in terms of the undesirable consequences of its unregulated and unplanned growth, or in terms of the opportunities lost in using its relative strengths to achieve public policy goals. This chapter attempts to define the characteristics and current role of the private sector in health, analyze its strengths and weaknesses, and propose options to include it in a coherent framework of policy and action to meet national health objectives. We do not deal with private health financing, as this is dealt with in a separate chapter.

Composition, Size and Spread of the Private Health Sector

What do we mean by the private health sector in India? The oft-repeated cliché that India lives simultaneously in several centuries is well exemplified in this sector, with corporate hospitals, super-speciality consultants and state-of-the-art technologies at one end of the spectrum, and illiterate, unqualified practitioners dispensing their own brand of healing at the other end. Its structure is complex: different types of providers practise formal and informal systems of medicine in a wide range of facilities. That classification is equally difficult is evident from the following attempt, vulnerable as it is to inadequate description or overlaps:

- nature of provider: private company, trust, NGO, qualified and unqualified individual provider;
- nature of service: hospitals, maternity and nursing homes, clinics, dispensaries, traditional practitioners, ancillary services (pharmacies, diagnostic facilities, ambulance services);
- system of care: formal (allopathy, ayurveda, unani, siddha, homeopathy); informal – unqualified, traditional (faith-healers, local medicine men and women, traditional birth attendants);
- ownership styles: for profit and not for profit.

The private health sector in India is commonly understood to refer to the for-profit, qualified provider. However, the sector includes not-for-profit NGOs, trusts, charitable and religious endowments. There is a growing concern about trusts and charitable institutions changing character to be more aptly classified as for-profit. Similarly, some expensive for-profit hospitals are registered as trusts to avail tax exemptions. The sector also includes the often overlooked unqualified practitioner, who has a far more significant presence in India's 600,000 villages than is readily acknowledged (3).

Data on the share of the private sector in total health infrastructure is limited by inadequacy as well as poor quality. There is no reliable data on the number of hospitals, beds, clinics/dispensaries or practitioners in the private sector. Government data, based on incomplete information collected from state governments and medical councils, is faulty, and hence available figures base estimates on various studies or indirect extrapolations. One study, for instance, estimates the number of private practitioners using the assumption that all doctors compiled from the lists of medical councils (about 12,00,000), minus government doctors (1,40,000), equals doctors in the private sector. Assuming that 80% are active, the study arrives at a figure of 8,50,000 private sector doctors (4). Data on facilities is also weak. For example, a hospital census conducted in AP in1993 listed 2802 hospitals, more than 10 times the official figure, and 42,192 beds, almost 4 times the official figure (5). Allowing for such under-estimation, a World Bank study has estimated that 90% of hospitals in India are in the private sector (6). Table 10.1 indicates government data on the growth and percentage share of private and public sector hospitals and beds.

Table 10.1
Growth and Share of Private Sector hospitals and Beds

Year	Hospitals			Hospital Beds		
	Public	Private	Total	Public	Private	Total
1974	2832 (81.4)	644 (18.6)	3176 (100)	211335 (78.5)	57550 (21.5)	268885 (100)
1979	3735 (64.7)	2031 (35.3)	5766 (100)	331233 (74.2)	115372 (25.8)	446605 (100)
1984	3925 (54.6)	3256 (45.4)	7181 (100)	362966 (72.5)	137662 (27.5)	500628 (100)
1988	4334 (44.1)	5497 (55.9)	9831 (100)	410772 (70.1)	175117 (29.9)	585889 (100)
1996	4808 (31.9)	10289 (68.1)	15097 (100)	295664 (63.4)	228155 (36.6)	623819 (100)

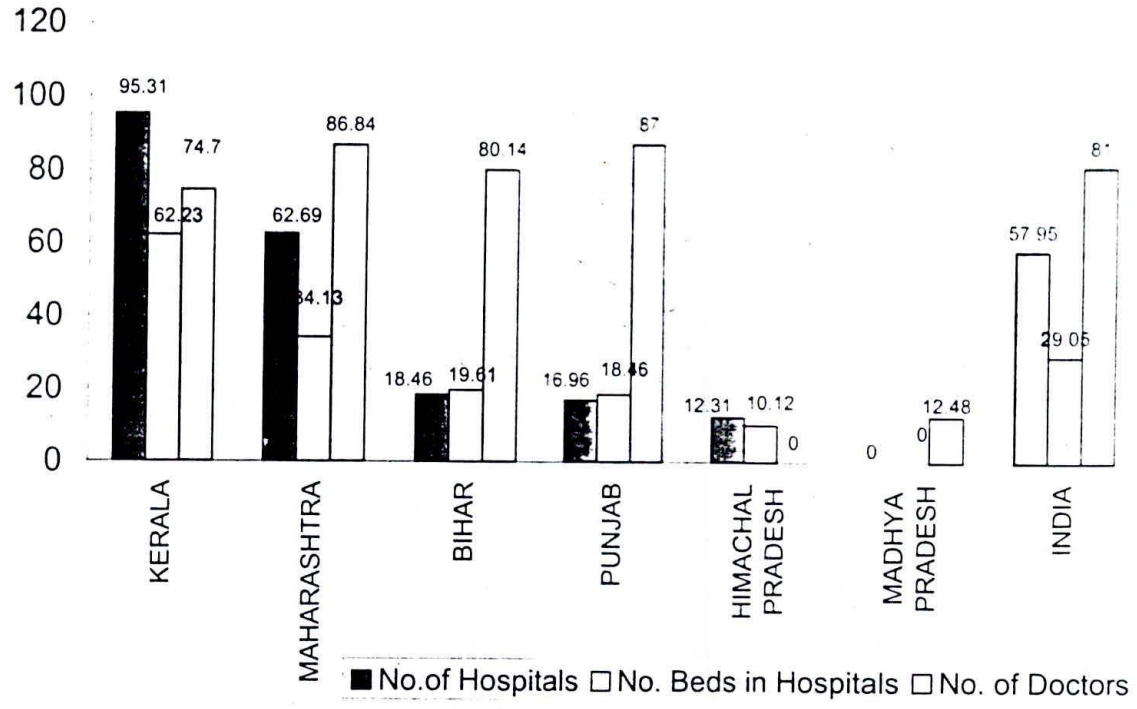
Figures in brackets denote percentage share.
Source: Health Information of India, CBHI, GOI, various years, Directory of Hospitals in India, CBHI, DGHS, GOI, various years

While these institutions have an impressive range of bed capacity (5 to over 700), most of them have small capacities, with 85% of them having less than 25 beds, and the average bed size being 10 beds (7). Most smaller institutions offer maternity and general services and are managed by doctor entrepreneurs (8), either singly or in partnership. Some studies

estimate that the sole-proprietorship category may comprise more than 80% of the private sector (9). However, small and large institutions differ widely in their range of services, equipment and facilities. Private tertiary care institutions providing speciality and super-speciality care are few and far between – only 1-2% of the total number of private institutions (10). Corporate hospitals, increasingly visible in recent times, actually constitute less than one per cent. The growing profile of these institutions, run mainly by trusts, private or public limited companies, has coincided with the entry of more advanced medical technology and the production of super-specialists from the country's leading institutions. A study on capital investment in large private hospitals reveals that investment in high technology equipment is viewed as a competitive strategy for increasing market share (11).

Physical access to healthcare is a prime need. But the spatial distribution of private facilities and doctors between states, and between urban and rural areas, does not facilitate the policy objective of equal access (Figure 10.1). State differentials indicate the private sector's propensity to set up facilities/practice in the more advanced states: HP has 12% of its hospitals in the private sector as compared to Kerala's 95%. HP and MP (possibly a case of non-reporting) show a negligible presence of qualified private practitioners, as compared to Kerala, Maharashtra and Punjab.

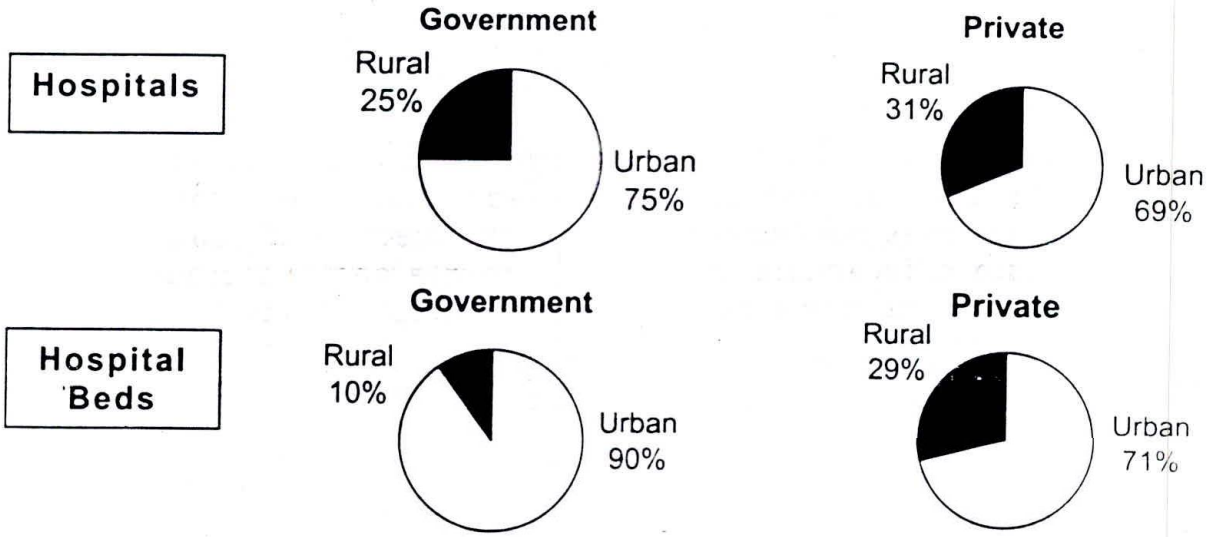
Figure 10.1
Percentage Share of Private Sector Hospitals, Beds, and Doctors by Select States



Source: (i) **Number of Hospitals and Beds:** M. Uplekar, A. George, **Access to Health Care in India**, 1995; (ii) **Number of Doctors:** R. Bhat, **Regulation of the Private Sector in India**, 1996

Rural-urban differentials are even sharper, with the spatial distribution of doctors and facilities showing a clear urban bias. The national average of urban hospitals and beds was 15 times the recommended norm in 1987 (12). But unexpectedly, private hospitals are relatively less urban-biased than public hospitals: about 31% of hospitals and 20% of beds are in rural areas, while only 25% of public sector hospitals and 10% of its beds are in rural areas (Figure 10.2).

Figure 10.2
Rural-Urban Distribution of Hospitals / Hospital beds: Public and Private Sectors



Source: Directory of Hospitals in India, 1998; Nandraj, Private Health Sector: Issues, Challenges, Options, 2000

The National Health Policy in 1983 called for expanding the coverage of services through the voluntary sector to improve access (Table 10.2). Till the mid-sixties, voluntary effort in healthcare was confined to hospital-based care. Later, inspired perhaps by the Chinese experience of a motivated health cadre delivering care at the community level, models of community health programmes and decentralized curative services began to receive attention.

Table 10.2
Growth & Share of Voluntary Hospitals and Beds

	1983				1987			
Ownership	Hospitals	%	Beds	%	Hospitals	%	Beds	%
Government and local	4065	55	374755	73	4180	43	395062	69
Voluntary	**569**	**8**	**53513**	**11**	**935**	**10**	**74498**	**13**
Private	2764	37	84206	16	4488	47	104018	18
Total	7398	100	512474	100	9603	100	573578	100

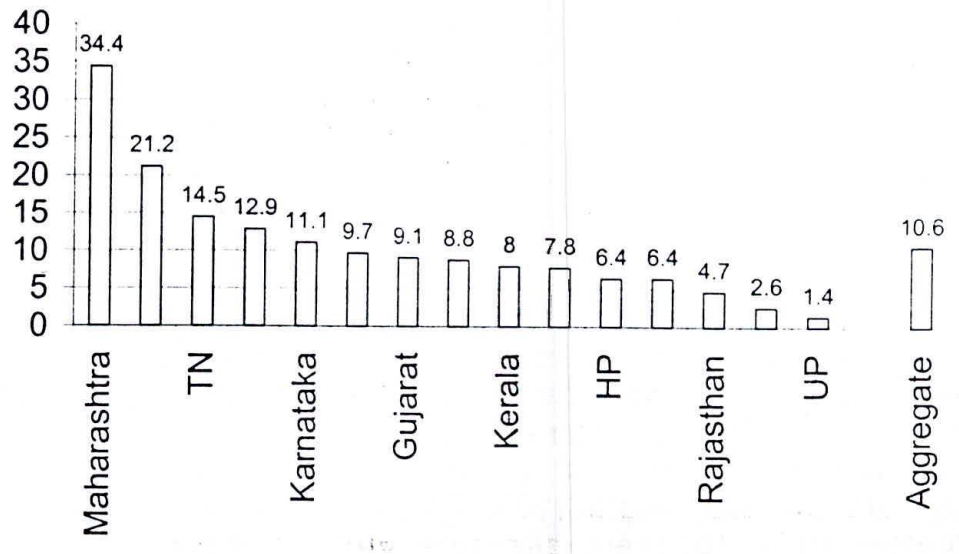
Source: Directory of Hospitals in India, 1985 and 1988

Voluntary effort in healthcare today covers a wide range of activities and can be classified broadly into

- organizations implementing government programmes (Family Planning, Reproductive and Child Health, AIDS Control, Integrated Child Development Services);
- organizations running specialised community health or integrated programmes for basic healthcare delivery and community development;
- organizations delivering care and rehabilitation services for disadvantaged groups (leprosy patients, the handicapped);
- organizations sponsoring healthcare for blindness control, polio eradication, management of blood banks and support during disasters/epidemics (Lions Club, Rotary Club, Red Cross and Chambers of Commerce); and
- organizations / individuals health researchers and activists who undertake applied research in health service delivery, health economics, health education, and who play an advocacy role.

According to a rough estimate, more than 7000 voluntary organizations in the country work in these areas of healthcare (13). The NCAER survey on human development indicators (1994) reveals that only 10.6% of the sample villages report the presence of some type of NGO. As in the for-profit sector, wide state differentials exist: UP reports only 1.4% villages with any kind of NGO, while Maharashtra reports a high of 34.4% (Figure 10.3). While the voluntary health sector has a higher presence in rural areas, unlike the for-profit sector, hard data on rural-urban presence is not available.

Figure 10.3
Percentage of Villages with NGOs, by Select States, 1994



Source: Ajay Mahal et al, **Decentralization, Democratization & Public Sector Delivery of Services: Evidence from Rural India**, 1999

Although a systematic documentation of NGO contribution is lacking, it is indisputable that NGOs can improve access, quality, and equity of services, either through direct provision, or through advocacy and other action. An empirical analysis based on the 1994 NCAER survey of human development indicators, reveals that NGO presence enhanced immunization rates : BCG immunization rates were a significant 11%-12% higher with NGO presence (14).

The potential of NGOS in helping reach public health goals has not been fully realized for several reasons, beginning with their limited size and spatial distribution. That they are missing where they are most needed hinders effective partnerships with the public health system. For instance, the state government's widely publicized call to take over the management of PHCs in the tribal areas of AP has found few takers. Performance in some cases has left much to be desired, with poor coverage levels as against the targeted population. Importantly, evidence from several schemes reveals that the poor are not well-represented in schemes unless there is an element of subsidy, which is most often provided by the government (15). Additionally, several NGOs have misused funds, thus seriously hindering expanded and effective partnerships.

A 1990 World Bank study (16) concluded that NGO involvement was limited because of

- the small numbers of NGOs involved in health or family welfare, their uneven geographic spread, and their limited areas of operation;
- low funds;
- bureaucratic rigidities affecting funds transfer from the government, particularly limitations imposed by government rules of audit and disbursements;
- weak financial management and accounting practices, limited technical and managerial capacity; and
- inadequate organizational capacity in the government to manage government-NGO interaction.

The challenge is to find strategies that will facilitate a far more substantial NGO participation in the health sector, particularly in backward states and remote areas, and to ensure systems that will keep participation accountable and transparent.

The natural corollary to this urban concentration of qualified practitioners and facilities, and the limited spread of the voluntary sector, is the rise of unqualified rural medical practitioners (RMPs). The estimated one million illegal practitioners manage about 50-70% of primary consultations, mostly for minor illnesses, and comprise the *de facto* primary curative healthcare system of rural India (17). The fact that they are unqualified seems to matter little to their clientele, who appear to judge them mostly by convenience and costs. Despite government attempts at license and regulation more than 25 years ago, subsequent proliferation has made prevention almost impossible (18). This complicated issue involving

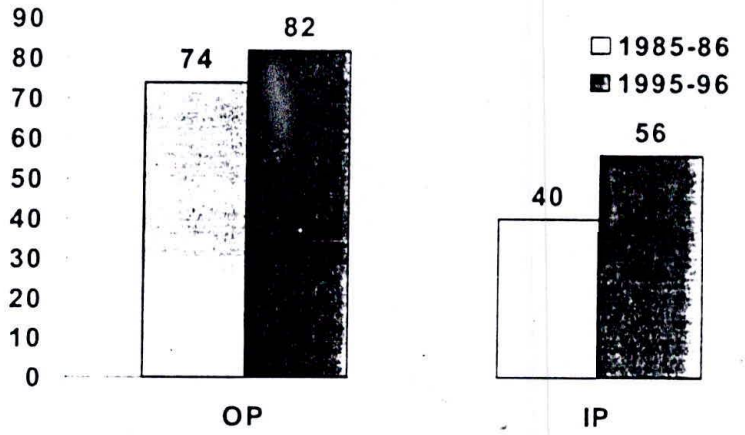
arguments and counter-arguments will be discussed in the section on the quality of care in the private sector, but briefly, the options before us are to

- repeat attempts to prevent their practice;
- continue ignoring them, hoping that improved public health services and quality awareness will undermine demand for their services;
- acknowledge their presence, define the parameters, and include them in the overall framework for health policy and planning.

Utilization Patterns of Private Healthcare

At the all-India level, the private sector currently dominates both outpatient (OP) and inpatient (IP) care (Figure 10.4). Reasons for the poor use of public health facilities are many, but distance, long waiting time, non-availability of doctors and lack of medicines are commonly quoted in several studies.

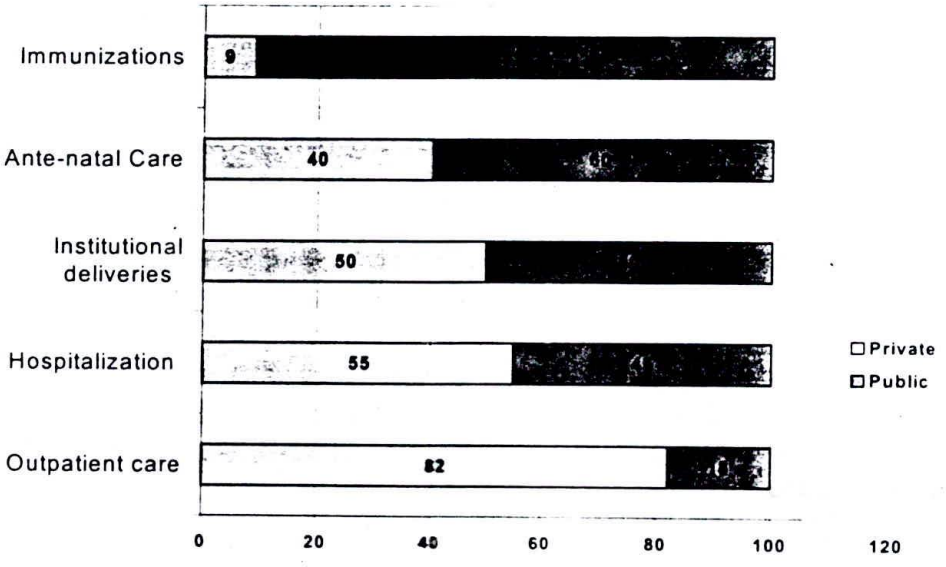
Figure 10.4
Share of private sector in Outpatient & Inpatient care



Source: **National Sample Survey**, 42nd & 52nd Round

The private sector accounts for 82% of all OP visits at the all-India level, with no significant variations by income group. The range is from 79-85% from poorest to richest quintile, by urban and rural, by gender, caste, or tribe (19). While the private sector shows a slight edge over the public sector in hospitalizations and institutional deliveries, there is a dramatic decline for ante-natal care and immunizations (Figure 10.5). The private sector's overriding presence in curative care has perhaps led to the view that India does not have a private *health* sector but a private *medical* sector; and that this sector has not taken up, either voluntarily or otherwise, a worthwhile role in achieving national health goals (20).

Figure 10.5
Public and Private Sector Shares in Service Delivery

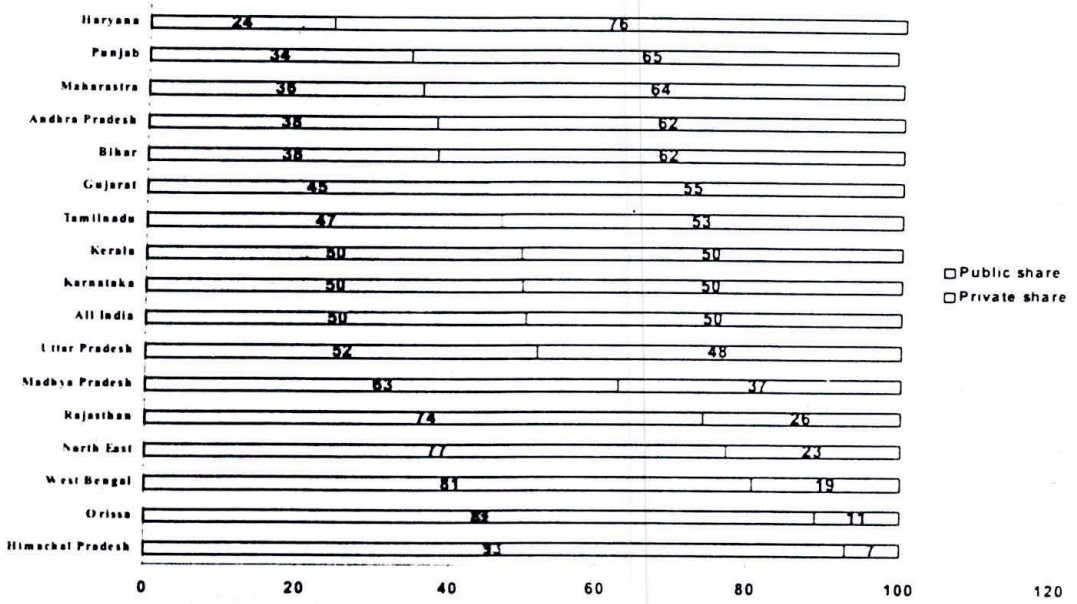


Source: Mahal et al, **Who Benefits from Public Health Spreading in India**, NCAER, 2000

The states show sharp variations for IP care (Figure 10.6). Certain states with underdeveloped and thinly spread private sector facilities, show lower utilization, such as HP (7%), Orissa (11%), West Bengal (19%), the NE states (23%), Rajasthan (26%) and MP (37%). More advanced states, with a developed private sector, show a greater reliance on private health facilities. These include Haryana (76%), Punjab (65%) and Maharashtra (64%). The trend indicates that where the private sector is better developed and distributed, there appears to be a growing preference for its services. Urban-rural differentials for hospitalized care are not pronounced, with urban residents utilizing more of private sector facilities (57% of all IP days), and rural residents using more of public facilities (56% of all IP days).

An important dimension to utilization of IP care in the two sectors is the share between rich and poor. Overall for India, the percentage of the poorest quintile using private sector hospitalization facilities, at 39%, is almost half that of the richest at 77%. However, there are dramatic variations among the states in terms of reliance of the poor on private sector hospitalizations. HP, Rajasthan and Orissa rely heavily on public sector services, perhaps because they happen to be the only available source. Haryana, Punjab and Maharashtra rely more on private sector services. Across India, the perception is that the private sector responds better to the patient's interest than the public sector. Data from the NSS 52nd Round reveals that 44% of patients chose the private sector because the doctor was more easily available, 36% because they were not satisfied with the treatment in the public sector, and 7% because medicines were not available (21).

Figure 10.6
Distribution of Inpatients between Public and Private by State

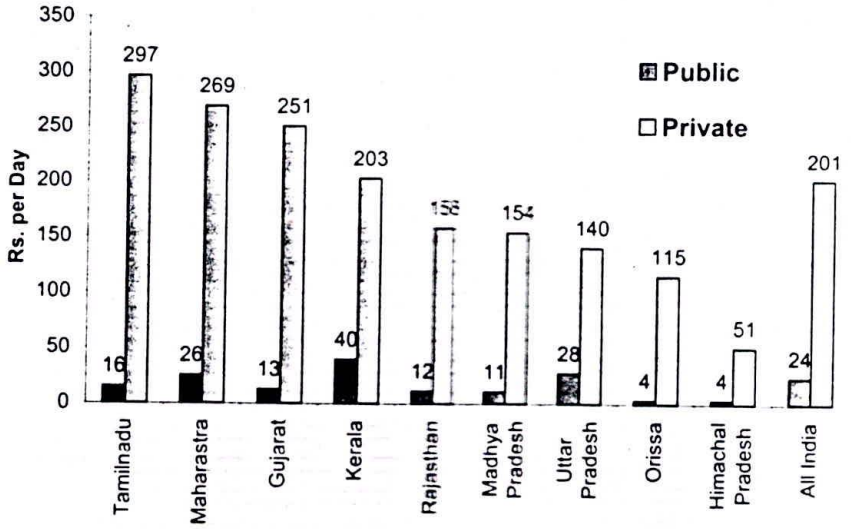


Source: Mahal et al, **Who Benefits from Public Health Spreading in India**. NCAER. 2000

Costs of Private Healthcare

The preceding sections have shown that the people of India, including the poor, make considerable use of the private health sector. The logical question would then be: at what cost? This is a crucial dimension of the private health sector in India, unfortunately under-researched. The few studies that estimate health expenditures at household level show that 7-9% of annual household consumption expenditure is spent on healthcare needs (22), about 85% of which goes to the private sector. The NSS 52nd round reveals that per capita out-of-pocket expenditure per year to private facilities ranges from over Rs.500 among the richest, to Rs.75 among the poorest. In terms of percentage share of per capita expenditure by quintile to the private sector, the poorest quintile contributes 88%, compared to 84% by the richest quintile. NSS data also reveals that the average cost of treatment in the private sector for rural inpatients is 2.1 times higher, and for urban inpatients 2.4 times higher, than in the public sector during 1995-96. The difference in costs between the private and public sector varies significantly across states, with private in-patient costs higher in the more advanced states (Figure 10.7).

Figure 10.7
Average Hospital Charge per Inpatient Day by Public and Private, by Select States



Source: Mahal et al, **Who Benefits from Public Health Spending in India**, NCAER, 2000

Data on rates in the private sector by facility, by service, state, urban/rural, and region, is inadequate. However, the average charges for select services in private hospitals are revealed by a recent World Bank-funded, centre-sponsored study in AP and UP. UP has higher prices than AP for most services, possibly due to higher establishment and transaction costs, and the lower spread of private facilities (Table 10.3). *Most of the expenditure by the household goes towards doctors' fees and drugs.* A 1987 field study in Jalgaon district, Maharastra, found that 66% of the average cost per illness episode was spent on doctors' fees and drugs, 12% on hospitalization and surgery, 6% on diagnostic tests, 8% on transport costs, and 8% on other costs (23).

Table 10.3
Average Charge (Rs) for Select Services in Private Hospitals

Services	Andhra Pradesh		Uttar Pradesh	
	Small Hospitals	Big Hospitals	Small Hospitals	Big Hospitals
OP Generalist	45	50	54	37
OP Specialist	64	82	104	170
Normal Delivery	1060	1613	2263	2400
Cesarian Section	3676	3708	7388	5545
Ultrasound	233	330	374	381
Chest X-Ray	92	107	99	98

Source: **India: Raising the Sights -- Better Health Systems for India's Poor**, World Bank, 2001

The costs of private sector healthcare are influenced by provider payment mechanisms. *Most payments in India are on an out-of-pocket, fee-for-service basis, an inflationary and cost-escalating method that induces the over-supply of care.* The alarming increase in cesarean deliveries in Chennai (above 40%), has been attributed to the fee-for-service payment systems prevalent in private hospitals (24). Over-prescribing, and subjecting patients to unnecessary investigations, are characteristics of a fee-for-service payment method. Additionally, the influence of pharmacies and diagnostic centres over doctors' prescribing behaviour is a frequent consumer complaint. So is the nexus between qualified and unqualified practitioners for commission-based referrals. In the coastal districts of AP, cesarians and hysterectomies are on the rise, with unqualified practitioners referring patients to nursing homes for a commission. This 'cut-practice' operates in most urban-centred private hospitals (25).

Usually, technology advances are associated with a lowering of costs. But the reverse is true of the medical sector, with capital-intensive technological development increasing healthcare expenses. Excess capacities, caused by the proliferation of medical equipment and technologies in urban areas, have led to both the excessive and irrational use of technologies. An example is the overuse of expensive diagnostic tests such as MRI, CT scan, ultrasound and ECG. Many hospitals fix the amount of 'business' a doctor has to bring in to ensure that beds are occupied and equipment fully utilized (26). Hospital managers have also admitted that they are forced to recover the investment on high-technology equipment through 'excessive' referrals (27). *This growing tendency to over-refer, over-test, over-medicate, and over-use diagnostic techniques, has been making healthcare unaffordable and a major drain on the resources of the poor.*

Quality of Private Healthcare

While the general assumption is that the quality of care in the private sector is superior to that in public institutions, this is not borne out by the limited existing studies. A 1997 study in two districts of Maharashtra found that a large number of unqualified doctors were practising modern medicine, and that several hospitals did not have even basic infrastructure or personnel (Annex 10.1). More recent studies of private medical hospitals in Kolkata and Mumbai confirm the poor state of facilities in private hospitals, and the frequency of medically unnecessary procedures (28). Studies also reveal that medically unsound early discharges were being resorted to since most procedure-derived profits are made in the first days of hospitalization (29). Private providers have been reported to prescribe excessive, expensive and more risky drugs. In Satara district, Maharashtra, a study on drugs supply and use showed that irrational drug prescription in the private sector was more than double that in the public sector. The problem is compounded by self-medication, facilitated by pharmacists: 47-64% patients are reported to buy medicines over the counter without prescriptions (30).

Quality of care is seriously compromised by inappropriate treatment protocols and drug regimes, as well as inadequate patient counselling / education. It is a sad comment on the functioning of the public sector that despite the widely publicized national disease control programmes offering free treatment and drugs, people still choose private providers. An estimated 60-85% of TB cases seek treatment from private providers (31); and about two-thirds stay with them (32). Similarly, 80% of consultations for childhood diarrhea are with private providers, mostly unqualified (33). Private providers are also the first choice for STDs, perhaps for reasons of greater confidentiality. Though they dominate treatment of diseases contributing most to the national disease burden, their treatment practices are under-researched, and existing studies reveal questionable practices. TB care, for example, reports failure to test sputum, reliance on X-rays, use of incorrect drugs/dosages and failure to educate patients. Almost half the TB patients consulting private doctors failed to complete their treatment (34). A Mumbai study revealed that 100 private doctors prescribed 80 different regimens for TB treatment, most of them expensive and inappropriate (35). Similarly, incorrect drug regimens and dosages affect the treatment of malaria (Annex 10.2). Poor prescribing practices and inadequate dosages harm individuals, promote resistance to drugs, and contribute to the spread of communicable diseases.

A recurrent theme relating to quality has been the need to redesign the medical curricula to address the major disease burden of the country, and to ensure knowledge of standard treatment protocols and drug regimens. The recent move to prescribe a minimum number of hours of Continuing Medical Education (CME) and re-registration every 5 years by MCI, pending approval of the central government, has been welcomed. But current CME programmes in the states focus on speciality and super-speciality care. Given the fact that private sector services in the treatment of common diseases (TB, malaria, RTI/STD, diarrheal diseases), do not conform to standard treatment practices, there is an urgent need for the dissemination of standard treatment and clinical protocols. Legislation must, therefore, prescribe minimum CME hours covering major disease burdens in the local context.

The review of studies reveals that the technical quality of care provided in the private sector is often poor, ranging from poor infrastructure, to inappropriate, inadequate and unethical treatment practices, to over-provision of services and exorbitant costs, to delivery by unqualified providers. "Information asymmetry" among users, arising out of a lack of information and an inability to make a sound judgement about the available types of healthcare, compounds the problem.

Private Healthcare and Health Sector Goals

The importance of the private sector in terms of size, spread and utilization, as also the negative consequences of its unplanned and unregulated growth, are obvious. It is clear that the private sector must fit better into a broader strategy to meet health sector goals. The obvious

question is: what are the current government strategies used to engage the private sector in these goals? Despite the lack of an explicit, comprehensive public policy for the private sector, certain government mechanisms or 'tools for oversight' (36) have been used to influence the private sector. The mechanisms in use at present are incentives, regulations and contracting. The next section analyses how effectively these mechanisms have been used to improve the quantity, quality, equity and efficiency of healthcare services, and what the options are for more effective engagement. In addition, mechanisms not widely used so far – public disclosure, consumer education and institutional mechanisms to promote dialogue and consensus – need to be discussed. The analysis is then rounded off with a suggested policy framework to direct the private sector toward meeting national health goals.

Access, Equity and Efficiency

Incentives: The mechanism of incentives can improve access, equity, efficiency and quality by influencing private providers to locate in underserved areas, to provide services to targeted groups, and can be built into contracting arrangements to use resources efficiently, improve quality and target services to the poor. It can also promote access to public health products. Incentives need not be financial; they can include the provision of supplies such as drugs, vaccines, and contraceptives, or the recognition of providers (accreditation/other forms). Incentives in India have included direct and indirect subsidies, covering private facilities, private providers, services and products.

Direct subsidies for the location of facilities and the provision of improved technology have been used to improve access to facilities and services. These include land at subsidized rates, customs duty exemptions for equipment, fiscal concessions such as exemption from sales tax and octroi for equipment, plant, machinery, and institutional finance at low interest rates. The 1983 National Health Policy recommended the promotion of private investment in tertiary care, acknowledging that the central and state financial situation would limit public investment in capital intensive care. Hence concessions have been made mainly to tertiary-level speciality and super-speciality facilities, but concentrated, however, in urban areas. Conditions of a percentage of free treatment for the poor have been worked in to address equity considerations. A recent study (37) on this initiative in Rajasthan, Punjab and Delhi, reveals weaknesses, including the offers of land in urban rather than rural locations; inadequate information to participants (except Rajasthan); no specifications on free care for the poor (Punjab); a lack of coordination among departments and inadequate management structures to handle new tasks. The results were delays, legal wrangling in some cases, and ultimately, failure to establish joint ventures (38). A House Committee set up by the state legislative assembly of AP has also concluded that hospitals in the state which received the concession of subsidized land were not providing free treatment to the poor (40% out-patients and 10% in-patients), and that there were no monitoring systems to ensure this obligation. The story

repeats itself in the scheme of customs duty exemption on import of medical equipment, a scheme recently withdrawn (39). Some states have used non-monetary incentives to motivate expansion of tertiary care. AP recently permitted medical and dental colleges to be set up only in identified backward locations, a policy that has paid dividends with large private investment in rural locations, taking specialist care closer to the people. Conditions on treatment of the poor, however, have not been prescribed.

Though incentive mechanisms have not improved access to quality healthcare and equity for obvious reasons, the initiative should be promoted with the necessary correctives. Some of the lessons learnt for effective action are that

- **Mapping and zoning exercises** must be undertaken to identify under-served areas. **Incentives** must be offered, such as subsidized land, the use of unutilized public buildings, tax-breaks, and low-cost capital with appropriate scaling to attract investment in the most needy areas. (Data from local stakeholders will indicate conditions and safeguards to improve incentive mechanisms.)
- **Remote and tribal areas must be targeted**, with strong efforts and adequate incentives to motivate voluntary organizations, trusts and charitable hospitals to set up hospitals/services where most needed. **Stable funding mechanisms** (timely and assured release of agreed budgets), the **simplification of procedures** and clarity regarding objectives, expectations and outcomes will persuade a larger voluntary sector participation in health service delivery.
- **Non-monetary incentives,** such as permissions to set up medical/dental colleges in rural areas, can develop specialist services in needy areas.
- Both monetary and non-monetary incentives must include **conditions of a percentage of free services to the poor.** Referrals of the poor from government hospitals must be linked to these institutions and closely monitored.
- **The monitoring of obligatory service provision must be decentralized** to local bodies or appropriate local committees.
- **Management capacities** must be developed
  - pre-project: to set specifications, formulate guidelines, coordinate with departments and manage negotiations;
  - post-project: to monitor and regulate obligatory service provision at state and local levels.
- **A regulatory framework and enforcement capacity** should be in place prior to such incentive-based expansion.

Regulation: This mechanism can improve access to qualified practitioners and distribute doctors / services more equitably between urban and rural areas. In Maharashtra, a landmark legislation requires doctors to serve 3 years in rural areas to be eligible for post-graduate admission. Similar

legislation has been enacted by Kerala and Orissa. In fact, the Medical Council of India should amend its legislation on standards for education across the country, through a similar provision. Additionally, the rural areas in which they are required to serve should be notified by each state to ensure spatial distribution as per need, and to prevent a clustering around cities.

Contracting: This mechanism improves access to services by contracting for the delivery of specified services, or through the provision of training or supplies such as drugs, vaccines and IEC material. Contracting arrangements with the private sector also imply the expectation of improvement in efficiency. The private sector, whether for-profit or not-for-profit, have long been associated with family planning, leprosy and blindness control programmes. Payment is made on a per case/per bed basis for services rendered. Partnering in the family planning programme also takes place through free supply of contraceptives – condoms, pills and IUDs. But private sector participation in this crucial national programme has been stagnating at around 17%, belying the expectation of increasing access, because of insufficient incentive amounts, the cumbersome procedures for government reimbursement, and the income tax problems that could follow the inspection of books of accounts. In the blindness control initiative, the expectations of improved efficiencies are belied by recurrent complaints of the over-reporting of cases, facilitated by inadequacies in monitoring performance of private sector providers. Newer initiatives include private contracting to expand essential health services (primary healthcare in urban slums and remote PHCs), and specialist services (gynecologists, anesthetists under the RCH programme), to underserved, targeted population groups. A recent initiative, TB treatment and control through a trust hospital in Hyderabad, points the way to contracting for TB control services in urban areas where public sector infrastructure is inadequate (Box 10.1).

Box 10.1

Public-Private Partnership for the DOTS Programme in Hyderabad City

A public-private partnering initiative for TB control, sponsored by WHO and DFID, is being implemented in Hyderabad, AP, through the not-for-profit trust Mahavir Hospital covering a population of 500,000. Since more than 60% of patients first approach private practitioners for TB care, the project utilizes the services of more than 350 doctors who practice in the catchment area. These private practitioners, allopaths and non-allopaths, refer chest symptomatics to Mahavir's chest clinic, where they are investigated and categorized as per DOTS. After 3 initial treatments at Mahavir when patient education and counselling takes place in the presence of a family member, patients are given the choice of continuing treatment in Mahavir or being shifted to neighbouring DOTS centres, nursing homes located in the catchment.

There are 32 such nursing homes participating in the project. The DOTS provider at this centre is a nurse or pharmacist; the provider's work is supervised through Mahavir's chest clinic. Treatment observation is available early morning and late evening to suit patients and treatment is free. Government provides drugs and donor funds pay supporting staff in the chest clinic.

As of March 2000, 2463 symptomatics have been examined (male:1299; female:1164); 60% have been referred by private practitioners. 1060 cases have been registered for treatment (male:519; female:541). In view of the neighbourhood DOTS centres, there have been no defaulters. Conversion and cure rates are in the range of 95%-98%. This is considered an effective model for the TB Control Programme in urban areas where public health infrastructure is weak.

Source: Directorate of Health Services, Andhra Pradesh

Transferring the management of public health facilities to the private sector, (almost always to the voluntary sector), is a more recent form of contracting to improve access and efficiency. In Gujarat, the management of all primary healthcare services in one district has been handed over to SEWA Rural. Orissa and Karnataka have handed over management of PHCs in tribal/remote areas to NGOs. These public institutions have remained underutilized for various reasons, and the move is expected to expand the coverage of services and improves cost-effectiveness. Handing over the management of 192 newly created urban health posts to NGOs in 74 municipalities of AP has the added objective of cost-savings on capital investments through the utilization of existing private sector resources. Under the AIDS Control Programme, the management of interventions for high-risk groups is handed over to voluntary organisations in view of their commitment to meeting social mandates. Some governments have been considering the transfer of hospital management to private providers, and action initiated in one case in Mumbai and one in Kolkata. The majority ownership of the hospitals and management is with private firms, with government representation on the Board, and conditions regarding the percentage of poor patients to be treated free. The Kolkata joint venture is functional; the Mumbai initiative is yet to take off. The reluctance of most governments to partner with the for-profit private sector in joint ventures has been the perceived risk of not meeting social mandates for equity. Clearly, pilot attempts will have to be carefully studied and assessed before such partnering is replicated on a larger scale. An effective regulatory and enforcement framework must also be in place to ensure that contractual and social obligations are fulfilled.

Contracting for services with private sector providers requires capacities to assess needs, formulate contract specifications, manage negotiations, manage accounts and finance, set standards, monitor and regulate service provision and evaluate outcomes. This capacity can either be developed within the public sector, or contracted to specialist organizations with proven management capacity: State Management Agencies have been contracted to manage NGO interventions with high-risk groups in the DFID-funded AIDS control initiatives in Kerala and AP. Many states have been contracting out ancillary services – security, sanitation, laundry and catering. There is as yet little evidence on the effects of these initiatives on savings, equity or quality changes, and the limited available evidence reveals that monitoring capacity is weak. For example, none of the Mumbai public municipal hospitals that have contracted out catering services has monitored quantity and quality of food provided (40). With no monitoring/regulation by either contractor or hospital management, there are constant complaints of informal payments to contractual security staff in AP. Several states are now considering contracting out of diagnostic services. All this only emphasizes the need to develop capacities at state, local and institutional levels to handle this new role, and in particular, to design efficient contracts and monitor contractor compliance. Most contracting initiatives in the states are currently funded through externally aided projects. The sustainability of these initiatives once funding ceases is an issue at hand.

Recruiting private providers into accredited networks with a programme logo is an effective way to increase coverage, meeting priority services and target groups. The international White Ribbon Alliance for maternal health and the Green Star Network in Pakistan for family planning services are two examples. In AP, in what could be the start of an accreditation network for promoting access to a priority service, rates lower than the market rates for a mother and child health package have been negotiated with private nursing homes through the AP Private Nursing Homes Association and the State Branch of the Indian Medical Association. The rates will be publicized by participating nursing homes through a prominent display board. Accreditation networks require adequate resources and a body able to manage the scheme; they can be self-financing, but often receive government support. This is one partnering initiative where Indian experience is limited, and which can be effectively promoted through voluntary organizations and professional bodies.

There is increasing international evidence of the effectiveness of social marketing as a means to increase the demand and awareness of public health products. Social marketing in India has covered some products with public health benefits – mainly the contraceptive pill and condom. In recent times, oral rehydration salts and Vitamin A are also being covered. Social marketing can also increase access effectively. In Tanzania, the sale of insecticide-treated mosquito nets at subsidized rates has increased the demand and number of manufacturers, resulting in price reductions, wider choice and greater awareness of efficacy (41).

In sum, contracting and partnering with the private sector could increase access to essential and specialist health services and products, address equity considerations by targeting underserved groups, and improve cost-effectiveness – by reducing capital investments, using existing private sector infrastructure and promoting improved utilization. The options for future action are as follows:

- **urgent development of capacities at state, local and institutional levels** to oversee contracts with the private sector;
- **studying effects of different models of contracting** on financial savings, efficiency, quality changes and health needs of the poor;
- **promotion of new partnering initiatives** with the private sector for service delivery and management of public institutions;
- **attempting accreditation networks** for identified services through voluntary organizations/professional bodies
- **supporting social marketing initiatives** for public health products and assessing existing schemes for correctives;
- **enacting legislation that prescribes rural service** in state notified areas as eligibility criteria for post-graduate admission.

Quality, Costs and Accountability

Regulation: In recent times, there has been an increasing demand from patients, advocacy groups, consumer federations and the general public that the private sector be made accountable in terms of quality and costs of healthcare. Like incentives, regulation controls the access, quality, equity and costs of healthcare through government action, but with legal backing reinforced by punitive measures. Though regulations for the Indian health sector exist, they are too often inadequate or outdated. Compounding this inadequacy is the problem of poor enforcement – arising out of an inadequate regulatory framework, the lack of resources, resistance from various professional groups, the lack of political will, and 'regulatory capture' through bribery. We restrict our assessment to regulations enforcing quality and accountability parameters: standards for medical establishments, medical practice and ethics, controlling costs, and protecting consumer rights. However, current regulations cover a much wider range and can be broadly classified into five categories.

