REVIEW OF MORBIDITY AND MORTALITY PROFILE OF PONDICHERRY
&
REQUIREMENT OF ESSENTIAL DRUGS IN PRIMARY HEALTH CENTRE

Paper to be presented
by
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that in the existing system political will and beaurocratic machinery only can implement laws strictly if they want to. This will help the clinician practice essential drugs concept to bring down mortality and morbidity.

The problem of high mortality and morbidity amongst mothers and children are vital for us to tackle in order to break this vicious cycle. Therefore, it is necessary to draw up a contingency plan to identify the causes of mortality and morbidity in the population and take preventive measures.

The lack of epidemiological data on Perinatal morbidity for example that cover a region if not a nation has been keenly felt. The non-representative hospital data proved ineffective in dealing with diseases.

Pondicherry occupies a unique status on the Indian health map. It is a centrally administered Union Territory with huge amounts of money pumped in for a population of 0.8 million. Average amount spent on per capita in Pondicherry is Rs.125/- compared to Rs.23/- in the rest of India. If you look at the Annual Report of Pondicherry Health Services. it is obvious that for ~~the~~ some reason or the other chapter on mortality and morbidity is mission. This shows the importance given by Demographers and Administrators to mortality and morbidity studies. However, in 1989 statistics a glance at item 15 on vital statistics the following is printed.

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TABLE - 1: Vital Statistics:

	Pondicherry	Rest of India	2000 AD
1. Birth Rate	22.2	31.0	21.0
2. Death Rate	7.3	12.0	9.0
3. Infant Mortality.	38.0	> 106	< 60

I also failed to understand the implication of the statistics given in the Report on health care from the following tables:

TABLE - II: PATIENTS TREATED IN MEDICAL INSTITUTES (1989) (Govt.Report).

	O.P.D.	INPATIENT	TOTAL
A. PONDICHERRY:			
1. Institute	9,60,426	48,846	10,09,272
2. Health Centres	7,38,071	3,118	7,41,189
3. Dispensaries	9,83,020	1,075	9,84,095
		Grand Total:	20,67,556
B. KARAIKAL MAHE & YANAM	is beyond my imagination approx.		10,00,000
C. Insured persons & their families:			5,10,017
			3.5 million + Sidha + Ayurveda.

Total population is - 0.8 million. Patients - 3.5 million

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TABLE - V:

A. Mobile Dental Unit:

Male : Female : Children - 867 : 698 : 1892

Tooth out - 760 Rotted (Caries) etc. - 2577

Filled in etc. - 671

B. Artificial Limbs (10), Calipers (34)

Others (83)

C. Food, water & Drug analysis. - 10,662 samples.

TABLE - VI:

A. Government Pharmacy Drugs Supplied value. Rs.43,21,195.80

The following tables illustrate the mortality and Morbidity pattern of the region and are self explanatory. I shall discuss its impact on health care later on.

TABLE -VII: CAUSES OF MATERNAL MORTALITY 1980-88) TOTAL - 163.

	Pondy (in%)	India (in%)
A. Direct Causes:		
1. Sepsis (67)	41.1	28.4
2. Haemorrhage (29)	17.79	22.2
3. Toxemia (24)	14.72	9.89
4. Rupture uterus (13)	7.97	N.A.
5. Amniotic fluid embolism(6)	3.68	N.A.
B. Associated Cause (17)	10.42	26.15
1. Anaemia 4		
2. Cardiac 7		
3. Hepatitis 6		
C. Unrelated (7) Asthma, Ca.cx.,etc.	4.29	7.35

TABLE -VIII:MATERNAL MORTALITY (JIPMER)

A. Age:

Less than 14 years	..	8
20 - 29 yrs.	..	32
More than 30 yrs.	..	36

B. Parity:

Primies.	...	23
Multies	..	50
Grand Multies	..	14

C. Duration of Hospital Stay:

Less than 24 hrs.	..	40
2 - 4 days.	..	20
More than 6 days	..	26

Maternal deaths are preventable tragedies killing more than half a million women every year around the world. Many of these deaths are inaccurately classified and many others are not reported at all, but now demographic technique have clarified causes of maternal mortality and improved estimates of rates.(4)

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TABLE - IX: MORBIDITY PATTERN IN JIPMER OPD:

	System involved.	1984 No.	% of total	1988 No.	% of total
1.	Infectious diseases	44343	30.08	44637	37.01
2.	Gastrointestinal & Dental.	15153	13.35	22385	18.56
3.	Orthopaedics	10902	9.60	19510	16.18
4.	Respiratory	6956	6.13	12950	10.73
5.	Ear and Mastoid	5042	4.44	6820	5.63
6.	Skin	4854	4.31	4890	4.06
7.	Miscellaneous	2368	2.08	3836	3.25
8.	Renal and Genito-urinary	2163	1.90	3853	3.25
9.	Cardiovascular & Lymphatic	2224	1.96	3890	3.25
10.	Ophthalmology	2079	1.83	3336	2.76
11.	Haematologic	2391	2.10	3213	2.66
12.	Psychiatric	1558	1.37	3200	2.65
13.	Gynaecologic	2292	2.01	3110	2.57
14.	Malignancy	1736	1.52	2474	2.05
15.	Pregnancy & its complications.	3242	2.85	2378	1.97
16.	Symptomatic	1690	1.48	2240	1.85
17.	Injuries	1070	1.05	1975	1.57
18.	Nutritions	1401	1.23	1873	1.57
19.	Nervous system	1043	0.92	1820	1.49
20.	Endocrine & Metabolic	851	0.79	1370	1.13
21.	Benign Neoplasm	280	0.24	665	0.58
22.	Poisoning	90	0.079	153	0.126

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TABLE- X: MORBIDITY PATTERN IN R.H.C., JIPMER.

Morbidity	1984	1980
Respiratory Disease	36%	38%
i) U.R.I.	31%	33%
ii) L.R.I.	5%	5%
Diarrhoea including dysentry	12%	11%
Helminthiasis	2%	2%
P.U.O. (Fever)	7%	5%
Myalgia	10%	9%
Anaemia	2%	4%
GIT & Liver	4%	5%
Genito-urinary disorders	0.5%	0.4%
T.B.	0.5%	0.6%
Injury	8%	5%
Skin diseases (including scabies)	10%	11%
Eye	3%	2%
ENT.	2%	1%
Dental	2%	2%
Miscellaneous (CVS & CNS, etc.)	1%	3%

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For Pondicherry the morbidity pattern is shown in above tables. It is a huge task to make a comprehensive list. After going through we found that it is a shear waste of time to elaborate the morbidity patterns as they are not reflective of the area and therefore is not valid. I will now go to the second part of my paper i.e. "Requirements of Essential Drugs in Primary Health Care."

The essential drugs are those which are the basic minimum group of drugs that should be available at all times in the designated centres i.e. from Subcentre to apex institution, obviously the choice of drugs depend on the morbidity pattern.

The Union Territory of Pondicherry has 14 PHCs including 3 Community Health Centres. A qualitative evaluation of the few of the Centres showed that 2 doctors, LHVs and ANMs posted are in place and all essential drugs are available. However, Labour Rooms and Operation theatres are not functioning.

A study of the prescription in the Rural Health Centre of JIPMER (Ramanathapuram) was carried out by one of our interns[5]. The major factors that influencex the prescription, are rationality of drug use, expertise available, availability of the drugs, the nature of the patient and lastly the complaints. They are directly related to one another.(Table XI).

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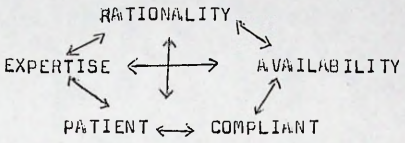
TABLE - XI:



The aims of the study was to collect and critically analyse various prescriptions and estimate the extent of drug misuse. Medical Record Section, Drug Registers maintained by Pharmacy and prescription were studied for the following diseases:

TABLE - XII:

1. Myalgia
2. Peptic Ulcer Syndrome
3. Anaemia
4. Upper Respiratory Tract Infections
5. Lower Respiratory Tract Infections
6. Vomiting
7. Acute Gastro-enteritis
8. Tuberculosis
9. Leprosy

Majority of prescriptions are made by those who are undergoing Internship and are mostly either not supervised or inadequately guided.

The number of prescriptions given and the drugs given are illustrated in the following tables at JIPMER adopted PHC.

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TABLE - XIII: DISEASES & DRUGS GIVEN

Illness	Drugs given	No.of prescription.	% of prescription
Myalgia	Aspirin	50	100%
	BCT/FST	44	88%
	Liv.52	12	24%
	Calmpose	14	28%
	Vit.C.	8	16%
	Other Drugs: MTS/Cardinal each in 2 cases.		
Peptic ulcer Syndrome.	Tab.MTS		
	- 1 tds	32	64%
	- 2 tds	7	14%
	- 1 b.d.	5	10%
	- 1 O.D.	6	12%
	Other Drugs - Calmpose, BCT, FST		
Anaemia	FST	50	100%
	BCT	38	76%
	Deworming agent	4	8%
	Polybion Inj.	6	12%
	Inferon Inj.	11	22%
Vomiting	Inj.Melodopramide	5	10%
	T.Stemetil	45	90%
	BCT/FST	10	20%
U.R.I.	Cough expectorant	38	76%
	E.N.Drops	20	40%
	T.Piriton	39	78%
	Syp.Phenergen	18	36%
	T.Aspirin	32	64%
	Paracetamol	22	44%
	M.V.drops & Vitamin	40	80%
	Septran	14	28%
	Procaine penicillin	18	36%

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Illness	Drugs used	No.of prescription.	% of prescription
L.R.I.	Cough Expectorant	19	38%
	T.Piriton	12	24%
	Syp.Phenergen	11	22%
	Paracetamol	38	76%
	Vitamins	32	64%
	Septran	15	30%
	Procaine Penicillin	11	22%
	Oral Penicillin	18	36%
	Tetracycline	3	6%
	Ampicillin	3	6%
Acute Gastro-enteritis.	ORS Packets	50	100%
	Cap.Tetracycline	14	28%
	T.Metronidazole	12	24%
	T.Furoxone	10	20%
Tuberculosis (Total) 14 cases.	INH + EMB	7	50%
	INH + THIO	1	8%
	INH + RMR	2	13%
	INH + RMP + EMB	3	21%
	INH alone	1	8%
Leprosy	DDS alone	44	
	MDT	25	

CONCLUSIONS:

In order to arrive at the requirements of Essential Drugs in Primary Health Care, it is necessary to review the morbidity and mortality patterns but certainly not the way in which it is being done. Unless a revamp of the whole system is carried out it is difficult for us to develop strategies to implement the concept of essential drugs.

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REFERENCES:

1. Balasubramanian, K. Global Marketing of Pharmaceuticals: Prescription for Disaster: Paper presented at Global Development and Environment Crisis - Has Man a Future? Penang, Malaysia, 5-9 April 1987.