- Regulations defining a professional code of conduct – the Indian Medical Council Act, 1956, the Indian Dental Council Act which can take doctors off registry rolls for violation of rules, the MCI Medical Code of Ethics;
- Regulations for minimum and uniform quality standards – the Indian Medical Council Act, 1956; the Dentists Act, 1948; the Nursing Council Act, 1947; the Pharmacy Act, 1948; the Indian Medical Degrees Act, 1916, which maintains registry, recognises institutions training medical personnel, prescribes uniform standards for medical personnel training (standard curricula, admission and examination standards); the Bureau of Indian Standards, which sets standards for articles or processes and addresses complaints about product quality.
- Regulation controlling sale, price and quality of drugs – Drugs (Control) Act, 1950 which fixes maximum prices and quantities to be sold; the Drugs and Cosmetics Act, 1940, the Dangerous Drugs Act, 1930, which defines quality standards and prohibits import, manufacture and sale of certain drugs;
- Regulation that register clinical establishments – Nursing Home Registration Acts (Delhi, Maharashtra, West Bengal) which maintain a register of private hospitals and cancel registration on provisions not being met;
- Regulations protecting consumer rights – the Consumer Protection Act, 1986 with a redressal mechanism that compensates for any inadequacy in quality of medical or insurance services, or exorbitant prices; Employees State Insurance Act and CGHS Rules which address complaints of treatment, benefits, eligibility; the Medical Termination of Pregnancy Act, 1971, conferring the right to abortions on health grounds; the Prenatal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994 and the Transplantation of Human Organs Act, 1994, with its mechanisms to prevent misuse of technology and commercial dealings in human organs respectively. The Indian legal system also provides other instruments such as the Law of Torts, the

Indian Contract Act and the Indian Penal Code, but these are rarely used for protection of consumer rights on healthcare issues.

Standards for Medical Establishments: Hospitals, nursing homes, dispensaries/clinics, diagnostic facilities and laboratories have proliferated in India without regulations specifying minimum standards and norms. In recent times, minimum standards in medical establishments have been discussed at central government level with states and professional bodies, and draft guidelines circulated to states. Since several states are in the process of drafting legislation setting standards and norms, a review of existing regulations and newer initiatives will provide useful lessons. Existing legislation in Delhi and Maharashtra provide for registration/licensing and inspection by a designated authority, but do not specify minimum standards for infrastructure, personnel, record-keeping, reporting on public health issues, sanitation and hygiene. Legislation enacted by the government of TN without consulting other stakeholders was taken court. The Karnataka and AP initiatives in constituting committees chaired by reputed medical professionals, representing the interests of all stakeholders and consulting with them on draft legislation, merits mention. AP has gone a step forward: the committee has formulated the standards and rules for each type of medical establishment. Given the fiscal situation in most states, governments may not be able to invest in regulatory mechanisms to enforce these regulations. A feasible and acceptable proposition is setting up an autonomous Appropriate Authority chaired by a medical professional/judge/ administrator of repute, with representation of all stakeholders including consumers. Financial autonomy could be ensured through appropriate registration fee charges. Three wings could function under this Authority to facilitate qualityt management and promote accountability: i) registration/licensing of medical establishments; ii) dissemination of the provisions of the act, promotion of quality standards and accreditation; and iii) disciplinary action. The Authority could contract services of individuals or organizations for specific tasks.

With public pressure building up, the time is now ripe to enact legislation that will register/license facilities and promote accreditation systems, crucial to standards and quality of healthcare. The following options will facilitate speedy and effective enactment and implementation:

- **All professional stakeholder groups must be involved** in the consultative process to draft legislation for registration/licensing.
- **Rules regarding standards for all types of medical establishments should be drafted simultaneously** so the legislation can be implemented on being enacted. Stakeholders could assume responsibility for drafting of rules.
- **An autonomous Appropriate Authority** should be set up to enforce regulations.

- **Registration/licensing/inspection fees should make the Authority self-financing.** Organisational capacity to implement and monitor regulation must be ensured.
- **A provision mandating social obligations** would motivate private participation in public health programmes and service delivery and address contentious issues such as the need to accept accident and medico-legal cases and reporting requirements. Rules should clearly outline the requirements of information sharing on clinical care and outcomes.
- **Widespread dissemination of rules and acts** will help motivate compliance.
- **An accreditation system for medical establishments** that could also function through the Appropriate Authority should be simultaneously developed. Financial incentives (government referrals under CGHS, ESI and other schemes) to only accredited hospitals/diagnostic centres/labs would buttress efficacy. Maharashtra has formed a 'Healthcare Accreditation Council' comprising all stakeholders, including consumer organizations, to evolve standards (physical, clinical and quality assurance), assessment and grading parameters and procedures for an accreditation system (42).

Costs: Rapidly escalating healthcare costs need to be contained, and regulation is seen as one of the mechanisms. The difficulty in determining charges in the absence of clear definition of appropriate treatment for different conditions and settings, coupled with pressures from powerful groups of private providers, all deter governments from attempting to set prices for private healthcare. Direct out-of-pocket payments and users' lack of information to determine what constitutes value for money, facilitates cost inflation. One method of controlling costs is pre-payment or prospective payment schemes where financial risks are shared among scheme members, and private providers are paid for commitment to provide defined packages of care. Since in most cases, over 50% of healthcare expenditure is on drugs, price control of producer prices and/or distribution margins can control healthcare costs. While governments may not have the capacity to set and regulate price controls for health services, they can, at the very least, ensure transparency in charging practices through regulation requiring publication of prices. Publication of prices for treatment services, diagnostic and lab services, room/bed and nursing charges by private providers will not only assist the consumer to take decisions on how much to buy and where to go, but will also have a favourable spin-off effect. Once prices are published, the media, consumer groups and other community based groups can promote awareness of consumer rights, including fair pricing, which will bring pressure on private providers to contain their prices. The use of inappropriate/unnecessary high-cost investigations and procedures may be addressed through a provision requiring mandatory review of complaints by the appropriate authority. The ultimate objective would be to institute a system of medical audit. The options suggested are:

- **legislative provision for the prominent display of rates** for services, since prescription and enforcement of price limits may not be feasible; and
- **legislative provision for the mandatory review of complaints** by the appropriate authority.

Medical Ethics: State legislation deals with matters of professional and ethical conduct. The punitive provisions of the MCI and State Council Acts allow for striking off the name of the guilty party from their rolls entirely or for a specified period. Given the low level of registration and inadequate monitoring systems in councils to ensure registration, the de-registration provision has not been effective. The medical brotherhood syndrome, self-interest and survival in a highly competitive marketplace, seem to compromise the laudable objective of self-regulation and compliance. The options proposed to promote professional and ethical conduct are

- **to make an exhaustive list of professional offences/misconduct** (for example, the misuse of prenatal diagnostic techniques), with specific punishments proposed for each category of offence;
- **to refer complaints to the appropriate authority** representing medical and consumer interests, with a stipulated period to reach a final judgement; and
- **to promote accreditation systems for ethical practice** through state councils or voluntary organizations.

Consumer Rights: The Consumer Protection Act (COPRA) was promulgated in 1986 to promote and protect consumer rights through consumer protection forums established at district, state and central levels. Services rendered free, or under a contract for personal service, are exempted from the purview of this Act. The Supreme Court has recently ruled that any paid medical service is covered under COPRA. Medical Associations have opposed COPRA on the grounds of possible misuse. However, a review (43) of cases filed before the Consumer Disputes and Redressal Commission in Gujarat reveals this fear to be unfounded: 71% of cases since 1991 have been in favour of doctors. Doctors also argue that the Act has resulted in the practice of 'defensive medicine' and in i) increasing costs of diagnostic services and doctors' fees, and ii) inappropriate care through overuse of diagnostic services. However, on the positive side, 64% of doctors surveyed in Ahmedabad thought the Act protected consumer interests, and that information sharing, time spent with patients and concern for quality have improved (44). From the consumer point of view, a survey (45) of hospitals in Delhi, Lucknow and Hyderabad shows 51% not satisfied with consumer redress mechanisms under the Act, while 38% expressed satisfaction. Delay was the major cause for dissatisfaction: in 93% of cases, judgements were reached after the stipulated period of 90 days; 80% of cases took between 1-5 years. Consumer forum members ascribed delays to heavy workload and inadequate supporting infrastructure. Another point of consumer dissatisfaction was quantum of compensation: even in cases of severe

disability or death due to medical negligence, compensation was often limited to cost of medical services provided. Access, particularly of women and SCs and STs, is restricted, due to income constraints and a lack of awareness. But despite its limitations, COPRA is a good example of using consumer protection legislation to deal with medical malpractice and negligence and has made providers more responsive to consumer needs and rights.

The survey of patient redress mechanisms in the three cities (46) reveals no significant differences between public and private sectors (Tables 10.4 and 10.5). It confirms management inattention to consumers' concerns, more pronounced in the public sector.

Table 10.4
Distribution of Facilities by Availability of Patient Redress Systems

	Private	Public	Total
Number of Facilities covered	54	27	81
Number of Facilities having Procedure manual or guidelines for receiving and processing complaints	9 (17%)	4 (11%)	13 (15%)
Number of Facilities having unit/individual responsible for dispute settlement	32 (59%)	18 (67%)	50 (62%)
Number of Facilities having complaint box/book	27 (50%)	14 (52%)	41 (51%)

Table 10.5
Distribution of Facilities with Some Consumer Redress Systems by Frequency of Review

Frequency	Private		Public	
	N	%	N	%
Daily	18	67	7	50
2-7 days	5	19	3	21
>7days	4	14	4	29
Total	27	100	14	100

Source: Bejon Misra, **The Regulatory Framework for Consumer Redress in the Health Care Sector in India**, VOICE, 2000

Some specific options, based on the review of COPRA (47) and hospital redress mechanisms to address consumer rights (48), include the following:

- **Increasing the number of District Consumer Forums and State Commissions** on the basis of workload for redress within the stipulated 90 days;
- **Amending the Consumer Protection Act to provide expert medical assistance** in negligence cases; identifying a panel of doctors in each district/state to advise councils/commissions;
- **Instituting screening mechanisms** so that only medical negligence cases are placed before the forums and all other cases referred to medical councils/appropriate authorities;

- **Compulsory provision of continuing medical education programmes** for providers;
- **Public definition of consumers' rights:** increasing consumer knowledge and awareness of redress mechanisms and publicizing healthcare norms and regulations through community education campaigns using mass media, consumer and voluntary organisations, public sector providers, local bodies, women and other community user groups; and
- **Institutionalizing complaint and redress mechanisms** in hospitals through the rules prescribing minimum standards.

Public Disclosure: Community and user education can reinforce regulation of private providers, while empowering users to negotiate for better information sharing, quality of care and cost-containment. Information and feedback to providers on the rational use of drugs, standard treatment protocols and pricing guidelines would increase their accountability. Participatory processes between users and providers can also raise awareness of quality issues in healthcare. The state must also use the mechanism of information and dialogue to feed back into policy and planning.

The Unqualified Practitioner: The complexity of the issue of unqualified practitioners bears repetition. On the one hand, past experience illustrates the difficulty of enforcing regulations to eliminate unqualified practitioners from the healthcare market. A case in point is the difficulty of implementing the recent judgement of the UP High Court calling for identifying unqualified practitioners and framing criminal charges against them. Elimination can also have negative consequences for the poor: in AP, irate, protesting mobs surrounded a district collector who attempted to shut down the practice of unqualified practitioners providing the limited medical care available to them. On the other hand, it is clear that only qualified persons should deliver medical care, at least eventually. Awareness generation and strengthening both public and private sectors will, in the long run, eliminate the demand for the services of unqualified practitioners. However, in the interim, the damage must be contained and it is in this context that the following strategies are proposed. These recommendations are confined to the unqualified practitioner practising formal systems of medicine and do not cover traditional practitioners, such as faith healers and local medicine men and women. Further, these interim measures are recommended only for under-served areas. There is no justification for permitting unqualified practitioners in most urban areas and well-served rural areas.

- The government could train literate but unqualified practitioners of formal systems of medicine in safe practices for the basic care of specified minor illnesses, with standard guidelines for diagnosis, treatment and the use of essential drugs.
- Such trained practitioners could be given provisional registration for a year, during which their compliance is closely watched so that final registration may then be considered.

- Simultaneously, a strong local monitoring and enforcing framework must be ensured for effective action against the untrained, and to prosecute those whose practice have caused injury to health or life.
- Wide public disclosure, on the type of treatment and the list of drugs such trained practitioners are authorized to dispense, must also be ensured.

Appropriate legislation will have to provide the required supportive legal framework. Local bodies or authorities considered appropriate by states could take on this responsibility with financial support for training, monitoring, enforcement and public disclosure. Professional bodies should also be involved in monitoring and information disclosure, including educating people on the advantages of qualified, professional care. The decision to manage unqualified practitioners to restrict harmful practices is contingent on health systems development in states. Kerala, for example, could close down the practice of unqualified practitioners altogether, given the reach and spread of its public and private health facilities. Ultimately, however, managing the unqualified practitioner is an interim measure: the states must hasten health systems development and awareness to eliminate the market for such services.

Dialogue and Consensus: If they are to be effective, *regulations need supplementing with institutional arrangements that foster partnerships and promote trust between public and private sectors.* The constitution of effective coordination mechanisms such as public-private forums is a good starting point; this will help to share information, address issues of common concern and coordinate activities of public and private sectors. Examples include Karnataka's Task Force comprising NGOs, for-profit organizations, academics and government; AP's high-level Committee of representatives of all professional bodies, stakeholder associations and government; and Maharashtra's forum with representatives of professional bodies and consumer organisations. Membership could vary from state to state, but should invariably include stakeholder associations, professional bodies, NGO representatives, consumer groups, academics/health policy researchers and appropriate government representatives. *Similar forums could be set up at the district level to facilitate trust-building at the cutting edge level and to make partnering effective.*

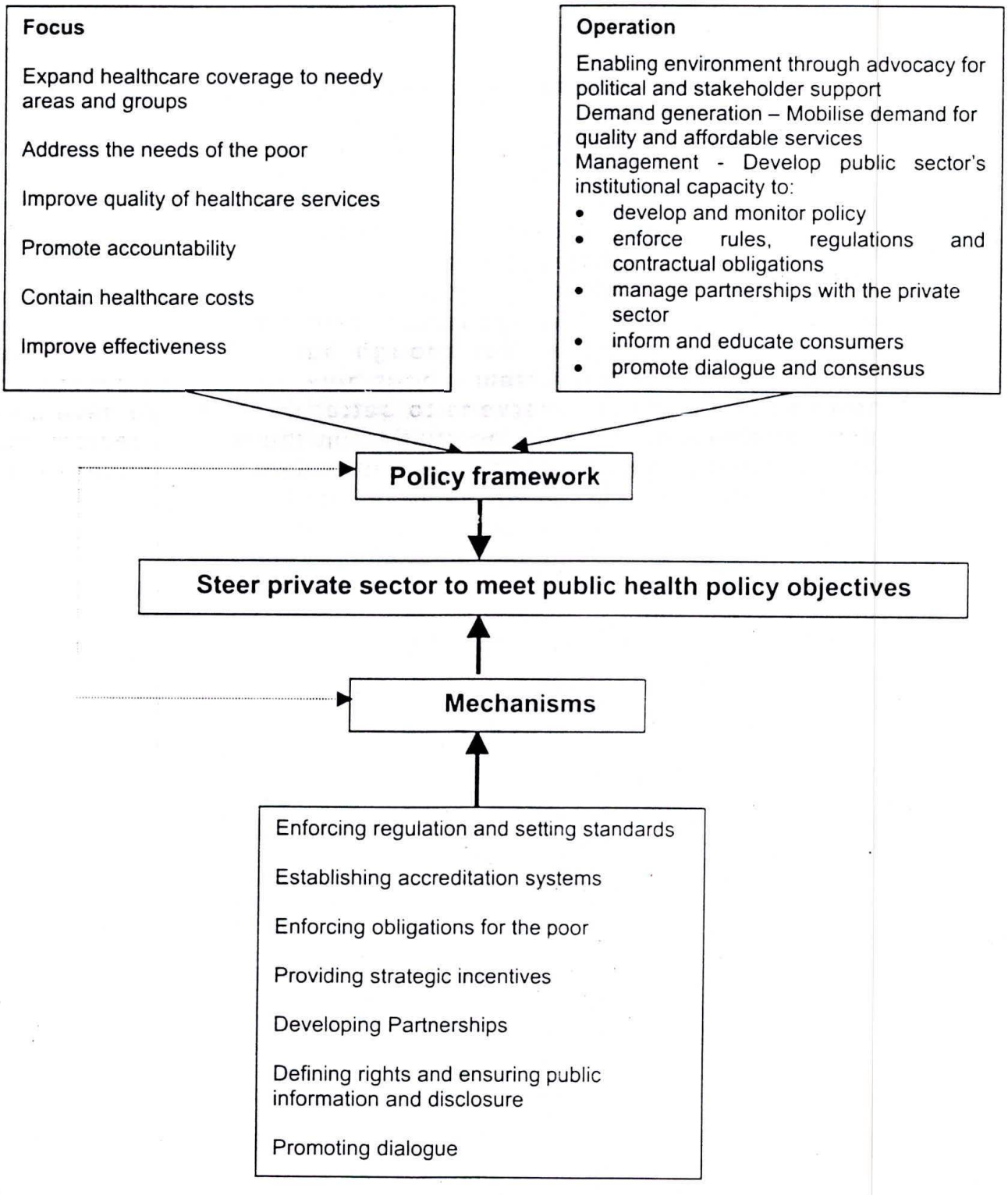
With its potential in meeting critical healthcare needs and its history of providing low-cost effective care, the voluntary sector must be involved in shaping policy for their participation in the health sector. Some states may prefer to have only one forum involving for-profit and not-for-profit providers; an option is a separate mechanism at central and state levels to enable the sharing of information, and collaboration for policy formulation and action with the voluntary sector. These bodies could identify areas and target populations in greatest need of primary health services, assist in policy formulation including the incentives and administrative relationships/procedures required to make action effective, define parameters for screening NGOs, and ensure accountability. While the

Department of Family Welfare has attempted such a mechanism through its central committee and the state SCOVAs, these bodies have become mere sanctioning authorities for NGO projects, thus limiting their scope and effectiveness.

Private Healthcare Policy: An Agenda for Action

"Stewardship is ultimately concerned with oversight of the entire system, avoiding myopia, tunnel vision and the turning of a blind eye to a system's failings." (50) Engaging with the private sector in India has not been a part of such 'oversight'. The initiatives have been sporadic, in response to perceived needs in the national, local or programme context, or as a reaction to the demands of pressure groups. Contracting with the private sector, for example, has generally been motivated by prescription in externally aided projects. **Not enough has been understood about the entirety of the health system, about how the private sector works, and how the state should intervene to better direct it.** We have attempted to distil information from existing studies on the private sectors current role and to outline possible options to better direct and influence the private sector in meeting the health sector goals (Figure 10.8). *A public policy inclusive of the private sector does not, and should not, mean a withdrawal, or a limiting or reduction of the public sector provision of service or funding.* The public sector will have to continue to intervene to offset market failure. Improving the quality and reach of public health services is also one way to direct and influence the functioning of the private sector.

Figure 10.8
A Framework for Policy and Action



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Annex 10.1

Physical Standards in the Private Health Sector – Findings of a Case Study Of Rural Maharashtra

Sunil Nandraj, Ravi Duggal, CEHAT, 1997

Practitioners

* Of practitioners surveyed one-fourth unqualified; 40% allopaths, 52.5% from Indian systems, 7.5% homoeopaths
* Though only 30% of sample were qualified allopaths, 79% practised only allopathy
* Only 55% had appropriate registration; only 72.5% registered among qualified practitioners
* Only 38% maintained case records, mostly records of medicines administered and amount collected/due
* Essential equipment and instruments (thermometers, sterilisers, examination table, weighing machine, sheets, towels, wash basin) lacking in most clinics

Hospitals

* None of the 49 hospitals surveyed registered by any authority, although the Bombay Nursing Home Registration Act applies to all of Maharashtra
* 29% hospitals run by doctors trained in other systems of medicine but providing allopathic cures
* Only three qualified nurses in entire sample
* Only 18% hospitals had minimum facilities for pathological tests; none had blood banks or quick access to one. Only a quarter had uninterrupted power supply, and not one had an ambulance. 71% of hospitals did not have a single bedpan
* Though most hospitals providing surgical services had OTs, only 71% had an operating table, 39% shadowless lamps, 10% an ECG monitor, 65% a steriliser, 56% cent an oxygen cylinder.

Annex 10.2

Private Practitioners and their Role in the Resurgence of Malaria in Mumbai: Serving the Affected or Aiding an Epidemic?

Vinay Kamat, unpublished

An ethnographic study in Mumbai and Navi Mumbai used a sample of 48 private practitioners. Findings suggest that many practitioners were poorly qualified and did not support ongoing efforts of public health departments to bring the epidemic under control. Most practitioners adopted diagnostic and treatment practices not consistent with guidelines laid down by WHO and NMEP, the Indian National Malaria Eradication Programme. Few practitioners in low-income areas used a peripheral blood-smear test for diagnosis. Practitioners with poor clientele resorted to one-day treatment that often included injectable antimalarials and broad-spectrum antibiotics to febrile patients. This mode of diagnosis and treatment was justified by the claim that they were only responding to demands from patients who could not afford a blood-smear test or a full prescription. Practitioners, driven by profit motives and retention of patients, were exacerbating patients' health problems and jeopardising control of the epidemic in the two cities.

11

Health Systems

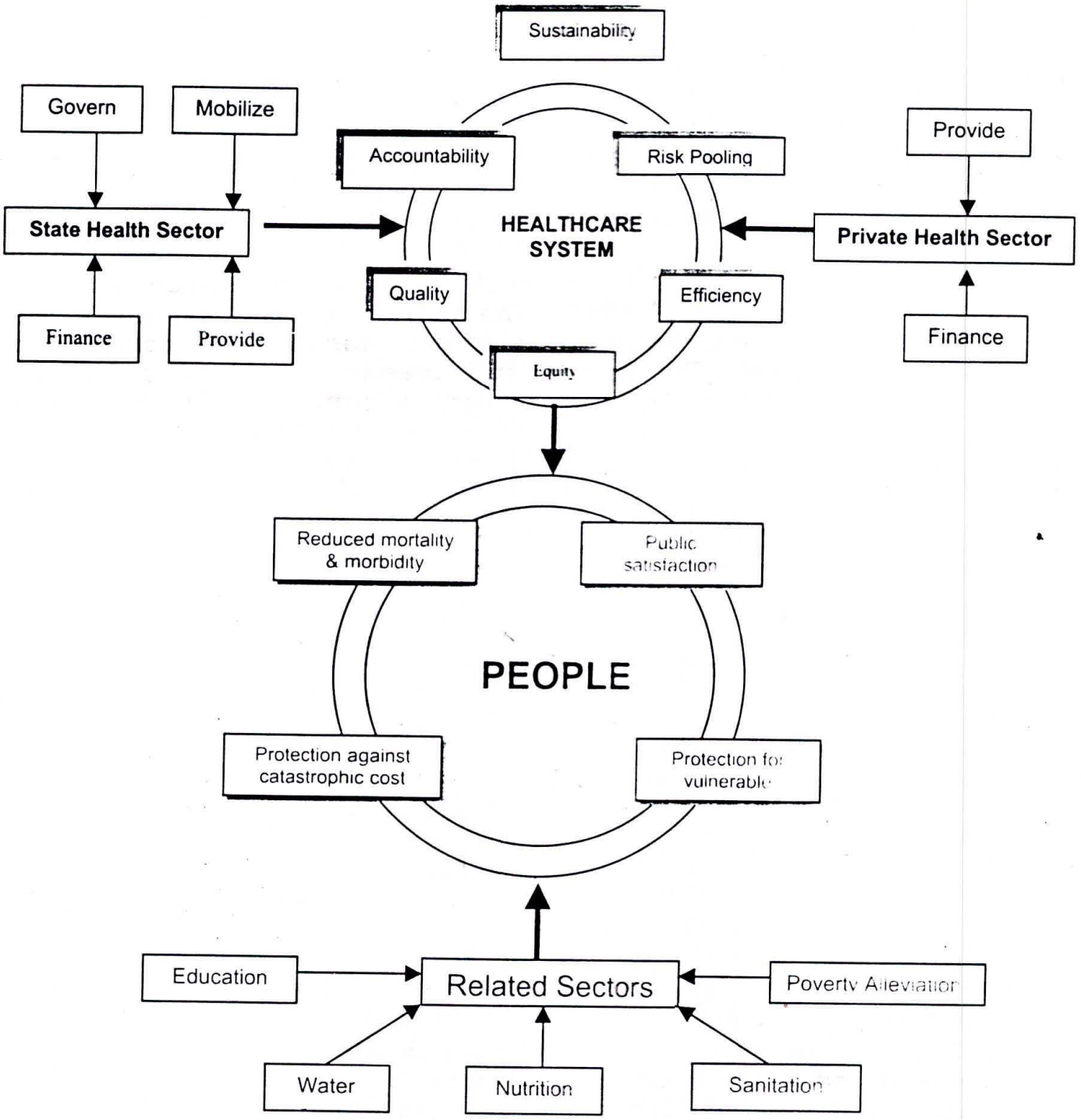
Introduction

National health systems are both complex and varied, and defining a health system is not the simplest of tasks. Assessing its performance is even more difficult, given the complex interplay of factors within and without the health sector that impact on the health status of populations. WHR 2000 defines a health system as including 'all the activities whose primary purpose is to promote, restore or maintain health'. For the purposes of this chapter, a narrower definition of health systems appears convenient, such as the 'combination of resources, organization, financing and management that culminate in the delivery of health services to the population' (1), and we interpret 'health services' as confined to healthcare services. The focus in this chapter is on organization and management of public healthcare delivery, a formidable challenge, given the wide differentials between and within 28 heterogeneous states. Information, analysis and strategic options are based primarily on intensive studies of health systems' performance in 8 major states of India (2), considered representative of the good, middling and poor performing states in terms of health outcomes.

The overall goals of a health system (Figure 11.1) are to reduce mortality and morbidity, ensure equity in health status, protect the poor against the financial costs of illness and increase public satisfaction. Restricting our assessment to healthcare systems, performance can be evaluated through certain universally accepted measures:

- Equity, or the fair distribution of the financial burden for healthcare between different income classes, and equal access to healthcare;
- Cost-effectiveness in improving the health status of a population, or achievement of the best health outcomes with the least expenditure;
- Allocative efficiency, or the extent to which the allocation and use of resources results in maximum benefits;
- Technical efficiency, or the combination of inputs which gives the maximum outputs at the least cost;
- Risk pooling, or protection against huge financial losses caused by catastrophic illnesses;
- Quality, or the provision of healthcare which conforms to aid-down standards and results in patient satisfaction;
- Sustainability, or the availability of adequate financial and capital resources for continuing long-term healthcare (3).

Figure 11.1
Goals of a Health System



Health systems performance is assessed in this chapter by focusing on health outcomes, equity, efficiency (allocative and technical), accountability, quality and political governance in major states. Analysis is restricted to mortality and fertility outcomes, as India lacks a dependable system for measuring morbidity.

Health Systems Performance and Health Outcomes

The health status of a given population is a reflection of a health system's performance. Health outcomes in the states of India vary considerably: under-5 mortality rates range from 138 per 1000 live births in MP to a remarkably low 19 per 1000 live births in Kerala. There are equally large differences in fertility rates: only two of the 16 major states, Kerala and TN, have reached replacement levels of fertility. Six major states of India, accounting for over 40% of India's population, have Total Fertility Rates (TFRs) which are =/>3, and include the poorest states with the highest infant and child mortality rates. Table 11.1 indicates under-5 mortality rates, fertility rates, and nutritional status of children, and groups 15 major states in terms of under-5 mortality performance. The grouping holds good for fertility rates also, except for Maharashtra and Orissa, which fit in with the group B states. The major reason for this discrepancy could be that Maharashtra started out with a much higher TFR (5.6 in 1971) and Orissa with a lower TFR (4.7 in 1971). An analysis of nutritional status also reveals a similar pattern, with states having the highest infant and child mortality rates displaying the highest levels of malnutrition among children < 3 years. This pattern indicates the causal relationship between malnutrition and mortality.

Table 11.1
Infant Mortality Rates, Total Fertility Rates, and Malnutrition in Major Indian States

State	Population (millions) 2001*	Under-five Mortality 1998 **	Total Fertility Rate 1998**	Weight for Age Status of Children Under 3 (% < - 2 SD)***
INDIA	981.3	94.9	3.2	47
Group : A Under-five mortality < 65				
Kerala	31.8	18.8	1.8	27
Maharashtra	96.7	58.1	2.7	50
Tamil Nadu	62.11	63.3	2.0	37
Group : B Under-five mortality > 65 to < 100				
West Bengal	80.22	67.6	2.4	49
Karnataka	52.73	69.8	2.4	44
Punjab	24.28	72.1	2.6	29
Haryana	21.08	76.8	3.3	35
Gujarat	50.59	85.1	3.0	45
Andhra Pradesh	75.72	85.5	2.4	38
Group : C Under-five Mortality > 100				
Orissa	36.70	104.4	2.9	54
Bihar	109.77	105.1	4.3	54
Rajasthan	56.47	114.9	4.1	51
Uttar Pradesh	174.52	122.5	4.6	52
Madhya Pradesh	81.17	137.6	3.9	55

Source: * Census 2001; ** SRS, 2000, Registrar General General of India;
*** National Family Health Survey,1998-99

Thus an analysis of disparities in health outcomes shows that certain states in India have consistently worse health outcomes. The questions that arise are:

- ❖ Why have some states been more successful in achieving better health outcomes?
- ❖ To what extent are health sector interventions responsible?
- ❖ How replicable are the approaches in better-performing states?

The oft-quoted hypothesis that poverty and illiteracy are the main determinants of health outcomes is not borne out adequately by state figures (Table 11.2). AP, with a female literacy rate lower than the rates in MP and Orissa, has remarkably low fertility rates and relatively better mortality rates. TN, with a much lower female literacy rate than Kerala, has shown significant improvement in fertility and health indicators. So also Karnataka and West Bengal. Differentials in poverty levels between the BIMARU (4) and other states cannot fully explain the large-scale differentials in health outcomes. UP, with 31% of its population below the poverty line, has far worse health outcomes than West Bengal, which has an almost comparable 27% of its population below the poverty line. Similarly, the minimal differentials in poverty levels in Rajasthan (15% below the poverty line) and Kerala (13% below the poverty line) are not reflected in health outcomes, which are, in relative terms, hugely disparate.

Table 11.2
Percentage Female Literacy & Percentage below Poverty Line

	% below poverty line	% female literacy
All India	**26.10**	**54**
Group A: Under-five Mortality < 65		
Kerala	12.72	87.86
Maharastra	25.02	67.51
Tamilnadu	21.12	64.55
Group B: Under-five Mortality > 65 to < 100		
West Bengal	27.02	60.22
Karnataka	20.04	57.45
Punjab	6.16	63.55
Haryana	8.74	56.31
Gujarat	14.07	58.60
Andhra Pradesh	15.77	51.17
Group C: Under-five Mortality > 100		
Orissa	47.15	50.97
Bihar	42.60	33.57
Rajasthan	15.28	44.34
Uttar Pradesh	31.15	42.99
Madhya Pradesh	37.43	52.50

Source: SRS 1998 and Economic Survey of India 2001

This is not to dispute that literacy and poverty levels have an impact on health outcomes but to analyze whether there are other relevant and critical determinants for improved health outcomes. A cross-sectional regression analysis was carried out for 25 states to assess whether differentials in health service delivery capacity have a significant association with health outcomes. Under-5 mortality was the dependent variable, and independent variables included female literacy (5), percentage below poverty line and service coverage of mothers and children under the RCH programme (6). Among the programme variables, the percentage of women who received 3 ANC visits and who received IFA tablets for 3 or more months, the percentage of births attended by a health professional, children fully immunized, and children who received ORT in case of diarrhea, have been used to assess their influence on under-5 mortality. The best regression fit with the highest R^2 value was obtained with the following three variables:

Regression Results
Dependent variable: Under-5 mortality

Independent Variables	Coefficient	t-value
Constant	**182.10**	
Female literacy rate	-0.6354*	1.96
% children fully immunised	-0.4390**	2.96
% received ORT in case of diarrhoea	-0.7555**	1.31

R^2=0.78, F-value = 25.52
Note: * indicates signifiant at 5% level ** Indicates significant at 10% level
Source: Satya Sekhar, IIHFW, 2001

The above three independent variables explained 78% of variation in the under-5 mortality rate. A one percent increase in female literacy rate could decrease under-5 mortality by 0.64%. A one percent increase in children fully immunized could decrease under-5 mortality by 0.44%, and a one per cent increase in ORT coverage of children could decrease mortality by 0.76%. Since MCH preventive services are mostly delivered in the public sector, public sector capacity is considered a relevant and critical determinant of health outcomes. Jean Dreze and Haris Gazdar advance the same hypothesis in an analysis of development experiences in UP, Kerala and the southern states (7). The authors argue that the relevant determinant of the development status of these states is the reach and functioning of public services, and support this argument with a comparative picture of select public services (Table 11.3).

Table 11.3
Select Indicators Relating to Public Services

	Uttar Pradesh	South India	Kerala
Health			
Percentage of recent births (1992-3) preceded by Tetanus vaccine Ante-natal checkup	 44 30	 85 73	 94 97
Proportion of births taking place in medical institutions, 1991 (%)	4	50	92
Proportion of children aged 12-23 months who have received some vaccination, 1992-3 (%)	57	87	89
Proportion of villages with medical facilities, 1981 (%)	10	20	96
Number of hospital beds per million persons, 1991	340	964	2,418
Education			
Proportion of rural settlements of 300 persons or more having primary school, 1986 (%)	47.7	87.6	75.2
Proportion of primary schools held in 'open space' 1986[a] (%)	17.2	3.4	0.0
Proportion of rural children aged 12-14 who have ever been enrolled in a school, 1986-7 (%) Female Male	 32 73	 72 86	 98.2 99.6

Source: Jean Dreze, Haris Gazdar, **Uttar Pradesh: The Burden of Inertia**, UNU/WIDER, 1997

The authors argue that 'resilient government inertia' as far as public provisioning of services is concerned, be it health, education or public distribution systems, appears to be the relevant determinant for the striking differentials in UP as compared to the southern states. This reinforces our hypothesis that **public health sector capacity in terms of provisioning of services is a critical determinant for improved health outcomes.**

Healthcare Systems and Equity

There have been large gains in health status since Independence, but the poorest 20% of Indians have more than double the mortality rates, fertility rates, and undernutrition levels of the richest 20%. State-wise figures of mortality are not available for the quintile groups. However, percentage coverage of health services among those with a high standard of living (pucca house) (8), and low standard of living (kutcha house) (9), reported in centrally sponsored, statewide surveys under the RCH programme, has been used for analysis among the 8 states studied. Table 11.4 reveals that states that have smalier differentials in service coverage between these two groups have consistently better health outcomes. *It is clear that those health systems that direct their resources and energies to address the health needs of the poor have a better overall health status.* This is a logical association, given the fact that the poor carry the larger burden of disease.

Table 11.4
Percentage Covered by ANC and Immunization Services, by Standard of Living

State	% ANC			% Full Immunization		
	Low standard	High standard	Ratio Low:High	Low standard	High standard	Ratio Low: High
Kerala	85.1	87.0	0.98	79.6	85.7	0.93
Maharastra	46.2	61.5	0.75	74.5	85.0	0.88
Tamilnadu	78.1	73.3	1.07	88.2	95.9	0.92
Andhra Pradesh	64.7	60.5	1.07	64.3	82.9	0.78
Orissa	29.1	45.4	0.64	54.5	71.3	0.76
Rajasthan	12.2	21.4	0.57	27.2	48.3	0.56
Uttar Pradesh	8.0	19.1	0.42	35.2	57.3	0.61
Madhya Pradesh	16.2	34.1	0.48	42.2	68.3	0.62

Source: RCH State Surveys, 2000, IIPS, Bombay

Social Access

In the Indian context, poverty has social dimensions and the lowest caste groups are also generally the weakest economically. SCs and STs have consistently worse health outcomes, and gender differentials also continue to plague health outcomes with serious intergenerational consequences. Table 11.5 reveals the state-wise differentials in service coverage of SCs and STs as per RCH survey data. *Those states which have smaller differentials between service coverage of disadvantaged groups and other groups have better health outcomes.*

Table 11.5
Percentage covered by ANC and Immunization Services, by Caste

State	% ANC			% Full Immunization		
	SC/ST	Others	Ratio SC/ST:Others	SC/ST	Others	Ratio SC/ST:Others
Kerala	82.9	87.5	0.95	79.1	89.0	0.89
Maharastra	48.2	57.8	0.83	73.8	82.3	0.90
Tamilnadu	79.9	73.8	1.08	90.2	91.9	0.98
Andhra Pradesh	67.0	63.1	1.06	70.4	76.4	0.92
Orissa	28.2	36.0	0.78	50.	064.0	0.78
Rajasthan	15.0	17.3	0.87	27.8	41.8	0.67
Uttar Pradesh	9.0	12.0	0.75	39.8	45.1	0.88
Madhya Pradesh	48.2	57.8	0.83	39.7	54.8	0.73

Source: RCH Surveys, 1998-99, IIPS, Bombay

Locational Access

A pre-requisite to good health outcomes is physical access to healthcare. Kerala's singular performance in health status can be attributed largely to proximity to healthcare providers. A woman in Kerala has to walk about 1.5 km. to get to a sub-centre while her counterpart elsewhere in the country has to cover almost double the distance. The radial distance of a PHC is 3.4 km. in Kerala, while it is 6.8 km. in the rest of the country. Similarly, a typical PHC in Kerala covers 37sq. km., compared to 143 sq. km. elsewhere in the country. Kerala has a road length of 375 per 100 sq. km. as compared to 75 km. for the rest of the country. NSS data shows that the percentage of people who did not access healthcare for locational reasons is higher in the poor performing states (Table 11.6).

Table 11.6
Percentage not Seeking Care due to Locational Reasons

State	Medical facility not available in area
Tamilnadu	0.8
Andhra Pradesh	3.2
Kerala	5.7
Rajasthan	7.1
Maharashtra	8.2
Uttar Pradesh	10.8
Orissa	19.5
Madhya Pradesh	19.8

Source: NSSO 1995-96

- Kerala boasts 26 public hospital beds per 10,000 population, while in the rest of the country, it is a mere 7. If beds in the private sector and ISM are included, Kerala has an impressive one bed per 265 persons, a ratio even better than that of several developed countries. Of the 8 states studied, the better performers have a relatively better public bed strength (Table 11.7). *The key lesson for states is the pressing need to improve deficiencies of locational and infrastructural inequities that drive up health costs.* A resource mapping exercise is required to be taken up in each state, to rationalize distribution of facilities through merger (merge closely located facilities) and re-location (an example : close down urban health dispensaries and establish Sub-centres/PHCs). Additionally, private sector services should be contracted wherever possible, and public sector facilities established only where private sector infrastructure/manpower is deficient.

Table 11.7
Beds per 10,000 Population in Public Hospitals

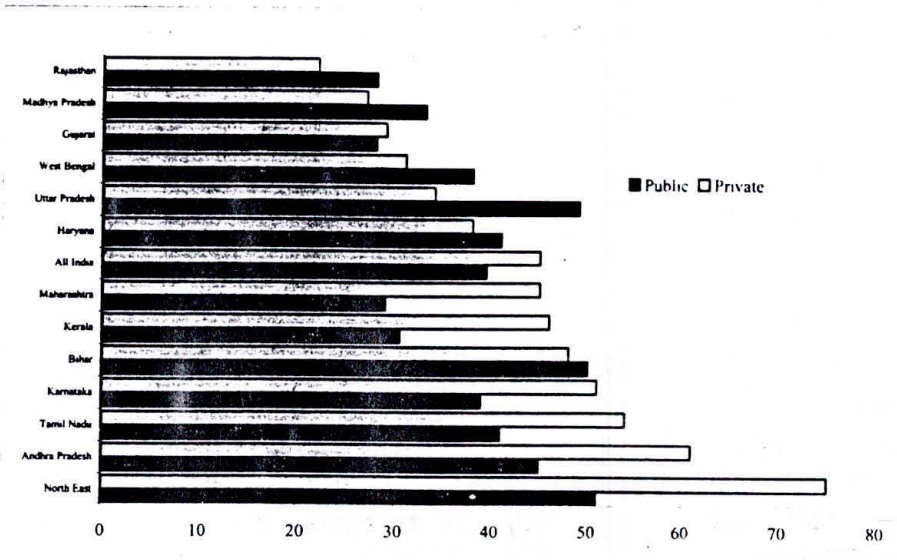
State	1991
Kerala	26.5
Maharastra	10.0
Tamilnadu	8.7
Andhra Pradesh	4.0
Orissa	4.6
Rajasthan	4.7
Uttar Pradesh	3.4
Madhya Pradesh	2.7

Source: Health Information of India, 1993, MHFW

Economic Access

The costs of healthcare have grown enormously in the country as a whole, and the rise has been steeper for inpatient (IP) care than outpatient (OP) care. While over 45% of the poorest quintile borrowed money/sold assets for hospitalization, the figure is just over 30% for the richest quintile. While there are differentials between the major states in terms of the poor borrowing or selling assets for hospitalisation, the unfortunate fact is that this phenomenon is high across states, be it Kerala or Uttar Pradesh (Figure 11.2). There are also high levels of borrowings for hospitalization in the public sector, perhaps because of diagnostic charges, drugs to be bought, and informal payments made within these institutions. Thus the public sector, which is supposed to provide insurance against catastrophic costs of illnesses through free services, has been unable to do so. *States must recognize the need to provide insurance against costs of severe illness, particularly for the poor, either through free services in public health facilities or risk-pooling mechanisms.*

Figure 11.2
Proportion of In-Patients Below the Poverty Line that Borrowed or Sold Assets for Public and Private Hospitalizations, by State 1995-96



Source: NSSO 1995-96

Utilization of Health Services

That access to health services is a key mechanism for better health outcomes is also indicated by utilization data: states that have high utilization rates reveal lower mortality rates (Table 11.8).

Table 11.8
Number of Public & Private Hospitalizations per 100,000 persons

State	Total
India	1653
Group A: Under-five Mortality < 65	
Kerala	7480
Maharastra	2519
Tamil Nadu	2138
Group B: Under-five Mortality > 65 to < 100	
West Bengal	1441
Karnataka	1733
Punjab	1622
Haryana	2851
Gujarat	1711
Andhra Pradesh	1595
Group C: Under-five Mortality > 100	
Orissa	1320
Bihar	722
Rajasthan	1005
Uttar Pradesh	1004
Madhya Pradesh	1030

Source: NSSO 1995-96

The central role of high utilization rates has major policy implications. It confirms the need to ensure access to health services and to focus on interventions that will improve utilization of health facilities. It also highlights the need to promote behavioural change that will motivate people to seek appropriate care when ill. Overall for India, NSS data reveals that 24% of the poorest quintile did not seek medical treatment when they were ill, compared to 9% of the richest quintile. Kerala's low mortality rates are explained not only by increased access to healthcare services, but by a population with a heightened awareness of ill health, driven by health-seeking behaviour.

In sum:

- **Geographic, social and economic access has a significant association with health outcomes, and barriers to access operate to the disadvantage of the poor. Utilization rates of health services, considered a proxy for access, confirm the association.**

- **States more equitable in service coverage have better health outcomes.**
- **States should focus on improving access/utilization rates of health services.**
- **States should ensure protection of the poor against costs of catastrophic illness through free public health services or risk pooling mechanisms.**

Allocative efficiency

The centre's declining fiscal commitment to health is reflected in the decreasing share of health expenditures compared to total expenditures. (Also see Chapter 12). State governments, which fund around 75% of total public health expenditure, have also not compensated the loss in the centre's decreased funding. An analysis of health budgets of eleven major states (10) reveals that the share of health budgets declined sharply from 7.19% of total revenue budgets in 1985-86, to 5.76% in 1991-92, and continues at approximately the same level (See Table 12.1). There has been some improvement in certain states in 1998-99, attributed largely to the increase necessitated by revision in pay scales following pay commission recommendations.

As a consequence of the rising share of salaries, non-salary grants have been reduced drastically, affecting the quality of services delivered through public health institutions. (Table 12.2). *The overall pattern emerging across states is that governments spend largely on manpower by way of salaries, while households are expected to spend on drugs, diagnostics and other treatment facilities.*

An analysis (11) of per capita public health spending (revenue expenditure) (12) and allocations to the primary, secondary and tertiary sectors in the 11 states studied reveals that *health outcomes appear to be strongly associated with higher per capita public health spending and with higher allocations to the secondary sector.* The analysis estimates simple correlation coefficients between health spending and under-5 mortality, infant mortality and life expectancy at birth (LEB). The matrix of estimated correlation coefficients linking per capita health spending with under-5 mortality, IMR and life expectancy are presented in Tables 11.9A, 11.9B and 11.9C. The coefficients presented in Tables 11.9A and B suggest that total per capita spending and the per capita spending on secondary care services are highly correlated with under-5 mortality and IMR in all the four years. The signs of the coefficients, predictably, are negative. LEB also has a high correlation with total per capita spending on health (Table 11.9C). Analysis of health expenditure in the primary, secondary and tertiary sectors suggests that LEB is strongly associated with secondary care services with the expected positive sign. The level and the structure

of spending on primary, secondary and tertiary care services for individual states also corroborate the above findings. For instance, Kerala has been consistently spending a larger proportion of its budget on primary and secondary care services. On the contrary, the level and structure of spending of other states have moved in favour of tertiary care services.