2. Islam, N. Prescriptions and Professionals. J.Indian Med.Assoc., 1988, 86: 48-51.

3. World Health Organisation: National Drug Policy and Rational Drug use: A Model Curriculum (draft). Drug action Programme 85.6, Geneva: World Health Organisation, 1985.

4. Task Force on Maternal Mortality and Morbidity: Ministry of Health and Family Welfare, Govt.of India, New Delhi.

5. Subramanian, S. Personal Communication. JIPMER Intern, 1990.

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REVIEW OF MORBIDITY AND MORTALITY PROFILE OF KERALA

AND

REQUIREMENTS OF ESSENTIAL DRUGS IN PRIMARY HEALTH CARE

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1. INTRODUCTION

1.1. General

Kerala State came into existence on Ist November 1956. The location of the State is at the southern tip of Indian Peninsula between 8° 17' to 12° 47' north latitude and 74° 52' to 77° 24' east longitude.

1.2. Area and Population

The area of Kerala is 38, 864 Sq.KM which is 1.18 percent of the area of the Indian Union. The population of Kerala has been growing rapidly in recent years. During the 40 year period from 1901 to 1941, the population of the State almost doubled from 63.96 lakhs to 110.30 lakhs and it almost doubled again in the next 30 years reaching 213.47 lakhs in 1971. According to 1981 census, population of Kerala is 254.5 lakhs and a recent estimate (1990) shows that population at present is 296.7 lakhs.

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1.3. Unique features of the Population of Kerala

As already mentioned, the population of Kerala is 254.5 lakhs (1981 census). The sex ratio of the State is 1032 females per 1000 males as per 1981 census as against 933 for India as a whole. A peculiar feature of the sex composition of the State is that in all the Census period 1901-1981, females outnumbered males, while opposite is the case with most of the other States. The density of the population of the State (655 per Sq.KM.) is the highest among the States of India. The death rate of the State is lowest among Indian States. The expectation of life at birth of females is higher than that of males. In this respect, Kerala is different from India and other States and resembles many of the advanced countries of the world. The level of general literacy is the highest among Indian States and is double that of India.

2. MORTALITY AND MORBIDITY PROFILE

The health status of a population can be assessed by the prevailing mortality and morbidity pattern of the community. It is expected that an analysis of the mortality and morbidity pattern prevailing in Kerala may help the health administrators and planners to develop their strategy, in order to attain the national goal of "Health for all by 2000 AD" on the basis of primary health care approach.

2.1. Mortality and Morbidity pattern

Changes in the mortality and morbidity are studied under the following heads (1) Mortality profile (2) Morbidity profile.

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2.1.1. Mortality profile

Usual measures of mortality used to study the earlier and prevailing pattern of mortality are:

(1) Crude death rate
(2) Infant mortality rate
(3) Expectation of life at birth.

2.1.2. Availability of data

The census estimates provide the mortality rate for the decades. These are used along with SRS annual estimates (sample registration system) for the recent years.

2.1.3. Crude death rate

The census estimates provide the data for the various decades. These estimates along with the recent estimates(as given by sample registration system) is presented in Table I.

TABLE I

DEATH RATES IN KERALA

Period	Rate per 1000 population Kerala	India
1911	38.7	47.2
1921	33.8	36.3
1931	29.1	31.2
1941	22.3	27.4
1951	16.9	22.8
1961	9.3	19.0
1971	9.3	14.2
1981	6.6	12.5
1986	6.2	11.9
1988	6.2	10.9

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The table reveals that the death rate has come down to very low levels. These rates are also very low compared to India. The death rate has started their downward trend by the begining of this century. Initially, decline was slow, but accelarated by fifties. The present rate of Kerala is well comparable as that of developed countries.

2.1.4. Rural Urban Variation

There is not much rural urban differences in death rate in Kerala compared to other States of India & India as a whole (see Table 2)

TABLE II

RURAL URBAN VARIATION IN CRUDE DEATH RATE IN KERALA

Period	Rural		Urban	
	Kerala	India	Kerala	India
1980	7.1	13.7	6.5	7.9
1981	6.7	13.7	5.8	7.8
1982	6.6	13.1	6.6	7.4
1983	6.7	13.0	6.7	7.7
1984	6.2	13.8	7.3	8.6
1985	6.5	13.0	6.6	7.8
1986	6.0	12.2	6.9	7.6

A noteworthy feature of mortality pattern of Kerala is the lower mortality rates in rural areas.

2.1.5. Infant mortality rate

The infant mortality which normally accounts for heavy toll of life, has shown a more steeper fall in comparison with general mortality.(see Table 3)

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TABLE III

INFANT MORTALITY RATE IN KERALA

Period	Rate per 1000 live births	
	Kerala	India
1911	242	204
1921	210	174
1931	173	178
1941	153	174
1951	120	161
1971	61	146
1981	37	110
1982	30	105
1983	33	105
1984	29	104
1985	32	95
1988	27	94

Kerala State has recorded the lowest IMR of 27 per 1000 live births among all the States in 1988. It is worthy to note that IMR in Kerala is just less than $\frac{1}{3}$ of the national average.

2.1.6. Expectation of life at birth

The expectation of life at birth and at other ages show the net effect of the differential mortality of various age groups. The value of expectation of life at birth for Kerala is given in Table 4, together with those of India for comparison.

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TABLE IV

EXPECTATION OF LIFE AT BIRTH IN KERALA

Period	Expectation of life at birth (yrs)			
	Males		Females	
	Kerala	India	Kerala	India
1911	25.49	19.4	27.41	20.9
1921	29.54	26.9	32.70	26.6
1931	33.19	32.1	35.00	31.4
1941	39.89	32.5	42.34	31.7
1951	46.17	41.9	50.00	40.6
1961	56.2 (1966)	46.4	60.00 (1966)	44.7
1971	60.57	50.9	61.16	50.00
1988	67.00	55.60	70.00	54.0

From the table it is evident that expectation of life at birth has been rising in Kerala and females have higher life expectancy than males. Higher life expectancy of females - a pattern of highly economically advanced countries - is a unique feature of Kerala. Higher expectation of life of females may be due to the fact that females have a lower IMR than males, as against a higher IMR for females for the other States of India. The sex ratio of Kerala also supports the above argument. Kerala is unique in sex ratio, 1032 females per 1000 males; reflecting a differential mortality improvement.

3. MORTALITY TREND

The picture that emerges from the above analysis is that the mortality rates started their x downward trend much earlier in Kerala than in the rest of India. It is a well recognised fact that extend of mortality is influenced by

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the environmental condition of the State and Socio-economic condition of the population. Also effect of mortality on the different age group of the population varies as many of the morbid conditions are selective with respect to age. The available evidence shows that there has been steady and early decline in mortality rates in Kerala. The factors responsible for this may be:

1. High level of literacy
2. High level of personal hygiene
3. Scattered nature of the houses (may be responsible for the high standard of environmental hygiene)
4. Universal availability of health and medical facility both in rural and urban areas.
5. Control of Communicable diseases, may be to a large extent responsible for the early decline in mortality rate in Kerala. eg: Cholera, Plague, smallpox. Also sharp decline in deaths due to Malaria ~~due to~~ Malaria due to impact of eradication programme in the State.

4. MORBIDITY PATTERN

4.1. Availability of data and its limitations

Comprehensive and detailed informations on morbidity and mortality in Kerala during the early and present ~~peeu~~ period are not readily available. However, morbidity and mortality statistics based on hospital records are available from the publications of Central Bureau of Health Intelligence, Govt.of India. The data reported by CBHI have the limitation that they are based on hospital statistics and may not be comparable due to incomplete coverage during the period of reference. Hence one may be cautious while interpreting the result.

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4.2. Morbidity and mortality pattern due to Communicable diseases:

Morbidity and mortality pattern for selected Communicable Diseases in Kerala for the period (1966-1987) is presented in Table. 5.

Malaria

The highest reported incidence rate (No.of cases per 100,000 population) was reported for Malaria during the period 1983-85. There afterwards there is a small but steady downward trend in the incidence of Malaria. The death rate (No.of deaths per 100,000 population) is very negligible; however it shows a steady and declining trend. The clinical records reveal that most of the cases of Malaria are imported cases from neighbouring States.

Tuberculosis

A recent estimate reveals that 3.72 lakhs persons are suffering from Tuberculosis in Kerala, out of which 93000 are sputum positive cases. Out of 14 districts in the State short course chemotherapy is in operation in 6 districts (pilot study). An upward trend in the prevalence of Tuberculosis is observed during the period under reference except for the period 1983-85 (See Table 5) The death rate is declining steadily during the reported period. The rate declined from 7.2 per 100,000 population during 1966-70 to 1.01 in 1987.

Cholera

During the period under report largest number of cases of Cholera was reported in the period 1971-75. Thereafter there is a steep decline in the incidence. The death rate of 0.45 during 1971-75 is the highest. However the overall picture is that death rate is in the declining side.

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TABLE V

MORBIDITY AND MORTALITY RATE PER 100,000 POPULATION DUE TO SELECTED COMMUNICABLE DISEASES IN KERALA

Sl. No.	Name of the disease	Period							
		1966-70		1971-75		1983-85		1987	
		cases (average)	deaths (average)	cases (average)	deaths (average)	cases (average)	deaths (average)	cass (average)	deaths (average)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1.	Malaria	0.6 (123)	0.02 (3)	3 (774)	Nil	15 (3921)	0.003 (1)	13 (3772)	0.003 (1)
2.	Leprosy	124 (25526)	0.20 (42)	+	+	+	+	271 (76041)	Nil
3.	Tuberculosis	151 (31090)	7.2 (1477)	175 (39007)	1.91 (424)	166 (44504)	0.74 (198)	208 (58367)	1.01 (283)
4.	Diphtheria	8 (1718)	0.99 (203)	2 (488)	0.05 (11)	1 (357)	0.01 (2)	1 (270)	0.003 (1)
5.	Whopping Cough	18 (3765)	0.40 (83)	141 (31318)	0.06 (13)	43 (11409)	0.01 (2)	40 (11121)	0.01 (3)
6.	Tetanus	11 (2354)	2.21 (455)	2 (391)	0.36 (79)	0.70 (183)	0.04 (12)	0.70 (184)	0.15 (42)

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
7.	Polio	2.0 (410)	0.16 (32)	0.70 (166)	0.05 (12)	1 (377)	0.13 (35)	3 (775)	0.23 (65)
8.	Measles	14 (2877)	0.14 (28)	125 (27701)	0.03 (6)	88 (23569)	0.003 (1)	154 (43181)	0.06 (16)
9.	Enteric Fever	73 (14962)	1.72 (354)	69 (15267)	0.21 (46)	136 (36403)	0.01 (3)	34 (9544)	0.04 (10)
10.	Cholera	7 (1408)	0.33 (68)	109 (2428)	0.45 (101)	0.40 (80)	0.03 (7)	0.50 (131)	0.03 (7)
11.	Dysentry	204 (42112)	2.57 (530)	2064 (458140)	0.29 (64)	2414 (497369)	0.21 (44)	2637 (738467)	0.24 (68)
12.	Gastroenteritis	+	+	+	+	86 (23021)	0.68 (181)	200 (56086)	0.65 (181)
13.	Viral hepatitis	56 (11636)	1.42 (292)	96 (21417)	0.14 (31)	47 (12640)	0.04 (12)	54 (15130)	0.09 (25)
14.	Influenza	119 (24586)	0.33 (68)	1942 (431126)	0.01 (2)	2062 (552593)	0.003 (1)	2899 (811848)	Nil
15.	STD	12 (2505)	0.13 (26)	15 (3283)	0.01 (2)	44 (11854)	Nil	59 (16413)	Nil

Note: 1. + Data not available
2. Reported cases are shown within the brackets.

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Leprosy

The State has an estimated case load of 1.4 lakhs of Leprosy patients. The estimated prevalence rate is 5.8 per 1000 population which is slightly higher than that of India (5.7/100,0% population). The registered prevalence rate for the State is 3 per 1000 population while for India it is 4.9. Out of 14 districts in the State, 6 districts have prevalence rate less than 5; 7 districts have prevalence rate between 5 and 9 and only one district (Palghat) has prevalence rate 10. This means that the whole State is moderately endemic area for Leprosy. Only one district viz. Alleppey for which prevalence rate is 6.6 is under MDT since 1987-88. The data presented in the table reveal that morbidity due to leprosy is showing an upward trend while the death rate due to leprosy is declining, recording no death during 1987.

Filariasis

The largest single endemic tract of B.Malayi infection is along the cost of central part of Kerala stretching over an area of 1970 Sq.KM covering Quilon, Alleppey, Ernakulam and Trivandrum districts. It is estimated that population exposed to the risk is 4 million in 1970 and about 6.63 million people are exposed to the risk of filariasis in the State at present. During 1976, persons having clinical manifestation is 1.81 lakhs in Kerala and no.of persons carrying microfilaria in their blood is 2.03 lakhs. Official reports of delimitation survey held during 1955-62 recorded that in Kerala, Alleppey District in the worst affected area (Mf rate = 12.8%; Disease rate = 11.77%). The recent surveys recorded a Microfilaria rate of 2.08% during 1986 and rate has reduced to 1.62% during 1988 for the State.

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About 2.83 million people are at present protected against Filariasis in the State.

Childhood Diseases

The incidence rate and death rate of both Diptheria and Tetanus show a declining trend during the period of reference. A high incidence rate of 141/100,000 population is recorded for Whooping Cough during the period 1971-75; but thereafter a steep decline is registered. Incidence rate of Polio is very low but registered a very small increase from 2 to 3 during the period. Death rate due to Polio also shows a more or less similar picture. Incidence rate of Measles shows an increasing trend, but death rate due to it records a downward trend.

Other Diseases

The incidence rate of Enteric fever shows, an upward trend during 1966-85(increased from 73 to 136); but register a sharp decline thereafter. (Rate is 34 during the year 1987). The death rate reveals a steady and declining trend (Declined from 1.72 to 0.04). The incidence of Viral hapatitis record a fluctuating trend over the period. The death rate due to Hepatitis dropped from 1.42 to 0.09 during the period; recording a declining trend. The incidence rates of Dysentry, Influenza and STD show fast and upward trend whereas death rates due to above diseases registered a downward trend during the period.

4.3. Morbidity and Mortality pattern due to non-communicable diseases

Unlike the data on Communicable diseases, the informations on non-Communicable diseases are not readily available. Other reliable sources are sought to obtain the relevant information. The data reported in this study are from the following sources:

Contd....13

(1) P.G.K. Panikar and C.R.Soman, Health Status of Kerala, Centre for Development Studies, Trivandrum.

(2) Annual administration report (1989) - analysis of 'ROME' data - Dept.of Community Medicine, T.D. Medical College, Alleppey - 5. (unpublished)

(3) Annual administration report (1989) Medical College Health Unit, Ambalapuzha, Medical College, Alleppey.(unpublished)

Cardio-vascular diseases such as Hypertensive heart diseases, Ischaemic heart diseases, Cerebro vascular accidents etc. contribute 11.7% of the total admissions in the Medical College Hospital Trivandrum in 1978. Cancer shows 12.9% Accidents and injury 12.5%, Endocrine disorders 5.3%, Diseases of the nervous system 4.5% of Disease of the Genito-Urinary system 5.6% of the total admission.

The percentage of death (25.2) due to Cardio-vascular diseases stand first in the Medical College Hospital, Trivandrum. The share of cancer to mortality is 17% of all deaths. The deaths due to Central nervous system is 6%, Accidents and Poisoning contribute 12.3% of all deaths.

The data on Nutritional Status show that percentage of persons with PEM is highest in Kerala (26.8% of the population is deficient in both protein and calorie) Distribution of pre-school children based on Gomez classification reveals that 4.8% of children in Kerala are severely mal-nourished and 33.5% children moderately mal-nourished; giving a total of 38.3% for the two groups put together. This percentage figure is lower than in other States.

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Morbidity pattern as registered in medical camps organised by Department of Community Medicine, Medical College, Alleppey and out patient register of Medical College Health Unit, Ambalapuzha , Alleppey (1989) is considered next. (See Table 6)

TABLE VI

MORBIDITY PATTERN AS RECORDED IN THE MEDICAL CAMPS (1989) & OP REGISTER OF MEDICAL COLLEGE HEALTH UNIT, AMBALAPUZHA, ALLEPPEY - 1989

(Non-Communicable Diseases)

Name of the diseases	Medical Camps (%)	Medical College Health Unit (%)
1. Anaemia	1	20
2. Hypertension	1	--
3. Cataract	1	1
4. Diabetes	1	--
Total	(3102)	Total(63645)

The Analysis reveals that anaemia is a major health problems in the rural areas of Kerala.

The foregoing discussion reveals that the dominant disease groups are (1) diarrhoeal disorders (2) Filariasis(3) Leprosy (4) TB (5) Enteric fever (6) Influenza (7) STD (8) Worm infection (9) Cancer (10) Hypertension (11) Nutritional deficiency diseases.

5. MORBIDITY TREND

The mortality is showing a downward trend whereas morbidity is showing an upward trend in Kerala inspite of the fact that Kerala has a wider network of health infrastructure.

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The reasons may be

(1) The people are more health conscious and therefore they go for prompt treatment even for minor and negligible illness. Hence more cases are recorded.

(2) The same disease may be occuring to the same person in different times. So each time at the time of reporting, case is recorded as a new one.

(3) Due to the high price of the essential drugs patient may not follow the full course of the drug. So naturally we can expect repeated attack of the same disease. This is again reported and treated with another costly drug and again discontinued by the patient due to his economic backwardness. This is again recorded as a new one. Also by prescribing and introducing a set of lowcost essential drugs, this vicious circle can be broken.

(4) Detection of more hidden cases from the community by intensive activities of the health workers.

(5) The high morbidity rate may be due the fact of treating the symptoms while neglecting the underlying causes.

6. REQUIREMENTS OF ESSENTIAL DRUGS IN PRIMARY HEALTH CARE

The main problem in making the essential drugs available in the Primary Health Centres is the limited financial allocation. The total budget provision for drugs for a primary health centre is usually one fifth of the actual need. Naturally, there will be a gap between supply and demand of drugs in the Primary Health Centres.

Contd...16

To overcome the situation of short supply of drugs, the doctor incharge of the Primary Health centres should be trained to prepare the indent in such a manner that it bridges the gap between supply and demand. Importance should be given to cheap, and primary drugs based on the prevailing morbidity pattern of the local area. Costly drugs should be relegated to the background.

Analgesics, antipyretics which are essential for distribution in immunization camps should be available through-out the year. Anti helminthics, haematinics, vitamins, anti-diarrhoeals, antiflatulants, antacids, antibiotic creams, simple anti-biotics are the drugs essential for primary health care.

Drugs alone will not solve the problem if repeated attacks of the same illness occur in the community. Therefore, equal importance should be given for the distribution of drugs and organisation of health education campaign to give basic knowledge about the prevention of illness to the people.

6.1 LIST OF ESSENTIAL DRUGS FOR PRIMARY HEALTH CARE

I Essential drugs for the Anganwadi

1. Vit.A.Solution
2. Iron and Folic Acid Tablets
3. O R S Packet
4. Chloroquin tablet
5. Paracetamol tablet
6. Mebendazole tablet
7. Chlorpheneramine tablet
8. Gentian Violet granules
9. Terramycin eye ointment
10. Benzyl Benzoate emulsion
11. Mercurochrome powder

Contd.....17

II. Essential drugs for the Sub Centre

A. Drugs suggested for the Anganwadi

B. Additional drugs.

1. Aspirin
2. Metoclopramide
3. Contraceptive pills
4. Tablets and injections of methergine

III. Essential drugs for the Primary Health Centre

A. Drugs listed for Sub Centre

B. Additional drugs.

1. Amoxycillin
2. Doxycycline
3. Chloramphenicol
4. Penicillin (Procaine & Benzathine)
5. Digoxin
6. Isosorbide dinitrate
7. Phenobarbitone
8. Promethazine syrup
9. Glybenclamide tablets
10. Furazolidine
11. Metronidazole
12. Theophylline
13. Aluminium hydroxide
14. Chlorpromazine
15. B.Complex
16. Diazepam
17. Anti-tubercular drugs
18. Anti-leprosy drugs
19. Diethyl-carbamazine
20. Primaquin
21. Cotrimoxazol
22. Predhisolone
23. Atropine 1% eye drops
24. Homatropine 2% eye drops
25. Pilocarpine 2% eye drops
26. Hydrocortisone eye ointment
27. Antisnake venom
28. Hydrochlorothiazide

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29. Tincture Iodine
30. Whitfields ointment
31. Xylocaine 4%, 2% and Jelly
32. Inj. Aminophylline
33. Inj. Adrenaline
34. Inj. Demathasone
35. Inj. Chlorpheniramine maleate
36. I.V. fluids (Ringer lactate, 5% detrose, 5% dextrose saline)
37. Inj.normal saline
38. Inj.atropine
39. Inj.potassium chloride
40. Inj.sodium bicarbonate
41. Inj.frusemide
42. Inj.morphine/pethidine
43. Inj.diazepam
44. Inj.oxytocin
45. Inj.Paracetamol
46. Chlorhexidine solution
47. Vaccines, DPT, OPV, Measles, BCG, TT, DT and Anti-rabies, anti cholera, anti typhoid.

7. SUMMARY AND CONCLUSION

The health status of any community can be assessed by the prevailing morbidity and mortality status. So the analysis of morbidity and mortality pattern will be very useful for the health planners, especially in the context of our aim to attain the Goal of "Health for all by 2000 AD" on the basis of Primary Health Care approach. Usual indices viz., Crude Death Rate, Infant Mortality Rate and Expectation of Life at Birth are used to study the mortality pattern of Kerala. The Death Rate has come down to very low level in Kerala and it is even comparable to that of other well developed nations. No appreciable rural urban differences in mortality rate exist in Kerala. The lowest Infant Mortality Rate is recorded in Kerala amongst the other States in India.