Table 11.9A
Correlation Coefficients between Under-5 Mortality and Per Capita Health Expenditure

Year	Primary Care Expenditure	Secondary Care Expenditure	Tertiary Care Expenditure	General Expenditure	Per Capita Health Expenditure
1985-86	-0.0358	-0.6158	-0.0138	-0.3295	-0.6409
1991-92	-0.2793	-0.4848	-0.0716	-0.0960	-0.6243
1995-96	-0.2736	-0.7011	0.0049	-0.2569	-0.6751
1998-99	-0.1460	-0.5752	-0.1422	-0.1896	-0.5086

Note: N=11 (states).

Table 11.9B
Correlation Coefficients between IMR and Per Capita Health Expenditure

Year	Primary Care Expenditure	Secondary Care Expenditure	Tertiary Care Expenditure	General Expenditure	Per Capita Health Expenditure
1985-86	-0.0127	-0.6378	-0.1165	-0.2851	-0.6761
1991-92	-0.2352	-0.5623	-0.1132	-0.0062	-0.6507
1995-96	-0.2326	-0.7909	-0.0723	-0.1647	-0.6993
1998-99	-0.0590	-0.6508	-0.1408	-0.1038	-0.4736

Note: N=11 (states).

Table 11.9C
Correlation Coefficients between LEB (Female) and Per Capita Health Expenditure

Year	Primary Care Expenditure	Secondary Care Expenditure	Tertiary Care Expenditure	General Expenditure	Per Capita Health Expenditure
1991-92*	0.1035	0.6180	0.0043	0.1652	0.6590
1995-96**	0.1871	0.7453	0.1197	0.2060	0.6820

Note: N=11 (states).
* Female LEB for 1991-96 related with expenditure during 1991-92
** Female LEB for 1996-01 related with expenditure during 1995-96

An analysis of NSS data reveals that in terms of curative care, the poorest 20% of the population captured only 10% of public subsidy, whereas the richest quintile captured 33% of public subsidy. (Also see Chapter 5 on equity.) However, state differentials are significant: Kerala, Gujarat, TN and Maharashtra expend almost equal amounts across each of the quintiles, while other states exhibit a pro-rich stance. Bihar and Rajasthan spend almost 5 times the amount on the richest compared to the amount

expended on the poorest quintile. Using NSS data on utilization and government data on expenditure, a concentration index to compare equity performance in states has been created for each concentration curve measuring the level of subsidy benefit inequality. (See Figure 5.6)

The preceding analysis indicates a strong association between health outcomes and equity in the public financing of healthcare. The pro-rich leaning in group C states may be the result of minimal formal private sector presence, hence a lack of choice for consumers. ***Availability of private health services will persuade richer individuals to self-select private services, automatically facilitating targeting of public subsidies for the poor.*** Kerala, TN and Maharashtra, which have fairly widespread private sector facilities, and are proven to be relatively more equitous, are standing examples of this phenomenon.

In summary, the review reveals that:

- Public health expenditure shows a declining trend at central and state levels in the share of total public expenditure.
- Salaries account for a major share of public expenditure in states, averaging between 70-80% of total health expenditure. Non-salary, operating grants have seen a drastic reduction, resulting in increased health costs, lack of protection of the poor against costs of illness, and a decreasing trend in utilization of public health services.
- *States which spend greater proportions on health, which allocate a larger share to both primary and secondary sectors, and which direct public spending for the poor, have better health outcomes.*
- **The key lessons for states are:**
    - **enhance public health spending to primary and secondary sectors, particularly to meet essential operating costs;**
    - **address efficiency and equity concerns through re-alignment of allocations that will simultaneously address the needs of primary and secondary levels of care and of the poor;**
    - **promote the establishment of private sector facilities in under-served areas and poorer states to facilitate self-selection of private services by the better off.**

Technical Efficiency

Technical efficiency relates to the way in which resources are organized and used for delivery of specific programmes and services at the least cost. Technical inefficiency implies that there will be gains if the management and use of existing resources is reorganized. ***The problems confronting public health service delivery in India are well known, several of which can be effectively addressed by reorganizing and managing existing resources better :***

- Scarce financial resources are being inefficiently used, not only in terms of allocative patterns, but also in the management of fund flow and monitoring.
- People are unable to access healthcare not only due to geographic, social or cost barriers, but inherent systemic and structural weaknesses of the public healthcare system as well:
    - ♦ compartmentalized structures and inadequate demarcation and definition of roles at all levels of care;
    - ♦ inadequate planning, management and monitoring of services/facilities, displaying insensitivity to local/ community needs;
    - ♦ ineffective or non-existent referral systems, resulting in under-utilization of PHCs, over-utilization of hospital services, duplication of services and cost-ineffective provision of services;
    - ♦ inefficient distribution, use and management of human resources so that people have to contend with lack of key personnel, unmotivated staff , absenteeism, long waiting times, inconvenient clinic hours/outreach, service times, unauthorized patient charging;
    - ♦ inefficient systems for purchasing drugs, supplies and services, which fail to ensure quality and value for money;
    - ♦ inadequate systems to promote responsiveness, enforce accountability and assure quality; and
    - ♦ inadequate attention to health education and public disclosure.

Institutional Issues

Health is a shared responsibility between centre and states. The Centre takes the lead in financing some public health activities through centrally sponsored schemes. But the share of state expenditure, and state responsibility for programme implementation and service delivery bring out emphatically that improvements in access, efficiency, equity, accountability, quality and ultimately health outcomes, depend largely on how well states perform.

Restructuring organization and management of public healthcare at state level:

Organizational restructuring of state departments of health is critical for improvement of technical efficiency in the public healthcare system. Health departments in all states have a similar, hierarchical, compartmentalized organizational structure. The organizational structure in AP more or less reflects the organization of health departments in states across the country (Annex 11.1). The problems of this structure include centralization of authority, ill-defined and overlapping roles, compartmentalized functioning, a lack of accountability, poor motivation

and wastage of resources. Frequent changes of leadership at state, directorate and district levels, result in a lack of continuity and accountability in planning, management and provision of services. As at the centre, responsibility for management of institutions and service provision vests with officials across all levels, including the policy-making secretariat level, as a result of which 'the department is run like a casualty ward, responding to everyday emergencies.' (13)

Unless organizational and management structures are changed, sustainable improvements in efficiency, quality and accountability will not be possible. The organizational structure must be revamped to

- ❖ shed executive functions at the secretariat level to focus on policy, strategic planning, monitoring and evaluation;
- ❖ allow for technical expertise on public health, epidemiology, health economics, health finance and healthcare management to inform policy and decision-making;
- ❖ define roles clearly at all levels of the system and promote decision-making at the level where problems arise;
- ❖ promote integration of preventive, promotive and curative aspects of healthcare;
- ❖ reduce unproductive cadres and levels to facilitate quick decision making and action;
- ❖ enhance accountability for action, results and quality through effective monitoring;
- ❖ contribute to team work and collaboration, including with other systems of medicine, and related sectors; and
- ❖ mobilize political commitment and community partnership/ ownership of services/programmes through institution-building, public disclosure and health education.

Based on these principles, the restructuring of health departments in states needs to be attempted in conformity with individual political and administrative structures in each state. However, a framework is suggested to indicate the broad direction of reform:

- At the secretariat level, ideally there should be one Minister and one Secretary for health and medical services, with: (i) policy formulation and planning (ii) strategic linkages with key departments (nutrition, water, and sanitation in the main), and (iii) monitoring and evaluation, as key functions. This level should be divested of executive functions. A Medical and Health Advisory Board/Council, including professionals (public health specialists, health economists, epidemiologists, healthcare management experts, medical educationists), representatives of professional bodies, health research institutions, elected representatives, NGOs, and consumer organizations should support policy formulation and planning. Orissa has constituted a Policy and Strategic Planning Unit (PSPU) at the state level, comprising 7 professional members (14). A 16-member Advisory Committee on Health Sector Reforms (government and non-government) has also been constituted. Karnataka has constituted a

Task Force, with a similar composition, to support policy and planning functions of the state.

- At the Directorate level, a Director-General of Health and Medical Services (DGH& MS), with public health as the qualifying speciality, should integrate and coordinate activities of the various directorates – primary, secondary, tertiary and Indian systems. This should be a selection post with a minimum tenure of three years. The DGH&MS will have overall administrative and technical control over all directorates. The role of the DGH&MS is for strategic planning, for integration and coordination in implementation and monitoring of services/programmes of all the directorates. He will be the link between the directorates and the secretariat. The DGH&MS must be assisted by Strategic Cells constituted for planning; surveillance; monitoring and evaluation (including quality of care); human resource management and development; health education.
- At the district level, a District Chief Health and Medical Officer (DCH&MO) will have administrative and technical control over heads of national disease control programmes, and all primary and secondary level institutions. Wherever tertiary hospitals are located, the Superintendent will coordinate activities with the DCH&MO through the Zilla Parishad or a District Health Committee. These district-level Committees will have similar representation as the state-level Advisory Board/Council and will participate in planning and supervision of services/programmes at the district level. Wherever powers have devolved to local bodies, the Standing Committees on Health would assume this role.
- At the sub-district level, a Deputy Chief Health and Medical Officer (Deputy CM&HO) should be in place for appropriate geographical regions within the district, with administrative and technical control over all primary and secondary institutions and national disease control units in his jurisdiction. He will function from an appropriate sub-district secondary hospital, which will be the administrative unit under which all primary/secondary units in his jurisdiction function. This will integrate the delivery of primary and secondary health services, essential for an effective referral system, for improved efficiency, and for improved utilization of primary level services. These sub-district-integrated units will be linked to the district hospital, as well as to teaching and speciality hospitals through geographically defined catchment areas. An advisory committee at the sub-district level – consisting of elected representatives, local body representatives, leaders of self-help groups, NGOs, and doctors from secondary and primary level institutions – will participate in planning and supervising delivery of services/programmes.
- Health committees are also proposed for each health institution with powers for day-to-day management so that political and community participation and a sense of ownership is promoted.

- Delegation of both administrative and financial powers must accompany reorganization of structures so that decision-making is decentralized and services are responsive.
- To support policy and planning for the tertiary level, including medical education, states may constitute special cells, or Universities of Health Sciences (as has already been done in AP, Karnataka and TN), depending on the number of medical colleges in the state. These bodies would be entrusted with the review of medical and para-medical education and health manpower needs for initiating appropriate action.

Based on the preceding suggestions, Annex 11.2 suggests a framework of the reorganized structure of state health departments, attempting to give a broad direction to the restructuring reform proposed. While it is not prescriptive, **efficiency improvements demand that every state will attempt restructuring models that plan for decentralized authority, responsibility and decision making; integration of preventive, promotive and curative services; and local community participation.**

Financial Management

Centre:
Improving efficiency in the provision of health service is contingent on reforming financial management systems to assure timely releases, flexibility in use, and monitoring of fund utilization against agreed performance indicators. The centre funds states through centrally sponsored schemes to address specific national health and family welfare priorities. Financing flows are extremely complex and cumbersome, both between centre and states and within states (framework in Annex 13.3) (15), resulting in inordinate delays and unpredictability of releases, rendering planning exercises ineffectual, and timely action next to impossible. An example is the release of central funds for sputum negative drugs under the TB control programme. The quantum of funds released from year to year is not made known to states in time for streamlining of planning and procurement, and releases do not conform to any fixed schedule. The centre also exercises rigid controls on budget lines uniformly applicable throughout the country, and states are unable to address their specific needs. Yet *most states want the centre to continue to fund national disease priorities, (with less rigid controls), since centrally sponsored schemes focus on cost-effective interventions with public health benefits. Releasing untied block grants to states could carry with it the danger of the tertiary and curative sector cornering the better portion of funds.*

In recent times, state and district level societies have been established with the precise objective of bypassing cumbersome financing procedures. States have welcomed this move, which will secure programme funds,

eliminate delays, and promote flexibility in management and use. However, financial management systems at state and district levels must be simultaneously ensured for the efficient use of funds released to societies.

State:
Exacerbating this situation is i) the further delay in release of funds at state level, caused again by inefficient financial management systems, and ii) short releases based on the fiscal situation in the state. As at the centre, an incremental budget approach is used to estimate funds requirement. Budgets tend to bear little relation to departmental proposals, with non-salary expenditure reduced to keep in line with available resources. In AP's zero-based budgeting experiment, budgets were ultimately cut to match the cloth and not the size of the need. The flow of funds after budget approval is a time-consuming process and there are considerable delays due to the sanctions required at various stages. A framework (16) depicting fund flow and sanctioning levels in one state of India considered representative of many other states is in Annex 11.4. AP has initiated in 2001 a system of block releases every 6 months, with the next 6-monthly release dependent on achievement of certain agreed performance parametres, and allowing departments the flexibility of utilizing non-salary grants as per need. *The inevitable conclusion is that every state must overhaul financial management systems for more efficient programme management and service delivery. Fully qualified and trained finance staff must be available at all levels, failing which accounting and audit services must be contracted out to professional agencies.*

Priorities in Public Health Sector Policy and Planning

Setting priorities in health sector policy and planning is a matter of intense debate. International opinion emphasizes the bias in favour of hospital care and the need to reform health systems in favour of primary care. *Our analyses suggest that the state must focus on both the primary and secondary sectors simultaneously, linked as they are for delivery of basic health services.* Maternal and neonatal mortality, for example, cannot be addressed adequately without emphasis on hospitalized care at the secondary level. Additionally, in the absence of risk-pooling mechanisms for the poor, the emphasis on IP is considered appropriate.

Primary Healthcare

In terms of finance, states spend an average 40% on primary healthcare (17). Some – AP and Maharashtra for instance – spend as much as 60%. The primary health sector carries the largest share of staff. In terms of infrastructure, the primary sector gets more than its share in most states as per Planning Commission norms (15% of beds in the primary sector,

70% in the secondary and 15% in the tertiary sectors). Meanwhile the secondary sector suffers shortages (Table 11.10).

Table 11.10
Percentage Beds in the Primary, Secondary and Tertiary Sector

State	Primary	Secondary	Tertiary
Andhra Pradesh	16	46	38
Orissa	31	47	22
Maharastra	35	30	35
Kerala	23	39	38
Tamilnadu	18	44	38
Rajasthan	26	50	24
Madhya Pradesh	14	27.4	58.6
Uttar Pradesh	27	65	8

Source: State Health Systems Studies

Despite reasonable input levels in many states, and more than the required number of beds, the primary level of care is the most unutilized across states. Even TN, which has a relatively better functioning primary sector, records on an average only 3 deliveries per month per PHC, although the average bed strength is 6 per PHC. Under-utilization, waste and ineffectiveness of primary health services, and over-utilization of hospital services, centre around an irrational distribution and use of resources at the primary level. In the Indian context, setting priorities will have to address the following issues:

- *a huge percentage of allocations being spent on salaries (90% in some states) with little left to spare for operating costs, leading to*
  - *lack of essential drugs, consumables and diagnostics*
  - *lack of essential maintenance, including sanitation*
  - *severe constraints in mobility and communications*
- *inefficient management of human resources on whom this salary is spent, leading to*
  - *absenteeism*
  - *unproductive cadres*
  - *mismatch between personnel and equipment*

While every state must ensure adequate allocations towards operating costs and basic facilities, *the focus should be on strategies to improve efficiency in health service production and PHC utilization.* Among these strategies are rationalizing distribution of beds, equipment and staff; ensuring the presence of key personnel, (doctors ANMs, male workers, lab technicians, staff nurses); and adding on medical services at the PHC level to add value to its perceived utility (institutional deliveries, MTPs, RTI treatment). *The attempt should be to increase medical services at the PHC level and take curative services closer to the people.* Our experience leads us to differ in this regard from donor agencies who have been advocating that in-patient services in PHCs be eliminated altogether on grounds of cost-effectiveness. This would seriously affect not only the family welfare programme, but would also impact negatively upon the perceived utility of the facility, and consequently on utilization. TN and AP have converted certain PHCs to 24-hour centres to raise the level of

institutional deliveries. AP has announced a fixed day at the PHC for treatment of reproductive tract problems, as is done for ante-natal care, immunization and family planning. Several states have contracted the services of private sector doctors/paramedics at PHCs to ensure the availability of key personnel. Some have handed over the management of PHCs to NGOs. *These initiatives however, are at best sporadic, and do not form part of a coherent, comprehensive policy to re-distribute resources and reorganize management to improve efficiency and utilization rates at the primary and secondary level.*

Secondary Level of Healthcare and Referral Systems

The focus on secondary care in the context of referral linkages with the primary sector and the welfare objective of insuring the poor against costs of illness is considered as essential as the focus on primary care. Five states have negotiated project assistance with World Bank to invest in the secondary level of care and improve allocational efficiency between secondary and tertiary levels of care, access, efficiency and effectiveness of service delivery in the first-referral hospitals, and the functioning of the referral system. The projects are still under implementation and are yet to be evaluated. However, current micro-level efficiency indicators for projects in AP, Punjab and West Bengal compare creditably with countries in the region, except for turnover rates (Table 11.11). *The key lesson is that with the required inputs, public hospital systems are capable of continuous improvements in efficiency. Similar investments in the secondary sector are recommended in other states.*

Table 11.11
Micro-efficiency for Secondary (District) Hospitals

State	2000		
	Occupancy Rate	Turnover Rate	Average length of Stay (ALOS)
Andhra Pradesh	73	53	5
Punjab	94.21	25.53	5.62
West Bengal	85.52	34.21	4.55
Srilanka (1997)	93.5	74.4	4.7
China(1986)	94	13.7	25.1
Indonesia(1985)	75	29.2	9.4

Source: State Reports, June 2000. DFID Health Systems Resource Centre

The objective of strengthening referral systems under these projects, however, has not been achieved. Inefficiencies such as duplication of service functions, increased costs of providing primary care at the secondary/tertiary level, under-utilization of the primary level due to inadequate support from referral institutions, continue to plague the system even in these states. Building up an effective referral system for optimal utilization of resources at the three levels of care, involves detailed and systematic planning and sustained action:

- drawing up of clinical protocols for each level of care
- ensuring required inputs at each level of care

- mapping clearly the referral pathways and publicizing them among facility staff and community
- instituting graded user fees to promote referrals: free services at the primary level, charged at the secondary level, and charged even higher at the tertiary level, with exemptions for the poor, and
- *most important, reforming administrative structures: integrating primary and secondary levels of care through administrative and technical controls at the level of the referral hospital.* Such structural reform has not been attempted in any state yet, and has only been enunciated in the Vision 2020 document of AP. Upward linkages to tertiary level institutions would also need to be defined.

Human Resource Management

The non-availability of key personnel in public health facilities due to vacancies, absenteeism or shortages against norms, is often quoted as a key reason for under-utilization of public health facilities. An analysis of the shortages in manpower at the primary level (vacancies plus shortages against population norms), reveals minimal differentials between states, with all states reporting a shortfall of over 100% for both ANMs and doctors. In fact, Kerala reports a shortfall on par with the worst performing states (Table 11.12). This suggests that more than shortfalls of personnel, **it is organization and management of existing human resources that is the key to better performance. It also reinforces the lesson that efficiency in use of existing resources should take precedence over mobilizing additional resources.**

Table 11.12
Health Manpower in Rural Areas – % Shortfall of ANMs & Doctors

Sl. No	State	% Shortfall* of ANMs	% Shortfall* of doctors
1.	Kerala	104.60	124.45
2.	Maharashtra	100.00	100.00
3.	Tamilnadu	114.70	100.00
4.	Andhra Pradesh	117.22	117.22
5.	Orissa	100.82	121.08
6.	Rajasthan	102.18	115.10
7.	Uttar Pradesh	100.48	117.48
8.	Madhya Pradesh	104.24	140.02

*Vacancies plus shortages of posts against population norms
Source: Rural Health Statistics 2000, Ministry of Health and Family Welfare

A key strategy in improving efficiency through the use of existing resources is the institution of systems to ensure availability of doctors and key paramedics in PHCs. State governments have initiated several measures to contain absenteeism and to staff posts in remote areas (Box 11.1). *Mandatory rural service prior to PG admission and*

devolving powers to local authorities to fill vacant posts of doctors on contract appear to pay dividends.

Box 11.1
State Government Initiatives

- **Maharashtra, Orissa, and Karnataka have legislated for mandatory rural service for all doctors who qualify for PG courses for a period of one year in identified remote PHCs, prior to PG admission. Those who are not in government service are given contract appointments for a period of one year.**
- **In Kerala, a certain number of PG seats have been reserved for allotment to in-service doctors serving in identified difficult rural areas, without the rigours of an entrance examination.**
- **AP has constituted a separate Tribal Health Service for over 300 earmarked posts with a 5-year bond period, a monthly incentive allowance of Rs 1500, and three years of tribal service (as compared to 5years for others) being the eligibility criterion for PG courses.**
- **Walk-in interviews to fill up chronic vacancies have been attempted in MP and Gujarat with limited success.**
- **Several state governments have also opted for contractual services of doctors for filling up chronic vacancies. In Kerala, this power has been devolved to panchayats, and the earlier 419 vacancies have been effectively reduced to around 80.**

Certain state governments have permitted private practice by PHC doctors, in the hope that it will motivate them to reside in headquarters and be available at the PHCs during working hours. The TN experience has not been happy, with increased absences of doctors from the public facility, as it is more lucrative to spend time treating patients privately (18). In Kerala, while doctors are, by and large, available during working hours (the consequence of a vigilant community), they do not stay in the residential accommodation provided to them; neglect hospital and fieldwork to some extent; and indulge in unethical practices such as referring patients from public sector facilities to their private clinics. This experience prompted the government to attempt withdrawing this facility. However, due to pressure from the doctors' lobby, private practice continues (19). The situation at the secondary and tertiary level is somewhat better across states, as doctors generally reside in urban areas where these facilities are located, though private practice lures them away form legitimate duties, very often during working hours, often in spite of a ban. The issue of permitting private practice by public sector doctors has never been resolved because of certain underlying dichotomies: why should doctors be treated any differently from other government servants and permitted the luxury of earning a private income? Can the objective of public service and the profit motive of private practice co-exist without the latter overwhelming the former? Attempting answers to these tricky questions is fraught with complexities. However, given the experience so far in different states, some practical options relating to private practice are suggested :

- **At the primary level, private practice must be permitted only in identified remote PHCs in under-developed areas where private sector doctors are also not available. The list of remote PHCs should be updated regularly.**
- **Non-monetary incentives should be offered: a) an increase in PG seats for in-service candidates who serve in rural areas up to 50% of total seats; b) a percentage of PG seats allotted without an entrance examination for doctors who serve in earmarked remote PHCs; and c) training in foreign countries.**
- **Doctors who are certified by local authorities as staying at headquarters in rural areas, where the ban is in force, may be compensated through a special rural service allowance.**
- **For secondary and tertiary level of care, evening pay-clinics may be permitted in hospitals, with a proportion of earnings being paid back to doctors as non-practicing compensatory allowance.**
- **An effective vigilance mechanism, including members of the government doctors' associations and professional bodies, must enforce the ban and check erring compatriots.**

Legislation declaring primary health services in notified areas as the priority service of government, with attractive scales of pay, could also be considered. Several state governments have also suggested the institution of a three-year course for rural doctors, which has not met with the approval of the MCI so far.

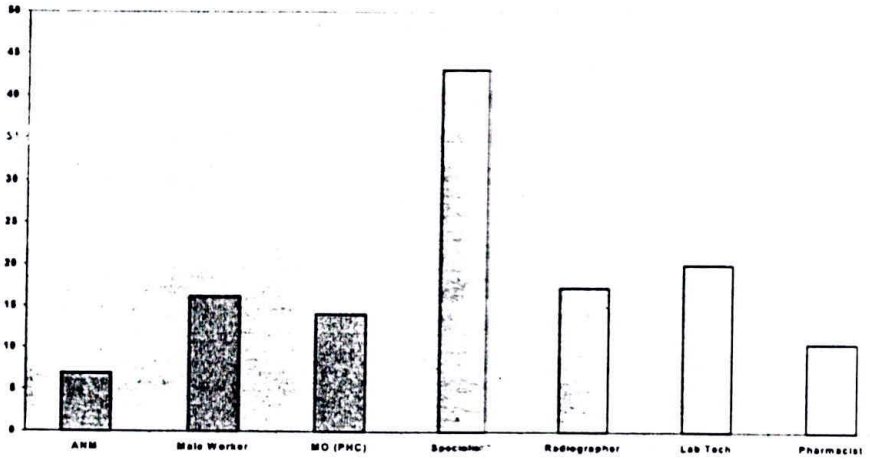
A transparent transfer policy providing for rotation of doctors on a regular and impartial basis, rather than one that depends on political patronage, will mitigate the problems of absenteeism, of remote facilities staffing and indiscipline to some extent (Box 11.2).

Box 11.2

- **AP has formulated draft rules, prescribing a transfer of doctors every three years.**
- **Doctors are allowed to choose their places of posting from the locations notified, in order of merit, based on the grading given through a performance monitoring system.**
- **The procedure for transfer, termed as 'counseling', is also transparent, with the list of doctors and grades, and the available locations, publicly displayed. Each doctor will be called in order of merit, and the transfer order handed over to him on the spot, as per his choice, by a Committee comprising of the Directors of tertiary, secondary and primary levels of care**
- **The draft rules have been referred to a Cabinet Sub Committee on Health for approval.**

Shortages of specialists to staff secondary (Figure 11.3) and tertiary level institutions in states have reached alarming proportions. The institution of short-term diploma courses, to be recognized by state governments, for the main specialities of anesthesia. obstetrics and gynecology and pediatrics, must be seriously considered. Orissa has in 1999 instituted a 3-month course to train doctors in anesthesia, to staff first referral units; obstetric emergencies can now be attended to in community health centres. TN has instituted a camp approach for specialist care in rural areas (Box 11.3) For the tertiary level. long-term planning to increase PG course capacity to address the needs of the public and private sectors must be instituted.

Figure 11.3
Percentage Vacant Posts in Public Facilities in Rural Areas



* Specialists include physicians, surgeons, obstetricians and gynecologists, and pediatricians.
Source: Rural Health Statistics, Ministry of Health and Family Welfare

Box 13.1

TN has launched a novel health camp approach called 'Varumun Kappom Thittam', to bring specialist care closer to people in rural areas. These camps, providing a range of specialist and diagnostic services on a single day, are organized at subcentre level, usually in school premises. Typically, each camp consists of specialists from the following disciplines: general medicine, pediatrics, ophthalmology dentistry, ENY, cardiology, dermatology and indigenous medicine. A range of diagnostic services is also conducted on the spot: blood and sputum test, ultrasound and ECG. In about 1000 places, X-ray services are also offered. Drugs are distributed free of cost in all camps. An additional budget of about Rs.10 crores has been released for these camps. A total of 8500 camps, covering about 8.5 million people have been conducted across the state during a 14-month period up to February 2001. More than 70% of the people treated were below the poverty line. About 4% of the 8.5 million people were identified for further referral care. Of these, 24% actually availed of care. Some officials argue that the camp approach is 'an acceptance of the failure of the existing system'. Policymakers are divided about the continuance of the camp approach for specialist care, with many considering it not sustainable.

The flexibility of contractual appointments must be extended to cover critical peripheral paramedical staff. Orissa has allowed for such contractual appointments through the District Health Committees. A transparent transfer policy and incentives to reward good performance must equally apply to these cadres. In fact, the policy for posting of ANMs and male health workers should be that they are, as far as possible, accommodated at the place of their choice/residence. TN has instituted a reward system to address specific high-priority issues: a gold sovereign is presented to every ANM in whose jurisdiction no infant death is reported. One of the weakest links in the public health system chain is the supervisory cadre, and particularly, the cadre between the PHC doctor and the ANM, which is seen by most states as unproductive. No state, however, has specifically addressed this issue. *The need is for this cadre to be rationalized: unnecessary posts must be suppressed; roles and responsibilities of those considered necessary must be redefined, their capacities rebuilt; and monitoring and evaluation systems holding them accountable for specific outcomes must be instituted.*

The perennial problem in all states is of clinicians holding administrative posts, with inadequate administrative experience, and public health posts without public health specialization. *Kerala has recently initiated a process whereby the cadre of doctors will be categorized as i) an administrative cadre, consisting of doctors without speciality training, who will be trained in public administration and hospital management, ii) a public health specialist cadre, with public health as the speciality and iii) different cadres of specialities.* Doctors will have to opt for categories and will be promoted only in these posts. Senior administrative positions will be staffed only from administrative cadre; the District Medical Officer and Director Health Services by public health specialists. *This initiative, which addresses issues of management and leadership, is commended for replication in other states.*

While several initiatives have been taken for effective management of human resources, certain systemic issues that contribute to low morale and uncommitted staff remain unresolved across states and need to be dealt with on a priority basis. These include low levels of remuneration; promotion based on seniority not on merit; some cadres (particularly supervisory) considered unproductive; failure to supervise and monitor field performance effectively; failure to punish poor performance and reward good performance.

Drug Procurement and Distribution Systems

Several surveys on consumer perceptions of public health services reveal two major lacunae: non-availability of doctors and non-supply of drugs.

Drug costs and shortages are perennial problems, and optimal use of budgets for drugs is imperative (Box 11.4).

Box 11.4

TN's Centralized Drugs Procurement and Distribution System: A Model for Improved Efficiencies

- **An essential list of drugs is drawn up by a panel of experts, subject to periodic review.**
- **Drugs are procured centrally through the TN Medical Services Corporation, following strict procedures for pre-qualification, contracting and quality checks; all drugs are strip-packed and procured from manufacturing firms with GMP certificates and a minimum turnover of Rs 10 crores.**
- **Samples from every consignment are tested in reputed laboratories through a computerized number-based system and drugs distributed through district warehouses.**
- **A pass book system gives the head of the facility flexibility to lift the drugs he requires from district stores.**
- **10% of untied funds are released to PHCs and secondary and tertiary hospitals for emergent needs.**
- **Rational prescription of drugs is promoted through extensive training programmes and monitoring of drug prescriptions.**
- **Most importantly, TN allocates over Rs.100 crores towards drug supplies (far higher than allocations made by other states).**
- **The results: expenditure on non-essential drugs has been reduced and funds released for essential and vital drugs; availability of quality drugs in over 2000 institutions in the state at reduced costs has improved dramatically; the Corporation has financed a range of diagnostic equipment for public hospitals in the state from savings generated through systems improvement.**

Central procurement systems for supply in kind under the centrally sponsored schemes need a similar overhaul as they are plagued with delays, resulting in stock-outs at crucial time periods. The centre has offered that states take over procurement and distribution functions under the RCH Programme, but there is reluctance in every state (except TN) to take over a task seen as troublesome and politically sensitive. It appears feasible for the centre to keep the option for state procurement open, and continuing to supply in kind wherever required.

Healthcare Delivery Systems for Disadvantaged Groups

Ensuring access of healthcare services to disadvantaged groups is integral to the effective and efficient functioning of a healthcare system. Systems must be instituted to provide healthcare to the tribal and remote regions of states, the availability of health facilities in such areas mapped and the deficiencies made good. Outreach services provided through public health facilities also suffers: an ANM required to walk up to 10 kms is less likely to provide outreach services in such habitations. A key strategy for such areas would be mobile health units as has been attempted in Orissa. The appointment of CHWs in tribal areas, selected from the habitation by the community, trained, and paid from state coffers

as has been done in AP is considered an effective strategy, and is commended for replication.

The delivery of primary healthcare to the urban slum population is another area of comparative neglect. Apart from scattered urban dispensaries and family welfare centres, there is no formal system/infrastructure for delivery of primary healthcare in urban areas. Cost effective interventions can be made through the infrastructure and manpower already established in the private sector. West Bengal, Karnataka and AP have instituted effective public-private partnerships to address the health needs of the urban poor. The management of the urban health project in Kolkata, West Bengal, is through the local body. Services of doctors for basic and specialist care are contracted from the private sector. AP has contracted out the management of 192 urban health posts in 73 municipalities to NGOs, who contract private sector medical and paramedical services.

Decentralization

a) Devolution of powers to local bodies:

Of the 8 states studied, all have attempted decentralization in one form or the other, except TN. Kerala, Maharashtra, MP and UP have devolved administrative and financial powers at the primary level to local bodies. Rajasthan has devolved certain administrative and supervisory powers to local bodies, but not financial powers. AP has chosen the mechanism of the registered society at the facility level to promote stakeholder participation, and Orissa the route of a District Health Society. The latter states and TN have not handed over control of health institutions to panchayats, possibly due to strong resistance from staff, and a perception that more inequities could result due to control by different political parties or local elite. The fact is that decentralization, without sufficient preparation of local bodies to take on this expanded role, could have conflicting results. In Kerala, where the decentralization initiative has been relatively successful, local bodies and the people were prepared through a six-phase programme of capacity building, over a period of one and a half years (Box 11.5). The Kerala experience indicates that *decentralization has to be preceded by a long period of planning, defining and clarifying responsibilities, capacity building and advocacy.*

Box 11.5
The Kerala Experience of Decentralization

Six-phase programme of capacity building:

- **First phase: intensive advocacy among people through Gram Sabhas**
- **Second phase: training elected representatives through seminars over a period of 3 days**
- **Third phase: forming and training task forces at local level to prepare projects**
- **Fourth phase: formulating grassroot level plans by panchayats**
- **Fifth phase: preparing plans for block and district levels**
- **Sixth phase: plan appraisal by voluntary technical groups**
- **Results: Only after these painstaking efforts did devolution of powers take place: management of all but 18 of 1300 institutions under the Directorate of Health have been handed over to local bodies. 37% of the state development budget was given to panchayats as untied funds on condition that 40% be used in the productive sector. Many panchayats have focused on preventive measures -- sanitation, garbage disposal, mosquito control and improvements to primary healthcare facilities. With the involvement of doctors in planning, a better working relationship is developing among doctors, health workers, local body functionaries and the people.**

MP has launched a similar decentralization programme. The policy instruments of decentralization are 1) Gram Swaraj through a Health Committee of stakeholders for direct community action on health, including action on determinants like safe drinking water and sanitation. 2) Panchayat Raj which provides the framework for inter-sectoral action at the panchayat level, and 3) District Govt. with an inter-sectoral mandate for planning and action, prioritization and deployment of funds. The government has also enunciated the Swasthya Jeevana Seva Guarantee Yojana, which aims at establishing a system through which community participation in the management of health services and improved utilization of resources and facilities is ensured (Box 11.6).

Box 11.6

A people's survey on health was conducted across the state in each of the 51,806 villages during February, 2001 and information gathered on the current status of health provision, diseases and key determinants of health. This information is the basis for formulation of the Village Level Health Plan. These plans are aggregated at the district level to form the district level plan. The Gram Sabha of each village is given responsibility to constitute a Health Committee of stakeholders to implement this plan at village level. This Committee will have a minimum of 12 members of which 50% will belong to SCs, STs and OBCs and 33% will be women members. The scheme envisages the provision of a core set of services within a specified timeframe, which includes one trained Jana Swasthya Rakshak in every village by June, 2002, one trained birth attendant in every village, immunization and antenatal care, safe drinking water and sanitation and nutrition cover for infants, children less than 3, and pregnant/lactating mothers. The District Level Committee will execute the district level health action plan. This Committee will have both an advisory group and an implementing group.

With the 73rd and 74th constitutional amendments, the wheel has been set in motion, and it appears to be only a matter of time before states will, like Kerala and Maharashtra, devolve powers, both administrative and financial, to local bodies. *Experience in recent times in India has shown that such devolution has had the salutary effect of encouraging local bodies to consider health as integral to other development activities and has greatly facilitated coordinated action on other determinants of health like water and sanitation. Experience has also shown that* **capacity building, of local bodies as well as the community, is an essential prerequisite to reap the full benefits of decentralization.**

b) Institutional Autonomy:

Delegation of administrative and financial powers to facility-level, to promote efficiency, accountability, mobilization of resources and a sense of ownership, has been attempted in several states with some degree of success, and is recommended for replication. The state governments of Kerala, MP, AP and Rajasthan have instituted systems to facilitate hospital autonomy through the formation of societies / committees at the hospital level. Kerala is one of the earliest proponents, with the setting up of Hospital Development Committees in major public hospitals in the early eighties. Members include representatives of political parties, stakeholder groups in the locality, with a senior administrator of the district as the chairman. These committees have been authorized to collect parking fees, visitors' fees, and user fees for diagnostics, and retain the amounts for the development of the facility. The major public hospitals have collected a reasonably good amount, an example being the Trivandrum Medical College Hospital, which collected nearly 10% of its total running costs, including salaries. AP has constituted Hospital Development Societies for tertiary and district hospitals with the district Collector as the chairman, Committees for sub-district secondary hospitals chaired by the local MLA, and Committees for primary health centers chaired by the local body president. Apart from fees as in the Kerala initiative, building maintenance grants, earlier with the Public Works Department, are now released to these societies / committees. Additionally, the State has prescribed fees for 1) internship transfer from private medical colleges to government colleges, 2) clinical attachment of private dental college students and 3) clinical attachment of para-medical students in Govt. institutions (all free hitherto) and permitted retention at the facility level. They have been authorized to charge user fees and exemptions for the poor are left to their discretion. Rajasthan has constituted Medical Relief Societies (MRS), functioning currently in 72 hospitals in the state. The state disbursed Rs.40 million as seed money to these societies in 1995. A study (20) conducted in 1999 revealed that revenues generated, on an average, account for 10-15% of the hospitals' recurring budgets. In Jaipur's SMS hospital, it has touched a high of 26%. An innovative source of finance that has been established by many societies is the Lifeline Fluid Stores (LLFS) (Box 11.7).

Box 11.7

An LLFS is a pharmacy that operates within the premises of the public hospital. A committee of doctors decides on the drugs and supplies that will be stored. The decision is based on information regarding demand for the product, the quality of the product, the market price, and the price at which the wholesale supplier is willing to supply. The committee fixes the selling price, after adding a reasonable percentage towards service charges. The supplier manages the pharmacy, and he is expected to maintain supplies at his own risk. The pharmacy pays a fixed amount to the hospital society towards use of the premises. The prices charged at the LLFS are substantially lower than the market. In 1996-97, the LLFS in Jaipur's SMS Hospital sold fluids and surgical items for Rs. 8.1 million, and the market rate of the same supplies was Rs.16.6 million. The LLFS thus provided a relief of Rs. 8.5 million to patients during the year. The hospital earned 0.6 million.

Exemptions are in place for the poor and procedures to decide exemptions are discretionary and informal – based on casual questioning and visible signs of poverty. The government has recently issued Medicare Relief Cards to families below the poverty line, who are entitled to free treatment. The percentage of population who has received these cards is reported to be around 30%. Targeting the poor however remains a contentious issue (in AP, 80% of the families hold the white card for supply of subsidized rice), and has invariably resulted in either the ineligible being included for subsidies or the eligible being excluded. MP appears to have found a feasible solution (Box 11.8).

Box 11.8

The Rogi Kalyan Samithi initiative of MP has received widespread acclaim. A project for cleaning and refurbishing the Maharishi Yashwant Rao Hospital at Indore progressed into the constitution of a Rogi Kalyana Samithi (Patient's Welfare Society) with private citizens' participation in hospital management. The Committee consists of people's representatives, health and local district officials, and major donors. The Rogi Kalyan Samithi levies user charges. The charges for the general wards are nominal while those for patients in private wards are not more than 50% of the rates in the private sector. Exemptions for the poor are given based on self-declaration on a simple printed form. Contrary to all expectation, the percentage of people who have used the self-declaration facility is only around 2%. Given the success of this venture, the State has established RKSs in 604 hospitals and health centers across the MP. More than 6,000 people are involved in running and managing health centers and hospitals and Rs.3.7 crores has been collected through user charges and donations since 1996-97. Although it faces teething problems, RKS has opened up the management of health delivery systems to people and has created a sense of ownership amongst citizens.

As public health institutions become more autonomous, there is need to guard against the danger of fragmentation of service delivery, which has negative consequences for effective referral services. Such fragmentation can be avoided if the referral hospital is held responsible for overseeing and managing lower level facilities within its catchment area.

One of the main objectives of the institutional autonomy initiative has been the local mobilization of resources through user fees. Unfortunately, this initiative is being promoted as an instrument of fiscal policy, rather than as an instrument of health policy: the aim of user fees should be more to facilitate efficiency, equity and accountability than to raise revenue. There are as yet no evidence-based studies on the impact of user fees on improved efficiency and quality, or public sector support to the poor.

Based on the experience of states, we highlight certain **issues that need to be addressed in relation to user fees:**

- **In Rajasthan and AP, hospital committees have been authorized to collect user fees, set rates and decide exemptions. Some hospitals are not charging user fees yet and users, therefore, may not be able to distinguish between official and unofficial fees. A clear government position becomes important.**
- **The exemption policy for the poor must be clearly enunciated by government. In addition to BPL cards, self-declaration appears to be a reasonable and practical procedure.**
- **Rates and exemption procedures should be widely publicized, and display boards put up in prominent locations in the facility.**
- **If an effective referral system is to be promoted, user charges should be graded, with higher charges for similar services, at the tertiary level.**
- **User fees should not be used as a replacement of regular budgets.**
- **User fees should be evaluated to obtain quick feedback regarding its impact on efficiency and equity objectives, and in particular, its impact on utilization patterns by the poor and disadvantaged groups.**

Accountability

Accountability is not seriously pursued in most states despite lip service paid to the importance of this objective, perhaps because of the complexities involved: public servants are accountable to a host of stakeholders, the rich and the powerful, the poor and the voiceless and the criteria by which they are judged differ with the interest of each group. Moreover, in the absence of assured funding and supportive infrastructure, systems designed to hold providers accountable to performance parametres, tend to falter. But there is no doubt that despite these complexities, **setting standards for healthcare provision, developing transparent and objective systems for monitoring performance, and facilitating local controls hold the key to improvement of the state's health service delivery.** AP has attempted

a performance monitoring assessment system for all the directorates functioning under it, with output measures, based on which each institution is given marks and graded. (See Annex 11.5 for the framework of this system.) An attempt has been made to link performance to individual career advancement through the issue of government orders that the performance grade of facilities will be attached to the confidential rolls of doctors. TN has set up a system of monitoring for PHCs under the DANIDA-TNAHCP initiative, but the system does not grade performance as in the AP case. *Every state must institute performance monitoring and grading systems for all directorates and all levels of care.*

Independent evaluation of programmes and service delivery to assess their utility and effectiveness in addressing goals and objectives, is a key to improved performance and accountability. Reported figures of immunization by state departments and the coverage levels reported through the NFHS point to the need and criticality of independent evaluation as a tool for assessing performance (Table 11.13).

Table 11.13
Reported Figures of Immunization, State Figures and NHFS 2

State	Full Immunization Coverage		% Ante-natal care	
	State data	NFHS2	State data	NFHS2
Kerala	109	80	92	99
Maharastra	101	78	95	90
Tamilnadu	102	89	94	99
Andhra Pradesh	103	59	99	93
Orissa	87	44	86	80
Rajasthan	69	17	62	48
Madhya Pradesh	57	22	--	61

Source: State Government Reports NFHS –2

Several states have used NFHS findings to highlight over-reporting by the department. Similarly, the RCH facility and household surveys, initiated by the centre, have proved an excellent management tool for improved performance. This initiative needs to be expanded to cover other programmes in the health sector. *The centre's role in supporting states for effective monitoring and evaluation systems to assess service coverage and health outcomes is paramount.*

The need to relate health systems performance to health outcomes, and not merely to service outputs, is also critical to improved performance. The issue of vital registration of births and deaths is too important not to merit at least a passing mention. If all births and deaths were recorded, reliable data on birth rates and cause of deaths would be available at the

district and sub-district level, so essential for policy and priority setting in the health sector. In most states, registration of these events vests with the revenue or panchayat raj department. The need to activate systems to ensure full recording of vital events cannot be over-emphasized.

Simultaneously, **it is imperative that the state institute systems for public disclosure on issues relating to health systems performance, both public and private, to increase awareness levels, to promote health-seeking behaviour and to facilitate public action that will motivate the system to perform optimally. It is also necessary that a patient's charter of rights be adopted in public health facilities in a phased manner.** Certain central government hospitals in New Delhi have adopted a citizen's charter of rights on a pilot basis to provide access without discrimination and to ensure citizen's grievances are redressed.

Quality

Quality is a function of two factors: a) the quality of facilities or physical standards and b) the quality of service (which includes clinical standards and quality assurance systems). The recommendations relating to legislation for minimum standards relating to private healthcare apply equally to the public health sector.

Quality improvements (QI) are difficult to motivate in the public sector, given the systemic deficiencies in ensuring accountability, rewarding good performance and disciplining poor performers. The cost of poor quality service in the private sector spells loss of business; the cost of poor quality in the public sector spells no loss to its providers. There is need therefore to link quality performance with personal incentives/disincentives and job retention. This will require, in the first instance, measuring of quality parametres, and an appropriate monitoring mechanism.

In terms of measuring quality of care parametres, the National Family Health Survey of 1998-99 has made a beginning, in respect of the RCH Programme. Table 11.14 presents certain findings on the quality of care for family planning services. The findings again indicate that the level of patient satisfaction, on an average, appears to be higher in the better performing states. These findings comprise an important pointer to the level of public satisfaction within each state, and should motivate remedial action.