Contd.....19

Expectation of life at birth has been rising in Kerala and females have a higher life expectancy - a pattern existing in economically well advanced countries - is a unique feature of Kerala. The analysis reveals that mortality rates started their downward trend in Kerala much earlier than that of rest of India. Analysis of Morbidity pattern indicate that morbidity rate (due to Communicable and non-Communicable diseases) is showing an upward trend wheras death rate due to these diseases register a downward trend during recent years.

The following communicable and non-communicable diseases are prevalent in rural areas of Kerala for which elementary drugs are necessary in the Primary Health Centres and Sub Centres. Adequate inservice training should be given to the medical and para-medical staff working in these health institutions along with the supply of the drugs.

Malaria, Leprosy, Tuberculosis, Measles, Enteric fever, Dysentry, Gastro-enteritis, Influenza Anaemia, Helminthiasis, Scabies, Diphtheria, Whooping cough, Tetanus, Bronchitis, Asthma, Urinary infection, Rheumatic fever, Hypertension are the common disease prevalent in the area.

Supply of drugs for the Anganwadi, Sub centre and Primary Health Centre should be based on the prevalence of the above diseases. A suitable mechanism has to be developed for the continuous supply of these drugs to the District Stores for its final delivery to the Primary Health Centres and Sub Centres.

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REFERENCES

1. Government of India, Health Statistics of India (1966-70), CBHI, DGHS, New Delhi (1975)

2. Government of India, Health Statistics of India (1971-75), CBHI, DGHS, New Delhi (1976)

3. Government of India, Pocket Book of Health Statistics of India 1977, CBHI, DGHS, New Delhi (1978).

4. Government of India, Health Statistics of India 1981 CBHI, DGHS, New Delhi (1982).

5. Government of India, Pocket Book of Health Statistics of India 1979, CBHI, DGHS, New Delhi (1979)

6. Government of India, Health Statistics of India 1984 CBHI, DGHS, New Delhi (1984)

7. Government of India, Health Statistics of India 1985, CBHI, DGHS, New Delhi(1985).

8. Government of India, Health Information of India 1986, CBHI, DGHS, New Delhi (1988)

9. Government of India, Health Information India 1987, CBHI, DGHS, New Delhi (1988)

10. Government of Kerala, Health Profile Kerala 1990 - Dept.of Health and Family Welfare, Trivandrum Kerala (1990).

11. Mahendra Dutta & Ehasin V.P. Communicable Diseases, Pattern of Morbidity and Mortality in India, CBHI, DGHS, New Delhi (1979)

12. Kurup, R.S. et.al, Fact Book on Population and Family Planning, DRC, Bureau of Economics and Statistics, Trivandrum (1975).

13. Sarama S.P. et.al, "Current estimates of Filariasis problem in India" The Journal of Communicable Diseases Vol.9, No.2(1977)

14. Panikar, P.G.K. and Soman, C.R.Health Status of Kerala, Centre for Development Studies, Trivandrum.

15. Dept.of Community Medicine, "Annual Administration Report, analysis of ROME data 1989 , T.D.Medical College Alleppey, Kerala (unpublished).

16. Medical College Health Unit "Annual Administration Report, Ambalapuzha" (Unpublished) T.D.Medical College, Alleppey - 1989 (Unpublished)

17. Government of India, National Leprosy Eradication Programme in India 1987 - Facts and Figures on Leprosy, Leprosy division, DGHS, Ministry of Health and Family Welfare, New Delhi (1987)

18. Dept.of Community Medicine, Proposal for permanent Filaria Research Unit of ICMR at T.D.Medical College, Alleppey, T.D. Medical College, Alleppey 1986 (unpublished).

DR 14:3.

"ESSENTIAL DRUGS IN PRIMARY HEALTH CARE IN INDIA"

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" ESSENTIAL DRUGS IN PRIMARY HEALTH CARE
IN INDIA. "

India is committed to attend the goal of Health for all by the year 2000 AD through the universal provision of Primary Health care services. Provision of essential drugs is considered to be an important element amongst the 7 elements of Primary Health care.

In India Primary Health care is provided by many workers, example community Health worker(village Health guide), Anganwadi worker, Dais, Multipurpose health workers, traditional birth attendants/trained birth attendants. Most of them are provided with a medicine kit for treatment of minor ailments.

The national health policy provides the universal comprehensive Primary health care services relevant to the actual needs and priorities of the country at a cost which people can afford, insuring that the planning and implementation of the various health programmes is through the organised involvement and participation of the community adequately utilising the services being rendered by voluntary organisation active in health sectors.

All governments to formulate national ~~health system~~ policies, strategies and plans of action to launch and support Primary health care as a part of national health system, provide community health care, attend to vulnerable and underserved groups.

Primary health care strategy calls for a sustained efforts to stimulate and organise the community to give itself a health system , economically, socio-culturally and technologically appropriate to meet the specific health needs.

Despite the fact that a high proportion of the health budget of the countries in the region is spent on drugs, the rural population often has no assess to the life saving and essential drugs. Scarce national resources are often wasted on less essential drugs which are marketed in the developing countries where the drugs consumption pattern often does not reflect the real health needs. In countries where health for all has received endorsement as policy at the highest official level, at least 5% of GNP is spent on health. ~~Xxx~~ A reasonable percentage is devoted to 1st level contact care including availability of atleast 20 essential drugs within one hour walk.

Comprehensive drug policy can bring about a radical change in the present situation by streamlining every aspect of the pharmaceutical and supply system. This would ensure the availability of essential drugs of high quality, safety and efficacy at reasonable prices and their proper

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utilisation by health person. WHO had an important role of technical co-operation in the formulation of drug policy. There is also the need for the proper selection of traditional medicines of established efficacy for use in Primary health care, linked with the expanded use of traditional medicine is the need for organised training programme for traditional practitioners in the preventive and promotive aspect of primary health Care.

The "essential drug monitor" is a newspapex-letter produced and distributed by the WHO action programme on essential drugs and vaccines. Since the action programme was launched in 1981 more than 100 countries have either drawn up essential drug list or started projects in support of Primary health care providing reliable essential drugs and vaccines which,

1. meets peoples common health needs
2. has significant therapeutic value.
3. are acceptably safe
4. offer satisfactory value for money.

A conferance of experts on the national use of drugs was convened by WHO in Nairobi(kenya) from 25th to 29th November, 1985.

The experts supported the need for government to adopt a national drug policy based on the essential drugs concept as a part of their national health policy for attaining the goal of health for all by year 2000. The aim of a national drug policy Dr. Mahler said, would be to ensure the constant availability of efficacious drugs of acceptable quality and safety to all in need of them, such drugs must be really required for maintaining peoples health and combating disease. It was emphasised that good manufacturing practices and quality control were integral parts of drug regulation.

It was generally felt that pharmaceutical industry has major responsibility for compling with established norms and avoiding different standards in different countries. WHO agreed to issue model data sheets and formularies for those drugs included in the WHO model list of essential drugs for government use.

The experts recognised that for making drug use move rational, approprate national legislation was required, the main responsibilities of all those concerned in making drug use move rational lies with the government, pharmaceutical industry, prescribers, medical colleges, teaching institutions and professional organisations, the public, patient and consumer groups and the mass media.

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It is estimated that there are between 1,00,000 to 2,00,000 drug products available today in the world market, the WHO has determined that fewer than 250 of these drugs are essential to treat most of the illnesses experienced by majority of world's population.

It is useful to have available standard list of drugs and equipment, reduced to the minimum that take into account the epidemiological situation as well as the resources available.

The problems involved in providing essential drugs presents an almost overwhelming challenge to all countries. Drug selection is difficult mainly because of the variety of drugs from which to choose, drug procurement problems include the number of possible drug sources, the complexity of estimating needs and the difficulties of arranging payment for the drugs that are needed. Drug distribution required the carefully planned interaction of transportation, storage and management system. Appropriate drug use relies on training and public education. These problems are magnified in developing countries where infrastructure and resources are often scarce. The policy decision related to essential drugs are made at several levels the strategies may be at National, community and individual level.

The section on national strategies discusses drug selection, supplies, costs, distribution system and regulation. The section on communtiy strategies covers needs, assessment, storage, stock control and training and finally consumer education and patient information are discussed under individual strategies.

DRUG SELECTION.

The drug selection process is made difficult by the vast number of available prescription and non-prescription items. All of these medicines are created from approximately 250 activd substances which are the chemicals in drugs responsible for the therapeutic effect. It has been estimated that there are on the average 70 different brand names for each drug marketed today.

Preparation with no known therapeutic value include many vitamins, tonics and cough preparations which are available without prescription. In 1982 a panel of experts has compiled a list of 230 drugs and a model list of 22 drugs for use in primary health care. More than 80 countries have developed national formularies or drug lists based on the WHO model list of essential drugs. International non-proprietary generic names for drugs are used and combination drugs are avoided unless they meet an important specific therapeutic need.

DRUG SUPPLIES

There is an increasing tendency to use drugs as the theatment of choice for all kinds of disease as a result treatment other than drugs are too often overlooked.

More developing countries relies on import of large part of their annual drug need, to reduce the need for foreign exchange , some developing countries have adopted policies that facilitate local production of drugs. There policies include restrictions on imports of foreign products, in some countries local repackaging of imported bulk shipments have been instituted.

National drug production is also being encouraged through the increased use of herbs. The national corporation of herbal medicine in the peoples republic of China relies on reduces 5,700 types of medicinal plants and 7,00,000 tons of herbs annually. In Philippines where herbilist have long provided rural medical care the ministry of health is encouraging research on medicinal plants. Factories are being setup to process herbs and the national formulary lists more than 30 medicinal plants. Quality assurance is critical to all drug programmes. WHO has instituted a certification scheme that provides importing countries with information on whether or not a product has been approved for use in its country of manufacture.

REDUCING COST

In any country cost is a central issue in drug selection procurement and availability while the annual per capita consumption of pharmaceuticals in developing countries is small in comparison to that of developed countries (US dollars 16 and US dollars 50) (respectively), drug purchases can sometime account for nearly half of the health budget. Several steps may be taken to cut this Cost.

- limited formulary can bring about significant saving in the cost of procurement, handling, stocking and training.
- Bulk purchases
- competative biddings. UNICEF has taken advantage of both bulk purchase and competative bidding to save money by purchasing drugs for over 100 countries.
- use of generic - ordering drugs by their generic name
- dosage forms - in general tablets or capsules are the least expensive dosage form.

Distribution System

Most countries have a private market system, often practitioners also dispense. Many countries also dispense free or subsidised drugs through the national health system. In Philippines, Mozambique and Haiti the government has also attempted to extend drug access to isolated communities by establishing rural pharmacies that sell essential drugs at small profit.

Co-operatives are currently operating in Thailand and experimental trial in Philippines are financed as revolving funds started with money raised by the community. Transporting drugs is a serious problem, long delays or exposure to heat may cause drugs to expire, loss and theft are also serious concerns. Some creative attempts to solve these problems under Kenya's new management system of drug supplies which started in 1981, sealed prepackaged ½ ration kits of essential drugs are sent out to health posts. The kits ~~of essential drugs are xxxx~~ contain 39 items for health centres and 31 items for dispensaries. Tanzania has also started using a similar system.

Regulation

In general over the counter (OTC) drugs decrease medical staff requirements, decrease the cost of handling and managing drugs through public health system and increase the availability of medicine in isolated areas. Disadvantage is the misuse by consumer and may delay some people from urgently needed medical attention. Cuba and Bangladesh have severly limited OTC preparation.

Community Stategies

Needs assessment:- can be based on the pattern of previous use, ~~or~~ on epidemiological data on disease incidence and prevalence. Estimated basis on use are less helpful if the previous use record reflects shortages of supplies or if population is changing quickly due to influx or outflow. A micro-computer model for planning drug requirement has been developed that can calculate needs based on both and this has been tested in Indonesia and Morocco.

Drug Storage:- Heat and moisture especially in tropical countries can cause drugs to deteriorate, this can be reduced by choosing a shady breezy location and by providing adequate ventilation. Refrigeration is necessary to maintain a cold chain for vaccine. All drugs should be labelled with at least their classification name, dosage form, strength and date of expiry.

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Stock Control:- Procedured include
- checking system against order records for damage and expiry date.
- arrange drugs alphabetically, by therapeutic category, clinical indication, frequency of use or a combination of these methods.

Estimating Drug Needs:-

Morbidity based needs estimates are calculated by first listing the expected symptoms, number of cases and proposed treatment. The expected number of cases can be estimated by using survey data. Course of treatment information from the national formulary is then added to the above estimates of number of cases to give estimated total drug requirements. An initial order increase of 25% will cover the contigencies for wastage and to provide for reserve if need increases. Record keeping and timely re-ordering will facilitate the supplies.

Training and continuing education for both prescribers and dispensars are important in any essential drug system. PHC workers who prescribe medicines needs to be trained in the indications for an safe prescription of the selected drugs. WHO has drafted drug information sheets for a whole list of essential drugs that can be adopted by each country. Each sheet list the drug name, indications, recommended dosages, precautions, adverse effects, interactions and directions for storage.

Individual Strategies

Consumer education and patient information are two important ways to infuse appropriate drug use. Underuse and overuse of drug is a problem, common belief is that purchased medicine is better than what can be prepared at home. These attitudes can result in waste of resources and can contribute to problems like drug resistance. Social marketing is one useful approach that examine such community attitudes and has been used in several countries to promote ORT and contraceptive use.

Patient information

If patients understands what kind of medicines they are taking and why and importance of finishing the full course of treatment, compliance can be increased. All prescriptions and OTC preparations should be labelled with information that includes the drug name, form, strength, proper dosage and any warning, contraindications or special instruction for use. Drug information material have been developed for patient who cannot read. They use pictures to represent the ~~mx~~ amount of medicine to be taken at different time of the day, in some cases these material also represents the illness for which the medicine is being used. Pakistan has recently decided that package inserts are to be

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printed in the national language Urdu and English. In Kenya the government is supporting a programme to improve the supply of essential drugs to church related rural health institutions and to train the staff of these bodies in the rational use of the drugs. All government dispensaries and health centres in the country receive standard kxix kits of essential drug.

Essential drugs are vital to primary health care. The provision of these drugs is a complex challenge that needs to be met at the national, community and individual levels while the establishment of the drug formulary and standardized treatment schedule is best done as a national policy. There are important drug issues that need to be adressed at other levels by health workers and programme managers as well. Needs assessment, storage, stock control, training and public education are all necessary to make the best possible use of drugs that are available. National drug policy can only succedd when the community and individual strategies are in place.

Guidelines for formulating drug policies.

Its objective should be to strengthen the national capabilities of developing countries in the proper selection, production, supply, distribution and and use of drugs to meet their health needs. The programme should assess the availabilxx resources such as manpower, raw material, finance, technical skill and technology and aim at creating an infrastructure for an efficient drug supply system and the achievement of self sufficiency in essential drugs and vaccine. Role of public sector is important in insuring a constant supply of dependable quality.

In India main health problems are of communicable diseases, malnutrition, environmental sanitation, population explosion, medico-social problems and medical care problem. Most of these are preventable and curable. Although drug constitute only a small part of health care yet vital and essential. There is a need to prepare a list of essential drugs appropriate to local needs, these drugs should be made available with the health guide, ANW, MPW and PHC.

In order to have the optimum utilization of the essential drugs the government may bring out a model list of drug for different regions/ state depending on the morbidity pattern, the epidemiological situation and the budgetary allocation.

I am furnishing herewith the list of essential drug for

1. The kit of VHG/ANW and
   Essential drugs at the subcentre level on annexure 1
2. Essential drugs at PHC on annexure 2
3. List of essential drugs based on WHO recommendations on annexure 3

4) Essential drugs to be used in acute respiratory infection- annexure 4

In Goa we have carried out 2 studies one on the morbidity profile or rural children and the other study was on morbidity profile of an urban scheme of Goa. In both these studies the first 5 causes of morbidity are:-

1) Respiratory infection
2) Infective & Parasitic diseases
3) Gastro-intestinal disorders
4) Malnutrition
5) Skin infection

Since ARI constitute the major cause of morbidity among under five, recommended treatment schedule is also included for the use of primary health care workers, in Annexure IV. They should be trained in the diagnosis and management of ARI

It is also recommended that the quantity of the drugs should depend on the seasonal trend and sickness load, regular monitoring and evaluation is needed in order to ensure availability of drugs. Judicious use of drugs also should be done.

References

Beverley & Dullen : Proper use of the right drug, a complex task.
World Health Forum 1988.
Vol. 9, No.2.

WHO: Report of the conference of experts Nairobi. 1985 " The rational use of drugs"

WHO: The use of essential drugs.
TRS No.722 1985

DIRECTIONS/5.2. 1985: Programme for appropriate technology in health.
reprinted in India by UNICEF 1988.

ARI News: Issue No.15 AIRTAG London August 1987.

WHO Chronicle: Rational use of drugs
40 (1) : 3-5 (1986)

WHO Chronicle: Exchange on experience on Primary Health care.
38(4): 187-189 (1984)

WHO The world drug situation 1988

WHO Guidlines for developing drug polices 1988

Swastheird: National drug policy October 1987

WHO Essential drug Monitor No. 6 1988

ANNEXURE - 1

WORLD HEALTH ORGANISATION
MODEL LIST OF DRUGS
FOR PRIMARY HEALTH CARE

The following list of 22 drugs was selected by WHO from the full model list of essential drugs as those which might be appropriate for administration by a tradiational healer or community health worker. In practice this list needs to be modified for each country to reflect the disease patterns, existing medical coverage, and level of training.

Drug	To Treat
acetylsalicylic acid	pain, fever, inflamation
activated charcoal	swallowed poisons
antacid	indigestion, heartburn, and stomach ulcers
antihemorrhoidal drug	hemorrhoids or piles
atropine	muscle spasms
benzoic acid+salicylic acid	fungal infections
benzyl benzoate	scabies and lice
calamine lotion	skin irritation
chlorhexidine solution	skin infections
chloroquine	malaria
chlorphenamine	allergic reactions
ephedrine	asthma
ergometrine	postpartum hemorrhage
iodine	iodine deficiency, infections
ipecacuanha	swallowed poisons(causes vomiting)
iron/folic acid	anemia
lindane	scabies and lice
mebendazole	parasitic diseases
oral rehydration salts(ORS)	diarrheal dehydration
paracetmol	pain and fever
piperazine	ascaris and pinworm
tetracycline eye ointment	conjunctivitis.

ANNEXURE - 2

ESSENTIAL DRUGS SUGGESTED FOR THE KIT OF C.H.V./V.H.G.

1. ORS packets
2. Chloroquine tablets
3. paracetamol tablets
4. Mebendazole tablet
5. Vitamin A solution
6. Iron and folic acid tablet
7. Mercurochrome powder
8. Chlorpheniramine maleate tablet
9. Gentian violet granules
10. Boraspirit ear drops
11. Acriflavine powder
12. Terramycin eye ointment
13. Benzyl Benzoate emulsion
14. Cotrimoxazole
15. Oxyphemonium bromide tablet
16. Chlorine Tablets (For chlorination of water)
17. Zinc sulphate eye drops 0.25%

Essential drugs at the sub-centre will be the same as above plus the drugs mentioned below:-

1. Aspirin
2. Metoclopramide
3. Contraceptive - Pills
4. Tablet and Injection Methergin
5. Activated charcoal.

ANNEXURE _ 3

ESSENTIAL DRUGS AT THE PRIMARY HEALTH CENTRES

A. Drugs listed for sub-centre

B. Additional Drugs.

1. Amoxycillin
2. Doxycycline
3. Chloramphenicol
4. Penicillin (Procaine & Benzathine)
5. Digoxin
6. Propranolol
7. Dihydrallazine
8. Isosorbide dinitrate
9. Phenobarbitone
10. Promethazine syrup
11. Glybenclamide tablet
12. Amitriptyline
13. Furazolidine
14. Metronidazole
15. Theophylline
16. Alluminium hydroxide
17. Chlorpromazine
18. B. Complex
19. Vitamin D
20. Diazepam
21. Anti-tubercular drugs (available under NTCP)
22. Anti Leprosy drugs (available under NLEP)
23. Diethyl - carbamazine
24. Primaquin
25. Sulfadoxine hydrochloride
26. Cap Gynae UVP
27. Isoxsuprine hydrochloride
28. Povidine Iodine vaginal pessary
29. Tab Prednisolone
30. Atropine 1% eye drops
31. Homatropine 2% eye drops
32. Pilocarpine 2% eye drops
33. Hydrocortisone eye ointments
34. Hydrochlorothiazide
35. Antisnake venom
36. Chlorhexidine solution
37. Tincture Iodine
38. Whitfield's ointment
39. Xylocaine 4%, 2% and Jelly
40. Inj. Aminophylline
41. Inj. Adrenaline
42. Inj. Dexamethasone
43. Inj. Chlorpheniramine Maleate
44. I.V. Fluids (Ringer Lactate, 5% Dextrose, 5%Dextrose saline)
45. Inj. Normal saline
46. Inj. Atropine
47. Inj. Potassium chloride
48. Inj. Sodium Bicarbonate.
49. Inj. Frusemide
50. Inj. Morphine/Pethidine
51. Inj. Diazepam
52. Inj. Oxytocics
53. Vaccines - DPT, OPV, Measles, BCG, TT, DT and antirabies

ANNEXURE - 4

Recommended treatment schedules

Amoxicillin: three times a day for five days

Age	less than 2 months*	2-11 months (6-9kg)	one to four years (10-19kg)
Dose	62.5mg	125mg	250mg
Tablets (250mg)	quarter	half	1
Syrup (125mg/5ml)	2.5ml	5ml	10ml

Ampicillin: four times a day for five days

Age	less than 2 months*	2-11 months (6-9kg)	one to four years (10-19kg)
Dose	125mg	250mg	250mg
Tablets (250mg)	half	1	1
Syrup (250mg/5ml)	2.5ml	5ml	5ml

Cotrimoxazole: twice a day for five days

(1 adult tablet=80mg trimethoprim+400mg sulphamethoxazole
1 paediatric tablet=20mg trimethoprim+100mg sulphamethoxazole;
5ml syrup=40mg trimethoprim+200mg sulphamethoxazole)

Age	less than 2 months*	2-11 months (6-9kg)	one to four years (10-19kg)
Tablets			
Adult	quarter	half	1
Paediatric	1	2	3
Syrup	2.5ml	5ml	7.5ml

Note: for infants less than one month old, give half a paediatric tablet, or 1.25ml syrup. Cotrimoxazole should not be given to infants who are premature or jaundiced

Procaine penicillin (intramuscular injection) once a day for five days:

Age	less than 2 months*	2-11 months (6-9kg)	one to four years (10-19kg)
Dose	200,000units	400,000units	800,000units

DR 14: 4.