Table 11.14

State	Quality of Care Indicators for Facility Visits				
	Median waiting time	% who said staff spent enough time with them	% who said staff talked to them nicely	% who said staff respected their need for privacy	% who rated facility as very clean
Group A: Under-five mortality > 65					
Kerala	29.8	98.1	95.2	96.5	88.1
Maharastra	14.9	97.7	84.6	94.2	83.2
Tamilnadu	29.7	93.5	83.1	85.8	79.4
Group B: Under-five mortality > 65 to < 100					
West Bengal	29.8	84.8	63.7	24.4	54.9
Karnataka	29.4	95.1	75.8	89.0	70.2
Punjab	14.4	98.6	79.5	84.0	64.4
Haryana	14.6	99.0	78.4	87.6	67.9
Gujarat	13.0	98.1	93.2	91.9	90.0
Andhra Pradesh	29.4	97.1	69.3	84.4	68.2
Group C: Under-five mortality > 100					
Orissa	19.2	90.8	62.9	57.0	46.8
Bihar	29.1	90.6	70.5	76.7	66.4
Rajasthan	9.5	96.0	45.9	85.8	39.3
Uttar Pradesh	24.9	95.5	54.6	69.9	51.3
Madhya Pradesh	19.4	94.7	65.9	71.4	57.1

Source: NFHS 2

State experiences in improving quality of care in public health institutions are limited. Some states, which are implementing the World Bank-aided First Referral Health Systems Projects, have initiated quality improvement (QI) actions through the formation of QI Circles/Cells in the secondary hospitals, the formulation of standard treatment guidelines and protocols and instituting patient satisfaction surveys. Based on state experiences, certain options are suggested to facilitate improvements in QOC:

- Institutionalize QI by establishing a) Quality Control Cells at Directorate level to set standards for structure, process (prepare detailed guidelines and protocols for treatment and referrals for each service at each level) and outcome, b)Quality Control Circles at each facility, identifying local teams and training them in QI approaches and techniques, c) Quality Assurance Mechanisms (clients' charter of rights, complaints redressal mechanisms)and d) instituting effective MIS for a two-way communication and utilization of QOC evaluation results
- Provide the required logistical support
- Design methodology for assessing quality against the standards. For example, develop supervisory check-lists, on the job supervision, assess client records, patient flow analysis, use NFHS and other survey findings, institute rapid surveys, OR, focus group discussions, to name a few

- ❖ Involve the community through the local bodies/women health groups to assist in QI and to ensure accountability
- ❖ Reward good facilities and effective QI actions

Convergence and Inter-sectoral Coordination

Systems to ensure inter-sectoral coordination for access to safe drinking water, sanitation and a clean environment are critical to improvements in health outcomes. In MP, for example, the Rajiv Gandhi Mission on Control of Diarrheal Diseases has been implemented through the departments of health, public health engineering and panchayat raj, as well as NGOs. *State experiences indicate that coordination arrangements need to be institutionalized through the establishment of Cabinet Sub-Committees and inter-departmental official committees at state and district levels with clear mandates, authority and funds to take action.* Devolving powers and functions to panchayat raj institutions, for activities related to water supply and drainage, for example, will address the problem of compartmentalization at the implementation level.

Community Participation

A key strategy to improving health systems performance is community involvement. AP's initiative in institutionalizing community participation through Advisory Committees at the PHC and sub-centre level – involving not merely local bodies but women's and self-help groups representatives – is worth replicating. Similarly, the MP experiment with the Village Health Committees, carrying a fair representation of women and disadvantaged communities, could be emulated. Additionally, in order to ensure community participation, MP has legislated the Gram Sabha Act, which mandates that a Gram Sabha should be established in every village for community participation and local controls. *Several states have a fairly large spread of women's groups and, if nurtured, these groups can facilitate community participation in health planning and health services delivery, reduce gender disparities in accessing health services, alleviate poverty and consequently, improve health.*

Political commitment

Social reform movements, leading to the political assertion of underprivileged caste groups, have created an environment of progressive change and development, and facilitated equal access to social opportunities in Kerala, TN, Maharashtra and West Bengal, all states with better health outcomes. **The experience in these states points to the importance of political leadership, political initiative and public action in bringing about transformation and ensuring that social opportunities are within the reach of all, regardless of class or caste.**

It is political leadership that has ensured substantive investments in health and education in Kerala. Amartya Sen argues that determined public action can ensure that "a region need not be imprisoned in the fixity of history' (21). The Malabar region, transferred from the Raj, was very much behind Travancore and Cochin in terms of literacy, mortality and life expectancy. But the initiative of successive governments, both Communist and Congress, ensured that Malabar caught up with the rest of Kerala. This offers a lesson on what can be done by determined political and public action, even without favourable historical circumstances.

This again bears out our hypothesis that **one of the most significant and critical determinants of improved health status is the response of governments and political leadership to the health needs of its people. Implicit to the response of governments is the reach and functioning of the public health services.** The recent experiences described in this chapter provide evidence that there is the awakening of a determined response in many states, a response that holds out hope for increased commitment to health sector reform and improved performance of health systems.

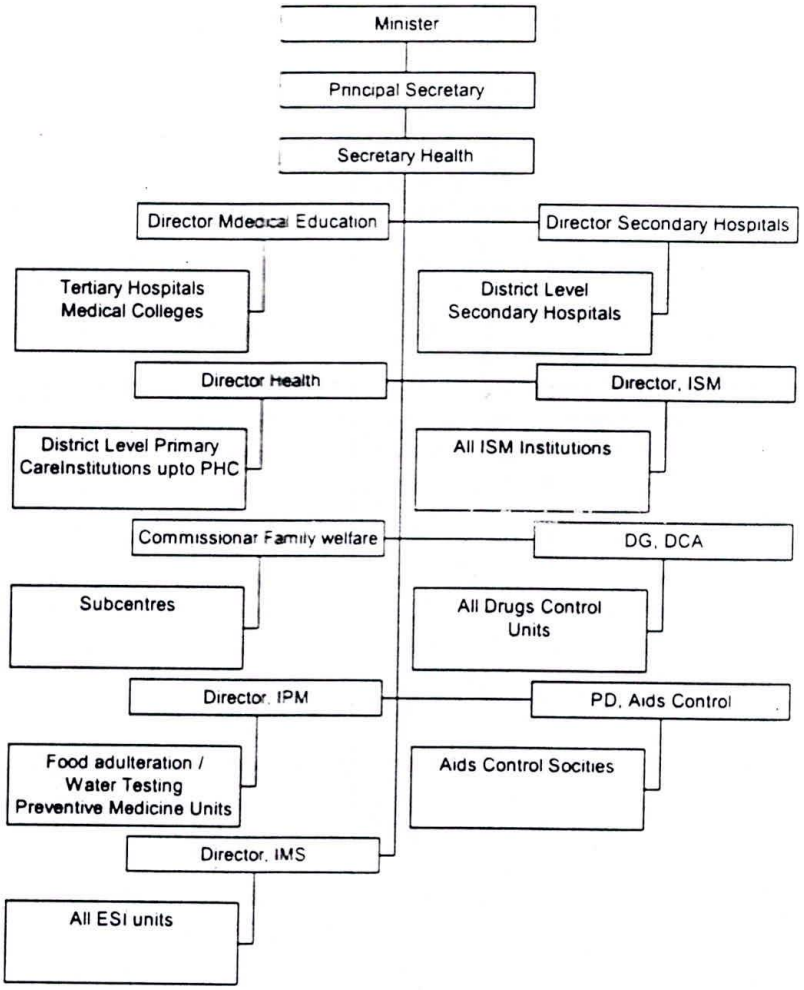
Conclusion

While giving an overview of the performance of the public healthcare system in India and major states, we have asked why certain states have performed better, while others appear to have failed. Having asked the question, we have attempted to isolate and highlight those factors that have led to improved health outcomes as a direction for reform. We have also attempted to highlight recent initiatives in states that can be replicated for improved performance of public health systems. **Generalization of factors that will improve health systems performance, no doubt, have to be tempered with the knowledge that there can be no prescriptive models or their uniform applicability for all of India. The experiences and strategies presented in this chapter must be carefully matched and tailored to address the problems obtaining in and within regions of states, bearing in mind the political and institutional environment, and the underlying principle for success: widespread support from stakeholders.**

Notes :

1. M. Roemer, National Health Systems of the World, vol I, OUP, Oxford, 1991.
2. (i) Andhra Pradesh – Chatterjee, Rachel (2001), Health Systems in Andhra Pradesh
   (ii) Orissa – Gupta, Meena (2001) Health Systems in Orissa
   (iii) Maharashtra – Duggal, Ravi, (2001), Health Systems in Maharashtra, CEHAT, Mumbai
   (iv) Madhya Pradesh – Dixit, Sandeep (2001), Health Systems in Madhya Pradesh, SANKET, Bhopal
   (v) Rajasthan – Gupta, S.D. (2001), Health Systems in Rajasthan, IIHMR, Jaipur
   (vi) Kerala – Vijaychandaran, V. (2001), Health Empowerment of the People : The Kerala Experience
   (vii) Tamil Nadu – Muraleedharan, V. R. (2001), Public Healthcare System in Tamil Nadu: A Critical Overview of its Strengths and Weaknesses, IIM, Chennai
   (viii) Uttar Pradesh – Srivastava, V. K. (2001), Health Systems in Uttar Pradesh, King George's College, Lucknow
3. The Economic Development Institute of the World Bank (EDI), Diagnostic Approaches to Assessing Strengths, Weaknesses and Changes of Health Systems, 1997.
4. An acronym, which in Hindi means 'sick', constructed with the initial letters of the states in category C (except Orissa), by Professor Ashish Bose, Institute of Economic Growth, New Delhi.
5. Census 2001.
6. NFHS 2.
7. Jean Dreze, Haris Gazdar, Uttar Pradesh: The Burden of Inertia, UNU, IDER, OUP, Delhi, 1997.
8. A structure with walls and roof made of pucca or relatively "permanent" material such as cement, concrete, oven-burnt bricks, stones, stone blocks, jackboard, tiles, timber, galvanized tar, corrugated iron sheets and asbestos sheets.
9. A structure with walls and roof made of non-pucca material such as, unburnt bricks, bamboo, mud, grass, leaves, reeds and thatch.
10. V. Selvaraju, V.B. Annigeri, Trends in Public Spending on Health in India, 2001. The 11 states are Andhra Pradesh, Gujarat, Haryana, Kerala, Maharashtra, Madhya Pradesh, Orissa, Rajasthan, Tamiladu, Uttar Pradesh and West Bengal.
11. Ibid.
12. The analysis does not significantly underestimate health spending by not considering capital expenditure, as annualised capital expenditure accounts for less than 10% of the revenue expenditure.
13. V.R. Muraleedharan, Public Healthcare System in Tamilnadu: A Critical Overview of its Strengths and Weaknesses, IIT, Madras, 2001.
14. A Health Sector Analyst, Project Planner, Health Economist, Social Development Analyst, Infrastructure Development Planner, Materials and Operations Planner, and an Adviser, Health Reforms.
15. Impact and Expenditure Review, Health Sector, Andhra Pradesh, DFID Health Systems Resource Centre, 2001.
16. Ibid.
17. Selvaraju and Annigeri, 2001.
18. Harvard University, Health Sector Reform in Tamilnadu: Understanding the Role of the Public Sector, 2001.
19. Vijaychandran, Health Empowerment of the People: The Kerala Experience, 2001.
20. S. Sharma and D. Hotchkiss, Developing Financial Autonomy in Public Hospitals in India: Rajasthan's Model, 2000.
21. Amartya Sen, Radical Needs and Moderate Reforms, Indian Development: Selected Regional Perspectives, UNU/WIDER, 1996.

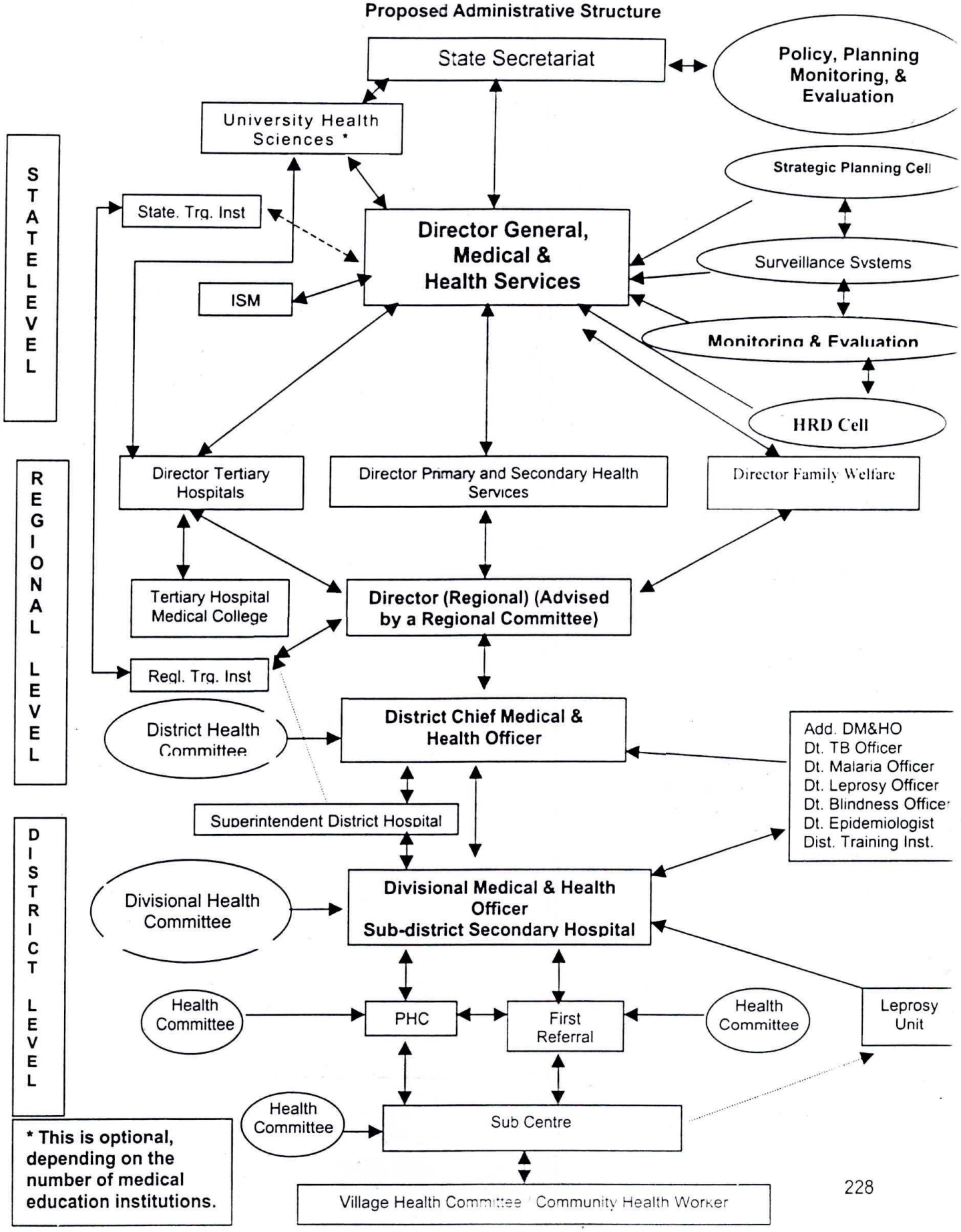
Annex 11.1
Organogram of the Departmental Health and Family Welfare



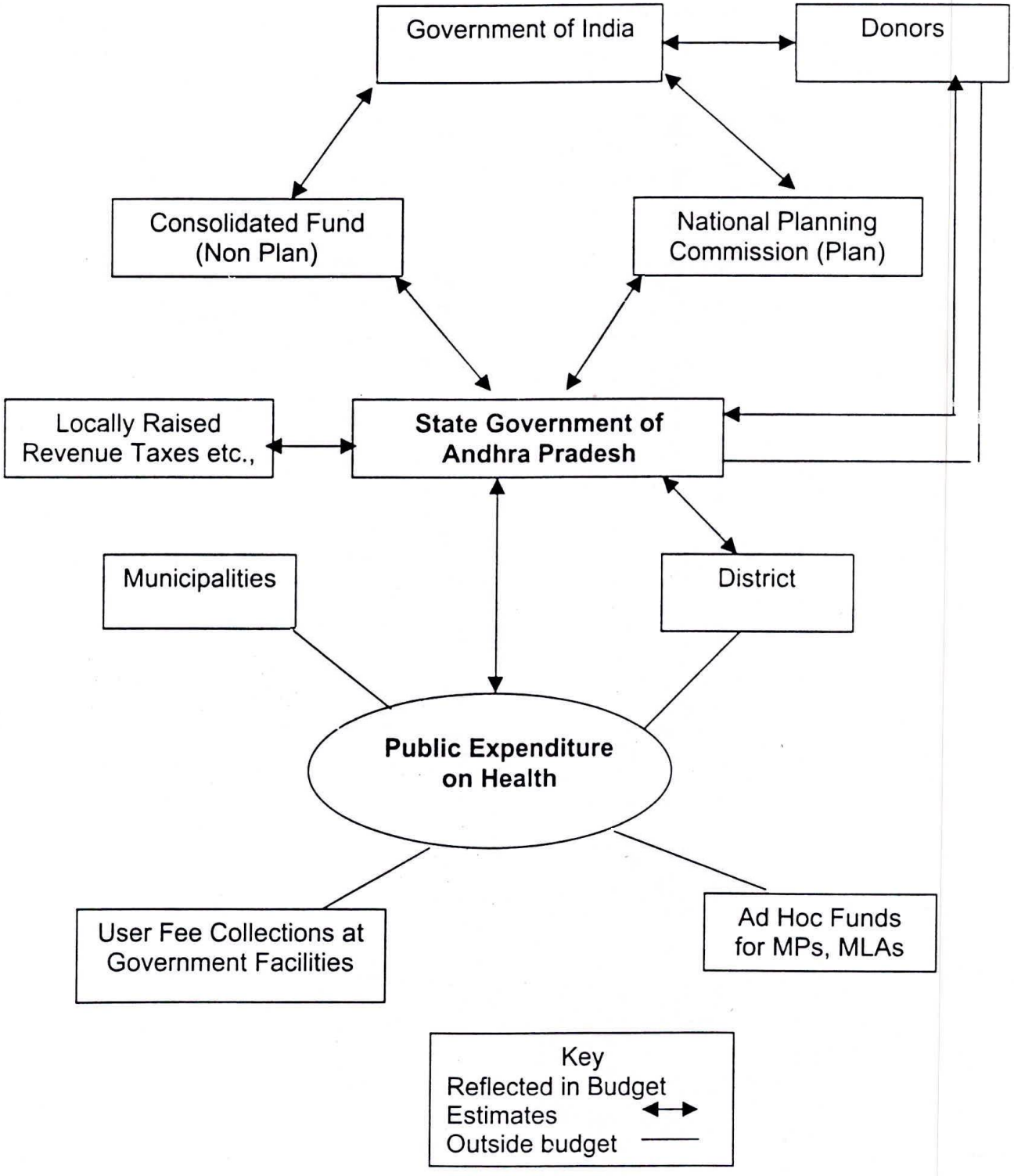
Abbreviations:

ISM : Indian Systems of Medicine
IPM: Institute of Preventive Medicine
IMS: Insurance Medical Services
DCA: Drugs Control Administration
PD: Project Director

Annex 11.2
Proposed Administrative Structure

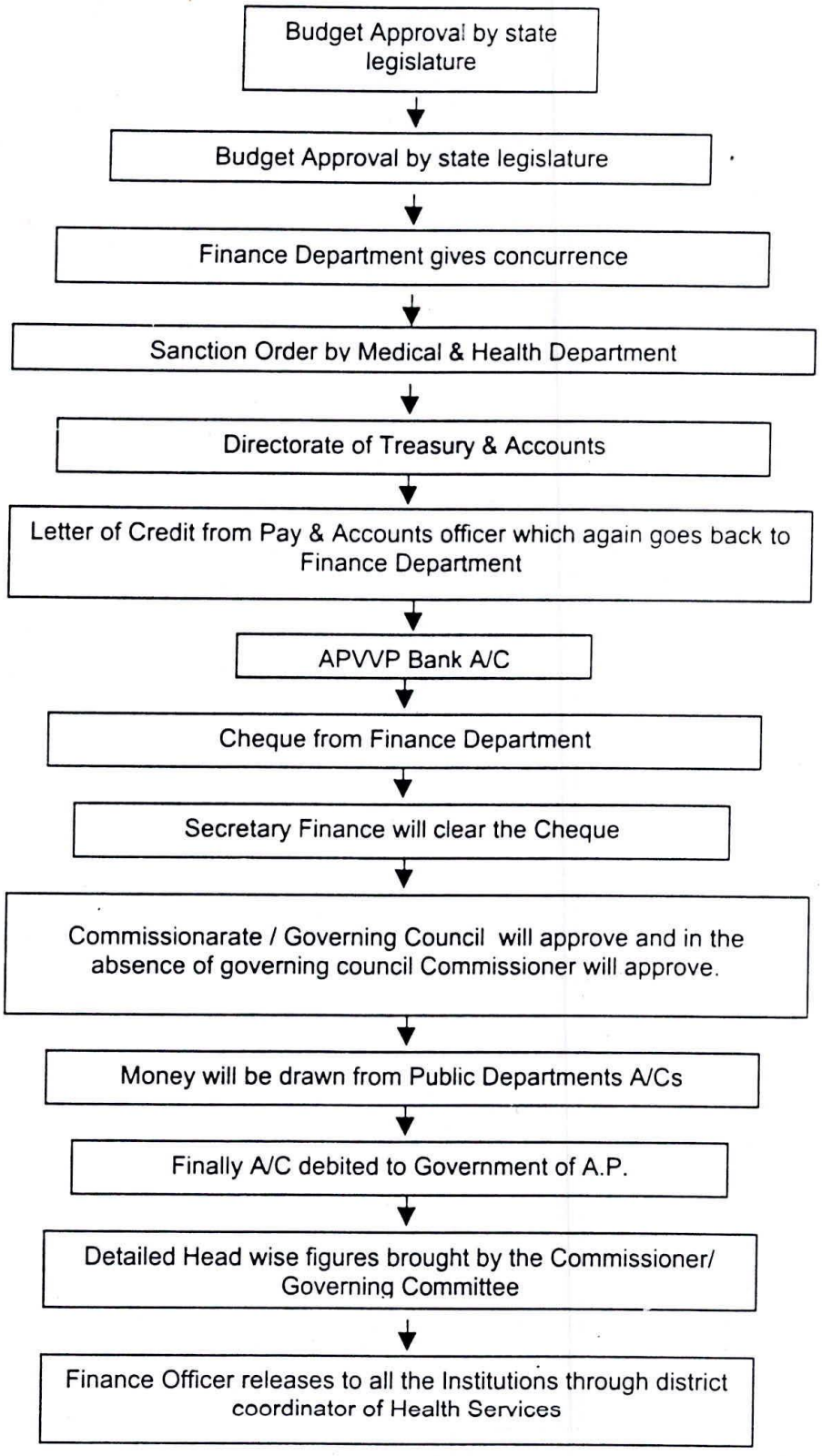


Annex 11.3
Public Expenditure on Health
Flow of Funds from Centre to State



Source: DFID Health Systems Resource Centre, March 2001

Annex 11.4
Flow of Funds in Andhra Pradesh Health Sector



Source: DFID Health Systems Resource Centre, March 2001

Annex 11.5
Performance Monitoring Framework

Level	Objectives	Output/Performance Indicators	Performance Against Criteria
APVVP (Secondary Hospitals)	Provision of hospital services according to guidelines on range of services and level of services	a) Output Measures 1.General Services : outpatient, inpatient, bed occupancy 2. Emergency Services : emergency OP, Emergency IP, emergency major and minor operations 3. Clinical Services : major/minor operations , tubectomies and deliveries 4. Diagnostic Services : X rays , ECG , lab tests , USG	monthly reporting against criteria with grading system
Tertiary hospitals	Same as for secondary level	(b) Quality Output measures same as for secondary hospitals, but speciality-wise	results of quality satisfaction survey Output indicators agreed, but non-compliance from hospitals to date
Medical Education	Provision of medical education as per norms and standards fixed by Medical Council of India	Indicators agreed for asst., associate and professors: no. of classes per month, CME hours per month, national/international papers published per month	
PHC Primary	Provision of preventive and limited curative services and effective implementation of vertical programmes.	a)Output measures relate to general services (OP),diagnostic services (lab tests),national control programmes (sterilisation, deliveries, ANC registration, full immunisations)and specific communicable diseases (GE/malaria deaths)	monthly reporting against criteria with grading system
		b) Quality	quality surveys under consideration

12

Health Finance

Introduction (1)

Poor public health expenditures remain the predominant cause of the unsatisfactory performance of the health system, though serious deficiencies in efficient utilization of available resources also contribute substantially to poor health outcomes. The declared policy, for the State to provide free universal healthcare to the entire population, is totally divorced from ground realities. India has one of the highest levels of private financing (87%), and out-of-pocket expenses, estimated to be as high as 84.6% (2), dominate. Only Cambodia, the Democratic Republic of Congo, Georgia, Myanmar and Sierra Leone show a higher proportion of private financing (3). Out-of-pocket payments, the most regressive method of financing health care, aggravates poverty. It is impossible to make a dent on poverty alleviation without addressing this link between the highly skewed pattern of health finance and the perpetuation of poverty. *The need for an appropriate health finance framework to improve the health system, give the poor financial risk protection against costs of serious illness, and shield them against the double jeopardy of catastrophic illness and financial ruin cannot be overemphasized.*

Over a quarter of the population is reportedly below the official poverty line (4), and those with the lowest incomes are generally in the worst of health and have a greater need for health services. They also depend on manual labour, and ill health directly affects their income. Illness then means borrowing from private moneylenders at usurious interest rates; one serious illness episode can lead to pauperization and indebtedness for generations. A recent analysis by the World Bank concludes, "the hospitalized Indian spends more than half of his total annual expenditures on buying health care; more than 40% of hospitalized people borrow money or sell assets as to cover expenses and 35% fall below the poverty line." Out-of-pocket medical costs alone may push 2.2% of the population below the poverty line in one year (5).

Objectives of the Health Finance System

The ultimate objective of a healthcare delivery service, to quote the famous words of Aneurin Bevan, is that the "rich and the poor are treated alike, that poverty is not a disability, and wealth is not advantaged."(6) It is the duty of the State to provide access to universal healthcare and to ensure that no one is denied healthcare, because of inability to pay, by providing some risk protection to the poor against the costs of serious illness. The most efficient way of providing this protection is to pool the risk between rich and poor, young and old, and employed and unemployed, to enable cross subsidization. The main instrument for achieving this objective is health insurance (7), because illness cannot be predicted; hospitalization costs are

lumpy and cannot be planned; and the proportion of the sick requiring hospitalization in any large population is small, permitting risk pooling.

Thus at a small cost, health insurance cover is possible for at least hospitalization costs. Cross subsidization is not only vertical but also horizontal: the healthy pay for the illness costs of the sick in the same group. Despite its desirability, health insurance may not be administratively feasible in all situations, particularly for those in the informal sector and living in remote areas. Hence, along with insurance, the State has to provide healthcare services to all those who cannot pay. The State has almost exclusive responsibility for providing public goods, which are invariably neglected, even by those who can afford them. Even where insurance cover is feasible, the State has to provide the legal and regulatory framework to maximize benefits and minimize costs. Also, not every category of insurance can be self-financing. The State then has to provide the necessary incentives and subsidies for the coverage of the poor and the sick. Finally, mobilization of resources for health should be fair. The access to health services should, thus, depend upon individual need, and not on financial status.

The financing strategy has to be country specific, depending on per capita income, size of the formal sector, poverty levels and administrative capacity (8). On account of its diverse socio-economic conditions and health outcomes, India's health financing strategy needs to be state-specific, even while following the broad framework of the national strategy.

Health Sector Spending Levels and Trends

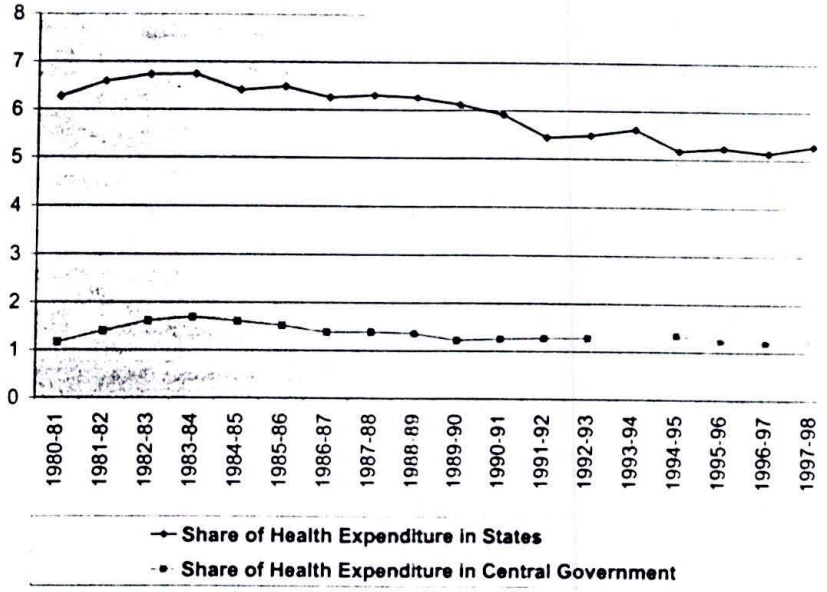
In the absence of a systematic compilation of national health accounts, and the adoption of differing classifications, expenditures have been variously estimated. The latest study by the World Bank estimates that India spent approximately 4.5% of GDP, or about $18 per capita on health in 1996, below the average of 5.6% for low and middle income countries (9). India's public health expenditure is estimated at 0.9% of GDP, well below the average of 2.8% for low and middle income countries, and the global average of 5.5% (10). Total health spending by the public sector in 1998-99 was Rs.161 billion, or the equivalent of Rs.165 per capita (US$ 3.9 or Rs.97 at 93-94 constant prices) (11).

Selvaraju et al (12) have independently analyzed the trends in the health expenditures of the centre and 16 major states for this Report (Figure12.1). (See Annex 12.1 for proportion of health expenditure to total expenditure for 16 major states and the central government.) The share of health expenditure in the major states shows a significant decline in proportion of health expenditure to total expenditure: from the range of 6 to 7% up to the eighties, it came down to just over 5% in the 1990s (13). There are no significant variations for the central government between 1974-75 and 1997-98; the share has always been close to 1.25%, except between 1982-83 and 1984-85 when it was closer to 1.60%. As far as real per capita public spending on health at 1980-81 constant prices is concerned, there has been a steady increase in all the 11 states in varying degrees (Table 12.1). The

sole exception is UP, the most populous state, and also one of the states with poor health outcomes.

Figure 12.2 gives the trends of real per capita public spending on health of selected major states, and their distribution among primary, secondary and tertiary healthcare. Per capita public spending has increased in primary and secondary levels of care by about 50% between 1985-86 and 1998-99; while spending levels have increased by more than 100% during the same period in the tertiary sector. This has serious implications for both equity and efficiency of the health system.

Figure 12.1
Share of Health in State and Central Budget (in %)



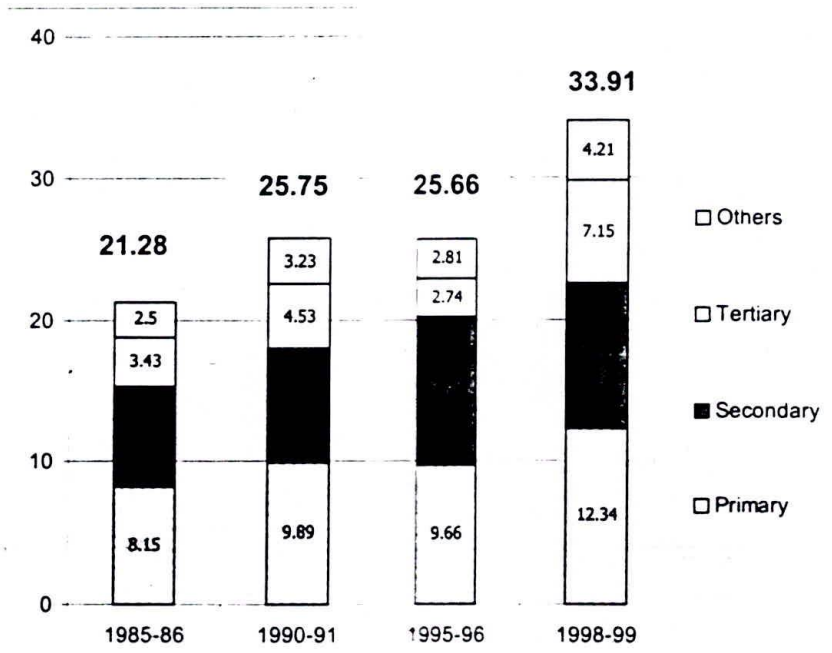
Source: Selvaraju et al, background paper, 2001

Table 12.1
Real Per-Capita Public Spending on Health (Rs.)

States	1985-86	199192	1995-96	1998-99
1 Andhra Pradesh	20.44	21.03	21.92	31.88
2 Gujarat	24.32	30.51	28.77	45.44
3 Haryana	26.79	26.65	24.39	33.78
4 Kerala	25.97	32.15	30.98	35.05
5 Maharashtra	27.46	30.87	30.73	33.67
6 Madhya Pradesh	16.19	19.17	17.89	25.49
7 Orissa	16.95	23.26	19.54	28.28
8 Rajasthan	21.85	29.07	31.02	37.70
9 Tamil Nadu	15.38	21.61	32.09	42.42
10 Uttar Pradesh	16.12	20.38	19.01	18.10
11 West Bengal	22.65	28.49	25.96	41.24
Average Spending	21.28	25.74	25.66	33.91

Note: The figures are in constant prices 1980-81=100
Source: Selvaraju et al, background paper, 2001

Figure 12.2
Per-Capita Real Public Spending on Health by Selected Major States (Rs.)



Note: For the classification of expenditure between Primary, Secondary and Tertiary, see Annex 12.2.
Source: Selvaraju et al, background paper, 2001

An important factor affecting the quality of health services in the states has been the substantial increase in the liability for salaries and pensions of government employees – further aggravated subsequent to the report of the Fifth Pay Commission. Though budget outlays have increased, the proportion of salaries and wages in health spending is going up, particularly in the poorer states. (See Table 12.2 for percentage share of salary and wages in the total health spending of 11 States from 1985-86 to 1998-99.) The situation seems to be particularly grave in MP, Rajasthan, Orissa and UP, where salaries and wages alone consume around 80% of the total health budget, leaving little for development activities, drugs and consumables.

Table 12.2
Percentage Share of Salaries and Wages in Total Public Spending on Health

	States	1985-86	1991-92	1995-96	1998-99
1	Andhra Pradesh	55.98	51.80	63.22	50.28
2	Gujarat	31.76	35.13	42.13	38.82
3	Haryana	53.75	70.63	72.73	63.83
4	Kerala	63.54	70.90	66.57	70.06
5	Maharashtra	41.79	36.71	39.17	46.58
6	Madhya Pradesh	65.53	70.68	76.75	79.58
7	Orissa	65.14	72.08	73.22	82.39
8	Rajasthan	52.42	70.54	70.39	79.02
9	Tamil Nadu	48.23	65.82	64.80	74.00
10	Uttar Pradesh	50.66	68.15	69.06	80.10
11	West Bengal	60.43	66.76	72.53	77.04

Source: Selvaraju et al, background paper, 2001

In sum, investment in terms of public health expenditure as a proportion of total government expenditure is either stagnant or declining. World Bank estimates seem to show the same stagnant levels in respect of total public health expenditures as a proportion of GDP (Chapter 2, Figure 2.16) (14). The analysis by Selvaraju et al also indicates worrisome trends in poorer states: a decline in per capita spending in UP, an increase of the component of the salaries and wages in MP, Orissa, Rajasthan and UP, and a substantial increase in spending on the tertiary sector.

Existing Mechanisms

Around the world, health services are financed through four main channels, of which two are private – out-of-pocket payments and voluntary insurance; and two are public – compulsory insurance (or social insurance) and funding from general government revenues. Social insurance, either publicly managed or heavily regulated by governments, also receives funding from general government revenues, and is hence classified as public (15).

In India, the dominant mode is private. Private spending contributes as much as 87% according to WHR 2000, and 82% according to the World Bank (2001). The bulk is out-of-pocket, estimated at 84.6% by WHR 2000 and 75.2% by Peter Berman (1996) (16). The other private mode, voluntary insurance, covers only 1.7 million people, an insignificant 0.16% of the total population. The proportion of private spending on public and private facilities varies significantly among the states: private spending is lowest in Rajasthan and Bihar, and highest in Haryana, Punjab and Kerala. Punjab and Kerala are also the highest in per capita public spending for 1995-96 (Figure 2.17), although subsequent estimates for 11 states by Selvaraju et al (Table 12.1) indicate that Gujarat, TN and West Bengal have moved ahead in 1998-99.

The World Bank estimates that states typically account for around 75% of total public finances for health (17). (See Table 12.3 for broad distribution of health expenditure 1990-91 based on Peter Berman's estimates.) As in the private sector, there are major variations in per capita public health spending (Table 12.1); these could aggravate the already glaring disparities in health outcomes between better performing and the so-called BIMARU states (18).

Table 12.3
Estimates of Total Health Expenditure in India,1990-91

Source	Total(Rs. crores)	Per capita(Rs.)	% of total	% of GDP
Public Sector				
Centre	554	6.6	2.1	0.1
States	4981	59.3	18.6	1.1
Municipalities	126	1.5	0.5	<0.1
External Aid	118	1.4	0.5	<0.1
Sub-total	5779	68.8	21.5	1.3
Private Sector				
Out-of-pocket	20160	240.0	75.2	4.5
Private employers	319	3.8	1.2	0.1
ESIS contributions	202	2.4	0.8	<0.1
Other sources	361	4.3	1.4	0.1
Sub-total	21042	250.5	78.5	4.7
Total	26821	319.3	100.0	6.0

Source : Peter Berman 1996. Reproduced from **Health Insurance in India**: Prognosis and Prospectus by R.P.Ellis, Alam, and I.Gupta.

Out-of-pocket payments account for most of health expenditure; public contribution from centre, states, local bodies and external aid has been variously estimated at 21.5% by Berman 1996 (Table 12.3) and by WHR 2000 at 13%. The bulk of public health expenditure is financed by revenues from general taxation, widely acknowledged as the most progressive source of finance. The share of social insurance, an important instrument of health finance in India, is estimated at only 2%; a comparison with some other countries (Bhat and Mavalankar 2000), brings out its inadequate development (Table 12.4). Due to discriminatory pricing and exemptions to the poor, user fees could also be progressive. However, the funds generated constitute a very small proportion of health expenditure, except in Kerala, Punjab, and Haryana (Table 12.5). Health insurance, which provides the maximum coverage in most countries, has remained relatively undeveloped in India (For salient features of current insurance, see Annex 12.3).

Table 12.4
Percentage of Total Health Expenditure Funded Through Public/Social Insurance and Direct Government Revenue

Country	*Social Health Insurance*	*Government Budget*
Algeria	37	36
Bolivia	20	33
China	31	13
Korea	23	10
Vietnam	2	20
India	2	18

Source: As cited in Naylor et al.1999. Reproduced from Dileep Mavalankar, Ramesh Bhat, **Health Insurance in India: Opportunities, Challenges and Concerns,** November 2000.

Table 12.5
Cost Recovery and Health Expenditure by States,1996

India/States	Total Exp. (Rs. Lakhs)	Total User Fees (Rs. Lakhs)	Cost Recovery Ratio
Andhra Pradesh	47897.97	734.92	1.53
Bihar	22130.44	229.75	1.03
Gujarat	33564.11	438.14	1.31
Haryana	11957.45	1136.67	9.51
Himachal Pradesh	11621.46	78.40	0.67
Karnataka	42614.04	1180.41	2.77
Kerala	31226.29	4952.00	15.86
Madhya Pradesh	36218.31	577.91	1.60
Maharashtra	45892.85	2126.99	4.63
North East	22695.49	386.37	1.70
Orissa	19093.04	183.21	0.96
Punjab	17693.15	1888.04	10.67
Rajasthan	43161.48	397.92	0.92
Tamil Nadu	55983.65	1238.33	2.21
Uttar Pradesh	84308.17	2726.22	3.23
West Bengal	50801.52	1063.42	2.09

Source: **India: Raising the Sights – Better Health Systems for India's Poor,** World Bank, 2001

Advantages and Disadvantages of Different Modes of Financing

The assessment of strengths and weaknesses of each system is summarised in Annex 12.4.

Private

- *Out-of-Pocket Payments:* Easiest and most convenient to mobilize resources, this theoretically allows the widest choice of providers. In reality, patients are not well informed to make intelligent choices, and it is the most regressive form of financing, impacting severely on the poor. Fee-for-service mode of payment, which accompanies out-of-pocket expenses, has an inbuilt tendency to escalate treatment costs.
- *Voluntary Private Insurance:* Its security and risk pooling gives it advantages over out-of-pocket payments; but there are many associated market failures, including cost escalation (Box 12.1). With public sector monopoly leading to relatively poor products and marketing, voluntary health insurance has had limited coverage in India. Competition will increase with the deregulation of insurance and the entry of many private players; this should increase coverage, particularly among the urban affluent. *But an independent regulatory mechanism for health insurance is essential to derive optimal benefits and minimize different kinds of market failures.*

Box 12.1
Market Failures in Financing Health

Market failures	Consequences	Measures used to correct failures
Demand Side Limitations		
Moral hazard	Overuse of services by patients.	Deductible, coinsurance, copayments etc. Gatekeepers, Waiting lines
Adverse selection	Little risk pooling. No insurance market will exist. Only insured.	Tax subsidy, compulsory universal coverag Lifetime enrolment
Under-utilisation of hea care	Under use of services/treatments w lumpy costs by poor and also for preventive care and diseases with externalities.	Education, Information and Communication Free or subsidised care.
Supply side Limitations		
Supplier Induced Dema	Increased demand by patients. Rais costs of care.	Use provider payment mechanisms like sal global budget, and case payments
Risk selection (Skimming)	No insurance for disabled, sick, poo elderly	Open enrolment, Community rating Risk adjusted premiums for individuals
Skimping	Deny benefits to the sick	Social Insurance
Exclusions	Exclude pre-existing conditions and certain diseases for stipulated perio life of the contract.	Lifetime and compulsory insurance. Guaranteed renewability
Monopoly or insurance	Excess profit, poor quality products, underproduction	Regulations

Source: Based on table from Garg 2000, quoted in background paper, 2001

- *Community Financing:* These schemes are tailored to suit local needs, and benefit from community involvement and low administrative costs. They are usually capable of providing only primary health cover, though they could complement social insurance by covering the rural self-employed. But they require the kind of strong local leadership generally provided by a dedicated NGO, cooperative or micro-credit society. So far, these schemes have had limited coverage: Berman (1996) estimates a 5% coverage; Ellis (1997) puts it at about 30 million. (See Annex 12.3 for salient characteristics of selected NGO managed health insurance schemes.)

Public

- *Tax Financed Services:* By far the most progressive means of health financing, government can direct spending toward targeted population and priority interventions. In practice, even public subsidies are disproportionately utilized by the affluent. Administrative costs are high; services are vulnerable to political instability and poor governance. *But tax financed healthcare is essential for the poor who cannot be covered by other health finance mechanisms.*
- *Social Insurance:* An important mechanism in industrialized as well as developing countries, its advantages are:
    - it can provide stable source of revenue for services;
    - the flow of funds to the health sector is visible;
    - it can help establish patients' rights to get good healthcare;
    - it can combine risk pooling by allocating services according to need, and distributing financial burden according to pay, ensuring equity in finance and access;
    - it can operate in pursuance of government health policy but maintain a degree of independence from the government; and
    - it can be associated with efficient provision of services.

  The disadvantages of social insurance are:
    - high administrative costs;
    - problems of ensuring coverage for informal and agricultural workers;
    - the risk of moral hazard; and
    - high-cost care, depending on payment mechanism to providers.