REVIEW OF MORBIDITY AND MORTALITY PROFILE OF TAMIL NADU AND REQUIREMENTS OF ESSENTIAL DRUGS IN PRIMARY HEALTH CARE

A. PARTHASARATHY* K.G. KAMALA**

TAMIL NADU is rapidly trying to catch up KERALA in bringing down its IMR to the Health for all 2000 AD target level. National programmes like Universal Immunization Programme, Diarrhoeal Disease Control Programme, Vit. A prophylaxis, Anaemia prophylaxis etc. have already gained momentum over the last five years and have started yielding good results. The trend of morbidity now seems to be from Respiratory Infection followed by Gastro enteritis and other infections in that order! While planning for the prioritization and requirements of essential drugs in Primary Health Care, it is necessary that we critically review the morbidity and mortality pattern of the given region with particular reference to their changing trends over the preceeding ten years. An attempt is made in this paper to present such a situational analysis to ensure a practical oriented approach in the procurement and use of essential drugs in primary Health Care.

In any primary health care system, the morbidity and mortality pattern of the priority group will eventually give us the ideal essential drugs that are needed for primary health care. This priority group are the children especially the newborns, infants and the under 5's, pregnant and lactating mothers and the Geriatric problems oriented old age population. Let us therefore analyse the mortality and morbidity pattern of this group. Again the representative samples of this group could be approached from the field based data

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as well as the Institutional data. In this communication, the figures for the entire state of Tamil Nadu and the figures obtained from the Institute of Child Health, Madras are utilised and analysed.

Let us first critically review and analyse the figures obtainable through the Civil and Sample Registration Systems (CSRS) of Tamil Nadu State. The total population of Tamil Nadu is 484.08 lakhs (1981) with a MYP of 558.97 lakhs (1990) distributed in 23 revenue districts. Each revenue districts is further split into 2 or 3 health unit districts for better delivery of the welfare schemes under Primary Health Care (PHC) The DHO's (District Health Officer) look after the PHC's apart from the district and these health unit districts are grouped into 7 regions under the guidance and administrative control of the Regional Deputy Director of Public Health & Preventive Medicine. The system is working very well with good coordination.

In Tamil Nadu, the CRS is in vogue in all districts and the SRS is conducted in selected rural and urban areas. The efficiency of births registration is 70-75% and that of Deaths registration is 60-65% The following table gives the vital rates as per CRS & SRS for the year 1981 to 1988.

TABLE I

VITAL RATES AS PER CRS & SRS 1981 - 1988 TAMIL NADU

YEAR	CRS			SRS		
	BR	DR	IMR	BR	DR	IMR
1981	18.94	5.98	33.22	28.0	11.8	91
1982	18.32	5.86	30.11	27.0	11.2	83
1983	18.79	6.20	32.51	27.9	11.7	88
1984	17.98	5.75	29.86	28.0	10.8	78
1985	17.07	5.30	28.47	24.7	9.5	81
1986	17.26	5.54	28.51	23.8	9.5	80
1987	17.17	5.74	29.25	24.0	9.9	76
1988	16.26	5.79	28.00	22.5	9.2	74

PROVISIONAL 1989 SRS: BR 21.6 DR 8.9 IMR 69

You could see from the above table as to how the SRS gives more reliable information than the CRS. However it is gratifying to note the decline in BR, DR and IMR to 22.5, 9.2 and 74 in 1988; an overall decline when compared to the 1981 figures.

The Medical Registration system (MRS) is being conducted in 64 selected primary health centres so as to identify the most probable cause of death. This is very essential for a reliable Mortality statistics. For instance in the table given below, you could see the distribution of infant deaths as different components.

TABLE II

DISTRIBUTION OF IMR, NMR, AND PNMR - 1984 - 1986 - TAMIL NADU

MORTALITY RATE	1984	%	1985	%	1986	%
Early neonatal	42.7	54.5	45.2	55.6	45.5	57.0
Late Neonatal	13.6		11.2		11.6	
Neonatal	56.3	71.90	56.4	69.7	57.1	71.55
Post neonatal	22.0	28.10	24.9	30.63	22.7	28.45
Infant	78.3		81.3		79.8	

As per SRS data more than 50% early neonatal deaths and 70% Neonatal deaths are recorded. For the year 1986, the following are the IMR components:

Day I to Day 7	57%
Day 8 to Day 30	14.5%
Day 31 to D 365	28.5%

The following table gives you Infant Death by age groups for the years 1981 - 1988.

TABLE III

INFANT DEATHS BY AGE GROUP 1981-88 TAMIL NADU

AGE GROUP	1981 %	1982 %	1983 %	1984 %	1985 %	1986 %	1987 %	1988 %
Under 1 week	40.44	39.57	34.70	40.46	25.49	44.62	46.50	45.42
Over 1 week under 1 Mon.	17.11	17.12	20.39	17.85	34.62	17.05	15.00	14.79
Neonatal	57.55	56.74	55.09	58.31	60.11	61.67	61.50	60.20
Post Neonatal	42.45	43.26	44.91	41.69	39.81	38.33	38.50	39.79
over 1 month upto 6 month	24.71	28.26	30.30	25.78	24.66	24.48	23.87	23.70
Over 6 month upto 1 year	17.74	15.00	14.60	17.91	15.23	13.85	14.63	16.09

Let us now see the mortality pattern of the Infant Deaths in the neonatal period.

TABLE IV

INFANT DEATHS BY CAUSES 1987 & 1988 CRS TAMIL NADU

S.No.	CAUSE OF DEATH	Under 1 wk		Over 1 week under 1 mon.		TOTAL		%	
		1987	1988	1987	1988	1987	1988	1987	1988
1.	RESP. DIS.	1929	1720	497	454	2426	2174	14.58	14.47
2.	OTHER FEVERS	1124	949	768	710	1892	1659	11.57	11.04
3.	DIARRHOEA	166	166	161	208	327	374	1.97	2.49
4.	HEART DISEASES	85	206	33	62	118	268	0.71	1.78
5.	TUBERCULOSIS	87	68	14	23	101	91	0.61	0.61

What is happening to infants is shown in the next table

TABLE V

INFANT DEATHS BY CAUSES 1987 - 1988 CRS TAMIL NADU

	OVER 1 MONTH UPTO 6 MONTH %		over 6 months upto 1 year %		TOTAL % (of all causes)	
	1987	1988	1987	1988	1987	1988
1. OTHER FEVER	22.46	21.89	21.32	18.77	15.48	14.85
2. RESP. DIS.	9.82	11.51	11.71	9.04	13.02	12.89
3. DIARRHOEA	8.76	10.11	12.35	11.33	5.11	5.72
4. HEART DISEASES	2.24	2.53	2.80	2.51	1.14	2.08
5. TUBERCULOSIS	0.40	0.59	0.48	1.02	0.54	0.67

From the above 5 tables we could infer

1) On an average 40% of infant deaths occur during the early neonatal period.

2) 60% deaths are in the neonatal period.

3) As per CRS, respiratory diseases take a major toll in the early neonatal period. The second major cause of death is 'fever'

4) Among the late neonates, fever is the predominant cause.

5) Respiratory system diseases are the major causes of ~~the~~ early neonates, ~~first~~ major cause is 'fever'.

We will now present the mortality statistics from a major urban Pediatric Institute viz. Institute of Child Health and Hospital for Children, Madras.

Table VI shows you the average inpatient percentage specialitywise.

TABLE VI

PERCENTAGE OF INPATIENTS SPECIALITYWISE 1989
INSTITUTE OF CHILD HEALTH & HOSPITAL FOR CHILDREN, MADRAS.

S.No.	SPECIALITY	Admissions	Treated	Death	%
1.	Medical	18788	17795	1259	7.1
2.	Newborn Medical	2581	2500	587	23.5
3.	SURGICAL	3239	3318	81	2.4
4.	New born surgical	494	583	155	26.6
5.	VACCINE PREVENTABLE DISEASES	830	888	69	7.8
6.	CARDIOLOGY	91	135	24	17.8
7.	NEUROLOGY	313	357	1	0.3
8.	RESPIRATORY UNIT	105	308	9	2.9
9.	GASTROENTEROLOGY	330	465	27	5.8
10.	NEPHROLOGY	218	396	52	13.1
11.	HEMATOLOGY	2041	2144	34	1.6
12.	E.N.T.	447	485	1	0.2
13.	ORTHOPAEDICS	483	519	1	0.2
14.	CARDIOTHORACIC	111	142	2	1.4
15.	UROLOGY	87	96	1	1.0
	TOTAL	30158	30131	2303	7.6

Table VII shows agewise classification of inpatients.

TABLE VII

AGEWISE CLASSIFICATION OF INPATIENTS & DEATHS IN % 1989
ICH, MADRAS.

AGE GROUP	TREATED	PERCENTAGE	DEATHS	PERCENTAGE
0 - 6 days	835	2.8	416	18.1
7 - 27 days	1758	5.8	258	11.2
28 days - under 1 Yr.	8531	28.3	777	33.7
Infants (0 - 1 Yr)	11124	36.9	1451	63.0
1 Yr - 3 Yrs.	7375	24.5	406	17.6
3 Yrs - 5 Yrs	3534	11.7	176	7.7
5 Yrs & above	8097	26.9	270	11.7
TOTAL	30131		2303	7.6

Table VIII shows the place of residency of the cases treated at the Institute of Child Health, Madras.

TABLE VIII

GEOGRAPHICAL DISTRIBUTION OF CASES TREATED AT INST. OF CHILD HEALTH. 1989

MADRAS CITY	MADRAS SUBURBAN	OTHER DISTRICTS	OTHER STATE
15101	8285	5542	1203
50.1%	27.5%	18.4%	4.0%

Table IX shows mortality % specialitywise for the year 1989 relating to the Institute of Child Health, Madras.

TABLE IX

MORTALITY % SPECIALITY WISE, INST. OF CHILD HEALTH, MADRAS. 1989

1) General Medical	...	7.0%
2) Pediatric Intensive Care Unit	...	81.5%
3) Vaccine Preventable Diseases Unit		7.8%
4) Newborn - Medical	...	23.5%
5) Newborn - Surgical	...	2.0%
6) Pediatric Surgical Intensive Care Unit		50.0%
7) Respiratory Diseases	...	2.9% *
8) Cardiology	...	17.8% *
9) Gastroenterology	...	5.8% *
10) Haematology	...	1.6% *
11) Nephrology	...	13.0%
12) Neurology	...	0.3% *

* Chronic cases

Table X shows the major causes of morbidity and mortality for 1989 of all cases treated at the Institute of Child Health and Hospital for Children, Madras.

TABLE X

MAJOR CAUSES OF MORBIDITY AND MORTALITY - 1989

S.No.	MAJOR DISEASES	ALL PATIENTS		NEW BORN PATIENTS	
		Total cases	Deaths	Total cases	Deaths
1.	Respiratory infections	7882	207	483	55
2.	Gastroenteritis	5576	372	357	26
3.	Nutritional deficiencies	3055	67	18	4
4.	Conditions originating in the perinatal period	2301	385	2049	373
5.	Septicaemia	1380	177	635	90
6.	Cardiovascular diseases	1043	22	0	0
7.	Tuberculosis	1032	50	0	0
8.	Anaemias	880	23	0	0
9.	Measles	506	42	0	0
10.	Helminthiasis	455	0	0	0

You could see from the above table that the 9 major medical cases of mortality as seen from a major urban Pediatric Institute statistics are:

1) Respiratory infections
2) Gastroenteritis
3) Nutritional deficiencies
4) Condition originating in the perinatal period
5) Septicaemia
6) Cardiovascular diseases
7) Tuberculosis
8) Anaemias
9) Measles
~~10) Helminthiasis~~

ESSENTIAL DRUGS

In Tamil Nadu, the following drugs are supplied at the subcentre level:

1) Tab B Complex
2) Tab B1B6
3) Tab. Cotrimaxazole (adult) for children above 5 years
4) Tab. Cotrimaxazole (child) for 1 to 5 years
5) Syp. Paracetmol
6) Syp. Cotrimaxazole for infants
7) Syp. Multivit.
8) Syp. Vitamin
9) ORS packets
10) FST tablets
11) Gentamycin Eye/ear drops
12) Nitrofurdcin oint.

At the primary Health Centre level, the following drugs are made available.

A) Drugs listed at Subcentre level

B) 1. Penicillin tablets
2. Chlorophenicol capsules
3. Phenobarbitone tabs
4. Furazlidine tabs
5. Metranezole tabs
6. Diazepam
7. A T T drugs (NTCP)
8. Antileprosy drugs (NLEP)
9. Tincture Iodine
10. Inj. Aminophylene
11. Inj. Deriphylline
12. Inj. Dexamethazone
13. IV fluids 5% dextrose saline
14. IV fluids of normal saline
15, Inj. Sodium Bicarbonate
16. All vaccines.

MORTALITY STATUS Vs. ESSENTIAL DRUGS

Let us now analyse the above mortality figures and the drug availability in Tamil Nadu. It will not be out of place here if I quote the recent findings of an International workshop on Rational use of antibiotics in the community held at Christian Medical College Hospital Vellore India. Out of 5, four clinical condition viz. Urinary Tract infection, Pneumonias, Fevers of short duration and surgical wound infection are quoted here with relation to their drugs therapy.

It was found that

1) In 71% of UTI's, one antibiotic was used and in 28.9% more antibiotics. Norflaxacin (23.7%), Ampicillin (20.3%), Cotrimaxazole (16.9%), Gentamycin (10.2%) and Nalidixic acid (8.5%) were the drugs used in that order.

2) In pneumonias 4% of cases received two antibiotics and 30.6% received single drug. The frest antibiotics used were Penicillin or Ampicillin either alone or in combination with Gentamycin.

3) In fevers of short durations 76% of patients received one antibiotic and 24% two or more antibiotics. The commonly used drugs were Cotrimaxazole, Ampicillin, Chloromphenicol and Erythromycin.

4) In surgical wound infection almost all received one or more antibiotics, Combination of 2 or 3 antibiotics were common. Ampicillin, Gentamycin, Cotrimaxazole either alone or in combination with Metranidyzole are the common antibiotics preferred.

This study was conducted in Vellore, North Arcot Ambedhkar and Thiruvannamalai Sambuvaroyar districts in 1989-90 by questionnaire method.

It could be seen from the above example and our mortality analysis in Tamil Nadu that Respiratory infections are a major problem followed by Gastroenteritis and fevers of short duration.

FUTURE NEEDS BASED ON PAST AND PRESENT REALITIES:

1) It is our recommendation that the National ARI control programme is introduced soon to detect early cases of pneumonia at the subcentre/PHC level itself so that ARI mortality could be considerably brought down, the ideally suited primary drug is cotrimaxazole, penicillin, ampicillin, Amoxylin, gentamycin etc. are drugs of choice for secondary and tertiary levels care.

2) Liberal distribution and use of ORS packets have brought down the diarrhoeal mortality to a greater extent. Limited drugs like gentamycin, nalidixic acid etc. are sufficient even at PHC level for complicated cases. of Diarrhoea

3) Liberal use of iron folic acid tablets 30 - 30 - 40 regimes has considerably brought down pregnancy associated anaemias. Same should be encouraged.

4) Effective coverage of TT2 of eligible pregnant women has brought down the incidence of Neonatal Tetanus to 1.4/1000 LB in Tamil Nadu. Maternal Deaths are rather unheard of, due to Tetanus.

5)Remarkable decline in Vaccine preventable diseases (Diphtheria 98%) Pertussis (60%), Tetanus older children (50%), Tetanus new born (97%) Poliomyelitis (60%) are attributable to over 80% immunization coverage with DPT 3 and OPV 3. Measles remains to be combated yet with only 50% Measles vaccine coverage.

6) In ICDS project areas of Tamil Nadu, 57 projects are mostly in rural sectors, the IMR has come down and VPD's have declined. Acute respiratory infections including measles related pneumona need to be combated.

7) Perinatal and Neonatal care has to be intensified as still 60% of IMR are attributable to this vital period of the infant's life.

It may therefore be concluded that the rational approach to Essential drug therapy in primary health care should be based on prioritization of the causes of morbidity and mortality, taking into consideration the MCH care intervention and non intervention areas. A close coordination between the planners and the health personnel involved in primary health care is the need of the hour.

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REFERENCES:

1) Profile of Infant Mortality in Tamilnadu. Mrs. Mercy Ebenazer - Personal Communication

2) Year Book 1989, Medical Records Department, Institute of Child Health & Hospital for Children, Madras. Ed. S. Sivaretnam

3) North Arcot Thiruvannamalai Districts Health Information Bulletin - Nathi - Vol. 7 No. 4 - April 90

4) Essential drugs in Primary Health care - Workshop proceedings. Indian Journal of Pediatrics. Vol. 56 No.1 Dinesh Paul.

HEALTH FOR ALL – ALL FOR HEALTH

ESSENTIAL DRUGS SAVE LIVES AND MONEY

INFORMATION KIT OCTOBER 1988

MESSAGE FROM

DR U KO KO

Regional Director
World Health Organization
Regional Office for South-East Asia
New Delhi

When disease strikes, as it so often does, it has to be fought with potent weapons and overcome. And an indispensable part of the armamentarium are drugs.

It is, however, not a simple matter. In fact, it is very complex considering that at any given time, there may be as many as 25,000 drug preparations available in some countries. To add to the problem, many are not easily available. Those that are, are usually beyond the means of most.

Keeping all these issues in mind, the World Health Organization convened a meeting of experts in 1977 which, after considered deliberations, concluded that about 200 drugs and vaccines could be considered essential to satisfy the health care needs of the majority of the population. Since then, a remarkable revolution has taken place in the area of drugs and pharmaceuticals, with different countries further reviewing the list of 200 essential drugs and developing lists more suited to their specific situation.

WHO's Action Programme on Essential Drugs is aimed primarily to ensure the regular supply to all people of safe and effective drugs of acceptable quality at the lowest possible cost. This is very much in keeping with the Declaration of Alma-Ata, which, while identifying the eight essential elements of primary health care as the keys to achieve the goal of health for all by the year 2000, listed essential drugs as a major element. For it is only when such drugs are easily available and rationally used that the war against disease will eventually be won.

It is hoped that "an informed public" will find the contents of these papers informative and useful and thus be better equipped for this war.

WHO40/1988/October/1

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ESSENTIAL DRUGS SAVE LIVES AND MONEY

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In this world, there is, on the one hand, an over-consumption of drugs and on the other an appalling dearth. Millions of people are compelled to go without medicines that could save their lives, prevent them from having to endure an existence of physical handicap, or relieve them of intolerable suffering.

The **WHO Action Programme on Essential Drugs and Vaccines** seeks to ensure that all people, wherever they may be, are able to procure the drugs they need at a price they can afford.

WHO40/1988/October/2

HEALTH FOR ALL – ALL FOR HEALTH

ESSENTIAL DRUGS SAVE LIVES AND MONEY

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F A C T S

If prophylaxis is one side of the coin, therapy with essential drugs is the other in health care. It plays an important role in protecting, maintaining and restoring health of the people - and at a cost most can afford.

THE PROBLEM

- There is a high level of morbidity, particularly in the developing countries.
- People want their illness to be relieved or cured expeditiously without being subjected to the ill-effects of therapy. They also want it at a price they can afford.
- There is a plethora of drugs available in all countries marketed by the pharmaceutical industry not necessarily to fulfil the needs of any particular country or people.
- To meet the needs of the sick, there is a great strain on the country's resources, both manpower and financial.
- Several countries are spending almost upto 40 per cent of their total health budget on drugs.
- Large resources are spent on "fire fighting" illnesses with the result that for the more important promotive, preventive and rehabilitative health activities resources become scarce.

ESSENTIAL DRUGS

Essential drugs form an important element of primary health care. While drugs do not buy health, they certainly save lives and money when used discriminatingly. The indiscriminate use of drugs does not merely lead to expending of scarce resources which could otherwise have been spent for buying nutritious food which is so

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important to health, but the injudicious use of drugs could also cause what are called "drug-induced diseases", for example, blood disturbances caused by analgin.

Most countries in the world spend large sums of money on drugs. It is reported that the world market of pharmaceuticals at the retail prices has almost reached US$100 billion. Several developing countries are spending as much as 40% of their health budget on purchasing drugs. Since a substantial portion of the total health care budget is thus spent on drugs, the cost of health care has risen and funds available for the more important promotive and preventive activities have become scarce. Although this is indeed a global problem, it has affected developing countries more acutely due to the very limited financial resources available in such countries.