Given administrative complexities, this mechanism is relevant primarily to the relatively small formal sector in India. The main instruments at present are Employees State Insurance Scheme (ESIS), Central Government Health Scheme (CGHS), and employer-based healthcare systems. Most public and private, industrial and service establishments provide health cover to their

employees. In the public sector the biggest providers are the Railways and the Ministry of Defence. Ellis et al (1997) estimate that roughly 15 million persons could be covered under various types of employer-based financing. In conjunction with social insurance, employer-based financing covers almost all employees in the organized manufacturing sector as follows (19) :

ESIS	-	18%
Private Health Insurance	-	11%
Employer Based Reimbursement Schemes	-	35.3%
Lump sum Payment	-	10%
Employers Own Facilities	-	47%

Health Financing Paradigm

Framework to Assess Feasible Financing Model Conditions in developing countries often preclude the use of financing mechanisms and management arrangements used in industrialized countries (20). Knowing the revenue raising ability of each group is necessary to understand the feasible financing options for different sections of the population. Dividing the population into different income and occupation groups helps to understand i) the number of rich and poor and the ability to raise resources from them and ii) the number of rich and poor households in formal and informal sectors and the feasibility of different arrangements. An exercise to estimate the population in each group divided by income, location (rural, urban), and occupation (Garg 2001), concludes that 354 million people are employed, with 28 million in the organized sector and 259 million in the unorganized sector, covering a population of 772 million (Annex 12.5). Data on central government employees has been interpolated to cover all groups of employees (21) to divide the organized sector into high income, middle income and low income categories. At best, these can provide a broad indication of the magnitude and composition of population in each category, and the potential for coverage under each instrument of health financing. For unorganized sectors, data from the NSSO 50th round has been used to determine each category and income group (22). (See Annex 12.6 for percentage distribution of employed by socio-economic status and main industry classification for rural/urban areas; and Annex 12.7 for how employees are paid for their healthcare.) Table 12.6 shows the percentage distribution of persons by income group, employee status and main industry classification. Basically, the analysis leads to the composition of the population indicated in Table 12.7.

Table 12.6
Percentage Distribution of Persons by Income Group, Employment Status and Main Industry Classification

	ALL AREAS- Rural and Urban			
	High	Middle	Low	
Organized				
Government				
Agricultural				
Manufacturing, Mining, etc.				
Services, trade, transport, etc.				
Unorganized Employment				
Regular Salaried				
Agriculture				
Manufacturing, Mining, etc.				
Services, trade, transport, etc.				
Self Employed				
Agriculture				
Non Agriculture/manufacturing				
Services, trade, transport, etc.				
Casual Employment				
Agriculture				
Manufacturing, Mining, etc.				
Services, trade, transport, etc.				
Out of Labor force/Other HH*				
Unorg and other households				

Note : **-green** **Blue** **Yellow**

Source: Charu Garg, 2001

Table 12.7
Percentage Distribution by Employment and Income Status

Sector	High Income	Middle Income	Low Income	Total
Organized	0.5	5.5	2.8	8.8
Unorganized ✳	6.6	32.6	42.6	81.8
Out of labour force and other household workers ☆	1.1	4.3	4.0	9.4
	8.2	**42.4**	**49.4**	**100.0**

✳ Includes all regular salaried, self-employed, casual/marginal and home-based workers.
☆ Includes all other households which do not have gainful employment.
Source: Derived from Garg 2001

Proposed Financing Framework

The following consists of broad directions that seem desirable and feasible; but further work is required to develop a health finance framework based on more reliable estimates of the costs involved in each mode of financing.

Tax Revenue Based Health: Tax revenue is limited and there are many competing claims. The median percent of tax collection as percent of national income is 18% (ranging from 8% to 44%) for low-income countries, while the median for high income is 48% (23). India is almost at the bottom of this scale at 9.2% of GDP in 2000-2001 (24). There is a strong case for increasing the share of health in resource allocation. But the extent of reallocation depends on political will, the fiscal situation, and how governments respond to the present unacceptable central and state levels of fiscal deficits, around 10% of GDP (25). Advocating reallocation to health is not enough in a country with a low tax base, a mounting debt liability, large security concerns, and a legacy of ineffectively targeted subsidies. Generally speaking, available tax resources should be used primarily for promotive and preventive health; the healthcare of the poor, particularly the informal sector outside the reach of insurance mechanisms; and for encouraging community financing. Resources from dedicated sources must be raised to the extent possible to eliminate competition, and provide stable and growing sources of revenue. Simultaneously, steps must be taken to improve the targeting of public subsidies toward healthcare of the poor:

- **Increase allocation for public health and primary healthcare better utilized by low income families;**
- **Utilize user fees at secondary and tertiary levels to reduce the price advantage of public services with simultaneous arrangements for exemptions for the poor;**
- **Improve public service efficiency to increase utilization.**

Options for different income groups:

The Rich: This population – distributed between formal and informal sectors, urban and rural areas – should be covered by voluntary private insurance because

- even the rich require security and risk pooling; their participation could help cross subsidize the old and the sick, and the less affluent;
- their substantial participation would strengthen the health insurance sector and highlight the need for better regulation;
- it would help develop health maintenance organization (HMO) type institutions, contributing to cost containment.
- it could contribute to freeing resources of public facilities currently being used to provide secondary and tertiary care to the rich.

While voluntary health insurance deserves government support, there is no justification for the recent public subsidies (tax concessions). On the contrary, there is a case for the cost of the regulatory authority being financed by insurance companies by way of premium tax, as in the United States. Increased competition will automatically spread coverage of voluntary health insurance and improve products and service quality. *The State's role is primarily to develop an appropriate legislative framework; appoint a dedicated and independent regulatory authority to monitor the insurance sector; and formulate procedures and regulations to avoid well*

documented market failures. Even in the absence of voluntary health insurance, the rich could continue to depend upon out-of-pocket expenses given their financial resilience.

Middle Income: The objective should be to cover all formal sector employees, but with social insurance primarily financed by contributions from employer and employee; State participation should be, at best, nominal. Those in the informal sector could join either voluntary health insurance schemes or community finance schemes wherever feasible. If none of these options is chosen, they could continue to rely on out-of-pocket expenses. The State must draw them into one of the institutional financing options, not necessarily by offering tax concessions or subsidies, but by making health coverage in those schemes attractive. Middle income should also be required to pay user fees for secondary and tertiary care in public healthcare facilities.

Low Income:

- Formal Sector: This sector is already covered by schemes such as ESIS, CGHS and Employer Based Schemes. Serious deficiencies have been documented about the coverage and service quality of ESIS and CGHS; they also have high administrative costs. By replacing these schemes with social insurance, the government could play facilitator and financier, but not necessarily provider of services. Services for social insurance could be contracted out, enhancing efficiency and reducing costs. The manufacturing and services sector will grow with industrialization and economic growth, and social insurance could play an increasingly important role in the future. Approximately 10% of the population is now covered by social insurance and employer-based schemes. Around 21% of households can be covered under social insurance as per categories that include all income groups – rich, middle income and poor, wherever social insurance is feasible (Garg, Table 12.6). At present, state governments contribute 12.5% of the medical expenditure by ESIS, subject to some limits; 20% of expenditure is passed on to excess fund into ESI reserves. If high income and middle income employees are included and premium made income rated, government contribution in an expanded social insurance scheme may be significantly reduced. Garg has suggested that a mere 5% contribution from the government may be sufficient, so that the additional cost of scheme expansion does not impose a substantial burden on government revenues.

- Informal Sector: Most of the poor in the informal sector (46.6%) deserve maximum assistance from the State, because administratively they are beyond the reach of social insurance. Other than tax based public healthcare, their only source of institutional finance is community finance – with its limitations of dependence on the initiatives of NGOs/cooperatives/micro-credit societies and strong local leadership. China, considered a leader in community financing, has a long history of cooperative medical schemes. A recent World Bank

study observed, "China's experience with community financing indicates that it may be a promising approach to reestablish risk pooling arrangements for catastrophic medical expenses in China's rural areas. Nonetheless, China is a large and heterogeneous country. While community financing has many advantages in theory, it may prove difficult to administer on a widespread basis." (26) This applies even more strongly to India. Although most current schemes rarely receive government support, state governments should set up a package of incentives for NGOs to develop such schemes in designated areas; the government should also contribute a fixed premium for every below poverty line (BPL) family covered by such schemes. All donations to genuine community finance organizations should be exempted from tax. Nevertheless, the bulk of the population would still need to be provided health cover by the State. This implies more efficient functioning of primary and secondary healthcare systems with a strong referral link.

- New Mechanisms – Sickness Funds: Such a fund could be created by a suitable cess on both rural and urban property as well as on their transfers. This is justified by equity considerations, ease of administration and collection, and low incidence of land taxation in rural areas. Besides, it completely exempts the poor. Collections could be pooled state-wise, then allocated to district level societies proportionate to the number of BPL families; the fund could be augmented by tax exempted donations. The objective of this fund is to cover all the hospitalization expenses of BPL families in public facilities as well as designated private facilities. This assumes that a system to identify BPL families already exists in each state for ongoing schemes, including subsidized food grains from Public Distribution System (PDS); if there are any lacunae in the system, they need be rectified. Some compensation to cover at least part of wage loss and other ancillary expenses (transport) should also be provided. Estimating the costs of hospitalization cover to poor families is not simple. On the basis of the 42nd Round NSS, T.N. Krishnan (27) estimated the cost of hospitalization at Rs.600 per episode. On the basis that around 4% of the population in the bottom 40% income group need hospitalization annually, he worked out the cost for 300 million population in the BPL category for hospitalization insurance coverage up to Rs.5,000/- per annum at Rs.900/- crores (Rs.9 billion). Estimates based on the NSS 42nd Round refer to 1986-87 costs; costs per hospitalization episode have risen substantially since (Annex 12.8). The average cost in 1995-96 is estimated at Rs.2,100 per episode at current prices in public facilities. If 4% of the population require hospitalization each year, the total cost for 12 million patients would be around Rs.25 billion (Rs.2,500 crores). A calculation based on per capita annual medical expenditure in ESIC of Rs.136, multiplied by a population of 300 million, is Rs.40 billion (Rs.4,000 crores). However, per capita expenditure in ESIC gets inflated by high administrative

cost, which has substantial scope for economies. Hence the real cost should be somewhere between these two figures.

Mobilization of Resources

Total health spending in 1998-99 is estimated at Rs.161 billion or Rs.16100 crores; to reach the lower middle income countries average of 2.2% of GDP, public investment will have to be more than doubled. The strategy of developing dedicated levies would provide sustained and dependable source of finance to strengthen the health sector and insulate it, at least partially, from fiscal crises, emergencies and political upheavals.

Central Level:

- Reallocation from General Revenues: In view of the fiscal position and the competing claims of different sectors, a quantum jump in allocations for health does not seem feasible. But a 50% increase or an additional Rs.2,000 crores can be derived, partly from General Revenues, partly by reallocation from other programmes not making an impact. That a number of development programmes are not yielding the expected results is well known, and has been widely commented upon in research studies, and evaluation and audit reports. Though it is not possible for this Report to identify them specifically, there is no doubt that reallocation of resources from such programmes to health is both desirable and feasible. Thus, a credit of Rs.2000 crores has been assumed from general revenues and reallocation from other sectors.
- Increased External Assistance: External assistance to the health sector from 1990 to 1995 (Table 12.8) shows that average disbursement has been 216 million dollars; around Rs.1000 crores or Rs.10 per capita. In view of population size, levels of income, poverty and BOD, this is woefully inadequate. Despite its small proportion, external assistance has played a key role in directing resources to priority areas. With a better absorptive capacity and understanding of the importance of investments in health, assistance can be expected to increase by about three times in coming years. This means at least an additional Rs.2000 crores a year. Even so, it would remain at a very modest level of per capita Rs.30 ($ 0.64).

Table 12.8
Summary of External Assistance for Health Sectors (in ' 000 $)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*	*Total from 1990-95*	*Average from 1990-95*	*Average (in Rs.millions)*	*Per capita external assistance (in Rs.)*
Total	184310	152296	204766	152862	338011	263359	1295604	215934	10116.51	9.85039699

Note : Exchange rate as on 11.5.2001 is $1 = Rs.46.85
Population of India for 2001=1027015247
Source : D.B.Gupta and Anil Gumber, background paper on External Assistance

- Tax on Tobacco: This has two main components, basic excise duty which is a central levy; and additional excise duty in lieu of sales tax – levied and collected by the central government on behalf of states. In 1997-98, a special cess was also levied to support dedicated programmes. (See Table 12.9 for the yield from taxes on tobacco in 1997-98 and 1998-99.) This is a buoyant source of revenue with a mechanism already in place for the imposition of a cess. The linkage between tobacco and disease is well established; taxation serves the dual purpose of reducing consumption and yielding resources. At least part of the revenue should be dedicated to preventive and promotive health, particularly to controlling the risk factors for NCDs that will add to the BOD in the near future. Even a 15% cess could contribute an additional Rs.1,000 crores to health without disturbing existing sources of revenue.
- Revenues from Disinvestment: The government has an ambitious programme of disinvestment in public sector enterprises but it has had a slow start due to political pressures, resistance from trade unions and procedural difficulties. A separate ministry for disinvestment, and the successful privatization of BALCO despite political opposition, augurs well for rapid progress. The budget for 2001-02 sets a target Rs.12,000 crores from this source, and out of this Rs.7,000 crores is earmarked for restructuring public sector enterprises, and Rs.5,000 crores for investment in infrastructure and social sectors. Although infrastructure is a high priority, it has many other supporting sources, including cess on petroleum products and private investment; at least Rs.2,000 crores must be earmarked annually for additional investment in the health sector. These proposals alone could provide an additional Rs.7,000 crores annually without significantly disturbing existing budgetary allocations; this means more than doubling of central sector investment (including external aid) in the health sector.

State Levies

Annex 11.9 shows the revenue receipts of states. Despite the fiscal situation of most states, the following are options for additional resource mobilization at the state level.

- Levy on Excise: The rationale behind suggesting a dedicated levy on tobacco for health applies equally to a cess on state excise duties, which predominantly relate to taxes on consumption of alcohol. Again this is a buoyant source of revenue yielding about 15,000/- crores annually; a 33% surcharge on existing excise revenue could yield 5000 crores annually.
- Property Tax: There are three categories of property related taxes. Registration and stamps yield around 10,000 crores annually, and is a tax on transfer of property with both a rural and urban component; even a 20% surcharge could yield 2000 crores annually. The second source is urban property taxes collected by local bodies. Based on a survey of 245 municipal bodies extending to 20 states by NIPFP for the 11th Finance Commission in February 2000, revenue estimates have been

generated multiplying per capita tax yield with 1991 urban population, which exhibit wide state-wise variations. The estimated income based on 1997-98 per capita estimates works out to around 2300 crores. (See Annex 12.10.) This is a rapidly growing source and the yield now would exceed 2700 crores. A 33% cess could provide Rs. 900 crores annually for Sickness Funds and other healthcare services for the urban poor. The third property tax category is land revenue, yielding around 1500 crores a year; a 33% surcharge could yield 500 crores a year. Thus these three sources of earmarked levies could yield around 3500 crores a year, sufficient to support Sickness Funds. The large state-wise variations in the yield from property taxes could result in some states being unable to provide sufficiently for Sickness Funds. The centre would need to extend a helping hand to such states for a countrywide coverage of the scheme.

- User Fees: The yield from this source is now small, but capable of substantial expansion as indicated by the experience of new initiatives in MP and Rajasthan. The World Bank 2001 report identifies four main hurdles to major expansion:
  - i) the lack of appropriate mechanism for user charge review;
  - ii) the minimum level cost recovery due to low fee structure and inadequate collection mechanisms;
  - iii) the difficulty of implementing targeting mechanisms to exempt the poor from user charges; and
  - iv) the lack of adequate mechanisms to ensure fund utilization at point of collection.

Recent state initiatives show how these weaknesses can be overcome.

- Income from user fees to be credited to a hospital based fund managed locally, with authority to review charges;
- User fee income to be additional to budget allocations for medical facility;
- Exclusive use of fund for improvements in concerned medical facility by the local management committee along broad guidelines of state government.
- Identification cards for all BPL families entitling them to automatic exemption; mechanisms for exemption of other indigent families at the discretion of local committee.

The three main objectives of user fees are:

i) discouraging overuse of public facilities by the affluent and correcting some of the distortions in the use of public facilities;

ii) improving quality of care, hence utilization of these facilities; and

iii) involving the local community in managing public healthcare facilities and fostering a sense of participation and ownership.

It has been argued that the levy of user fees is politically sensitive; international literature has also shown that the imposition of user fees in

many African countries led to significant reduction in utilization of public facilities (28). The experience in India is, so far, quite different, and user fees have not generally led to reduction in utilization. Where such levy has been accompanied by local community participation, it has also been able to overcome political resistance. In many cases, it has resulted in visible improvement in the upkeep and quality of public medical facilities. The important point is that if charges are simple, transparent, reasonable, and collection mechanisms do not inconvenience patients, it should eventually be possible to mobilize at least 10% of expenditure on secondary and tertiary health care, yielding about Rs.600 crores on current estimates (29).

Table 12.9 sums up the additional resource mobilization proposals. Given that the total public health expenditure of the centre and states is estimated at around Rs.16,000 crores, these alone could lead to doubling of public investment in health, taking it closer to the target of 2.2% GDP. In per capita terms, this would still remain a modest Rs.311.00 or $ 6.60.

Conclusion

The above analysis attempts to establish a convincing case for a quantum jump in State investment in health. **Increased investment is an essential condition for a significant improvement in the performance of the health system. But it is not a sufficient condition. Major systemic reform should accompany increased allocations to improve efficiency, quality, and outreach of public health interventions. This combination of increased investment and improved public healthcare is also crucial for equity and for providing risk protection to the poor.** The suggested order of resource mobilization seems feasible without inviting serious political risks. India has to move ahead quickly to set up institutional mechanisms that will drastically reduce out-of-pocket payments for health to more acceptable levels (>50%). This means that one of the foremost priorities of central and state governments should be the major expansion of health insurance schemes.

Table 12.9
Additional Resource Mobilization Proposals: A Summary

A. Central Level:

		Rs. in Crores
1.	Additional support from general revenues including reallocation from other programmes	2,000.00
2.	Increased External Assistance	2,000.00
3.	Levy on Tobacco	1,000.00
4.	Allocation from Disinvestment Receipts	2,000.00
	Total A	**7,000.00**

B. State Level:

		Rs. in Crores
1.	Levy on State Excise	5,000.00
2.	Levy on Registration and Stamps	2,000.00
3.	Cess on Urban Property	900.00
4.	Cess on Land Revenue	500.00
5.	User Fees	600.00
	Total A	**9,000.00**
	Total A + B	**16,000.00**

Notes

1. This chapter makes extensive use of background papers specially commissioned for this Report. The papers (all 2001) include Trends in Public Spending on Health in India by V. Selvaraju and V.B. Annigeri; Health Finance Paradigm in India by Charu Garg; and Health Insurance for Informal Sector – Problems and Prospects by Anil Gumber. Many of the estimates in this chapter have been worked out specifically for the Report from original state and central budget documents.
2. WHR 2000 (These estimates have been disputed by many countries including India and do not match with state level estimations).
3. Ibid.
4. Based on NSSO-2001, which estimate the population below poverty line at 26.10%. However, this is disputed by many as a gross under-estimate caused by a change in the methodology. NSSO 1993-94 estimates showed a figure of 36%.
5. World Bank 2001.
6. Aneurin Bevan 1952, quoted in WHR 2000.
7. T. N. Krishnan 1997.
8. William Hsiao 2000.
9. The categorisation of countries in High Income, Middle Income and Low Income follows classification of the World Development Reports. Low Income is per

capita income less than $765, Middle income is $765 to $9,385 and High Income is $9,386 and above.

10. World Bank 2001.
11. Ibid.
12. Selvaraju et al, background paper, 2001.
13. There is a missing link in the figure as data for 1993-94 for the centre was unavailable.
14. World Bank 2001.
15. WDR 1993.
16. Peter Berman teaches International Health Economics at the Harvard School of Public Health.
17. World Bank 2001.
18. BIMARU refers to the relatively backward states of Bihar, MP, Rajasthan, and UP in North India.
19. Garg 2000, Duggal 1993, quoted in background paper by Garg, 2001.
20. Bengt Johnson and Philip Musgrove 1997.
21. Government employees in Group A, B & C have been treated as high income, middle income and low income.
22. Per capita monthly expenditure of Rs.560 in rural and 1055 in urban and above is classified as high income, Rs.265 – 560 in rural and Rs.410 – 1055 is middle income and less than Rs.265 in rural and Rs.420 in urban is low income.
23. IMF Government Financing Statistics, 1998.
24. Economic Survey, 2000-2001.
25. Budget Speech of the Finance Minister, February, 2001.
26. China: Issues and Options in Health Financing, World Bank, 1996.
27. Hospitalisation Insurance – A Proposal, 1997.
28. Dyna Arhin Tenkorang, November 2000.
29. The total public expenditure on health (both centre and states) is estimated at around 16,000 crores and about three-fourths (12,000 crores) is attributable to the states. Just over half of the state expenditure is on secondary and tertiary care (Figure 12.2) – which would work out to around 6000 crores. If a 10% cost recovery is to be made from user fees, the yield would be around 600 crores.

Annex 12.1
Trends in Government Expenditure (Revenue and Capital) 1980-81 to 1998-99 (Rs.Lakhs)

	Year	16 Major States		Central Government		Share of Health Expenditure in States	Share of Health Expenditure in Central Govt.
		Health Expenditure	Total Expenditure	Health Expenditure	Total Expenditure		
1	1980-81	106391.16	1697189.97	25970	2230201.97	6.27	1.16
2	1981-82	128990.48	1957776.71	35180	2505496.82	6.59	1.40
3	1982-83	152282.65	2263233.40	48620	3017949.32	6.73	1.61
4	1983-84	179339.60	2660615.93	60900	3595229.01	6.74	1.69
5	1984-85	203850.50	3180788.20	69310	4307954.89	6.41	1.61
6	1985-86	232724.07	3588315.02	79610	5231187.29	6.49	1.52
7	1986-87	259316.19	4141910.44	86550	6260316.35	6.26	1.38
8	1987-88	303802.75	4816623.09	96490	6941811.78	6.31	1.39
9	1988-89	343164.95	5476233.01	108890	7984868.95	6.27	1.36
10	1989-90	387265.19	6324076.93	114910	9423714.86	6.12	1.22
11	1990-91	445229.93	7531682.13	133000	10594742.15	5.91	1.26
12	1991-92	485517.24	8920762.19	149870	11790874.64	5.44	1.27
13	1992-93	548201.93	9995688.62	177560	13891583.80	5.48	1.28
14	1993-94	633313.20	11276993.97			5.62	
15	1994-95	694396.20	13426662.20	243250	18068203.75	5.17	1.35
16	1995-96	784284.43	14983995.39	243270	19783536.51	5.23	1.23
17	1996-97	883224.41	17204469.41	262820	22053078.86	5.13	1.19
18	1997-98	1019978.23	19330764.55	330320	27551164.63	5.28	1.20
19	1998-99	1194020.85	22306364.17			5.35	

Note : Central data for 1993-94 is not available.
Source : V. Selvaraju et al, background paper, 2001

Annex 12.2
Constituents of Primary, Secondary and Tertiary Care Services

Budget Heads of Health	Budget Heads of Health
Primary Care Services	**Tertiary Care Services**
1 Primary Health Centres	1 Attached to Teaching Institutions
2 Health Sub-Centres	2 Major Hospitals
3 Other Health Services	3 Tuberculosis Institutions
4 School Health Schemes	4 Allopathy - Medical Education, Training & Research
5 Public Health	
6 Family welfare	
Secondary Care Services	**General**
1 Employees State Insurance Scheme	1 Direction and Administration
2 Central Government Health Scheme	2 Health Statatistics, Research, Evaluation & Training
3 Hospital and Dispensaries	3 Medi.Stores Depot & Deptl.Drug Manufactures
4 Community Health Centres	4 Tribal Area Sub-Plan
5 Ayurveda – Other Systerms	5 Other Expenditures
6 Homeopathy – Other Systems	6 Assist.to local bodies, corporates, etc.
7 Unani – Other Systems	7 Machinery and Equipments - Family Welfare
8 Sidha – Other Systems	
9 Other Systems	

Source : Selvaraju et al, backgrounc paper 2001

Annex 12.3

Salient Features of Some Insurance Schemes in India

Indicators	Mandatory Social Insurance Schemes		Voluntary Private Insurance- MEDICLAIM	Community based Insurance /NGOs
	ESIS	CGHS		
Types of beneficiaries	Factory sector employees with income less than Rs. 6500 per month. Their dependants are also covered	Employees of Central government– current and retired, some autonomous and semi-govt. organisations, MPs, judges, freedom fighters, journalists.	Individuals and groups with persons aged 5 to 75 years. Children between 3 months and 5 years covered with parents.	People in the communities
Coverage	About 35.3 million beneficiaries in 1998	About 4.4 million beneficiaries in 1996	1.7 m persons covered. Groups more likely to purchase policy.	About 30 million. Normally quarter of the target group. Table A15
Types of benefits	Medical benefits, cash benefits. Preventive and promotive care, and health education.	All OP facilities, preventive and promotive care available in dispensaries. IP facilities available in government hospitals and in approved private hospitals on being referred.	Hospitalisation and domiciliary hospitalisation according to the sum insured. Exclusions and waiting period clause. Maternity benefits allowed with extra premium.	Mainly preventive care. Also ambulatory and inpatient care.
Premiums (financing of scheme)	4.75 % of employees wages by employers 1.75 % of their wages by employees 12.5 % of total expenses by state governments	Varies from Rs. 15 to Rs. 150 per month based on salaries of the employees. Mainly financed by Central Government funds.	Premiums based on age and sum insured.	Financed by patient collection, govt. grants and donations Premiums depend on the scheme – flat rate or income based.
Provider payments	Mainly salaries for physicians in dispensaries and referral hospitals. IMP paid on capitation basis. Hospitals have global budget financed by ESIC through state governments.	Salaries for doctors. Providers not allowed private practice. Treatment in private hospitals is reimbursed on case basis, subject to actual expenditure and prescribed ceilings.	Indemnity type. Insured pays to the provider who is later reimbursed according to the sum insured.	Mainly fee-for service
Administrative Costs	About 21 % of revenue expenditure. For paying wages for corporation employees, and administering cash benefits, revenue recovery and implementation in new area.	Direct administrative costs including travel expenditure, office expenses, RRT – 5% of total expenditure. Part of salaries can also be charged to administrative costs.	Generally High. Low claim-premium ratio reflects that a large proportion of funds are utilised for running the scheme or kept as profits.	Generally low (3%-5% depending on the scheme)

Source: Based on table from Garg 2000, quoted in background paper, 2001

Annex 12.3 a

Salient Characteristics of Select NGOs Managed Health Insurance Schemes

Voluntary Organizations/ Location	Date started	Service provided	Health Service delivery/organization	Population Served	Total Annual Cost (Rs.)
Sevagram/ Wardha, Maharasthra	Hospital, 1945 Community health program 1972	1. 500 bed hospital 2. Out reach community health programme	-- Trained male VHW provides basic curative, preventive and promotive health care. Mobile with doctor and ANM provides care every 2 months	-- 19457	-- 69459
Bombay Mother and child welfare society (BMCWS)/ Chawla in Bombay	1947	Haelth activities, Two maternity hospitals (40 beds each) with child welfare centers, Non-health activities, Day care centers, convaleacent home	. outpatient and inpatient maternity care . Outpatient paediatric care including immunization		120175 (health and non health combined)
Raigarh Ambikapur Health Association (RAHA)/ Raigarh, Madhya Pradesh	1969 Community health services started 1974	Federation of 3 referral hospitals and 65 independent health centers with outreach community care	. RAHA functions include management of insurance scheme, training and support for health centers. . health centers staffed by nurse provide outpatient care run MCH clinic . VHWs provide community based care	400000	30000-50000 (cost range of individual health centers of which there are 65)
Christian Hospital/ Bissamaucuttak, Orissa	Hospital 1954, out reach community care 1980	120 bed hospital, community project currently not operational	Outpatient/inpatient care, specialties include obstetrics, gyneacology, surgery, ophthalmology	--	1911740 (hospital only)
UPASI Coocnoor, Tamil Nadu	19th century CLWS - 1971	Association of tea growers run comprehensive labour welfare scheme (CLWS)	CLWS provides training, management support to health programmes of individual tea estates. Tea estates have small cottage hospital and outreach care provided by local workers.	250000	300000
Goalpur Co-operative Health Society Shanthiniketan, West Bengal	1964	Dispensary, periodic community health services	Doctor provides outpatient care twice weekly	1247	32000
Students health home West Bengal	1955	Polyclinic plus 28 regional clinics	Polyclinic has 20 beds provides outpatient and inpatient care; Regional clinics, outpatient care only, health education campaigns, blood donation camps.	550000	2950745
Saheed Shabsankar Saba Samithi (SSSS) Burdwan, West Bengal	1978	Dispensary occupational health activities, rural health programme, school health programme, fair price medicine shop	Doctors provide outpatient care weekly MCH clinic.	--	87780
Arvind eye hospital Madurai, Tanil Nadu	1976	2 Urban hospitals (100 beds), 2 rural hospitals (500 beds), outreach programme	Outpatient and inpatient eye care Regular eye camps organized	--	10987700
Tribovandas Foundation Anand, Gujarat	1980	Community based health programmelinked with milk cooperatives, regional rehabilitation centers, Balwadis women's income generating scheme	CHWs provide basic curative, preventive and promotive care; field supervisors provide support to CHWs milk society building used as base for coordinating health services.	300000	1080000 (health and non health combined)
SEWA Ahemadabad, Gujarat	Union 1972, health programme 1984	Union of self employed women. Helps organize women into cooperatives of various traders, provides credit facilities. Provide health care as a support which stocks rational generic drugs.	Health centers in urban slums and rural villages. CHWs provide basic care, doctors provide support twice weekly.	63000	391850 (health program only)
CINI Daulatpur, West Bengal	1975	Community based health programmes, dispensary and outreach rehabilitation centre. Other activities: income generating schemes, farm, health training, research	CHWs provide MCH care through Mahila Mandals, doctors run daily OPD, weekly MCH clinic, supplementary feeding	70000 (Community health project)	1900000

Source : Dave (1991), reproduced from Anil Gumber, background paper, 2001

Annex 12.4
Assessment of Different Methods of Financing Healthcare in India

Options	Strengths	Weaknesses	Interventions suggested
Government Financed	-Can have high coverage - -Can tax the rich and finance the poor -Can meet the objective of Equity in finance- based on progressive tax structure -There are incentives to control costs of care- Costs are controlled by having salaries and global budgets. - No problems of adverse selection, risk selection, skimping and supplier induced demand. -No profit incentives. Administrative costs are low.	-Limited government budget - Tax base low. Difficult to assess the incomes for those not earning regular wages and collect revenues/ contribution from rural and unorganised sector -Rich can corner the benefits if there is no system to prevent them from doing so. Distribution of public subsidies would then be not equitable -No incentive to assure quality improves -Consumer choice for providers is normally restricted -Risk of moral hazards for free care especially if the quality improves.	-Shift the delivery aspect from government to private providers or make the payments to the public provider more incentive based. -Monitor and accredit private providers
Social Insurance Funds	-Large pool of persons to spread risks -Equity in finance as premiums are related to incomes, but contributions do not determine the extent of benefits and can be distributed according to needs. -Costs can be controlled, as providers are normally a part of the insurance funds. Even for other providers, suitable payment system has to be in place. - stable source of revenue for services - It can help to establish patients rights to get good health care	-Cannot provide universal coverage as it is difficult to collect premiums from rural & unorganised sector -Moral hazard can be prevalent, but can be controlled with copayments and deductibles. -No adverse selection because of compulsory insurance. -No incentives to assure good quality unless there are competing funds. - High Administrative costs	-Shift provision to private providers or make payments to the public providers more incentive based. -Have risk equalisation schemes to cover risks with different risks and resources. - Have medisave account/ lifetime insurance
Voluntary Community Finance	-Low coverage but help to organise funds for relatively poor people -Low cost, mostly spent on primary care - Access affected by geographical proximity. Available services for all - Incentive to control quality to lure more people to join - Generally very low administrative costs.	- Flat rate or community rated premium. Not progressive. -Difficult to collect premiums from those not interested in joining the scheme. - Moral Hazard in some schemes -Adverse Selection, unless it is compulsory to join the scheme -External support from government or donors-almost necessary condition to sustain the schemes - Risk selection and skimping generally low, as the idea is to make it attractive for people to join.	-Organise funds at local level by involving local bodies/panchayat -Make the schemes more attractive for everyone in the community to join -Proper monitoring of the schemes

Private Insurance	-Greater freedom of choice for consumers to choose their provider -Incentive to provide good quality of care	- Very low coverage -Moral Hazard both in terms of number of visits and costs. -Tends to be inflationary in terms of costs of care. -Adverse selection by people in age 18-45 -Skimming exercised by varying premiums according to age and activity - OP care generally not covered because of high administrative costs -SID under fee-for-service -Regressive in financing, as premiums are risk rated. Contributions determine the benefits. - Indemnity type of insurance makes it unattractive for many. Poor cannot make large payments out-of-pocket and reimbursed later. -Exclusions for certain diseases and pre-existing conditions -High profit incentives to the insures and providers	-Cover maternal and OP care - Limit exclusions and guarantee renewals -Have coinsurance, deductibles, etc. to minimise moral hazard -Have prepayments or direct link-up with providers -Allow freedom of choice in different systems of medicine -Have proper regulation and monitoring to take care of consumers interests.
Out of pocket payments	- Every one can seek care - Freedom of choice of providers - Incentives to improve quality by the providers	- Highly regressive in nature. Costs of care are the same to different income groups. Poor bear greater burden in terms of the proportion of their incomes spent on health care. - Not everyone can afford. - There will be a tendency for under utilisation by the poor and for preventive and curative care - There will be no incentive to control costs	Reduce the impact on the poor by helping them with tax financed money.

Source : Charu Garg's Background Paper, 2001

Annex 12.5
Employment by Industry in Organized and Unorganized Sectors in India: 1997

(In Million)

Employment by industry	Organised Public	Organised Private	Organised Total (Pub+Pvt)	Unorganised	Total organised + unorganised
Central Government	3.3		3.3	----	3.3
State Government	6.5		7.5	----	7.5
0- Agriculture, hunting etc.	0.5	0.9	1.4	190.0	191.4
1- Mining and quarrying	0.9	0.1	1.0	3.2	1.0
2&3- Manufacturing	1.6	5.2	6.7	21.6	28.4
4- Electricity Gas and Water	1.0	<0.1	1.0	3.2	1.0
5- Construction	1.1	0.1	1.2	7.3	8.5
6- Wholesale and retail trade	0.2	0.3	0.5	23.8	24.3
7- Transport, Storage Communications	3.1	0.1	3.2	4.9	8.1
8- Finance, Insurance , real estate	1.3	0.4	1.7	2.6	1.7
9 - Community Social, Personal services	1.8	1.7	0.7	2.4	11.5
Total main workers	**19.4**	**8.7**	**28.1**	**259.0**	**287.1**
Marginal workers	----	----	---		**28.0**
Home based workers**					**39.3**
Unorganised total					**326.3**
Working Population					**354.4**
Unemployed					**7.4**
Total labour force					**361.8**

Source : Ministry of labour (2000) Annual Report
Ministry of Finance (2001) Economic Survey
Reproduced from Charu Garg, background paper 2001

Annex 12.6

Percentage Distribution of Employed by Socio-economic Status under Employment Status, Main Industry Classification and for Rural-Urban Areas

Employment Status and Industrial Classification	Rural					Urban				
	High	Middle	Low	Persons by activity category*	Persons by household status*	High	Middle	Low	Persons by activity category	Persons by household status
				in millions					in millions	
Organised						**5.4**	**62.7**	**31.8**	**28.1**	**74.9**
Government									10.7	28.5
Agricultural									1.4	3.7
Manufacturing, Mining, electricity, etc.									9.9	26.4
Services, trade, transport, communication									6.1	16.3
Unorganised Employment	**8.1**	**40.9**	**51.0**	**259.5**	**518.8**	**8.0**	**36.6**	**55.4**	**67**	**178.7**
Regular Salaried	23.2	48.8	28	16.7	42.9	12.9	48.2	38.9	26.4	82.4
Agriculture	8.4	38.7	52.9	2.7	6.9	6.1	35.6	58.3	0.26	0.8
Manufacturing, Mining, electricity, etc.	23.3	51.2	25.5	4	10.3	12.5	48.6	38.9	8.8	27.5
Services, trade, transport, communication	27.8	50.4	21.7	9.9	25.4	15.1	49.8	35.1	17.4	54.3
Self Employed	9	46.7	44.3	150.4	314.5	6	34.7	59.3	28.3	71.43
Agriculture	9	46	45	122.3	240.9	3.6	26.9	69.5	4.8	13.1
Non Agriculture/ manufacturing	7.2	42.5	50.3	11.3	33	7.8	30.9	61.3	6.9	18.4
Services, trade, transport, communication	11.6	47.9	40.5	16.8	43.6	7.5	38.1	54.3	15.4	39.9
Casual Employment	2.8	29.5	67.7	92.4	161.6	0.9	17.3	81.8	12.3	24.9
Agriculture	3.4	28.1	68.5	78.4	137.1	1.9	8.2	89.9	3.1	6.3
Manufacturing, Mining, electricity, etc.	5.6	39.9	54.5	10.2	17.8	2.5	20.6	76.9	5.7	11.5
Services, trade, transport, communication	5.3	40.1	54.6	3.8	6.6	2.5	18.7	78.7	3.4	6.9
Out of Labour force/Other Households*	12.3	46.9	40.8	325.5	66	6.9	40.3	52.8	126.1	14.3
All Households	**5**	**35.2**	**59.8**	**585**	**585**	**4.9**	**35.5**	**59.6**	**193.1**	193

Source: Table has been generated using the NSSO report 409 for 1993-94 data, Government of India (1997)
Figures are reconciled using table 4 and table 36 of the NSSO report (1997) and annual report Ministry of labour (2000) and Economic Survey (2001)
**For the organised employment, we do not have the break up by rural and urban areas. For organised sector, the classification is either by industry or by public and private sector. Employment figures under Government are deducted from the services sector under industrial classification
The total beneficiaries/ population covered are estimated in the organised sector by considering the ratios between employees covered and total beneficiaries in the unorganised sector
* Category 'other household' considers persons who are not regularly employed, self employed, or casual workers. These include students, infants, beggars, homemakers, pensioners etc. These are put under the column persons by activity.
Persons by household status includes all non employed under the relevant household status of the employees. Hence, other households in this column will include only those persons where no person in the household is gainfully employed.
All agricultural labour has been taken as the casual labour and other labour has been treated as regular employment in the rural areas.

Source : Charu Garg, background paper, 2001

Annex 12.7
How Employees are Paid for their Healthcare

	Tax-Financed	Social Insurance	Private insurance	Employers Schemes	Out of Pocket	Approx. P% of health exp.*
Regular Salaried employment						
Government						5.1
Defence, police etc.						2.6
Railways						2.2
Agriculture						1.1
Manufac- organized sector**						10.4
Manufac- unorganized sector**						9.5
Services						8.6
Self Employment						
Agriculture						24.4
Non Agriculture						9.3
Casual wage Employment						
Agriculture						11.6
Non Agriculture***						5.9
Others not classified anywhere++						9.3
Percent of total health Expenditures						100

- These percentages are approximations and not based on any evidence.

Note : The darker the shade of the grey in the table, the higher is the contribution of the specified source.

Annex 12.8

Utilization of Health Services and Average Expenditure Incurred for Treatment as Outpatient and Inpatient

	1986-87		1993-94		1995-96	
	Rural	Urban	Rural	Urban	Rural	Urban
% of ailing persons not treated	18	11	12	8	17	9
% treated as Outpatient(OP)						
Public	26	28	42	34	19	20
Private	74	72	58	66	81	80
% treated as inpatients (IP)						
Public	60	60	61	60	44	43
Private	40	40	39	40	56	57
Average payment for OP treatment/episode (Rs)						
					(At current prices)	
Public	73	74	51	65	129	166
Private	78	81	123	141	186	200
All	76	79	93	115	176	194
Average Payment for OP treatment/episode (Rs)						
					(at constant 86-87 prices)	
Public	73	74	27	35	48	64
Private	78	81	65	75	74	81
All	76	79	49	61	69	78
Average Total Expenditure for IP treatment/episode (Rs)						
					(at current prices)	
Public	722	653	559	452	2080	2195
Private	1156	1570	1876	2336	4300	5344
All	886	1007	1076	1210	3202	3921
Average Total Expenditure for IP treatment/episode (Rs)						
					(at constant 86-87 prices)	
Public	722	653	297	240	912	963
Private	1156	1570	998	1243	1886	2344
All	886	1007	572	644	1404	1720

Note: (i) Data for 1993-94 relates to the survey by NCAER and for 1986-87 and 1995-96 data relates to a surveyby NSSO in their 42^{nc} and 52nd round.

(ii) Consumer Price Index was used to convert the data from current to constant prices.

Source: Garg 2000.

(i) For 1986-87 data: NSSO (1992)

(ii) For 1993-94: Garg (1998) Compiled from the tables in Shariff et. al. (1998)

(iii) GOI (1998)

Annex 12.9
Revenue Receipts of States (Rs. Crore)

Items	1997-98 (Accounts)	1998-99 (Budget Estimates)	1998-99 (Revised Estimates)	1999-2000 (Budget Estimates)	Variation					
					Col.4 over Col.2		Col.4 over Col.3		Col.5 over Col.4	
					Amount	Percent	Amount	Percent	Amount	Percent
1	2	3	4	5	6	7	8	9	10	11
Total Revenue (I + II)	170300.8	203106.0 (200136.4)	189118.4	220154.0 (214740.7)	18817.6	11.0	-13987.6 (-11018.0)	-6.9 (-.5)	31035.7 (25622.3)	16.4 (13.5)
I Tax Revenue (A+B)	121640.6	147094.4 (144918.5)	134419.8	157188.3 (153678.4)	12779.2	10.5	-12674.6 (-10498.7)	-8.6 (-7.2)	22768.5 (19458.6)	16.9 (14.5)
A. Revenue from States Taxes (I to iii)	81229.4	100393.0 (98217.1)	93530.7	111317.6 (108007.7)	12301.3	15.1	-686.3 (-4686.4)	-6.8 (-4.8)	17786.9 (14477.0)	19 (15.5)
(I) Taxes on Income (a+b)	1085.8	1235.3 (1235.9)	1363.2	1524.9	277.4	25.5	127.9 (127.3)	10.4 (10.3)	161.6	11.9
(a) Agricultural Income Tax	182.0	131.0 (131.6)	181.9	197.6	-0.1	-0.1	50.9 (50.3)	38.9 (38.2)	15.7	8.6
(b) Tax on Professions, Trades Callings and Employment	903.8	1104.3	1181.3	1327.3	277.5	30.7	77.0	7.0	145.9	12.4
(ii) Taxs on Property and Capital Transaction (a to c)	8313.7	10860.7 (10585.9)	9450.8	11198.4 (10980.9)	137.1	13.7	-1409.9 (-1135.1)	-13.0 (-10.7)	1747.6 (1530)	18.5 (16.2)
(a) Stamps and Registration fees	7143.0	9118.8 (8879.5)	9078.0	9469.0 (9372.5)	935.0	13.1	-1040.8 (-801.6)	-11.4 (-9.0)	1391.0 (1294.5)	17.2 (16.0)
(b) Land Revenue	1090.6	1656.4 (1620.9)	1305.8	1651.2 (1530.2)	215.2	19.7	-350.6 (-315.1)	-21.2 (-19.4)	345.4 (224.4)	26.5 (17.20)
© Urban Immovable Property Tax	80.2	85.5	67.0	78.2	-13.2	-16.4	-18.5	-21.6	11.1	16.6
(iii) Taxes on Commodities and Services (a to g)	71829.9	88297.0 (86395.4)	82716.7	98594.4 (95502.0)	10886.8	15.2	-5580.4 (-3678.7)	-6.3 (-4.3)	15877.7 (15785.3)	19.2 (15.5)
(a) Sales Tax *	48841.8	59643.9 (58825.0)	55930.0	65003.1 (64154.1)	7088.1	14.5	-3713.9 (-2895.0)	-6.2 (-4.9)	9373.1 (8224.1)	16.8 (14.7)
(b) State Exercise Duties	11270.7	13628.6 (13568)	13680.9	16157.9 (16033.6)	2410.2	21.4	52.3 (112.2)	0.4 (0.8)	2477.0 (2352.7)	18.1 (17.2)
© Taxes on Vehicles	4853.9	5841.2 (5637.0)	5343.5	6317.9 (6173.2)	489.6	10.1	-497.7 (-293.5)	-8.5 (-5.2)	974.4 (829.7)	18.2 (15.5)
(d) Taxes on Passengers and Goods	2003.9	2401.6 (2390.3)	2090.5	2677.1	86.6	4.3	-311.1 (-299.8)	-13.0 (-12.5)	586.6	28.1
(e) Electricity Duties	3194.2	4070.0	3853.7	4635.2 (4424.2)	659.5	20.6	-216.3	-5.3	781.5	20.3
(f) Entertainment Tax	664.6	710.9	680.4	757.0 (743.4)	15.8	2.4	-30.5	-4.3	76.6	11.3
(g) Other Taxes and Duties	1000.7	2000.9 (1193.5)	1137.3	2746.2 (1296.5)	137.0	13.7	-863.1 (-55.7)	-43.1 (-4.7)	1608.4 (158.7)	141.4 (14.0)

Items	1997-98 (Accounts)	1998-99 (Budget Estimates)	1998-99 (Revised Estimates)	1999-2000 (Budget Estimates)	Variation					
					Col.4 over Col.2		Col.4 over Col.3		Col.5 over Col.4	
					Amount	Percent	Amount	Percent	Amount	Percent
1	2	3	4	5	6	7	8	9	10	11
B. Share in Central Taxes (a to c)	40411.2	46701.4	40889.1	45870.7	477.9	1.2	-5812.3	-12.4	4981.6	12.2
(a) Income Tax	18171.2	18860.5	14980.0	17441.6	-3191.3	-17.6	-3880.6	-20.6	2461.7	16.4
(b) Estate Duty	0.2	0.0	0.0	0.0	-	-	-	-	-	-
© Union Excise Duties	22239.8	27840.9	25909.2	28429.1	3669.4	16.5	-1931.7	-6.9	2519.9	9.7
II Non-tax Revenue (C+D)	48660.2	56011.6 (55217.8)	54698.5	62965.8 (60862.3)	6038.4	12.4	-1313.0 (-519.3)	-2.3 (-0.9)	8267.2 (6163.7)	15.1 (11.3)
C. Grants from the Centre	24222.5	28306.2	30091.1	33701.1	5868.5	24.2	1784.9	6.3	3610.1	12.0
D. States own Non-Tax Revenue (a to f)	24437.6	27705.4 (26911.7)	24607.5	29264.7 (27161.2)	169.9	0.7	-3097.9 (2304.2)	-11.2 (-8.6)	4657.2 (2553.7)	18.9 (10.4)
(a) Interest Receipts	7909.8	6879.5	7513.3	7399.6	-396.5	-5.0	633.8	9.2	-113.7	-1.5
(b) Dividends and Profits	94.2	122.0	116.2	217.4	22.0	23.4	-5.8	-4.8	101.2	87.1
© General Services	6419.5	6908.2	5114.0	6069.6	-1305.6	-20.3	-1794.2	-26.0	955.6	18.7
Of which : State Lotteries	3257.7	3764.5	2246.7	3607.2	-1011.0	-31.0	-1517.8	-40.3	1360.4	60.6
(d) Social Services	1685.5	1546.3	1726.4	1775.9	40.9	2.4	180.1	11.6	49.5	2.9
(e) Economic Services	8327.8	12249.2 (11455.5)	10137.5	13802.1 (11698.6)	1809.7	21.7	-2111.7 (-1318.0)	-17.2 (-11.5)	3664.6 (1561.1)	36.1 (15.4)
(f) Fiscal Services	0.8	0.1	0.1	0.1	-0.8	-87.5	-	-	-	-

Note :

1. Figures for Jammu and Kashmir and Nagaland for 1997-98 (Accounts) relate to Revised Estimates.
2. Figures outside brackets under the year 1998-99 (Budget Estimates) are adjusted for Rs.2969.6 crore towards Additional Resource Mobilisation Measures proposed by the States.
3. Figures outside brackets under the year 1999-2000 (Budget Estimates) are adjusted for Rs.5413.4 crore towards Additional Resource Mobilisation Measures proposed by the States.

* Comprise General Sales Tax, Central Sales Tax, Sales Tax on motor spirit and Purchase Tax on sugarcane,etc.

Source : State Governments' Budget Documents, reproduced from Reserve Bank of India Bulletin,Vol.IV No.1,January 2000.

Annex 12.10
Property Tax in Municipal Revenues

States	Per capita property tax (in Rs)		Population 1991 (in million)	Total property tax (in Rs. million.)	
	1992-93	1997-98		1992-93	1997-98
Andhra Pradesh	86.94	141.79	17.88	1554.49	2535.21
Assam	9.52	11.75	2.48	23.61	29.14
Bihar	12	29.51	11.35	136.20	334.94
Gujarat	17.19	165.9	14.24	244.79	2362.42
Harayana	44.41	60.6	4.05	179.86	245.43
Himachal Pradesh	208.89	237.41	0.44	91.91	104.46
Karnataka	37.17	57.62	13.90	516.66	800.92
Kerala	42.41	62.74	7.68	325.71	481.84
Madhya Pradesh	22.82	29.64	15.33	349.83	454.38
Maharashtra	83.34	146.64	30.54	2545.20	4478.39
Orissa	2.05	2.54	4.23	8.67	10.74
Punjab	19.83	25.66	5.99	118.78	153.70
Rajasthan	13.58	30.1	10.06	136.61	302.81
Tamil Nadu	86.32	83.43	19.07	1646.12	1591.01
Uttar Pradesh	21.65	27.33	27.60	597.54	754.31
West Bengal	132.5	206.3	18.70	2477.75	3857.81
Manipur	0.22	2.23	15.33	3.37	34.19
Meghalaya	37.41	51.09	30.54	1142.50	1560.29
Tripura	10.57	27.69	0.03	0.32	0.83
India	65.79	105.68	217.61	14316.56	22997.02

Source : Survey of 245 Municipalities conducted by the National Institute of Public Finance and Policy for the 11th Finance Commission, 2000

13

External Assistance to the Health Sector

Introduction: An Overview

External assistance in India is small in terms of its proportion to the GDP. In health, it has never been more than 1-3% of the total public health spending in any given year. Yet external assistance has had a profound impact on health: technical support obtained from such assistance has made a significant contribution to hastening India's demographic and epidemiological transition.

According to the UNDP's Human Development Report (1992), development assistance from industrialized countries was equivalent to 0.35% of their combined GNP against the 0.7% norm recommended by the UN General Assembly. This assistance was, however, not uniformly spread – the 10 countries accounting for more than 72% of the world's poor received hardly 27% of total Official Development Assistance (ODA). During the last two decades, the total ODA to India increased steadily from about $2 billion in 1980 to $9 billion in 1988, then came down to about $1.5 billion in 1998. The present position is not radically different. With its large numbers of the poor, India was a natural candidate for external assistance. Yet, per capita, the ODA received was $2.8 in 1992 and $1.6 to 1998, while Thailand got $13.5 and $11.3 respectively. In fact, for the same years, India received the lowest ODA per capita in 1998 among selected countries (Table 13.1).

Table 13.1
ODA Received by Selected Countries

Country	Total (US$m)		As % of GNP		Per Capita $	
	1992	1998	1992	1998	1992	1998
Thailand	770	690	0.7	0.6	13.5	11.3
China	3045	2358	0.7	0.3	2.6	1.9
Sri Lanka	639	489	6.6	3.2	36.2	26.1
Indonesia	2075	1257	1.6	1.3	11.3	6.2
India	2430	1594	0.9	0.4	2.8	1.6

Source: **Human Development Report**, 2000

Till about 1992, more than half of the ODA was for the power sector, and another 40% for industrial development and agriculture. The social sector accounted for less than 8% (1); the estimate for the health sub-sector is not more than 3%. This appears to be changing for the years 1990-98 (Table 13.2).

Table 13.2
Percentage Health to Total ODA – 1990-1996

Indicator	1990-92	1993-95	1996-98
Overall ODA	9.6 bn	8.7 bn	9.3bn
Amount for Health	305 mn	268 mn	623 mn

Source: D.B. Gupta, **External Assistance to Health Sector**, Background Paper, 2001

Since the mid-nineties, there has been an increase in the quantum of funding; more importantly, there has been a perceptible shift in the content of funding compared to earlier years. Till 1994, donor aid was by and large in the area of family planning, primary healthcare and MCH. Most of the 142 health projects under implementation were for primary healthcare and immunization programmes, with a focus on projects related to the strengthening of service delivery, capacity building, training and IEC (2). From 1995, the portfolio for external assistance changed in terms of size and scale of funding, indicating a decline in the share of Family Welfare as a percentage of total donor aid to health (Table 13.3).

Table 13.3
Project Profiles in Health - 1991-95

Indicator	1991	1992	1993	1994	1995 (Planned)
Sectoral Policy	11.8	16.3	13.4	30.9	58.8
Primary Health	43.4	40.9	32.6	33.3	15.1
UIP/Disease Control	33.7	33.9	50.5	31.2	25.2
Family Planning	9	7.6	3.2	2.1	0.58
Hospitals	1.9	1.1	0.17	2.4	0.16
All	100	100	100	100	100
Total Health $m	152	204	152	338	572

Source: **India: Development Co-Operation Report 1994**, UNDP, November 1995

Nature and Extent of Aid

During the initial years of development, external assistance to health was in the form of grant in aid, largely from bilateral donors such as USAID, DFID and SIDA, for specific programmes in family planning, leprosy and malaria eradication. Assistance under the IDA of the World Bank constituted about 10-20% of total external aid flows to health, and this was mainly utilized for the construction of sub-centers, post-partum facilities and family welfare centers (Table 13.4).

Table 13.4
Funding during 1970-80

S.No.	Agency	Amt/ $m.	% To Total	Main Purpose
1.	USAID	493	57.4	Area Projects in FP
2.	UNICEF	134	15,6	Nutrition
3.	World Bank	91	10.7	Infrastructure
4.	UNFPA	42	4.9	Area projects
5.	FORD/ROCKFELOR	15	1.9	Family Planning
6.	SIDA, NORAD, DFID	26	3.2	FP/ Disease Control
	TOTAL	**806**	**100**	

Source: R. Jaffrey, **New Patterns in Health Sector Aid** (3)

With the introduction of the India Population Projects in the early eighties, the World Bank gradually emerged as the principal donor. Funds were provided under these projects for the construction of health centers, the provisioning of equipment and supplies, and the training of health workers. Between 1980-90, the Bank funded 7 India Population Projects for a total outlay of about $744m, increasing its share of total aid to 45%. This period also saw an expansion in the lending portfolio of other bilateral donors, who increased their assistance for disease control programmes – leprosy, malaria, TB and blindness. A major innovation was UNICEF fund support to establish the cold chain infrastructure for the nationwide campaign against vaccine-preventable diseases.

Till 1990, except for the control of malaria and leprosy, disease control programmes did not receive the attention they deserved, partly because of the precedence given to population stabilization by the government; and partly because of the health sector's low priority in the development paradigm. Foreign aid was mobilized essentially for technology and the economic sectors. The strategy changed with the

introduction of liberalization policies; macroeconomic compulsions and the process of economic reform also triggered a series of developments. The role of external assistance for health became more pronounced with the convergence of several unrelated developments:

- the emergence of HIV/AIDS and the increasing concern with controlling infectious and communicable diseases as a consequence of globalization;
- the adverse balance of payments forcing India to mobilize foreign exchange, preferably on concessional terms, which was available for health;
- with the collapse of the Soviet model, a redefinition of the State's role as more primarily concerned with health and education;
- the growing frustration of bilateral and multilateral donors with the lack of adequate efficiencies in delivery systems, resulting in poor implementation and low fund absorption; and
- the IMF and World Bank strategy to push through the process of structural adjustment with "a human face."

The real change in the nature, scale and depth of donor aid to health began in 1992 with World Bank assistance for HIV/AIDS, followed in quick succession with lending for the control of leprosy, cataract blindness, malaria and TB. The Bank recently approved the second phase of lending for leprosy and HIV/AIDS; substantial assistance has also been given to reproductive health – which includes traditional concerns with MCH, as well as the control and prevention of reproductive tract infections. Proposals are also being considered at present for IDA funds to establish a nationwide surveillance system and capacity building for food and drug regulation. (See Table 13.5 for a significant increase in Word Bank assistance in the last ten years and a perceptible decrease in bilateral funding.)

The rapid expansion of primary healthcare facilities as a part of the Minimum Needs Programme was at the cost of reduced investment in district and sub-district hospitals, affecting the development of a referral system. Poor-quality services resulted in the proliferation of the private sector and consequent out-of-pocket expenditure on minor ailments, communicable diseases, deliveries and respiratory infections. Analyses of public health spending were followed up with the financing of a series of State Health Systems Projects (SHSP). District hospitals (4), area hospitals at the sub-district levels, and community health centers (CHCs) at the block level are being upgraded and strengthened through these projects (Table 13.6).

Table 13.5
External Assistance by Major Donors in US $/m

Agency	Amt. in US $M	Nature of Project
World Bank	2126	Disease Control, SHSP, FW
UNICEF	16	RCH
UNFPA	43	Population
DFID	148	TB, HIV /AIDS
USAID	415	FW, HIV/AIDS
EEC	191	Sector Investment–FW
Sub-Total	2939	
Total Health	**3031**	

Source: Compilation of ECTA, EEC, 2000, Delhi. For Detailed List see Annex I3.1.

Table 13.6
List of World Bank Assisted State Health Systems Projects

(Amount in US $m)

State	Year	Amount	Project Components
Andhra Pradesh	1995	135	Distt/Area Hosp-74 CHCs' –74
Karnataka	1996	121	Distt/ Area Hosp-128 CHCs' – 74
West Bengal	1996	155	Distt/Area Hosp-75 CHCs'- 131
Punjab	1996	94	Distt /Area Hosp-59 CHC's –91
Orissa	1998	93	Distt./AreaHosp-71 CHCs'- 85
Maharashtra	1999	162	Distt/Area Hosp-101 CHCs'-35
UP	2000	1100	Distt/Area Hosp-53 CHCs' – 64

Source: MHFW, GOI

The State Health Systems Projects comprise an important milestone: they have unintentionally shifted the role and direction of aid. The projects have achieved several firsts:

- first massive infusion of capital in secondary care;
- the direct negotiation between the Bank and state governments that prepared projects with few central inputs;

- the stipulation of some conditions on policy changes (user fees, contracting out of services, institutional autonomy);
- shifts in the aid policies of bilateral donors: donors seek to choose project areas and focus on system issues such as the co-option of private sector, NGOs and civil society; decentralization; client satisfaction; and hospital autonomy.

Thus the DFID has gradually shifted lending to an area approach, with assistance provided to projects in AP, Orissa, MP, West Bengal and Kerala. DANIDA's focus is on Karnataka, Orissa and MP. Both DANIDA and DFID provide funds for disease control programmes (blindness, TB, HIV/AIDS, leprosy); the EEC, a late entrant, focuses on the improvement of delivery systems at the district level. USAID concentrates funds on three major projects – HIV/AIDS (TN), population control (UP), and the establishment of the National Institute of Biologicals (NIB) for the quality assurance of vaccines. There has been a convergence of all donors in the Polio Pulse Programme: pooled bilateral and multilateral funding support the National Immunization Days Initiative for polio eradication. Donors such as SIDA or NORAD have mainly provided funds for special programmes such as CSSM (5), and leprosy/polio eradication, through a consortium of donors or through the WHO.

While all donors without exception have focused on primary healthcare, only JICA (6) has assisted initiatives to bridge the investment gaps in strengthening tertiary care. JICA has provided about $20m toward a state-of-the-art Childrens' Hospital in Delhi; towards super specialized diagnostic and medical equipment in Osmania Medical Hospital, Hyderabad; and towards funds for critical equipment such as CT Scans and Linear Accelerators to over 15 Cancer Centers. JICA (and now France), have substantially assisted the Sanjay Gandhi Hospital in UP to establish a modern tertiary facility, and the NICED (7) in Kolkata in its basic research on cholera. Finland has now offered to provide interest-free loans for equipment in medical colleges in TN, Karnataka and Assam.

Of all donor agencies, the WHO occupies a unique position as the designated UN organization for health. In India, WHO assistance is on a special footing as it is the only agency whose funds are outside the budgetary mechanism. About $15million is provided on a two calendar year basis for studies/surveys/evaluations; for the training of technical personnel within or outside the country; for the procurement of small equipment, essential drugs and medicines for emergencies; and for the mobilization of technical expertise. For priority programmes, the WHO provides funding under the Extra Budgetary Mechanism – on average, about $30-50m every biennium. Of late, the WHO has sought to strategize global health by focusing resources on identified priority areas such as TB, HIV/AIDS, polio eradication, safe motherhood and

tobacco control, and by identifying parameters and indicators for increasing the sensitivity of health systems to the needs of the poor.

The influence of the WHO on international health is disproportionate to the quantum of assistance. It is the main certifying agency on all matters of health standards and safety, setting global priorities and international agenda in health, and mobilizing resources and political support through advocacy and research. The profound influence of the WHO on Indian health policy is indicated by the manner in which the health agenda has been steered, from the priority given to the eradication of communicable diseases, to selective primary healthcare as a follow-up of the 1987 Alma Ata Conference, to the focus on HIV/AIDS, polio eradication, tobacco control and the reform of health systems. The WHO's importance to developing countries can only increase – as a forum to mobilize international consensus and moderate the negative impact of global arrangements under WTO and the Codex Alimentarius Commission; and to support the access of the most deprived to the fruits of global technology and development. By making a moral case for investing in health, the WHO has secured the support of the G-8 countries in providing medicines, vaccines and diagnostics to meet the target of 50% reduction in TB and malaria mortality by 2010.

Sector Work:
The research undertaken on health financing and health system issues has been a significant development: the World Bank took up an assessment of public sector health expenditure at central and state levels in 1992, and the financing of primary healthcare in 4 states. These studies, carried out by NIPFP (8) and NCAER (9), contributed to the understanding of the utilization of public funds at tertiary, secondary and primary levels – between centre and the states, between public health and medical care, and between rural and urban. In 1992-93 followed disease burden estimations by the Administrative Staff College of India. Such estimations, based on hospital data, helped in understanding disparities in the epidemiological shifts taking place in the country, laying the ground for differential approaches that need to be adopted in health planning. The health sector work led to greater lending by the Bank. More studies – on referral systems, on the functional distribution of work at different levels, and on the physical standards for facilities – were taken up by the state governments with negligible central involvement. This approach set a trend. DFID also took up sector work on these lines in West Bengal to improve efficiencies in hospitals, the contracting of services, the financing of PHCs, hospital autonomy, cost effectiveness studies, procurement systems, and decentralization. The World Bank assisted set of studies recently undertaken by Indian researchers – in insurance, benefit incidence analysis, dynamics of the private sector, consumer law, patient grievance redressal systems, pharmaceuticals – will have great value for drafting legislation, for legal frameworks regulating the

private sector, and for the protection of patients from market distortions. Thus *donor lending has gradually shifted from passive, programmatic assistance to the central government, to a more direct, active role in influencing and building the capacity of governments to initiate health reform. These shifts reflect changes in the international environment – the evolution from disease control to system issues and governance.*

Impact of External Assistance

The impact of external assistance on efforts in disease containment and health policy has been significant and positive. In the initial years, India depended a great deal on WHO technical expertise for small pox eradication, malaria control and the development of technical capacity in public health. The establishment of the Technology Mission for the Universal Immunization Programme (UIP) attracted substantial assistance from a UNICEF-led consortium of donors to establish a cold chain and to supply associated inputs. This helped upgrade infrastructure, and enabled campaigns against vaccine-preventable diseases, significantly reducing the disease load among children. India has virtually eliminated polio with the assistance provided on an unprecedented scale for the Polio Pulse Campaign. These successes have strengthened and expanded the original design of the MCH programme into a comprehensive RCH (10) strategy, with a primary focus on the reduction of maternal and child mortality. Externally funded projects have also been more flexible of late, providing scope for innovation: among examples of innovative features are the co-option of NGOs, the contracting of private service providers, hospital autonomy to improve managerial efficiencies, and encouraging the retention of user fees at the institutional level to enhance sustainability.

External assistance has enabled technology transfer and influenced the technical strategies adopted for containing disease. In the malaria programme, attention has shifted from case finding and blood smear examination to radical treatment. Changes have been introduced in the technical strategies in DDT-resistant pockets, and personal protection has been provided through the use of impregnated bed nets. In the TB programme, the successful implementation of the DOTS strategy and its rapid expansion are largely due to technical assistance from external donors. This strategy can be strengthened with the establishment of the Global Drugs Facility (11) to provide developing countries with TB drugs as in the case of leprosy.

Advocacy for political and administrative support to HIV/AIDS is also due to support from donor aid agencies; while leprosy eradication is virtually on account of the coordinated global effort of NGOs, donor countries and multilateral agencies. In the Blindness Control Programme, external assistance has helped build infrastructure for eye

care, doubled the number of cataract surgeries and drastically brought down the cost of IOLs (12), expanding the access of the poor to improved technology. The policy of establishing district level societies to facilitate fund absorption, and enable greater accountability, emerged from externally funded projects. Finally, in view of the inflow of external assistance, the budgetary outlays for disease control have increased substantially. In proportion to the total Central (Plan) budget for Health and Family Welfare, external assistance has steadily increased to about 35.8% (Table 13.7).

Table 13.7
Percentage of ODA to Central Health & Family Welfare Budget Plans (Rs./Crores)

Period	Health Budget	EAP	% EAP	FW Budget	EAP	% EAP
1990-91	275	25	9			
1992-93	302	68	23	1000	188	19
1994-95	578	193	33	1430	352	24
1996-97	722	323	45	1535	350	23
1997-98	920	324	35	1829	513	28
1998-99	1145	479	42	2489	763	30
1999-00	1160	467	40	2920	676	23
2000-01	1300	480	37	3520	1278	36
2001-02	1450	629	43	4210	1402	33

Source: Department of Health, GOI (all figures rounded)

Over the years, donor assistance has evolved from specific project lending, to programme assistance, to system improvements. The shifts in focus have not been entirely free of conflict, or inconsistency, or lack of clarity. Nor have they been entirely free of the problems caused by the absence of a forward-looking strategy. The absence of a strategic approach has been caused by inter-departmental tensions and conflicts of interest; by resistance to change; and by differences in perception among policymakers, project managers and donors about the need for reform. Besides, a supporting environment and a broad social consent for change is necessary for any restructuring or major policy shift. This unevenness of outcomes has sometimes created problems, but it has also offered valuable lessons.

- Hospitals at the block level have been upgraded under the World Bank Assisted SHS Projects, entailing increases in recurring costs. Since this addition to the non-plan expenditure has come at a time of fiscal crisis, the sustainability of the assets created is in doubt. The levying of user fees to mobilize resources has also not solved the problem everywhere due to a large number of free riders. The conflict arises primarily where the implementing agencies show alacrity in fulfilling the hardware part of the project but ambivalence in the software part, on account of a fundamental confusion regarding the full import of reform,

or on account of a lack of leadership to steer the process. This could lead to a situation where the donor finds that the investments made are not yielding optimal returns, and that the basic objective of protecting the poor remains unrealized.

- The procurement systems of the donors, particularly of the World Bank, are needlessly complicated, affecting the primary task of technical persons at central and state levels in providing technical guidance in the field.
- The donors' attempts to broad-base programme implementation, through the inclusion of locally elected representatives and Panchayat Raj bodies, is viewed by implementing agencies as an intrusion into areas of governance not germane to the health sector.
- External assistance is perceived as often creating islands of excellence, where projects have their own separate administrative set-ups and reporting systems, as in the Polio Pulse or DOTS programmes. Doubts about sustainability remain after the cessation of assistance.
- The lack of coordination among donors leads to the duplication of aid, exacerbating the existing fragmented structure of health. For example, every disease control programme has a distinct district-level society with health promotion budgets. Thus overall impact is diluted despite a plethora of projects.

Utilization of External Assistance:

Compared to authorized assistance, utilization has on average been below par, not because the country cannot absorb the funds, but for administrative and procedural reasons.

- *Mismatch between budget allocations indicated to the implementing department and assistance agreements with donor agencies:* To avail external assistance, departmental budgets have to provide for counterpart funding and the Planning Commission has to provide plan outlays commensurate with commitments. Inadequate allocation of budgets means low spending, thereby affecting absorption (Table 13.8).
- *Inadequate preparation of projects:* The IPP VI and IPP VIII projects had little relevance to ground realities and had to be changed considerably on implementation. In IPP VI, the training strategy had to be changed; in IPP VIII, a project (for Metro cities) had a poor start because municipal bodies had not been consulted in the first place.

Table 13.8
Budgetary Funding and External Aid for Disease Control Programmes
(Rs. in crores)

Programme	Amount of Credit	Year/Period of Implementation	Utilized as or 20.3.2001	% Utilized
AIDS/HIV	Ph-I: US $ 84 m	1993-1998	Fully utilized	100
	Phase II : 1425 crores*	1999 (5 years)	160	11
TB	342.42	1997 (5 years)	216.64	62%
Leprosy	292.13	1993 (6 years)	Fully utilized	100%
Blindness	470	1994 (8 years)	296.11	63%
Malaria	891.04	1997 (5 years)	182.35	20%

* World Bank (1,155 crores) ; DFID (104 crores); USAID (166 crores) = 1,425 crores.
Source: MHFW, GOI

- *Multiple goals and sub-goals in excess of implementing agency capacity:* Often, projects contain concepts beyond the comprehension of field officers. The concept of contracting out requires skills in drafting out agreements, specifying deliverables as well as providing penalties in case of default. Similarly, releasing substantial funds to NGOs without appropriate verification procedures and indicators for progress evaluation can cause problems.
- *Unrealistic time frames:* While the total duration of most projects is five years, the procedures to obtain approvals before procuring equipment or construction of civil work takes a year. No civil work can be taken up without the prior approval of donor-appointed architects. The procurement of any equipment or consumables under the International Competitive Bidding process requires the World Bank's clearance at least four times – after the finalization of technical specifications, before placing the indent, after bid evaluation and before placing orders. Unless the procedures are simplified or unless projects provide a year for preparatory action, projects will invariably be delayed or show low fund absorption.
- *Inadequate matching of financing and scheduling of project activities:* Undue pressure on budget utilization and filing claims for reimbursement can force programme managers to take up any activity that absorbs funds, regardless of sequence. Though the civil works may not have begun, equipment may be procured. By the time the building is completed and the equipment installed, the warranty period is over. Or training may precede availability of equipment; or IEC is not taken up at all for want of infrastructure in place. Processes are sacrificed in the anxiety to spend funds; in the long

run, this means an adverse impact on the quality of outcomes and project sustainability.

- *Delay in filling up staff positions:* At the time of implementation, there is hesitation in filling agreed staff positions for fear of placing an unsustainable burden on finances in the long run. Such prevarication in carrying out agreed components has an adverse impact on fund utilization as well as programme quality. In the Cataract Blindness Control Programme, the state governments' inability to create posts – of eye surgeons, ophthalmic assistants and nurses – not only resulted in savings, but also in the non-utilization of operation theatres and operating microscopes. The result was the failure to meet targets. Similarly, the JICA project, the 300-bed, Rs.50 crore Kalavathi Saran Hospital, is not fully operational even after a year of being commissioned, for want of the required specialists and support staff. This has led to the under-utilization of capacity and equipment.
- *Delayed completion of projects due to system deficiencies:* Project completion takes an average of 7-8 years in India, double the period in China. Thus India will have to quickly resolve some of these factors to make more effective use of external assistance.

Lessons Learnt:

The overall decline in external assistance from bilateral donors needs serious analysis, and a policy paper on external assistance outlining India's strategy for donor aid is also required. To create a more conducive environment for external assistance, it is necessary to

- spend **more time on project preparation** and **increase consultation with the stakeholders** from the conception stage;
- **reform the system of financial planning and accounting:** Once an agreement is made, project funds must be kept apart, and directly released on demand to project authorities. Recent steps to constitute district and state-level societies has helped the quicker absorption of funds and promoted the sharing of responsibility. These societies must be strengthened with the appropriate capacity and skills in monitoring, account keeping, project planning and management.
- **modify financial systems:** Under the current system of budgeting (plan and non-plan), funds for the maintenance of assets get transferred under non-plan, and get lost in salaries and wages for example. The non-availability of timely and adequate funds for maintenance is one of the reasons for the non-repair and non-use of expensive equipment supplied by projects.
- **identify the project team – technical, administrative and accounting:** The project team must be appointed well in advance, after careful selection, and they must be trained thoroughly on the

project aims, objectives and procedures. They should then be accountable for shortfalls and not shifted from their positions till project completion.

- **include preparatory time of a year in every project to complete formalities (land acquisition, approval of building plans, technical specifications for equipment, development of training modules):** This helps avoid cost over-runs or the low utilization of assistance in the initial years. Budgeting should also be sequential to ensure that training and other capacity building activities are taken up after the infrastructure base is ready. This will again require changes of budgeting and releasing of funds. The budget is indicated under different minor subheads (grant in aid, commodity assistance, central and state). Funds in central budgets, for instance, can be released only in four equal installments during the year. Instead, there should be flexibility to release allocated funds when needed. In the blindness control programme, the construction of operation theatres, the procurement of microscopes and the training of doctors in IOL surgery could have been taken up on priority in the initial years, followed by demand generation for these services and beneficiary coverage. The absence of a sequential approach has resulted in fragmentation, the repetition of activities such as procurement year after year, and confusion in the field due to the mismatch in the delivery of the mix of inputs.

- **identify and train the critical mass of technical persons required at central and state levels:** Providing adequate incentives will ensure these technical persons do not leave government employment after being trained.

- **train state and project level authorities:** One reason for the slow absorption of external assistance is the poor ability of the state and project level authorities to prepare projects in a way acceptable to donors.

- **focus on developing a good system of MIS and sound monitoring at every level.**

Future Directions

Donor assistance has contributed significantly to the health gains in India. The priority accorded to disease control and MCH, the broad basing of the population policy to make it more comprehensive, the early warning about the HIV/AIDS epidemic, and the assistance being received to eliminate leprosy and polio, are all significant contributions. Donor assistance is likely to get even more focused in the future because of the growing clarity and convergence in the prioritization of areas and concerns. Communicable and infectious diseases must be contained. Inequity within and among nations must be reduced. Health systems must be strengthened to cope with emerging challenges. And global health must be improved by ensuring the access of the poor to

the benefits of new technologies, health services and a better environment at the household and community level. It is in this context that the meeting of the main western donors in 1996 assumes significance. At this meeting, donors committed themselves to a set of global targets to be achieved by 2015, with the support of the IMF and the World Bank. The ones relevant to health aim to reduce maternal mortality rate by three-quarters; infant and child mortality by two-thirds; to ensure universal access to reproductive health; and to achieve 50% reduction in HIV infection among 15-24 year olds. *This commitment has introduced a new urgency among donors to rearrange agendas.* The WHO (13) has identified new trends that will influence health in the 21st century, and consequently donor profile. They are

- widespread absolute and relative poverty
- demographic changes: aging and growth of cities
- epidemiological changes: continuing high incidence of diseases
- global environmental threats to human survival
- new technologies: information and tele-medicine services
- advances in biotechnology
- partnerships for health between private and public sectors and civil society
- globalization of trade, travel and spread of values and ideas.

Conclusion

India will continue to be dependent on donor aid, to provide the level of capital investment required to improve infrastructure at primary and secondary levels. External assistance will also continue to serve as the catalyst to the improvement of systemic efficiencies and universal access to healthcare, through appropriate restructuring. *External assistance can help India evolve a sustainable and equitable health system; if improperly utilized, assistance can also result in a dependency syndrome.* **Evolving a long-term strategy for external assistance will help optimal utilization.** The priority will have to be the poor and the poorer states. This is to ensure reduction in inequity and inequality in health; and to help states in the pre-transition stage of epidemiological evolution, with maximum disease burden on account of infectious diseases, to come on par with the rest of the country. It is equally important to find **the right balance between programmes and system improvements.** Given the low resource base and the poor state of finances in most parts of the country, institutional capacity has to be developed and strengthened for maximum gains from external assistance.

1. RBI Report on Currency and Finance, 1990-91.
2. D.B. Gupta, External Assistance to Health Sector and Its Contribution, background paper commissioned for this Report.
3. R. Jaffrey, New patterns in Health Sector Aid, IJHS, vol. 16, no.1, p. 126.
4. Districts in India typically have a population of about 3 million people, a sub-district a population of about a million, and a block about 120,000.
5. Child Survival and Safe Motherhood – an improved programme over the earlier Maternal and Child Health (MCH) Programme.
6. JICA: Japan International Cooperation Agency, an OD agency of the Government of Japan.
7. National Institute for Cholera and Enteric Diseases, a WHO collaborating center in Calcutta, West Bengal.
8. National Institute of Public Finance and Policy.
9. National Council of Applied Economic Research.
10. Reproductive and Child Health.
11. As of now, India is not included with China in the GDF. India feels it would be unwise to exclude these countries as they account for more than half the world's disease burden on account of TB.
12. Intra Ocular Lenses: a technique where the lenses are implanted inside the eye. The quality of vision restored under this procedure is found to be far superior compared to conventional methods. At the start of the project in 1994, IOLs had to be imported and were available for Rs.2000; since then they cost less than Rs.100, bringing them within reach of the poor.
13. Health for All in the 21st Century, WHO.

Annex 13.1

List of Externally Funded Projects under Implementation in India

Development Partner	Programme Name *Time frame*	Geographic Coverage State *Geographic Coverage Districts*	Key activities and focus *Status*	Funds foreign currency *Funds INR (lakhs)*
DFID	RNTCP	Andha Pradesh, Central	RNTCP in the whole of AP., training, strengthening of Central TB Division *On going*	10933
	West Bengal Sexual Health Project 4/2001 – 3/2005	West Bengal	Proposed	2921
	Madhya Pradesh Health Guarantee Scheme 10/2000–9/2005	Madhya Pradesh	Ongoing	36850
	Orissa Health & FW Project Phase III 9/1977 – 6/2001	Orissa Bhadrak, Keonjhar	Strengthening State Govt. ability for policy reform, quality of service, training, IEC *Ongoing*	2330
	Sexual Partnership Project	Andhra Pradesh, Gujarat, Kerala, Orissa	This Project is in the nature of support to the National AIDS Control Project Phase II	10400
EEC	Sector Investment Programme 10/98 – 9/2003	Central, AP, Assam, Bihar, Gujarat, Haryana, HP, Kerala, MP, Maharashtra, Orissa, UP, Rajasthan, NE States (18) 21 districts (will expand)	Health Sector reform, improvement of management, policy reviews, national reform activities (logistics, urban health, tribal health, first referral services, social marketing, training etc.), capacity building State and district levels, district projects	86000
	NGO Projects in health, family welfare and control of AIDS	TN, Orissa, WB, Gujarat, Maharashtra, AP, Karnataka	Ongoing	3977
UNFPA	Integrated Population and Development	Gujarat, MP, Kerala, Maharashtra, Orissa, Rajasthan	Ongoing	18037

UNICEF	RCH (Master Plan of Operations 1999-2002)	All India All districts	Cold chain maintenance, FRUs, training, NIDs, IEC, drug management, extension of programmes to urban areas, reemerging diseases, IMCI, support to institutes, surveillance and monitoring, baby-friendly hospitals, revitalization of sub-centres	7200
USAID	Innovations in Family Planning Services	Uttar Pradesh 28 districts	Expand service delivery to increase access, improve quality, promote family planning *Ongoing*	90000
	AIDS Prevention and Control (APAC) 84 months	Maharashtra Mumbai Urban, Pune, Thane, Sangli rural	Improve availability of information and products for STD control, capacity building at State/ municipal level, research, pilots *Ongoing*	18060
	AIDS Prevention and Control Project (APAC) 2/1995 – 2/2005	Tamil Nadu State wide, 10 focus districts	Support to NGOs, prevention and control of STDs, research *Ongoing*	4000
World Bank	Enhanced Malaria Control Project 9/97 – 6/2002	AP, Bihar, Gujarat, MP, Maharashtra, Rajasthan, Orissa	*Ongoing*	74160
	NTCP 1/97 – 6/2002	All India	*Ongoing*	60 486
	UP Health Systems Project 7/2000–12/2005	Uttar Pradesh 35 districts	Policy reforms, strengthening and renovation of existing assets, skill development, public-private partnership *Ongoing*	49500
	AP State Health Systems Project 3/95 – 9/2001	Andhra Pradesh	*Ongoing*	60800

	Karnataka State Health Systems Project 6/96 – 12/2001	Karnataka	*Ongoing*	54600

	WB State Health Systems Project 6/96 – 12/2001	West Bengal	*Ongoing*	69800
	Punjab State Health Systems Project 6/96 – 12/2001	Punjab	*Ongoing*	42500
	Orissa State Health Systems Project 9/98 – 8/2003	Orissa	*Ongoing*	41557
	Maharashtra State Health Systems Project 2/99 – 8/2004	Maharashtra	*Ongoing*	72700
	Immunization Strengthening Project 7/2000 – 6/2004	All India	Support to polio eradication, strengthening of routine immunization, development of a strategic framework for the immunization programme *Ongoing*	64170
	India Population Project VIII 8/1993 – 6/2001	Delhi, AP, Karnataka, West Bengal	Establishment of Health Posts and referral facilities in urban slums, training, IEC, community based interventions and innovative schemes *Ongoing*	42201
	India Population Project IX 6/94 – 12/2001	Assam, Rajasthan, Karnataka	Augmenting health and family welfare infrastructure, training institutions, residential accommodation, better programme management *Ongoing*	41406

	National AIDS Control Programme Phase II 11/99 – 9/2004	All India	Blood safety, control of STDs, surveillance, care and support of patients, IEC, condom promotion, targeted interventions, AIDS policy	85500
	Cataract Blindness Eradication Programme 5/94 – 6/2001	AP, MP, TN, Maharashtra, Orissa, UP, Rajasthan	Upgradation of ophthalmic services, expansion of coverage in rural and tribal areas, District Blindness Control Societies, training, MIS, health education *Ongoing*	55400
	National Leprosy Eradication Programme 2/94 – 3/2000	All India All districts	Domicillary multi drug therapy in endemic districts through vertical staff, mobile services in moderately endemic areas, high education, deformity and ulcer care, medical rehabilitation Completed	30200
	RCH Project Phase I	All India All districts and intensive activity in 24 districts	Integrate and strengthen the interventions of the CSSM Programme with fertility regulation and control of RTIs. Expand Family Welfare services, make them more accessible and improve their quality. Includes a component of district project. *Ongoing*	111735

Source : As Compiled by the ECTA Consultants of the EEC, Delhi, 2000

14

Drug Policy and Regulations

Introduction

This chapter discusses those aspects of drug policy that directly impact healthcare (1). A brief description of the pharmaceutical industry is unavoidable in such a discussion, but the chapter does not attempt to deal with the problems of the industry or its contribution to the economy. Only the following aspects have been specifically addressed:

- the impact of the WTO mandated IPR regime on the availability and prices of drugs;
- price controls, their impact and relevance;
- drug control regulations and their enforcement;
- the institutional infrastructure for quality control; and
- the rational use of drugs.

Pharmaceutical Industry in India

Though the WTO mandated legislation to recognize product patents will be brought into force only in the year 2005, the pharmaceutical industry is already feeling the impact of globalization. Indian companies such as Dr. Reddy's Laboratories, Ranbaxy, Wockhardt, Sun Pharmaceuticals, and Cipla have begun making significant investments in product research in anticipation of the new IPR regime. Already there have been some important successes: Ranbaxy has licensed a Novel Drug Delivery system (NDDS) to Bayer for the product Ciprofloxacin. Dr. Reddy's Laboratories has licensed two New Chemical Entities (NCEs) to a Danish multinational company, Novo Nordisk, to undertake clinical trials. Multinational companies (MNCs), such as Pfizer, Glaxo and Smith Kline Beecham, are making aggressive plans to introduce their latest drugs in the Indian market (2).

The global trends of mergers and acquisitions, and high investment in R&D – with an increasing role for new technologies such as biotechnology, genomics and combinatorial chemistry – are also likely to exert considerable influence on Indian industry. The smaller companies, unable to keep pace with newer technologies, may be bought over by larger players or utilized for contract manufacturing. The industry is, thus, in the midst of a major transformation.

Impact of TRIPS

The agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) came into force with the formation of the World Trade Organization (WTO) in January 1995. TRIPS requires all developing countries to provide a twenty-year patent protection for novel, non-obvious and useful inventions, whether products or processes, in all fields of technology including

pharmaceuticals. The required national patent law amendments for pharmaceuticals can be delayed up to January 2005 in developing countries and economies in transition, and up to January 2006 in the least developed countries. Moreover, in countries deferring formal patent grants up to 2005/6, exclusive marketing rights (EMRs), providing protection similar to that given by product patents, must be granted to the patent applicant for five years from the date of marketing approval in these countries. Violations of TRIPS obligations, judged as such by WTO dispute settlement bodies, can lead to trade retaliation or compensation to affected WTO members (3). India has so far recognized only process patents in pharmaceuticals; legislation for compliance with WTO obligations is pending passage in Parliament. As of December 1999, only 16 WTO countries including India, continued to exclude pharmaceuticals from product patent protection. India has no option but to fall in line; but we should actively explore ways in which the advantages of the new regime can be maximized and disadvantages minimized.

Product patents comprise a highly imperfect instrument to provide incentives for new drug discoveries, which are very expensive, risky and time consuming. Comanor estimates that the process of introducing a successful new product in the US can take as many as 10 or more years and cost more than $250 million (4). The estimates for the development of new NCE in India is often quoted to be US$ 90-100 million due to lower input costs. For every 10,000 New Chemical Entity (NCE) in discovery, 10 enter pre-clinical development, five enter human trials, and only one may be approved. Product patents limit competition, grant monopoly power and encourage high prices; clearly, they are detrimental to the immediate interests of the consumer. Thus patent protection is perceived as a necessary evil – to provide incentives to the pharmaceutical industry and keep alive their interest in research that may lead to new tools to treat disease. When it comes to the diseases of the poor, even patent protection alone is not seen as a sufficient incentive despite the large size of the market, because of the inadequacy of their purchasing power. In 1992, an estimated $55.8 billion was invested in healthcare R&D. The governments of developed countries and pharmaceutical companies financed 93% of the total and the health issues of these regions received priority. Only an estimated 4% ($2.4 billion) of this total global R&D health expenditure budget was devoted to communicable, maternal, peri-natal and nutritional disorders. Pecoul et al show that only 13 (one per cent) of the 1223 new chemical entities commercialized between 1975 and 1997 were specifically for tropical diseases, and two of these 13 were updated versions of existing products (5). The public policy question that arises is how to balance the desire to make new drugs affordable to all those who need them – yet retain strong incentives to invent and develop new and better treatments (6).

In its formative years, the Indian pharmaceutical industry took full advantage of the absence of product patents due to its technological strengths. Through the process of reverse engineering. it was able to provide new drugs introduced in the industrialized countries to the Indian consumer with a time

lag of only 5-10 years, and at a fraction of their cost. In the process, it has become one of the strongest pharmaceutical industries in the developing world, not only in terms of domestic market coverage but also exports. This development, however, has not been without its negative consequences. With its access to the easier path of reverse engineering, the industry neglected investment in R&D almost completely. Only the 1995 agreement to introduce a new IPR regime spurred industry leaders to serious initiatives in research, so that the industry now seems poised to exploit the new opportunities, reinforced by the natural Indian advantage in all knowledge based activities. Above all, it can now make a significant contribution towards research on the diseases of the poor if an appropriate policy environment is created.

Having enjoyed the benefit of new drugs at affordable cost in the old regime, the impact of TRIPS on the price of new patented drugs is bound to be significant in India. But some mitigating features are likely to moderate this impact.

- Skills in reverse engineering will still be useful in producing generics for drugs going off patents and in cases of compulsory licensing.
- Most life saving drugs are off patents, and there should be little impact on their prices in the new regime.
- In most cases, the monopoly power of patented drugs, are contained by competition from other medicines that treat the same condition.
- All new patented medicines need not provide significant therapeutic gains.

USFDA divides new drugs into three categories, A (significant), B (moderate) and C (little or no therapeutic gain). Lu and Comanor (1998) found that out of the 148 new drugs introduced in the US between 1978 and 1987, only 13 had no close substitute in their therapeutic class. The prices also varied significantly for each category. Only new breakthroughs became far more expensive and out of reach of most of the population on account of the new IPR regime. It also needs to be said that even now, newer drugs are generally not within the reach of the common man, who settles for cheaper alternatives regardless of their lower efficacy or side-effects. But what if a new vaccine or drug of great public health significance – say a vaccine for HIV/AIDS or TB or malaria – becomes out of reach for 10-15 years because of patent protection? Avoidable morbidity and mortality would be needlessly prolonged; its benefits would be denied to poor countries where the new technology is most needed. The international community and the national government need to explore ways of making new discoveries of high public health significance available at affordable prices, without reducing the incentives for research in these areas. How to achieve this is the big question.

What policy options does the government have to minimize the adverse impact of TRIPS? The first option is to have the entire TRIPS regime reviewed by the WTO. In this case it is useful to recall that the Indian government, recognizing the adverse impact of TRIPS, resisted it all along in the Uruguay Round of negotiations, and accepted it only when India was completely isolated and left with no alternative. Since 1995, there seems to have been no new development to persuade industrialized countries to agree to a wholesale review of TRIPS, subjected as they are to intense political pressure from the pharmaceutical MNC lobby. Any initiative in this regard seems both counter-productive and doomed to failure. However, it may be possible to negotiate a better deal, limited to new discoveries of major public health significance.

The other options within the four corners of the existing TRIPS regime are Compulsory Licensing and Parallel Trade. The latter attracted considerable attention, consequent to the judicial challenge by multinationals to the parallel importation of anti-retrovirals for AIDS patients by South Africa, from middle-income countries such as Spain and Portugal. The judicial challenge has since been withdrawn. Basically, the incentive to resort to Parallel Trade arises out of the common practice of multinationals for differential prices of drugs in different markets. In India, for instance, even patented drugs are priced at much less due to various factors, such as poor purchasing power, strong competition from generics, and price controls. Further, our own pharmaceutical companies are major exporters, and would like to enjoy the flexibility of differential pricing depending upon the market conditions. The discriminatory pricing regime is, thus, advantageous to India, and deserves our support and encouragement. However, if the multinationals apprehend the re-export of these cheaper drugs into more affluent markets, this desirable trend is likely to receive a setback. Parallel Trade in patented articles is governed by what is called the exhaustion of rights doctrine. This doctrine states that once the producer of a patented product has sold the product, the patent-holders' right to determine the conditions under which the product is resold is exhausted (7). Neither the Paris Convention on patent rights nor the Uruguay Round Treaty establish any rules on Parallel Trade, and the permissibility or otherwise of such trade is solely dependent on the domestic laws of individual member countries. It seems quite clear that overall, India stands to gain from discriminatory pricing, and should thus be discouraging, both domestically and internationally, any practice, including Parallel Trade, which inhibits the same.

Compulsory Licensing deserves a fuller discussion. Article 31 of TRIPS stipulates two basic preconditions for compulsory licensing:

1) The prospective licensee is unable to obtain, within a reasonable period of time, authorization from the patent holder to use the patented innovation "on reasonable commercial terms and conditions." The failed negotiation clause can be waived in the case of national emergency or extreme urgency for non-commercial public use.

2) Compulsory License must be "predominantly for the supply of the domestic market" of the authorizing nation, and its user must pay to the patent holder "adequate remuneration" taking into account "the economic value of the authorization." There is wide variation in the way responsible government agencies have set the amount of compensation awarded to patent holders, when patents have been subjected to compulsory licensing (8).

Article 40 also allows Compulsory Licensing in response to "an abuse of intellectual rights having an adverse effect on competition in the relevant market." Failure to supply or license a patented product at all, or supplying at unreasonably high prices, might be treated as abusive (9).

It is apparent that the right to Compulsory Licensing is heavily circumscribed, and that the rather vague formulation of relevant articles could mean varying interpretations and conclusions. Only when the disputes under these articles are settled in the WTO will some authoritative interpretation emerge. But even at this point of time, it is quite clear that the route of Compulsory Licensing does not provide an easy escape from the TRIPS regime, and that any indiscriminate application could be challenged in the relevant dispute settlement bodies of the WTO. However, selective use in cases of new patented vaccines/drugs of major public health significance – primarily for free distribution/application by public sector agencies – increase the possibility of sustainability in the event of a challenge. In fact, a case made in such a situation for easing the rigours of Compulsory Licensing conditionalities is likely to strike a sympathetic chord in the affluent countries. The realization that the globalized patent regime should not be allowed to worsen the health prospects in poor countries has been growing, and a number of initiatives have been set in motion by a variety of public-private partnerships, multilateral organizations and national governments (10). The consensus statement of the Global Health Forum I, February 2000, sums it up appropriately: "The move to globalize the protection of intellectual property is not politically sustainable without, at the same time, making the delivery of health technology more equitable."

Instead of leaving the identification of new products of major public health significance to the whims and fancies of individual governments, it would be appropriate to evolve an international mechanism that commands universal credibility and acceptability. The WHO, for instance, could set up a body of eminent professionals to periodically review patented products entering the market, and identify those with major public health value. Once these are identified, various options can be explored to make them available to poor countries at affordable prices:

- The conditions prescribed for Compulsory Licensing could be relaxed and the patent holder compensated jointly by the government of the licensee and the international community.

- The patented product could be supplied to low income countries at a marginal cost, while being sold at full market value in industrialized countries (tiered pricing). As in the US, such subsidized sales can be treated as tax deductible expenses, encouraging pharmaceutical companies to supply them readily and liberally.
- Many multinational organizations, donor agencies and charitable foundations could pick up the difference between the market value and marginal cost to ensure access to new drugs where they are most needed.

Two essential conditions must be met to derive full benefits from Compulsory Licensing:

1) Indian pharmaceutical companies must be able to quickly reverse-engineer the new patented drug – a skill they have amply demonstrated in the past.
2) Compulsory Licenses must be made commercially attractive to the Indian company.

Fiscal concessions and exemption from price controls are necessary for the fulfillment of the second condition. To optimize the benefits of Compulsory Licensing, the license should be granted at the earliest stage. The longer the delay of Compulsory Licenses after the introduction of the patented drug in the market, the less time the licensees have to recover their start up costs, and the more difficult it is to achieve effective competition among generic substitute suppliers (11). Hence the advantage of setting up an expert body of professionals – to periodically review new entrants in the market, identify those with potentially high public health significance, and explore the possibilities of Compulsory Licensing.

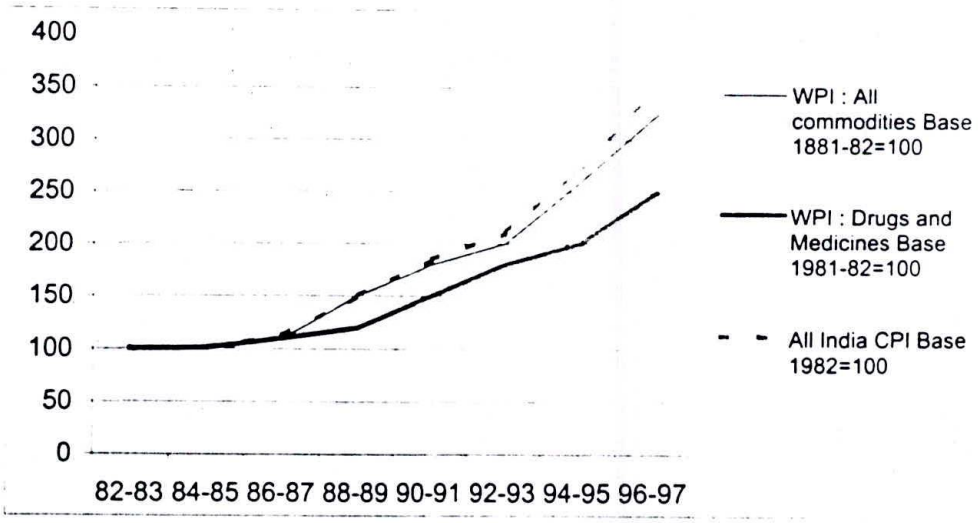
Drug Price Control

Most countries control drug prices one way or the other. In India, we have inherited a rather complex system that covered around 70% of the market prior to the Drug Policy of 1994. It was administered directly by the Ministry of Chemicals and Fertilizers on the advice of the Bureau of Industrial Costs and Prices (BICP). The system was characterized by delays and arbitrariness, and it generated strong protests from the drug industry. The Drug Policy of 1994 simplified the system considerably, and reduced its coverage to be around 50% of the market (12). Also in pursuance of this policy, an independent National Pharmaceutical Pricing Authority (NPPA), which improved the system substantially, was established. Despite its much publicized weaknesses, the system has served the country well. The prices of drugs have risen much less than Wholesale and Consumer Price indices, and yet the industry has recorded robust growth (Figure 14.1).

Price control is on the basis of turnover and competition, and not related to the essentiality of the drug. (See Figure 14.2 for a broad outline of Price

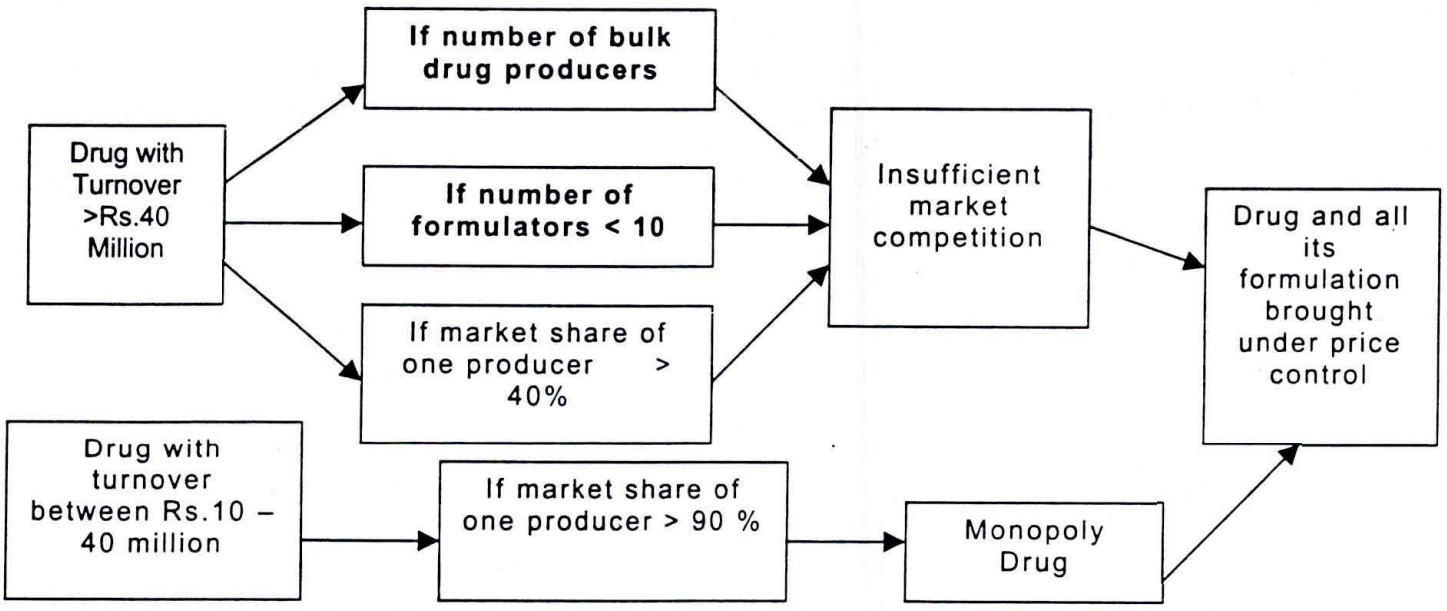
Control Regulations.) Broadly speaking, a drug is subject to price control if its annual turnover is more than Rs.40 million. Drugs with a turnover above this minimum revenue level may be exempted, if there are at least five bulk producers and at least 10 formulators, and if none have more than 40% of the market. Any bulk drug with a turnover above Rs.10 million, with one producer supplying 90% or more of the market, is also subject to price control. Given this last criterion, all patented pharmaceuticals are subject to price control unless they are widely licensed – an unlikely scenario (13). This by itself can become a serious disincentive to investment in R&D and the introduction of new drug discoveries. It can also discourage those obtaining Compulsory Licenses.

Figure 14.1
Movement of Price Indices of Drugs and other Products



Source: OPPI Annual Report, Reproduced from **The Indian Pharmaceutical Industry**, ASCI, 2000

Figure 14.2
Price Control Regulations



Source: **The Indian Pharmaceutical Industry**, ASCI

Drug Policy and Administration

The administration of drugs and pharmaceuticals is divided between the Ministry of Chemicals and Fertilizers (MCF) and the Ministry of Health and Family Welfare (MHFW). The former is responsible for drug policy, regulation of industry and price control, while the latter is responsible for laying down standards, quality control, the introduction of new drugs and the enforcement of relevant laws and regulations. This arrangement prevents the government from taking a holistic view that takes into account the interests of both industry and consumers. The policy of one ministry is often at cross purposes with that of the other: MCF aggressively promoted the small scale sector, leading to the establishment of over 20,000 manufacturing units with adverse consequences for the quality of drugs. The smaller units are generally unable to provide and maintain the infrastructure for quality control, and are reportedly responsible for a majority of quality standards violations (14). The stringent price control over drugs with a high turnover creates disincentives for investments in the production of drugs related to widely prevalent diseases, and drives investments towards elitist drugs with small volumes but large margins. This is obviously quite contrary to what the MHFW would like the incentive regime to do.

The J. L. Hathi Committee (1975), that provided the basic policy framework for drugs for two decades till the Drug Policy of 1994, recognized this dichotomy. It suggested setting up an independent National Drug Agency that would take over all drug-related functions being performed by the two Ministries at that time. The Drug Policy of 1994, while suggesting the setting up of a National Drug Authority, confined its role to the functions presently assigned to the Central Drug Standard Control Organization (CDSCO) in the MHFW – prescribing standards, enforcing quality control and promoting rational drug use. The National Drug Authority was to be a glorified and strengthened CDSCO, but not like the FDA in the US, with its comprehensive jurisdiction over all aspects of manufacture, sale, pricing and quality control.

The proposed NDA should be the single agency with jurisdiction over all aspects of pharmaceutical industry: this will develop a long-term, holistic vision and policy. It should be supported by a small cess on the manufacture and import of pharmaceuticals, a cess that could be conveniently collected along with excise and customs duties. Given the large turnover of both domestic production and imports, the cess could be small enough not to impose a noticeable burden on either the industry or the consumer. Yet it could yield sufficient resources for a National Drug Fund, to be administered by the proposed National Drug Authority to support all its operations. A certain proportion could also be set aside to assist R&D on diseases of the poor by the Indian pharmaceutical industry. The total estimated value of bulk drugs and formulations manufactured in India was Rs.1,96,370 million in 1999-2000 (15); even a one per cent cess would yield Rs.1,963 million annually. Similarly, the value of imports of bulk drugs, intermediates and formulations, is estimated at Rs.31,280 million in 1998-99 (16), and a similar

one per cent cess would yield Rs.312 million annually. Thus substantial resources could be raised with a small one per cent cess to benefit both industry and consumer. If the infrastructure for drug quality enforcement is to be strengthened, the proposed NDA must be self-supporting. Otherwise the entire reform programme will remain vulnerable to the vagaries of budgetary allocations, which will vary with the perceptions of individual decision-makers in the MHFW. Public sector support must be forthcoming in many ways to motivate the pharmaceutical industry to invest in R&D in diseases of the poor such as TB and malaria. The proposed National Drug Fund could provide one such avenue of support. The resources available to NDF can be put to innovative use in many other ways. One example is support to Indian pharmaceutical companies that receive Compulsory Licenses, to compensate the patent holders in accordance with WTO regulations. The pharmaceutical industry should be enabled to actively participate in the management of the National Drug Fund.

The Regulatory System for Drugs

The Constitution of India places Drugs and Cosmetics in the Concurrent List, which allows jurisdiction to both the centre and the states on this subject. In the event of a conflict between central and the state laws, however, central laws will always prevail. We have argued elsewhere in this Report in favour of greater decentralization and an enhanced role for the states; but in the case of drug regulation and enforcement, we would advocate a stronger central role for three reasons:

- A sub-standard/spurious drug manufactured in one state can be sold and consumed in all parts of the country. Hence enforcement of quality standards cannot be left to the mercy of individual states.
- The states are unlikely to find adequate resources for investment in laboratories and infrastructure for enforcement of drug laws without central help.
- The states would not be able to provide, at their level, the expertise required to lay down and monitor standards of drugs, or to determine the rationality of new drug combinations.

The import, manufacture, distribution and sale of drugs and cosmetics in India is regulated by the Drugs and Cosmetics Act of 1940. The Act specifies that the central government is responsible for the constitution and functioning of the Drugs Technical Advisory Board, which advises the Drugs Controller General (DCG) on all technical matters; and the Drugs Consultative Committee, which is the main institutional mechanism for centre-state coordination. The central government has the power, in consultation with the Drugs Technical Advisory Board, to make rules and to specify the different types of offences in relation to import of drugs. The responsibility of the state governments, as regards the manufacture, distribution or sale of drugs, is described in Chapter IV of the Act. States

have been empowered to license any person to manufacture or sale of any drug "which is of standard quality and is not misbranded, adulterated or spurious." Standards of quality have been defined under section 16(1)(a) – it is required that "the drug complies with the standards set forth in the Second Schedule of the Act". The Second Schedule of the Act includes patent or proprietory medicines, and states that "the standards, which are described as in the formula or list of ingredients displayed in the prescribed manner on the label or the container and such other standards as may be prescribed." Since no other standards, as specified, have been prescribed, the states today have the power to permit use of any combination of drugs as long as the constituents are displayed on the label of the container. Thus the states can permit licensing of any number of such combination drugs without examining the aspects of safety and efficacy, leave alone the question of the rationality of a new combination.

The prevailing system has led to a chaotic situation with nearly 50,000 to 60,000 drugs licensed to be marketed in India. In fact, no authoritative figure of the total number of drugs licensed in the country is available. The central government, realizing the consequences of indiscriminate licensing of drugs, provided, by an amendment in the Rules, for joint responsibility for the licensing of vaccines, IV fluids and blood products. However, the need of the hour is to amend the Act itself, to make it mandatory for the states to obtain approval of the central government before licensing a new Fixed Dose Combination (FDC) drug. Such approval should be given only after careful assessment of the safety, efficacy, rationality and need of the new drug in the market.

Even otherwise, the Drugs and Cosmetics Act 1940 has become outdated, and needs to be replaced with a new law that takes into account changed circumstances as well as the need for an enhanced role for the central government. In 1940, most drugs were imported into the country and hence the emphasis in the Act was merely on ensuring quality. The scenario has since completely changed: the abundance of new drugs, new treatment options, technological innovations, the new TRIPS regime and the growth of the pharmaceutical industry call for a new legal framework altogether.

The Central Drug Standard Control Organization (CDSCO) is the designated organization at the centre to administer the Drugs and Cosmetics Act 1940. The main functions of CDSCO include the quality control of imported drugs; the coordination of the activities of the state drug control authorities; the approval of new drugs proposed for import into or manufacture in the country; the laying down of regulatory measures and standards of drugs; and acting as the central license-approving authority for blood and blood products, large volume parenterals, sera and vaccines. The CDSCO functions from 4 zonal offices, 3 sub-zonal offices and 7 port offices. The 4 central drug laboratories carry out tests of samples of specific classes of drugs (17). The CDSCO is headed by the Drug Controller General, who functions under the Director General of Health Services.

The State Drug Controllers bear the responsibility for ensuring that pharmaceutical manufacturers are following Good Manufacturing Practices (GMP). By and large, the states have neither the organization nor the inclination to enforce these standards, and their performance, as in most health related matters, is extremely uneven. As a result, the market is full of sub-standard and spurious drugs playing havoc with people's health. The checking of drugs is inadequate not only because of lack of staff and non-performing laboratories; but also because the samples to be taken by enforcement staff have to be paid for, and quite often the budget available is insufficient for this purpose. Even where a violation of the law is detected, the weakness of the prosecution machinery, the slow disposal of cases by courts, and the ineffective provisions of the law, continue to render the deterrent practically, non-existent. What is required is a new law with teeth, and a total overhaul of the enforcement machinery.

The licensing of chemists is also the responsibility of the State Drug Controllers. Each chemist is supposed to employ a qualified pharmacist, but this requirement is rarely met. The sale of prescription drugs over the counter in violation of the law further compounds the problem created by the hordes of unqualified practitioners and registered practitioners of other systems of medicine freely prescribing allopathic drugs. The indiscriminate use, and often, abuse, of prescription drugs poses serious health hazards to uninformed patients, besides contributing to increasing resistance to anti-microbials. The efficient enforcement of laws in this regard will require very strong monitoring and supervision by the proposed National Drug Authority. It is also essential to have a system of monitoring the performance of all drug-testing laboratories, both from the central and state governments, as well as from the private sector, by independent experts of repute. Accreditation by the National Accreditation Board for Analytic Laboratories under the Ministry of Science of Technology must be made mandatory to check this downslide.

Merely tinkering with the existing system is unlikely to improve the situation. Only an independent National Drug Authority – supported by adequate financial resources from the National Drug Fund, and authorized by a new law arming it with exclusive licensing authority and providing deterrent punishment to violators – can make a significant difference.

The Rational Use of Drugs

The problem of irrational drug use is not likely to go away even if all the laws are strictly observed. This is because even registered and qualified medical practitioners, unfortunately, resort to the grossly irrational use of drugs. Basically this arises from inadequate attention to the subject in the medical schools. But it is also aggravated by the total lack of emphasis on continuing medical education – most practitioners never bother to keep abreast of the latest technological developments save whatever information they receive

through representatives of pharmaceutical companies. Naturally the latter, in their aggressive attempts to push their products, over-emphasize effectiveness and minimize risks and side-effects.

The WHO first introduced the concept of rational use of drugs in 1973-75. In India, however, it did not receive any attention for two decades. The first administration to take up this cause seriously was Delhi, in 1994. A Drug Policy for Delhi was based on the concept of Essential Drugs proposed by WHO, and developed and successfully implemented in several countries such as the UK, Norway, Australia, Bangladesh and Iran. The WHO India Essential Drug Programme was launched in Delhi in 1998 in collaboration with the Delhi Society for Promotion of Rational Use of Drugs (DSPRUD) – which was formed as a 'triangle' of political leaders, bureaucrats and technical experts, dedicated to the cause of rational use of drugs. The programme has expended rapidly over the last three years. While the Central Ministry has remained cool to the programme, a number of states have actively participated in it, including UP, Gujarat, Orissa and Kerala. The Indian Railways, with its vast infrastructure of medical facilities, has shown interest. A number of NGOs and professional organizations have organized conferences and training workshops. However, the sustainability and effectiveness of many of these initiatives is in doubt unless the relevant governments and professional associations "own up" to the programme and promote it actively.

Training physicians in both public and private sectors as part of Continuing Medical Education (CME) is important in ensuring rational prescribing practices. Unfortunately there is no formal CME requirement yet in India for medical practitioners. The Indian Medical Council has now proposed that registrations should be renewed after every five years, contingent on certain minimal participation in CME activities. This is an important initiative that deserves support. Professional associations, particularly the Indian Medical Association, must, on a priority basis, take over the responsibility of sustained training of its members on the rational use of drugs.

Conclusion

The drug scenario in India exhibits both significant strengths and weaknesses. The strengths lie in technological skills, a robust and dynamic pharmaceutical industry, and more recently, its R&D capabilities. The weaknesses arise from the proliferation of manufacturing in small units, licensing of irrational Fixed Dose Combinations, outdated laws and their poor enforcement. With the enforcement of the WTO-mandated TRIPS regime, the drug sector faces new challenges as well as opportunities. This makes it **important for the government to provide dynamic and far-sighted leadership in leading the wide-ranging reforms; and putting in place, in collaboration with the industry, the necessary institutional and legal framework that will facilitate the process of adjustment to the globalized regime.**

Notes

1. The background paper to this chapter was written by Professor Ranjit Roy Choudhury, Emeritus Scientist, National Institute of Immunology, New Delhi, and President, Delhi Society for the Promotion of Rational Use of Drugs (DSPRUD).
2. The Indian Pharmaceutical Industry, ASCI, 2000.
3. F.M. Scherer and J. Watal, Post TRIPS Options for Access to Patented Medicines in Developing Countries, unpublished paper for Working Group 4, The Commission on Macroeconomics and Health, 2001.
4. W.S. Comanor, The Pharmaceutical Industry and the Needs of Developing Countries, 1996.
5. Creating Global Markets for Neglected Drugs and Vaccines: A Challenge for Public-Private Partnership, consensus statement organized by the Global Forum for Health Research, Institute for Global Health, 2000.
6. Scherer and Watal 2001.
7. Ibid.
8. Ibid.
9. Ibid.
10. For a fuller discussion, see Creating Global Markets for Neglected Drugs and Vaccines: A Challenge for Public-Private Partnerships, 2000.
11. Scherer and Watal 2001.
12. Langjouw 1998, as quoted in Ibid.
13. Scherer and Watal 2001.
14. ASCI 2000.
15. Ibid.
16. Ibid.
17. Annual Report 1999-2000, MHFW.

15

Indian Systems of Medicine

Introduction

No discussion of the Indian health system can be complete without the inclusion of the Indian Systems of Medicine (ISM). India has an incomparably rich heritage in ancient systems of medicine that make up a veritable treasure house of knowledge for both preventive and curative healthcare. *These systems, through their safe, effective and inexpensive treatments, have the potential to make a significant contribution to the healthcare of the common people.* But their true potential is still largely unrealized, despite a large and well-dispersed infrastructure.

The term ISM (1) comprises 6 different systems – ayurveda, siddha, unani, yoga, naturopathy and homeopathy. In terms of registered practitioners, ayurveda is the dominant system in ISM. Homeopathy, though German in origin, has a large Indian clientele, and is second only to ayurveda among the ISM.

Ayurveda

Ayurveda means the 'science of life' in Sanskrit. It is one of the oldest and the best documented among the ancient systems of medicine. The documentation of ayurveda is referred to in the Vedas (1500-500 BC), said to be the oldest recorded wisdom in the world. It derives its basic principles from the *Caraka Samhita* (600 B.C.) and the *Susruta Samhita* (500 BC). The approach is essentially philosophic, holistic and humanistic. Ayurveda emphasizes life and health more than disease and treatment. It presents a comprehensive life science and encompasses total health – physical, mental and spiritual – in a holistic way. The system is based on the laws of nature, and the individual human being is a minature replica of the universe. The individual and the universe are both essentially *panchamahabuta*, or made up of the five basic physical factors or elements: *akasa* (ether/space), *vayu* (air, motion), *teja* (fire/radiant energy), *jala* (water/cohesive factor) and *prthvi* (earth/mass). The individual *(purusa)* and the universe *(loka)* remain in constant interaction with each other, and as long as this interaction is wholesome and optimal, the human being enjoys good health. Any disharmony in this interaction is the basic cause of disease, and all treatments in ayurveda attempt to restore this harmony and the normal balance of the five elements in body and mind. In this sense, ayurveda is a system of medicine very close to nature.

The five physical attributes of *pancamahabhuta* constitute three major biological components of the living body called *tridosa*, i.e. *vata*, *pitta* and *kapha*. All ailments arise out of the imbalance of the three *dosas* or

humours, and the role of medicine is to assist the natural healing powers of the body.

It is not possible to deal with the various aspects of this ancient system in detail here (2). Suffice it to say that it is a complete and well-developed promotive, preventive and curative system of medicine with eight major clinical specialities: a) *kayachikitsa* (internal medicine), b) *salya tantra* (surgery), c) *salakya* (ENT), d) *kaumarabhrtya* (pediatrics, obstetrics and gynaecology), e) *bhutvidya* (psychiatry), f) *agada tantra* (toxicology), g) *rasayana tantra* (nutrition, rejuvenation and geriatrics), and h) *vajikarana* (sexology).

Ayurvedic drugs are usually soft medications, acting as molecular nutrients for different organs and tissues. Their action is explained more in terms of nutrition dynamics rather than actual pharmacodynamics. All preparations are from natural sources; most of them are herbal, but the system also makes extensive use of minerals and ashed metals.

Siddha

Siddha, an equally ancient system, is similar to ayurveda in its fundamental principles. But there is considerable difference in the way the two systems have evolved. The siddha system got its name from the ancient masters, who, besides practicing medicine, also performed many miraculous acts. Siddha means a master; thus the name denoted the mastery of such practices. The most famous of the Siddhas was Nagarjuna, whose *rasatantra* forms the basis of this system. The literature of siddha is in Tamil, unlike Ayurveda, where the ancient texts are all in Sanskrit. The system flourished in South India and Sri Lanka, and at present, it is practiced primarily in the state of TN. The distinctive features of siddha are its reliance on minerals and metallic compounds, and its emphasis on rejuvenative therapies.

Unani

The unani system originated in the 4th-5th century B.C. in Greece under the patronage of Hippocrates (377-460 B.C.) and Galen. It gradually absorbed the experience and wisdom of many ancient cultures, including those of Egypt, Arabia, Persia, China, Syria, and of course, India. The system was documented in *Al anoon* by Sheikh Bu-Ali Sina (980-1037 A.D.) and in *Al havi* by Razi (850-923 A.D.). The system is based on the humoural theory, so that good health depends on the balance of the four humours, blood, phlegm, yellow bile and black bile. Like ayurveda, this is a holistic system including promotive, preventive and curative interventions. But unlike ayurveda, it relies overwhelmingly on herbal preparations.

Yoga

Yoga is not really a system of medicine. Its objectives are self-realization and spiritual union with the all-pervasive divine cosmic power. But certain intermediary practices and yogic attitudes have proved beneficial for reducing stress, preventing many lifestyle-related diseases, and promoting general health and well-being. It has also proved useful in the treatment of many chronic and intractable ailments. Along with meditation, this is by far the most popular ancient system globally.

Essentially, yoga is devoted to the integration of the physical, mental, intellectual and spiritual dimensions of one's being. The technology of the practice of yoga is based on Patanjali's *Yoga Sutra* (around 200 B.C.), containing the scheme of *astanga yoga* (eight limbic yoga) with the ultimate goal of attaining samadhi or union with the cosmic force. Meditation is an essential ingredient of yoga. However, in common parlance, yoga is associated with certain postures *(asana)* and breathing exercises *(pranayama)*, which have wide and varied beneficial influences on both physical and mental health.

Naturopathy

Naturopathy is based on the fundamental principles of ayurveda. While ayurveda uses medicines in addition to bio-purificatory and dietary practices, naturopathy relies solely on the latter. The basic tenet of naturopathy is to live according to the laws of nature: disease occurs due to the accumulation of toxins in the body, and to cure the ailment, the body is purified with the use of natural methods, dietary regulation and exercise. A naturopath uses mud, water, heat and air as the instruments for therapy, but never any drugs.

Homeopathy

Homeopathy is fundamentally different from other Indian systems. It is based on a specialized method of treating diseases – administering potentised drugs in very high dilutions, which have been empirically established to have the power of relieving the very symptoms which they normally cause in healthy human beings when administered in their gross form. Homeopathy was discovered by a German physician, Dr. Christian Frederic Hahnemann, in the 17th century. Homeopathy is also a holistic system, and it treats the patient as a whole, not merely the diseased organ. It is particularly useful for constitutional ailments for which modern medicine has few remedies. It is safe, inexpensive and easy to use, and as a result, many households maintain a small chest of homeopathic medicines, which they use on their own for common ailments, particularly those of children. Homeopathy is, by far, the most popular ISM system across the country, although other systems have their areas of influence in designated parts of the country.

Underlying Similarities

While there are significant differences among the ISM systems, there are some important underlying commonalities in basic approaches and fundamentals, particularly between ayurveda, siddha, unani, yoga and naturopathy.

- All the systems adopt a holistic approach, attempting to treat the patient as a whole rather than the affected organs.
- The systems are more life-oriented than disease-oriented.
- All of them emphasize promotive and preventive aspects.
- All of them believe that disease is a consequence of disharmony between man and nature that disturbs the balance between biofactors/humours. The object of all therapy is the restoration of this balance.
- All systems use natural substances, predominantly herbal preparations used as nutritional supplements rather than drugs.
- All systems emphasize appropriate diet.
- Ayurveda, siddha and unani rely, to a great extent, on pulse reading for diagnosis.

Infrastructure

There is a vast infrastructure of hospitals, dispensaries, teaching institutions and registered practitioners under different systems of ISM (Annex 15.1). Different systems are dominant in different parts of the country (Annexes 15.2 and15.3). Ayurveda is more popular in Kerala, HP, Gujarat, Karnataka, MP, Rajasthan and Orissa. Unani has a greater following in AP, Karnataka, TN, Bihar, Maharashtra, MP, UP, Delhi and Rajasthan. Homeopathy is more widely practiced in UP, Kerala, West Bengal, Orissa, AP, Maharashtra, Punjab, TN, Bihar, Gujarat, and the North Eastern states (3).

Most state governments have set up parallel facilities of ISM – hospitals and dispensaries that have significant outreach in rural areas. However, with the exception of rare cases, these facilities are not utilized for public health programmes, and are completely independent of the rural health infrastructure. In isolated cases, ISM doctors have been added to PHCs, thus giving patients a choice of systems.

The Potential of ISM

With its vast infrastructure and cultural acceptance it would be logical to expect ISM to play a major role in Indian healthcare. But contrary to expectations, recent surveys (4) seem to point towards a complete dominance of allopathy, with over 90% of illness episodes being treated with that system (see Chapter 2). These surveys also indicate that the

practitioners of ISM are increasingly resorting to unauthorized treatment of their patients with allopathic drugs.

All the same, the fact remains that ISM systems can make a major contribution to healthcare in the following areas:

- In the changing demographic and epidemiological scenario, longevity has increased, and people are more vulnerable to chronic ailments requiring long term and expensive therapies unaffordable in a poor country. ISM can fill in this critical gap and provide safe and cost effective treatment for many conditions.
- More important, the epidemiological transition has increased the burden of NCDs, which has major cost implications in a poor country. The best strategy to deal with this new challenge is to emphasize promotive and preventive health and healthy lifestyles. Many ISM practices and therapies such as yoga are of great value in avoiding or delaying the onset of NCDs.
- With their vast infrastructure and outreach, ISM could make a significant contribution to public health programmes and supplement healthcare facilities, particularly in under-served areas.
- The rich range of remedies in ISM could provide leads to the discovery of safer and more effective drugs to support the human battle against disease.
- ISM could provide a growing market for exports with the rising demand for Complementary Alternative Medicine (CAM) in the industrialized world.

Neglect of ISM in India

We are far from realizing the potential benefits of ISM, given the centuries of its neglect in the country. With the advent of British rule, the indigenous systems lost official patronage and support: the colonial masters considered these systems unscientific and unreliable. Following the example of their masters, the Indian elite shifted to modern medicine, and consequently, ISM suffered a major setback with both the State and affluent clients withdrawing their support. The result was an unequal competition between modern medicine and ISM. The former got huge investments in research and came out with new discoveries, while ISM stagnated as it continued to depend only on the ancient texts. In fact, it is only the *guru-shishya parampara* (teacher-pupil tradition) which kept these systems alive, by passing on traditions from teacher to pupil in the absence of any formal teaching institutions and official patronage.

There was some recognition of the potential of ISM after Independence, but very little was done by way of follow-up. An institutional framework was indeed established, to standardize education and drugs and to promote research, but inadequate attention by policymakers and insufficient financial support made these initiatives largely ineffective. ISM continued to

be developed as a parallel stream, with no attempt to synthesize or integrate the systems with modern medicine and assign them a role in public health. Antagonistic attitudes ruled out any possibilities of meaningful collaboration in research. The traditionalists argued that the ancient texts, based as they were on the insights of seers, could not be questioned. Also, since the traditional systems were based on different principles altogether, they could not be subjected to the evaluation protocols applicable to modern remedies. As a result, even when State support was forthcoming, research was confined mainly to so called literary research, or the deciphering and interpreting of ancient texts. Unlike the situation in China, very few initiatives were taken to undertake scientific evaluation of ISM remedies.

Alternative Medicine in Industrialized Countries

The second half of the19th century saw the beginnings of a technological revolution in modern medicine, with the germ theory of disease contributed by the work of Pasteur and Koch, followed by the establishment of the microbial origins of infections. Just the dissemination of information about the simple rules of hygiene led to a dramatic fall in disease burden and mortality. The introduction of sulphonamides in the 1930's helped the development of chemotherapy, and later, penicillin made a major impact on the control of infection related ailments. As a parallel stream, the development of vaccines, beginning with Jenner's first vaccination two centuries ago, brought down child mortality significantly. This, coupled with advances in surgery, seemed to promise that modern medicine had answers to all health problems. Naturally, nobody thought it was worthwhile to look at traditional medicine, since it was not validated by modern science. As a result, most traditional medicine was clubbed with quackery.

Attitudes, however, began to change with the shift in the disease profile, and with the realization of the limitations of modern medicine. With an aging population, the burden of disease shifted to chronic constitutional problems, for which there were, as yet, no solutions in modern medicine. The confidence in the effectiveness of drugs began to wane, with microbial evolution causing resistance to known potent drugs, and with the emergence of new diseases. The harmful effects of the prolonged administration of powerful drugs began to be documented. Research established conclusively the strong linkage between lifestyles and many NCDs. The faster pace of life led to stress being recognized as a major factor in ill health, generating interest in traditional stress-relieving techniques such as yoga and meditation.

All these factors have led to an explosion of interest in Complementary Alternative Medicine (CAM) in western countries, an interest exceeding even the popularity of oriental religious and spiritual movements. The global market is now estimated at US$60 billion, and expected to grow to the mind-boggling figure of $5 trillion by 2050. With recent developments in

genomics and biotechnology, medical science is poised to take a giant leap forward, which may yield relatively easy remedies for apparently intractable chronic constitutional ailments. It is difficult to say how this would impact CAM. All that we can say with some degree of assurance is that even if such remedies do become available, they would probably remain out of reach of the common people in poor countries. Hence irrespective of whatever happens in the West, traditional remedies would remain relevant in India in the foreseeable future.

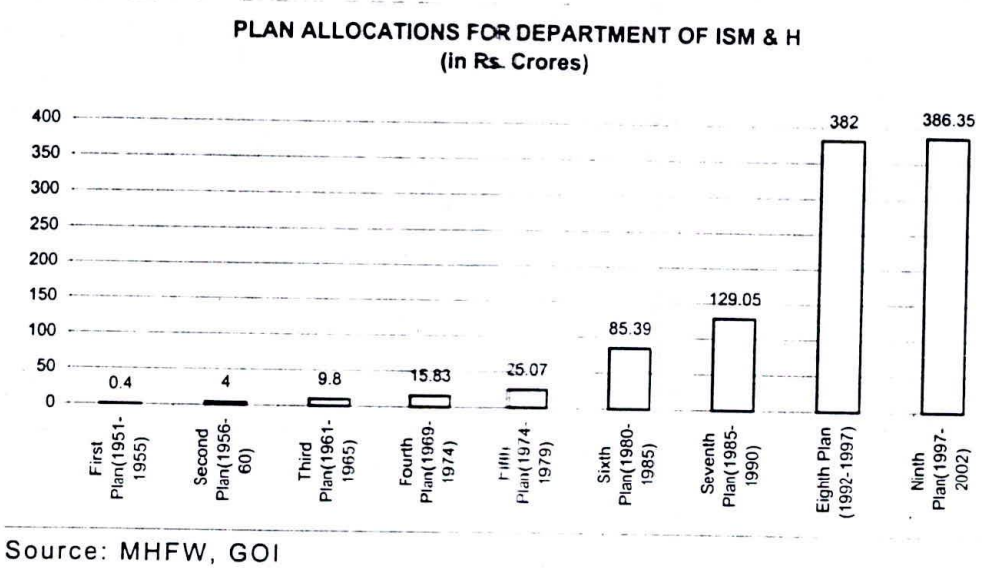
The Impact of Western Interest on India

Since the West finds India's treasure of traditional remedies interesting, the Indian elite has also begun to perceive these remedies as valuable. This is most welcome – to the extent that this perception encourages support from the government and others to the realization of the true potential of ISM. This also means new commercial opportunities. But it presents, at the same time, some new challenges. First, the tendency of western commercial interests to patent traditional knowledge to enjoy monopoly rights needs to be effectively countered. Second, the rising demand for herbal products could lead to over-exploitation of scarce species, consequently endangering their existence and availability.

Creation of a Separate Department for ISM

The creation of a separate department in the Ministry of Health and Family Welfare in 1995, in response to a long pending demand, seems to have given new visibility and importance to ISM. This is reflected in a major step-up in financial allocations (Figure 15.1). It has also led to some very well intentioned initiatives, besides strengthening many existing programmes.

Figure 15.1



Source: MHFW, GOI

Major Challenges

Failure to Concentrate on Identified Strengths:

One of the major weaknesses of ISM arises from its failure to concentrate on its strengths, and in trying to dabble in areas where it lacks a comparative advantage. ISM must clearly identify its strengths and limitations, and concentrate on developing the former. This would lead to better targeting of resources and concentration of both research and training on their areas of specialization. Conversely, modern medicine practitioners should also appreciate their limitations in dealing with many chronic, constitutional ailments for which ISM has better weapons in its armoury. This is already happening in India as well as abroad, and many modern medicine practitioners encourage patients to try alternative therapies. Once the comparative strengths of each system have been then identified, the government should encourage the setting up of specialized clinics for specified diseases under ISM.

Integration:

There has been a great deal of debate on the question of integration of all systems on the Chinese model, but very little progress has been made. The disadvantages of uncoordinated development of parallel streams are obvious. The large manpower and institutional resources of ISM are completely divorced from public health activities, which is a huge waste in a poor country. On the other hand, even where ISM remedies are potent and cost effective, they are not being used in the healthcare institutions supported by public funds. Needless to say, a synergistic development of ISM and modern medicine would be highly desirable for both systems. But how is such a synergy to be achieved?

Several alternatives have been suggested. Some scholars have advocated complete integration on the Chinese model, with a common course of medical education and a common pharmacopoeia, with the most cost effective remedies of ISM being incorporated as first choice treatments in modern medicine. The suggestion is that a common graduate course could be followed by specialization for ISM at the post-graduate level (5). On the face of it, this seems a neat solution, but both sides have serious reservations. ISM specialists feel that it is not possible to integrate the two streams without compromising its growth and development, since the principles governing diagnosis and treatment are entirely different. They are also apprehensive – not entirely without good reason – that such integration could lead to the more popular and powerful allopathic system totally overwhelming the ISM systems. They point out that the first step should have been the integration of ayurveda, siddha and unani – all of which have many similarities, but no initiative in this direction has been possible because the traditionalists in ISM are dominant. The modern medicine professionals are also not enthusiastic about ISM being made a

part of the MBBS curriculum. They feel this would take away precious time from the more pressing requirements of teaching modern medicine, which has to enlarge its scope to accommodate expanding scientific horizons and new diseases. They also suggest that teaching two entirely contrary sets of theories would only confuse students. An integrated course that was initiated many years back was abandoned as a result of opposition from both sides. There is also legitimate opposition to the induction of ISM drugs in modern medicine therapies before their safety and efficacy is established on a scientific basis. It is not easy to discount the reservations held by either side, and we believe that the proposal for complete integration is a total non-starter.

The ICCSSR/ICMR Report (1981) examined this question and suggested a synthesis of all systems to evolve a common national system:

- Each indigenous system should be allowed to retain its identity, while developing, at the same time, a national system of healthcare in which all systems can make their own unique contribution.
- Just as ayurvedic colleges offer some education in western medicine, colleges of modern medicine must offer brief courses introducing students to relevant portions of indigenous systems. The ultimate goal is for all institutions training medical and health personnel to teach one synthesized system of medicine, with the individual systems being offered as some of the specialization courses at the post-graduate level.
- Synthesis has to be a well-planned process with a singularly efficient monitoring and evaluation system at the healthcare delivery level.

Apart from all this, synthesis requires the right climate to evolve. All public pronouncements about health must aim at convincing people of the need to evolve a national system that would bring together the best in all systems. Most important, an exchange of opinions among experts should be initiated and an appropriate atmosphere for discussion created. Broadly, such a synthesis would involve the following steps:

- The curriculum in each stream should familiarize students with the basic principles and important remedies in the other. The ISM courses already include basic subjects of the modern medicine curriculum; what they need to attempt is a better understanding of the systems within the ISM fold, which alone could lead to the eventual integration of at least ayurveda, siddha and unani. On the other hand, modern medicine must incorporate familiarity with the basic principles and important remedies of ISM in its curriculum.

- An intensive effort must be launched to evaluate, by modern scientific methods, the well-known remedies of ISM, and incorporate those that

show a comparative advantage in Essential Drug Lists and treatment protocols for public medical institutions.

- All ISM practitioners in public institutions should be given short courses to enable them to participate in major public health programmes such as control of HIV/AIDS, TB, malaria, ARI and diarrheal diseases. They should be trained to prescribe simple allopathic remedies and refer complicated cases to medical doctors.

- While the streams may continue on their parallel courses, there needs to be strong cross representation on educational bodies from both sides.

- Eventually, a synthesized national health system must emerge as envisaged in the ICSSR/ICMR report, incorporating the best of all systems and utilizing all the available manpower of all systems to maximum advantage for the achievement of national health goals. A beginning seems to have been made by the introduction of some time-tested ISM remedies in the RCH programme (6).

Research

The proposed paradigm requires a complete change in the way research has been conducted in ISM. Separate autonomous bodies for ayurveda and siddha (CCRAS)(7), unani (CCRUM)(8), homeopathy (CCRH)(9) and yoga and naturopathy (CCRYN)(10) under the chairmanship of the Minister for Health and Family Welfare, are mandated to promote and oversee research in their respective fields. Although clinical research has also been pursued for the last 50 years, albeit half-heartedly, the results do not command any credibility due to an absence of scientific rigour and application. All known remedies need to be scientifically evaluated on the basis of accepted principles of research. To this end, ISM researchers need to be trained in the methods of investigation, and ISM research bodies and the ICMR need to collaborate more closely. Above all, the need is for a complete change in the mindset and research culture.

There is another aspect of ISM research that deserves specific mention. Based on ISM texts, some attempts have been made in the past to isolate the active principle of herbs for purposes of new drug development. The traditionalists are opposed to this kind of research on the grounds that the isolation of the active principle militates against the holistic approach of ISM. It is possible that developing a drug on the basis of isolation of the active principle may change the character of the original remedy and may affect its efficacy and safety. Despite this view that such drugs cannot be utilised in ISM treatment, this is a line of research that we need to pursue vigorously, in both public and private sectors, because it is now widely believed that these investigations could yield important new weapons for fighting disease.

Educational Standards

One major issue in ISM is the standardization of education, and this has been engaging government attention for several decades. The Central Council of Indian Medicine (CCIM), constituted in 1970, is the statutory authority for laying down standards for ayurveda, siddha and unani, while this function is discharged by the Central Council for Homeopathy (CCH) for homeopathic institutions. Despite differences in teaching regimens, laying down standards and prescribing curricula has not been as difficult as the task of enforcing these standards. Most ISM institutions are poorly equipped and have inadequate financial support. As a result, the Central Government has had to intervene to provide financial support for various programmes of upgradation. The centre has also established Natural Institutes in each ISM discipline to develop a model educational institution. However, most of these institutions, are far from fulfilling this objective. Except for the Institute of Post-Graduate Teaching and Research in Ayurveda, Jamnagar, none of the institutions can be considered to have reached standards comparable to similar institutions in modern medicine. Thus ISM education still has a long way to travel. To cater to the growing international demand for CAM practitioners, a new breed of ISM manpower – that is modern in outlook, scientific in approach and fluent in English – needs to be developed.

Standardization of Drugs

The standardization of ISM drugs is a matter of even greater complexity. With hundreds of texts and the varying interpretations and diverse treatment modules followed by hereditary practitioners, the development of the pharmacopoeias is indeed a daunting exercise. The Pharmacopoeia Committees for ayurveda, unani, siddha and homeopathy, with the assistance of the Pharmacopoeial Laboratory of Indian Medicine and the Homeopathic Pharmacopoeia Laboratory at Ghaziabad, have been working together to develop detailed pharmacopoeias for the last several decades, but the task is still far from over. Even more difficult than the prescribing of standards is their enforcement. Many practitioners dispense the medicines themselves, and since most preparations are of organic origin, testing and determining their exact composition presents immense problems. Although ISM medicines are formally notified under the Drugs and Cosmetics Act, the actual enforcement of standards is still only in name. A Drug Control Cell in the Department of ISMH, MHFW, is coordinating legislation and its enforcement with the office of the Drug Controller General. This is an area which that needs particular attention in the future.

Medicinal Plants

The growing commercial interest in ISM remedies the world over has raised concerns about over-exploitation of natural herbal resources. According to a report of the Export Import Bank of India (1997), the value of the

medicinal plants related trade in India is of the order of US$5.5 million, and growing rapidly. Forests have traditionally been the source of medicinal herbs and plants, but now these herbs are threatened in two ways: first, the forest cover is fast shrinking; and second, the demand for these products has been rising sharply. In the absence of timely action, certain species are in danger of becoming extinct. The Ministry of Environment has already recommended a ban on the use of 29 endangered species of medicinal plants. Many of these plants are not capable of commercial cultivation away from their natural habitat as they lose their therapeutic value. The availability of medicinal plants can be improved only with coordinated action of the Ministries of Health and Family Welfare and Environment and the state governments. Besides launching a scheme for cultivation of medicinal plants, a Medicinal Plants Brand has been constituted under the Minister for Health and Family Welfare to coordinate all activities in this regard.

Patents

The increased commercial interest in herbal products, coupled with the introduction of the WTO mandated Intellectual Property Rights (IPR) regime, has led to many well-known medicinal uses of plants being patented abroad. This points to the need for vigilance, and for contesting these patents in appropriate courts. Side by side, all the traditional knowledge in this regard has to be quickly documented to contest such claims. It is proposed to develop a Traditional Knowledge Digital Library (TKDL), initially for Ayurveda. The TKDL will ensure that knowledge in the public domain is available in patent compatible and easily retrievable form to the patents examiner, which will help prevent claims of patent on non-original inventions (11). This is a well-timed new initiative by the Ministry.

Conclusion

ISM has to make up for centuries of neglect. Besides strengthening the infrastructure, some major initiatives must be taken to promote the synthesis of different systems, and to encourage the scientific evaluation of traditional remedies. Above all, a change of mindset is required to make ISM modern and forward looking in outlook without loosening its traditional roots. The new slogan for ISM should be 'tradition with modernity.' Some new initiatives of the central government encourage us to believe that ISM has been set on the right course. With the right policy initiatives and necessary reforms, ISM can not only make a contribution within India, but also emerge as a leading source of alternative medicine the world over.

Notes

1. Though the term ISM is generally used to cover these 6 systems, only 3 of them – ayurveda, siddha and yoga – are indigenous systems. Unani is of Greek origin and came to India in medieval times. Naturopathy has some elements of non-Indian origin; and homeopathy is of German origin.
2. For a fuller discussion, see Appendices, Ayurvedic Medicine, Its Approaches and Principles by Ram Harsh Singh, Senior Professor and Chief Consultant in the Department of Kayachikitsa (Internal Medicine), Faculty of Ayurveda, Banaras Hindu University (BHU), Varanasi. This chapter is based on a background paper on him.
3. Annual Report 2000-01, Ministry of Health and Family Welfare (MHFW).
4. NSS 42nd Round, NCAER Household Surveys, 1995.
5. R.H. Singh, BHU.
6. Annual Report 2000-01, MHFW.
7. Central Council for Research in Ayurveda and Siddha.
8. Central Council for Research in Unani Medicine.
9. Central Council for Research in Homeopathy.
10. Central Council for Research in Yoga and Naturopathy.
11. Annual Report 2000-01, MHFW.

Annex 15.1

Summary of Medical Care, Medical Manpower and Medical Education Facilities available under Indian Systems of Medicine and Homeopathy as on 1.4.1999. (Provisional Figures)

Sl. No.	Facilities	Ayurveda	Unani	Siddha	Yoga	Naturopathy	Homoeopathy	Total
1	Hospitals	2258	196	224	8	21	297	3004
2	Beds	40313	4872	1811	101	733	12836	60666
3	Dispensaries	14416	970	363	42	56	7155	23028*
4	Registered Practitioners**	367528	41221	12915	-	388	189361	611413
5$	(I) Undergraduate Colleges	196	40	2	-	-	149	387
	(ii) Admission Capacity	7070	1280	150	-	-	7610	16110
6$	(I) Post Graduate Colleges	49	3	2	-	-	14	68
	(ii) Admission Capacity	645	35	70	-	-	186	936

Note :

- : Nil Information

* : Includes 26 Amchi Dispensaries

** : Information as on 1.1.99.

$: As on 1.10.2000 based on information furnished by CCIM/CCH

Source : Annual Report 2000-01, MHFW, GOI

Annex 15.2

Statewise Number of Registered ISM & Homoeopathic Practitioners* as on 1.1.1999 (Provisional Figures)

States	Ayurveda	Unani	Siddha	Naturopathy	Homoeopathy	Total
Andhra Pradesh	14621**	4614**	-	298**	8411	27944
Assam #	250	NA	-	-	464	714
Bihar #	75711$	3250$	-	-	25669	104630
Gujarat	16223	234	-	-	3768	20225
Haryana	18553	1656	-	-	5664	25873
Himachal Pradesh	6798	454	-	-	1076	8328
Karnataka	10555	679	1	67	5871	17173
Kerala	13080	55	1345	-	7760	22240
Madhya Pradesh	47130	427	-	2	6794	54353
Maharashtra	46519	2298	-	-	27911	76728
Orissa	3653	15	-	-	4733	8401
Punjab	19924	5610	-	-	7256	32790
Rajasthan	26056	1849	-	-	3975	31880
Tamil Nadu	3366	916	11569	21	16060	31932
Uttar Pradesh	55921	11963	-	-	24711	92595
West Bengal	2873	4927#	-	-	36107	43907
India	367528	41221	12915	388	189361	611413

Note :

\# : No information has been received for the current year hence repeated for latest available year.

\- : Nil information

NA : Not Available

$: Source CCIM

* : Includes Institutionally Qualified & Non-institutionally Qualified Registered Practitioners.

** : Information is available for one Board only.

Source : Annual Report 2000-01, MHFW,GOI.

Annex 15.3

Statewise/Systemwise Number of Hospitals and Dispensaries with their Bed Strength under Indian Systems of Medicine and Homoeopathy Functioning as on 1.4.1999. (Provisional Figures)

States	Ayurveda		Unani		Siddha		Yoga		Naturopathy		Homoeopathy	
	Hospitals	Dispensaries	Hospitals	Dispensaries	Hospitals	Dispensaries	Hospitals	Dispensaries	Hospitals	Dispensaries	Hospitals	Dispen
Andhra Pradesh	8(444)	1437	7(390)	207	-	-	-	-	1(135)	-	6(280)	286
Assam #	2(130)	329	-	1	-	-	1(25)	2	-	2	3(105)	75
Bihar #	9(871)	522	4(414)	128	-	-	-	-	-	-	1(100)	1(
Gujarat	45(1745)	539	-	-	-	-	1(1)	2	-	8	9(730)	3
Haryana	9(840)	414	1(10)	20	-	-	-	-	-	-		2
Himachal Pradesh	16(330)	1064		3	-	-	-	-	1(10)	-		14
Karnataka	124(6132)	561	11(202)	45	1(10)		5(25)	-	12(451)	11	25(1480)	25
Kerala	109(2561)#	759#		1#	-	9#	-	-	1(30)#	-	72(1440)	27
Madhya Pradesh	34(1160)	2105	1(60)	56	-	-	-	-	-	-	12(590)	20
Maharashtra	73(11713)	463	10(1400)	23	-	-	-	-	-	-	77(5505)	-
Orissa	8(323)	527		9	-	-	-	35	-	30	5(150)	503
Punjab	11(771)#	489#		35#	-	-	-	-	-		6(185)	10
Rajasthan	90(1179)	3486	5(270)	79	-	-	-	-	2(22)	3	5(160)	12
Tamil Nadu	4(267)	10	1(54)	6	221(1716)	338	-	-	-	1	3(150)	41
Uttar Pradesh#	1671(9911)	713	136(1186	148	-	-	-	-	-	-	36(399)	1378
West Bengal#	3(215)	254	2(110)	-	-	-	-	-	-	-	14(682)	89
India	2258(40313)	14416	196(4872	970	224(1811)	363	8(101)	42	2(733)	56	297(12836)	715

Note :
Figures within bracket indicates the Bed-strength
: No information has been received for the current year hence repeated for latest available yea
- : Nil information
Source : Annual Report 2000-01, MHFW, GOI

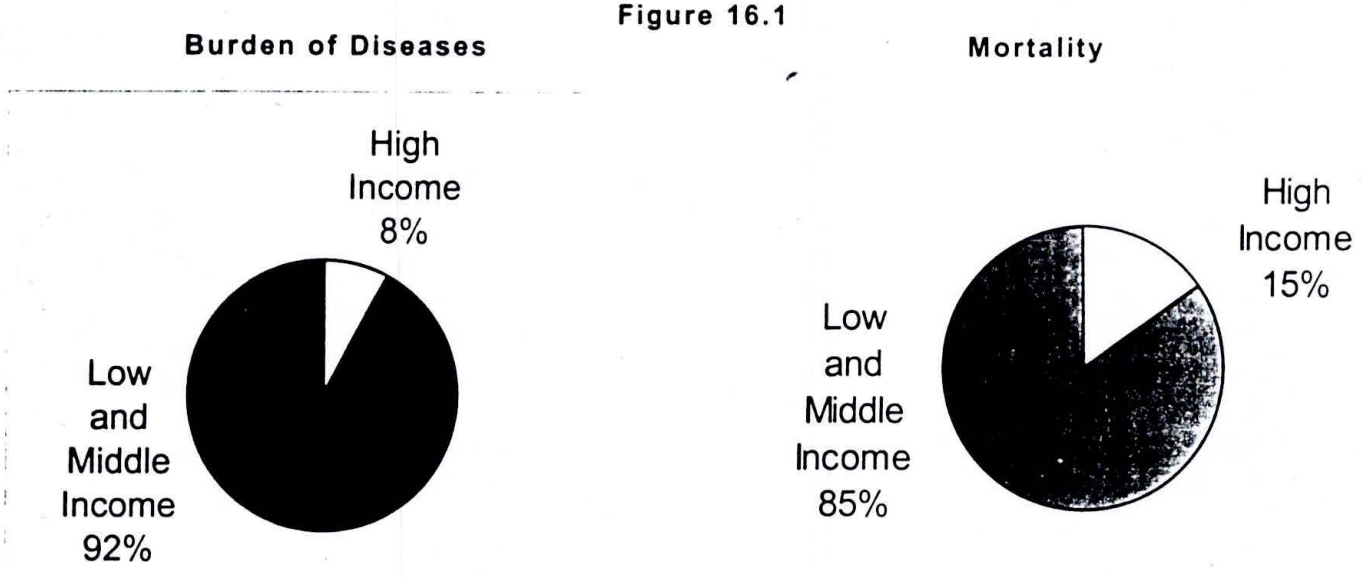
16

Health Research: Its Potential in India

The Global Context (1)

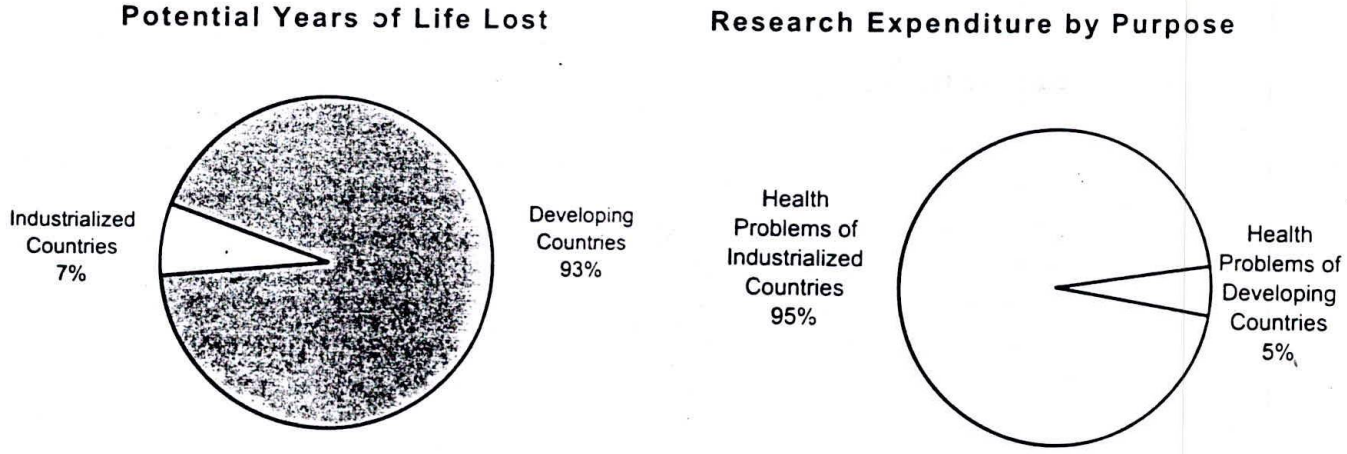
There is a widely acknowledged mismatch between the disease burden of the poor countries, and the resources and research efforts devoted to developing new tools to address them. Similarly, the wide disparities between rich and poor countries, in terms of burden of disease and mortality levels, have provoked serious global concern (Figure 16.1). There is an increasing awareness, even in the industrialized countries, of the dangers inherent in these growing inequalities in health status. One of the strategies that could narrow this gap is research on diseases that predominantly affect the poor. According to a recent study (2), new technology, an indicator that includes medical breakthroughs, accounted for almost half the gains in mortality reduction in low and middle income countries between 1960 and 1990. The Commission on Health Research for Development (1990), which first investigated this issue, "found a gross mismatch between the burden of illness, which is overwhelmingly in the third world, and investment in health research, which is overwhelmingly focussed on the health problems of the industrialized countries."(3) (Figure 16.2).

Figure 16.1



Source: **WHR** 1999

Figure 16.2
World Health: Contrast in Premature Mortality Burden and Allocation of Health Research Funds (per cent)



Source: Commission on Health Research for Development, 1990

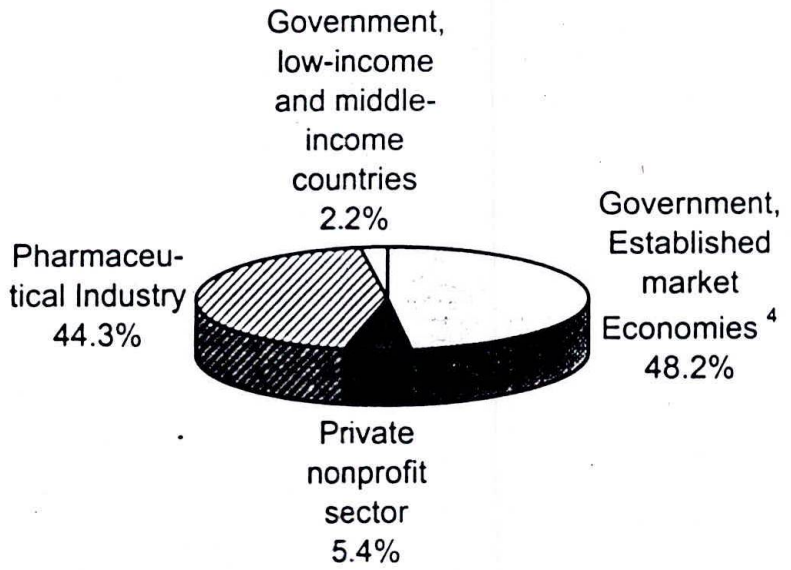
The Ad-Hoc Committee on Health Research Relating to Future Intervention Options (1996), which conducted an in-depth examination of these issues, came to a similar conclusion: "Of a total of almost $56 billion invested in health research in 1992, we estimate that 95% was invested in the health problems that primarily pre-occupied the industrialized world, and just 5% was devoted to the health needs of developing countries. Our assessments of R&D spending on specific health problems showed, for example, that the combined amount spent per year on R&D into three leading conditions – pneumonia, diarrheal disease and TB – totaled just US $133 million, or 0.2% of the world's total health R&D expenditure. Yet between them, these diseases make up almost 1/5th of global disease burden."

Admittedly, the development of infrastructure for high-quality health research is expensive. Since the necessary facilities already exist in the industrialized world, it is often argued that persuading the industrialized countries to invest more in health research – and particularly on diseases of the poor – would help sharpen the focus on this neglected area. While it is nobody's case that the industrialized countries, with their vast resources and infrastructure, should not devote more attention and resources to the problems of poor countries, we are constrained to point out that this strategy alone cannot lead us towards our desired objective. Despite the unambiguous conclusions and strong recommendations of both the Commission on Health Research for Development, 1990, and the Ad-Hoc Committee on Health Research Relating to Future Interventions Options, 1996, and their follow-up by the Global Health Forum, the pattern of investment in health research does not seem to have significantly changed.

According to a study (4) in 1992, funds for R&D came mainly from two sources: governments (US $28.1 billion or 50.4%) and the pharmaceutical industry (US $24.7 billion or 44.3%). The balance (US $3 billion or 5.4%) came from the private not-for-profit sector (Figure 16.3). The Global Health Forum I, 2000, has identified two key bottlenecks to greater investment in health research devoted to the diseases of the poor:

- insufficient funds and interest in identifying potential candidate products for neglected diseases; and
- the lack of commercial interest in developing and marketing potentially promising discoveries.

Figure 16.3
Sources of Funds for Global Health R&D, 1992



Source: **Investing in Health Research and Development**, WHO, Geneva, 1996 (5)

Earlier stages of discovery are highly speculative by their very nature, and it is not easy for a single party to expropriate the benefits of this research. As a result, private researchers are likely to under-invest in these stages, relying on public organizations to fill in the gaps. Public organizations have more latitude to base their allocative decisions on political rather than strict commercial grounds. In practice, however, basic research tends to focus on global diseases that are priorities in higher income countries such as cancer, rather than on neglected diseases (6) – for the obvious reason that public funding of research is guided primarily by political considerations, which naturally emphasize diseases of immediate concern. Research on diseases such as TB and malaria is concentrated in low- and middle-income countries, but their resources are limited and their availability uncertain for research groups to establish long-term, large-scale programmes. *If this imbalance is to be corrected, there is no option but to encourage the*

developing countries themselves to invest substantially in research on problems of their immediate concern.

The role of the private sector in research is primarily to convert scientific ideas into marketable products. The expense and magnitude of resources and experience required to conduct clinical trials is normally beyond the means of public organizations. In selected therapeutic areas for R&D, private companies are guided by three main criteria (7):

- expected market size (number of patients and availability of funds to purchase medicines);
- degree of unmet current and future medical needs; and
- probability of success.

From the commercial standpoint, most neglected diseases do not offer an attractive market despite perceived high need, primarily because of the inability of the poor to pay for the new discoveries.

There have been many new initiatives to encourage the private sector to invest more in these acknowledged priority areas. As a result, many new public private partnerships (PPPs) have been launched, most notably, the Global Alliance for Vaccines and Immunizations (GAVI), the International AIDS Vaccine Initiative (IAVI), the Medicines for Malaria Venture (MMV), the TB Diagnostics Initiative and the Global Alliance for Anti-TB Drug Development. However, these alone may not be able to achieve the desired results, unless the developing countries themselves strengthen their capacity for research and devote greater resources to the diseases that affect most of their population. This is also because "the practice of health research relies heavily on close contact with other areas of the health sector, on the local epidemiological environment, and on clinical, behavioural and social sciences that are tied to national frameworks as well as global ones. Many of the needed solutions to the health problems of the people in low income countries are more likely to be found by researchers working closely with those populations than by researchers who remain remote from them" (8).

Besides, the degree of commitment developing countries can bring to bear on research on these neglected diseases is unlikely to be generated in the industrialized countries on a sustained basis. In the words of the Global Health Forum I: "there are no 'first world' solutions for 'third world' problems." Brazil, India and South Africa have been specifically identified as countries with internationally recognized research capabilities and pharmaceutical companies, that are in a position to make significant contributions to the global effort (9).

India's Potential in Science and Technology

India's rich heritage and tradition of scientific inquiry is well acknowledged. Notable among its ancient contributions are the decimal system, the concept of the zero and the comprehensive treatises in health sciences compiled by

many teaching medical institutions, most notably, the All India Institute of Medical Sciences (AIIMS), Delhi, the Post Graduate Institute of Medical Education and Research, Chandigarh, and the Christian Medical College, Vellore make valuable contributions to medical research.

Box 16.1
Principal Institutions Contributing to Health Research Outside ICMR

- **Central Institute of Medicinal and Aromatic Plants (CMAP), Lucknow**
- **Central Drug Research Institute (CDRI), Lucknow**
- **Centre for Genetic Engineering and Strain Manipulation, Madurai**
- **Biochemical Engineering Research and Process Development Centre (BERPDC), Institute of Microbrial Technology, Chandigarh**
- **Centre for Cellular and Molecular Biology (CCMB), Hyderabad**
- **National Institute of Immunology (NII), Delhi**
- **National Centre for Cell Sciences, Pune**
- **International Centre for Genetic Engineering and Biotechnology, New Delhi**

ICMR:

The ICMR promotes bio-medical research in the country through intramural research (through institutes totally funded by ICMR), and extra mural research (through grants-in-aid given to projects in non-ICMR Institutes). Intramural research is currently carried out through the Council's

- 21 permanent national research institutes/centres (Annex 16.4), which are mission-oriented institutes located in different parts of India. They address research on specific health topics such as TB, leprosy, cholera and diarrheal diseases, viral diseases including AIDS, vector control, nutrition, food and drug toxicology, reproduction, immuno-hematology, oncology, and medical statistics.
- 6 Regional Medical Research Centres (Annex 16.5) which address regional health problems and attempt to strengthen or generate research capabilities in different geographical areas of the country.

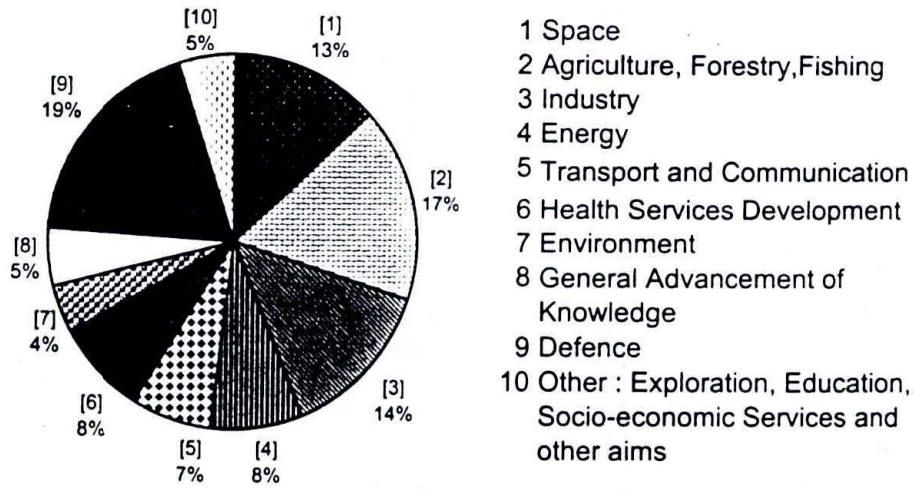
Extramural research is promoted by ICMR through

- centers set up for advanced research (Annex 16.6) in different research areas around existing expertise and infrastructure in selected departments of medical colleges, universities and other non-ICMR research institutes;
- task force studies that emphasize a time-bound, goal-oriented approach, standardized and uniform methodologies, and often a multi-centric structure; and
- open-ended research on the basis of applications for grants-in-aid, received from scientists in non-ICMR research institutes located in different parts of the country.

Finance:

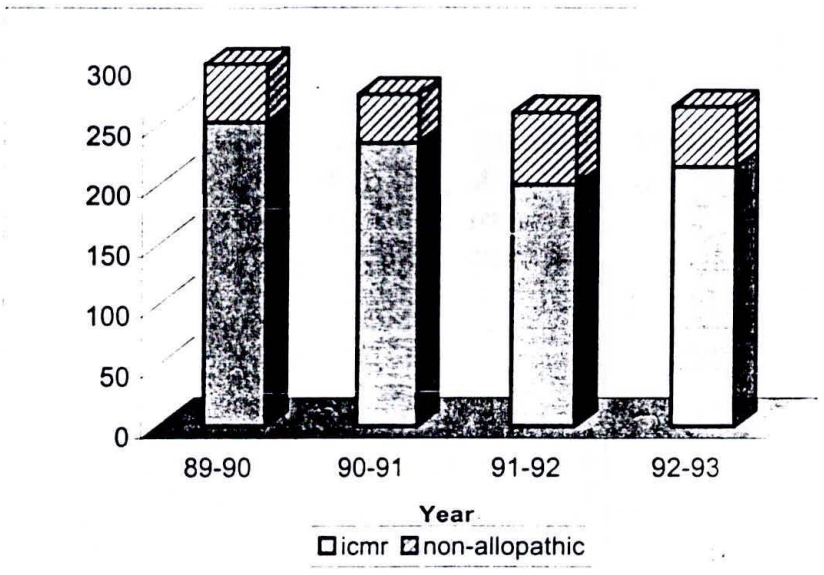
Health research in India has, in general, been a neglected area. According to the data for 1996-97 published by the Ministry of Science and Technology, only 8% of the total public expenditure on R&D was for health related research (Figure 16.4). A study undertaken for the Ad Hoc Committee (1996) by Almeida et al showed that there was a slight decline in real terms in expenditure on health research (Figure 16.5).

Figure 16.4
Indian R&D Expenditure by Objectives, 1996-97



Source: Ministry of Science and Technology, 1999

Figure 16.5
Central Government Health R&D Expenditure in India (Constant Prices) Rs. (Million, 1980-81 Prices)



Note: ICMR includes one to two per cent spent on indigenous systems of medicine.
Source: MHFW, GOI. Reproduced from **Health R&D Expenditure, India**, 1995

The situation has, however, changed for the better in recent years as far as allocations to ICMR are concerned, and there has been a welcome upward trend (Table 16.1). Although this augurs well for the future, investments in ICMR and other health research institutions need to be stepped up substantially to bring them on par with international standards, and make them capable of producing high-quality research in high-tech areas.

Table 16.1
Financial Outlays for ICMR 1997-98 to 2001-2

Year	Rs. Millions
1997-98	377.60
1998-99	540.00
1999-2000	592.50
2000-01	860.00
2001-02	1020.00

Source: Lalit Kant, background paper, ICMR, 2001

Important Achievements

There have been many significant research achievements to the credit of Indian research institutions (Annex 16.1). Similarly, Indian research institutions have had some notable successes in the field of diagnostics (Annex 16.2). More recent initiatives include the National Institute of Biologicals set up by MHFW to develop standards, quality control and research on vaccines. The Department of Biotechnology has launched a five year $20 million India-Genome initiative to study the genetic variation of diverse Indian population.

Weaknesses:

Despite their many achievements, Indian research institutions, like most public sector agencies, are characterized by several weaknesses, including

- *bureaucratic functioning*
- *hierarchical management structures:* civil service type career structures that reward seniority rather than performance.
- *centralization of authority:* Many of these institutions are autonomous only in name. The ICMR, headed by the Minister and the Secretary, hardly has any genuine autonomy. Only a thorough overhaul of the management structure of such institutions will yield optimal results for investments in health research.
- *poor and unstable funding, and poor compensation and incentives to researchers:* stagnant levels of funding have led to the growth of fixed costs relative to variable expenditure, so that salaries, consume the bulk of outlays and actual research work receives lower allocations. This has also been aggravated by the substantial increase in salary costs after the 5th Pay Commission.

Health Research in the Private Sector

India has one of the largest and most technologically advanced pharmaceutical industries among the developing countries. The total production in 1999-2000 was Rs.37,770 million for bulk drugs and Rs.1,58,600 million for formulations in 1999-2000. It is a major foreign exchange earner with exports totaling Rs.56,662 million in 1998-99 (15). The total Indian market is valued at $7.2 billion, and in terms of volume, it is the world's third largest market with over 20000 manufacturers. The industry has shown its technological capabilities in reverse engineering by producing generics at a fraction of the cost in international markets. However, it has paid scant attention to research because of the absence of product patent protection, and concentrated its energies on producing generic substitutes for foreign patented and branded products. The Intellectual Property Regime (IPR) is set to change with the introduction of product patents in conformity with WTO mandated regulations. The industry is poised to play a major role in drug discovery and development. Although the new product patent regime will be applicable to India only from the year 2005, there has been, in anticipation, a substantial increase in the R&D expenditure of major pharmaceutical companies such as Ranbaxy Laboratories, Dr. Reddy's Laboratories, Wockhardt, Sun Pharmaceuticals and Cipla (16). The Indian industry already commands a major advantage over its rivals in the West: the cost of introducing a new chemical entity (NCE) in the market is estimated at $250-500 million in the US, while the estimate is only $90-100 million in India (17). According to a recent study commissioned by the World Bank, "India has the potential to become the hub of pharmaceutical research."(18)

Modern R&D will become ever more complex and expensive with the advances in sciences on several frontiers. The cost of conducting R&D at the frontiers of knowledge has become prohibitively high. It is not possible to develop all facilities under one umbrella, and the favoured strategy is to develop core competency and look for complementary strengths elsewhere. Some beginnings have already been made toward developing partnerships between public sector and private sector research organizations/companies. CDRI, Lucknow, for instance, is collaborating with Novo-Nordisk of Denmark on a new molecule; Smith Kline Beecham is working in collaboration with the Indian Institute of Chemical Technology (IICT).

Another important development that can benefit the Indian industry is the outsourcing of research by MNCs. The expenditure on outsourcing research, as a percentage of R&D expenditure, has already exceeded 16%, compared to almost 8% in 1990. The worldwide contract research market reached US $5 billion by 1998 (19). Globally, India has an advantage in all outsourcing activities because of its well-trained, highly qualified and relatively inexpensive manpower.

It was with this background of strengths and advantages in view that some multi-nationals established research centers in the country. Astra IDL has set up an R&D Centre of international standards in Bangalore; Eli Lily has joined hands with Ranbaxy to conduct research; Novo Nordisk A/S of Denmark has teamed up with Dr. Reddy's Laboratories for an anti-diabetic drug. These companies and many more see the obvious advantages of coming to India, and what is a trickle today is likely to grow into a flood provided India establishes an appropriate policy framework. In the words of the Global Health Forum I: "In the longer term there is a real possibility that Brazil, China, India or other Middle Income countries with growing pharmaceutical industries could make significant contributions to the development of products for neglected diseases. However, simply because the companies are based in a country where neglected diseases exist does not mean that they, operating as they do in the global economy, are more likely to focus on these diseases than companies in the US and Europe." The companies in India are equally driven by the profit motive; and already there are indications that their ongoing research efforts are prioritizing new molecules for NCDs such as cancer and diabetes. If the resources and skills of the Indian pharmaceutical industry are to be harnessed to research the neglected diseases of the poor, the government needs to develop an appropriate incentive framework.

Special Advantage and Opportunities:

Besides public sector research infrastructure, the pharmaceutical industry, and other strengths, there are some special advantages that India enjoys over many countries of both the North and the South:

- India has huge and diverse clinical material for research, giving the country a unique opportunity to turn an acknowledged disadvantage into a research advantage.
- India has a strong claim to being an appropriate site for clinical trials. As the companies seek to conduct global trials, contract research organizations in India are ideally placed to take advantage of this opportunity.
- India has unparalleled bio-diversity, and the wealth of its flora and fauna make India an ideal site for research on new biological compounds.
- India has a rich and unmatched heritage of traditional systems of medicine, which can provide leads for new discoveries for the treatment of many apparently incurable chronic ailments.
- A large, diverse population steeped in tradition has ensured that many rarer genetic disorders have survived in India, and this can become the subject matter of valuable research.
- The future belongs to bio-informatics. The sequencing of the human genome would hardly have been possible without the strong inputs from information technology. India, with its strong

IT base, can take a lead in research areas which require strong software inputs.

- India is already a huge and fast growing market for pharmaceuticals, and new drug discoveries are generally assured of good commercial returns.

Policy Framework

India could realize its true potential and take full advantage of its unique capabilities in health research provided the Government creates a favourable, enabling policy framework. Such a National Health Research Policy would have to clearly establish both the vision and the future directions of health research in the country. It would also have to create an incentive environment for both public and private sectors. The main elements of this policy framework could be as follows.

Public Sector:

- The government has already agreed to the WTO mandated IPR regime, and the necessary legislation awaits passage in Parliament. Enacting this legislation without delay would end the current uncertainty.
- There must be substantial increase of public investment in basic and strategic research, particularly directed towards new discoveries for the neglected diseases of the poor.
- Priority must be given to health policy and systems research – so far a neglected area with the exception of recent interest from the World Bank and some bilateral donors. Special efforts are also required to train researchers in health economics, health finance and epidemiology, disciplines in which there is only limited available expertise.
- The international support for health research has so far been nominal; Almeida et al (1995) estimated it at only 5% of total health R&D expenditure in 1992-93. In view of India's potential to contribute, external assistance for this purpose must make a quantum leap.
- Public sector institutions can produce a higher quality of research with an appropriate management structure. The Ad-Hoc Committee 1996 examined this question in some depth. It emphasized
    a) *autonomous management*
    b) *compensation policies* to attract young and talented scientists
    c) *training* of numbers large enough to allow for transfer to other sectors
    d) *stable core funding*, and an element of competitive funding allocated to research projects and to individual and institutional development
    e) *internationalization*, including collaboration with institutions from both North and South and

f) *the use of electronic media* for peer review and publication as a first step towards reducing the regional bias in established publishing formats.

As far as the ICMR is concerned, restructuring would need to be on the following lines:

a) *true autonomy*, with the Minister and Secretary replaced in the governing body by eminent professionals; decentralization of decision making to research institutions;
b) *improve compensation, working environment and perquisites* to attract and retain talented scientists; develop career progression system for scientists that rewards performance rather than seniority;
c) *add an international dimension to research efforts* and constitute an external scientific advisory committee for the purpose; and
d) *change the name of the body* to the Indian Council for Health Research, *to broaden its mandate* to include health policy and systems research.

- The development of research requires the removal of both demand and supply side constraints. Increased investment, better infrastructure and higher quality of scientific personnel have already been suggested as means to cope with the supply side. But these suggestions can only produce results with a growing demand for research inputs and their improved utilization. This means the following steps must be taken:
    a) *Promote a management culture in which decision making is based on evidence and analyses.*
    b) *Put in place institutional mechanisms for regular and close interaction among policymakers, programme managers and researchers, to set research agenda and utilize research inputs.* This would help focus the attention of public sector agencies on neglected diseases; as well as on health systems research, directed at the improvement of technical efficiency and the delivery of various programmes and services.

- There needs to be *a renewed emphasis on research capacity strengthening by improvement of infrastructure* for the training of scientists and new collaborations with institutions from both the North and the South. In particular, capacity needs to be developed quickly to undertake clinical trials for new molecules likely to be introduced for various communicable diseases. A very close partnership with international organizations such as the WHO Special Programme for Research and Training in Tropical Diseases (TDR) and PPPs would be necessary.

Private Sector:

The required push and pull mechanisms to provide incentives to the private sector – to develop interest in research in general, and in neglected areas in particular – has been well documented (Annex 16.3). All these mechanisms need careful examination with the aim of stimulating research in the desired direction by industry. Some recent government initiatives are bound to have a salutary impact. The limit for foreign direct investment in pharmaceuticals has been raised to 100%. Investment and expenditure on research and development is already entitled to a weighted deduction of 150% in certain areas. In the current Budget (20), this has been extended to biotechnology, clinical trials, filing patents and obtaining regulatory approvals. This should provide the industry with a substantial incentive to invest more in R&D.

Chapter 14 of this Report (21) refers to the government review of the price control regime on drugs. It emphasizes that the review should consider the need to give appropriate incentives for new discoveries, particularly in priority areas of research. It also suggests a National Drug Fund through a levy of a suitable cess on both imports as well as domestic production of pharmaceuticals. This fund can be used to share expenses with private industry on product development in designated priority areas. **What is most important is alliances among academia, research institutions and industry.** The key to the success of these endeavours lies in the use of basic and strategic research outputs by industry, which must then take the process a step further towards product development. The ICMR should develop suitable mechanisms to facilitate such an alliance, and to mediate between research outputs from academia and research institutions, and the pharmaceutical industry. It should develop expertise for product development to facilitate such transfer of knowledge on the same pattern as TDR. Other important government initiatives would be the simplification of regulatory mechanisms to undertake clinical trials, a transparent system of granting approvals and monitoring, and a system to enforce the ethical guidelines already developed by the ICMR.

Conclusion

Along with some other low and middle income countries, India could help bridge the gap between the overwhelming need for research on the neglected diseases of the poor on the one hand, and the totally inadequate international research response on the other. An enlightened policy framework, coupled with a close partnership between public and private sectors, could seize this opportunity for India's benefit and indeed, for the rest of the world. Health research could give a new dimension to India's research efforts, while transforming the current image of the Indian pharmaceutical industry as expert reverse engineers, to market leaders in the introduction of new products. Like IT, health research could not only boost India's image, but also provide significant impetus to the

pharmaceutical industry and the economy. This is, of course, besides making its contribution to the reduction of avoidable morbidity and mortality in low-income countries. Health research may turn out to be by far the most profitable, beneficial and cost-effective investment for India.

Notes

1. This chapter is based on a background paper prepared by Dr. Lalit Kant, Senior Deputy Director General, ICMR, New Delhi.
2. WHR 1999.
3. Report of the Commission on Health Research for Development, 1990.
4. Catherine Michaud and C.J.L. Murray, Resources for Health Research and Development in 1992, A Global Overview, CJL, 1996.
5. Represents industrialized countries.
6. Global Health Forum I, 2000.
7. Ibid.
8. The Ad-Hoc Committee on Health Research, 1996.
9. Global Health Forum I, 2000.
10. Lalit Kant, background paper, 2001.
11. Ibid.
12. Research and Development Statistics, 1996-97.
13. Dewang Mehta, Software Garden for World Users.
14. Lalit Kant, background paper, 2001.
15. Indian Pharmaceutical Industry, ASCI, 2000.
16. Ibid.
17. Ranjit Roy Chaudhary, background paper, 2001.
18. ASCI 2000.
19. Ibid.
20. Budget Speech of the Finance Minister, February, 2001.
21. Chapter 14 of this Report, Drug Policy and Regulations.
22. DOTS – Directly Observed Therapy Short Course for TB.

Annex 16.1
Significant Research Achievements of Indian Research Institutions

- The supervised administration of drugs developed by the ICMR's TB Research Centre at Chennai was a forerunner of DOTS (22).
- The pulsed approach for polio control originated from an ICMR supported study in North Arcot District, Tamil Nadu.
- The ICMR institutes, the Malaria Research Centre and the Vector Control Research Centre, have demonstrated the feasibility of the integrated approach to vector borne diseases, especially malaria and filariasis.
- The National Institute of Nutrition developed technology for the double fortification of common salt with iron and iodine to fight anemia and iodine deficiency disorders together.
- Researchers at the Shri Chitra Tirunal Institute of Medical Sciences and Technology, Thiruvananthapuram, developed a mechanical heart valve selling at one third the price of imported ones.
- The CSIR generated the combined genetic and physical map of the whole *V-cholerae* genome.
- The CSIR also pioneered the use of DNA fingerprinting in India by developing an exclusive indigenous probe.

Annex 16.2
Achievements of Research Institutions in Diagnostics

Product	Developed At
Filariasis detection kit	Mahatama Gandhi Institute of Medical Sciences, Wardha
Pregnancy Slide Test	National Institute of Immunology (NII), New Delhi
Pregnancy DOT-ELISA	NII, New Delhi
Hepatitis-B detection kit	NII, New Delhi
Leishmaniasis detection kit	Central Drug Research Institute, Lucknow
Western Blot test for HIV I & II	Cancer Research Institute, Mumbai
ELISA test for Japanese Encephalitits, Dengue and West Nile	ICMR
Typhoid fever detection kit	All India Institute of Medical Sciences, New Delhi

Source: Lalit Kant, background paper, 2001

Annex 16.3

"Push" and "Pull" Interventions to Promote the Discovery / Development of Drugs and Vaccines

Push interventions		Pull interventions
To lower costs and risks of research and development	To remove barriers in the development pipeline	To provide incentives for development and manufacture, by creating a market, providing other economic rewards or removing economic deterrents
Basic research funding (from government or philanthropy) Grants for product development R&D tax credits to companies R&D expense write-offs Tax credits to investors Establishment of R&D capacities in endemic situations, e.g. Phase III trial sites Protocol assistance, as per US Orphan Drug Act Support for R&D to identify new indications for existing entities : • Financial • Through mass screening facilities Consortia (public, private or public/private) • "horizontal" – discovery • "vertical" – development/ manufacturing	Regulatory harmonization Expediting regulatory/licensing process Lowering regulatory fees for specified product categories Simplification (not lowering) of standards Protocol assistance Setting ethical guidelines for conduct of research involving human subjects and/or international collaboration	Improving delivery of existing drugs and vaccines Identification of public health priorities for new projects Product specifications/contingent recommendations for use Recommendations for use (earlier) Market assessment Patent extension Patent "exchange" (extension on another product) Market exclusivity Prizes (for first to meet specified product characteristics) Market "assurances" • purchase funds • contingent loans and credits "cost-plus" formulas • requisition to buy Legislation on product liability litigation

Source: The 10/90 Report on Health Research, 2000

Annex 16.4
ICMR Permanent Institutes/Centres

1. National Institute of Nutrition, Hyderabad
2. National Institute of Virology, Pune
3. Institute of Research in Reproduction, Mumbai
4. Tuberculosis Research Centre, Chennai
5. Institute of Immunohaematology, Mumbai
6. National Institute of Cholera and Enteric Diseases, Calcutta
7. Institute of Pathology, New Delhi
8. National Institute of Occupational Health, Ahmedabad
9. Vector Control Research Centre, Pondicherry
10. National Centre for Laboratory Animal Sciences, Hyderabad.
11. Food and Drug Toxicology Research Centre, National Institute of Nutrition, Hyderabad.
12. Central JALMA Institute for Leprosy, Agra
13. Malaria Research Centre, Delhi
14. Institute for Research in Medical Statistics, New Delhi
15. National Institute of Epidemiology, Chennai
16. Institute of Cytology and Preventive Oncology, Maulana Azad Medical College Campus, New Delhi
17. Enterovirus Research Centre, Haffkine Institute, Mumbai
18. Rajendra Memorial Research Institute of Medical Sciences, Patna
19. Centre for Research in Medical Entomology, Madurai
20. ICMR Genetic Research Centre, Mumbai
21. National AIDS Research Institute, Pune

Annex 16.5
Regional Medical Research Centres

1. Regional Medical Research Centre, Bhubaneswar
2. Regional Medical Research Centre, Dibrugarh
3. Regional Medical Research Centre, Port Blair
4. Regional Medical Research Centre for Tribals, Jabalpur
5. Desert Medicine Research Centre, Jodhpur
6. Regional Medical Research Centre, Belgaum

Annex 16.6
ICMR Centres for Advanced Research

1. ICMR-NIC Centre for Biomedical Information, National Informatics Centre, New Delhi
2. Centre for Advanced Research on Standardisation, Quality Control and Formulation of Selected Traditional Remedies/Natural Products, Regional Research Laboratory, Jammu-Tawi
3. Centre for Advanced Research for Health Consequences of Earthquake Disaster with Special Reference to Mental Health, B.J. Medical College and Sasoon General Hospital, Pune
4. Centre for Advanced Research for Drug Development from Natural/Plant Products, Central Drug Research Institute, Lucknow
5. Centre for Advanced Research for Clinical Pharmacology inTraditional Medicine, Seth G.S. Medical College and K.E.M. Municipal Hospital, Mumbai

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iii)	Andhra Pradesh	:	Rachel Chatterjee, Prl.Secretary, Govt. of Andhra Pradesh
iv)	Orissa	:	Meena Gupta, Prl.Secretary, Health, Government of Orissa.
v)	Madhya Pradesh	:	Sandeep Dixit, SANKET, Madhya Pradesh
vi)	Rajasthan	:	S.D.Gupta, Director, IIHMR, Jaipur
vii)	Uttar Pradesh	:	Dr.V.K.Srivatsava, Department of Preventive and Social Medicine, K.G. Medical College, Lucknow.
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