Concept of Essential Drugs

It is now recognized that it is possible to treat most patients using only a few drugs which have proven therapeutic value, assured quality, and are economically priced. Such drugs are to be considered as "essential drugs", indicating thereby that they are necessary for the health needs of the population of a country. Essential drug care is thus a public health approach in drug selection.

Unfortunately, most countries have not accepted this concept, despite the fact that the indiscriminate use of drugs may lead to "drug-induced distress" and to the expenditure of valuable and scarce resources. It is now known that the excessive use of antibiotics and other inappropriate drugs to treat infections has given rise to a predominance of micro-organism resistance to several commonly used antibiotics. This has illustrated how important it is to use appropriate drugs depending upon the type of disease, the environmental situation, the competence of health personnel, other characteristics and dietetic habits, bringing benefits both to the patient and to the community.

Advantages of Essential Drugs

1. Fewer drugs would mean less storage space, money, infrastructure for purchases, efforts for distribution and quality assurance.

2. There would be improvement in drug management, dissemination of information to health personnel and the community, improved patient compliance, better monitoring of drug adverse reactions, if any, and their prompt treatment.

3. Fewer drugs would tend to stimulate local production of pharmaceuti- cals, wherever feasible, sparing valuable foreign exchange for more important community needs.

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ESSENTIAL DRUGS SAVE LIVES AND MONEY

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RATIONAL USE OF DRUGS

> **"A desire to take medicine is, perhaps, the great feature which distinguishes man from other animals".**
>
> – Sir William Osler, 1891.

Human beings have for centuries employed simple, low-cost traditional remedies for centuries to relieve their ailments and diseases. Some of these remedies did cure or at least provide symptomatic relief. Most produced some mild reactions but rarely any ill-effects in a patient. The last four decades have, however, seen a large number of potent drugs being added to the therapeutic armamentarium of the physician. The value of world consumption of drugs has increased dramatically to over 100 billion US dollars.

In the developing countries this is indeed a problem. To begin with, very scarce resources are provided for health development, with not more than 3-4% of the total public sector budget outlay spent on health. Yet, many of the countries continue to expend 30-40% of their valuable resources on buying drugs. In the markets of the developing countries are seen a large number of drugs and their combinations. Patients, with fevers which are usually self-limiting, are treated with, and even demand, potent medicines like antibiotics. Sometimes as high as 70% of drug prescriptions are for combination products. Doctors use one or sometimes a combination of antibiotics to bring about a "quick cure", not realising how dangerous it is to expose human systems to very potent chemicals which are alien to the human body.

In one country in the South-East Asia Region of WHO, there are some 20 different drugs to treat pain and some 15 different drug combinations to treat allergy. Doctors, flooded with literature on different drugs manufactured by pharmaceutical companies, are often bewildered and even unable to remember the ingredients of a drug combination which they prescribe for their patients. Since most drug products are marketed under a brand name, prescribing physicians are unable to recall what active substances a brand product contains. These are likely to lead to errors; prescribing an over-dose or under-dose of a drug results in serious and harmful consequences.

A new culture has developed. Patients have come to believe too much in the power of a drug and, with a doctor ready to satisfy the patient's expectations, it is not uncommon to find that antibiotics are prescribed for a cold, sedatives for a mild agitation and tonics given to almost every patient for 'building their strength'.

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There is also the 'injection mania': the patient expects or even demands an injection, believing in its magic curative properties.

Rational use of drugs implies that doctors and health workers must choose appropriate drugs for their patients in adequate dosage and, as far as possible, prescribe a single drug. Two or more drugs administered together may produce interactions which could be dangerous or even fatal. Some drugs are known to produce fatal effects when taken after eating certain types of food. It is, therefore, dangerous to resort to polypharmacy. Fixed ratio combinations are only justified if they are proven to improve patient compliance, to assure safety, enhanced effect or to reduce cost of treatment. The cost of drug treatment must also be taken into account so that patients are put to minimum financial strain. It must be remembered that a patient does not choose a drug for himself or herself. It is the prescriber who makes that choice and thus on the prescriber devolves a great moral responsibility to make an appropriate choice.

Today's drugs are, indeed, like "specific bullets" aimed against disease. But they have to be used in appropriate doses and individualized for a patient. There are many factors which govern drug response: drug absorption, its fate in the body, its rate of disposal, the nutritional status of a patient, the presence of liver or kidney disease, the habits of the patient and the patient's environment. It is indeed a very complex situation. Prescribing drugs is a serious measure, it should not be taken lightly by a physician.

All drugs produce some degree of ill-effects; some of these are moderate and may be self limiting. Others may produce fatal reactions. Such disastrous effects may be seen soon after taking the drug or sometimes may not manifest for days or even years. In known cases they are seen, in fact, only in the next generation as genetic abnormalities or cancer promoting effects., e.g. the drug thalidomide used during pregnancy which produced malformed babies having congenital absence of all four limbs.

Irrational use of drugs is harmful not only to the individual patient but also to the community. Extensive and irrational use of antibiotics has resulted in the emergence of resistant bacteria which are a source of dangerous and fatal infections in hospitals (Nosocomial). In a recent outbreak of dysentery in some of the developing countries patients could not be cured by the available antibiotics, because the germs had become resistant to the commonly used therapeutic agents.

ROLE OF WHO

WHO has been actively promoting the rational use of drugs. Since physicians, pharmacists and health workers are all involved in providing primary health care, WHO is providing appropriate information on drugs to all such groups. WHO has produced drug information bulletins, a primary health worker manual on essential drugs, in-service training programmes for rational drug use and drug formularies. Besides, WHO has emphasized a need to examine and review undergraduate curricula for medical, nursing and pharmacy students in order to train them in the concept of essential drugs, and rational prescribing.

One aspect which has often been neglected in the past is information that is needed to be given to a patient. Ignorance on the part of a patient can be a major obstacle to the rational use of drugs. The use of mass media to advise the patient and the community to improve drug compliance must be explored. Educational materials, posters and handouts have been produced by WHO.

WHO has also promoted research on the socio-economic and behavioural patterns of communities and on drug utilization studies in developing countries. Such studies would provide the health planner useful information for evolving appropriate interventions to encourage rational use of drugs.

The active promotion of essential drug concepts by WHO has also resulted in restructuring of resource allocations and in the optimal utilization of the available scarce resources.

HEALTH FOR ALL – ALL FOR HEALTH

ESSENTIAL DRUGS SAVE LIVES AND MONEY

INFORMATION KIT

OCTOBER 1988

ESSENTIAL DRUGS SAVE MONEY

Most developing countries today face a serious financial crisis as a consequence of global recession. There is great concern at the increasing health costs. Faced with little prospects of increased budget allocations and the rising inflationary trends, health ministries of developing countries have to evolve appropriate strategies to provide optimum health care within the allocated financial resources.

Since there is a high morbidity rate in most developing countries, it is quite understandable that drugs have to play an important and vital role in health care.

A substantial portion of the health budget is expended on purchase of drugs. In some countries, the cost being as high as 30% of the health budget outlay, little funds are spared for the more important preventive and promotive activities. Economic considerations, therefore, influence health care decision-makers and this has often resulted in searching for 'short-cuts' in health development rather than the more important plans for long-term investments which alone can ensure positive health. Several drugs marketed both in developed and developing countries are priced high, especially under brand names. Since consumers, namely, the patients, get their drugs only through the intermediary of a health personnel, they have hardly any choice to pick and choose what is most economical to their pockets. This tends to increase the expenditure of individuals and families, leaving little for other necessities of life. Besides, the public sector health institutions which cater to the health needs of the majority in developing countries have to provide greater outlays on drugs than on immunization, prevention and control of infectious diseases and promotive activities.

Drug prices have become a nightmare for the common man. Irrespective of the political or economic value system, it is inevitable that some patients will not receive the medicines appropriate for their illness. This is inequitous and it becomes necessary to ensure that the good of the majority reigns over the privileges of the few.

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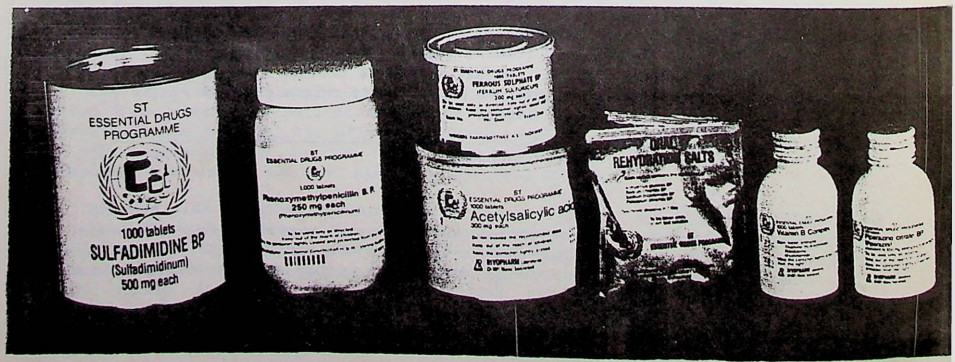
"Essential drugs", on the other hand, are priced economically and, therefore, individuals and institutions using only essential drugs spend less on drug bills. There is, thus, substantial saving for other relevant health development activities. After all, the per capita health expenditure in several developing countries is only about US$3, and even lower in the least developed countries. How important it is, then, to save every cent for preventing diseases.

On an average, it is reported that there are three episodes of illness per year per person. A middle- or low-income group family of five members has, therefore, to spend approximately more than 5% of its meagre budget on drugs. Since almost 70% of the population in a developing country has to depend upon public sector institutions for health care, there is also a strain on resources allocated to health, necessitating their optimal utilization. Excessive prescribing, irrational use of drugs, wasteful expenditure on drugs of doubtful value, wastage due to improper storage, poor quality of medical care, vagaries of procurement and distribution systems, are some of the serious problems faced by most developing countries. If there are too many drugs made available in a country, the drug management system suffers; besides, the country has also to pay a substantial price for these, regardless of whether they are obtained through the public or private sectors.

Many countries are still dependent upon international procurement to meet their drug needs. There is consequently a wasteful expending of foreign exchange which is so valuable for buying food and other items for socio-economic development. Thus, by pruning down drug imports and procuring only those drugs which are most essential to meet health needs of a community, foreign exchange can be saved. The essential drug concept is, therefore, of significant economic importance to the developing world.

Essential drugs are not patented. These are available under generic names at economic prices. A regulatory control on quality has, of necessity, to be assured. These drugs are most cost-effective. They are safe and efficatious. Thus, they not only save lives but also money, for the individual, the community and the nation.



HEALTH FOR ALL – ALL FOR HEALTH

ESSENTIAL DRUGS SAVE LIVES AND MONEY

INFORMATION KIT OCTOBER 1988

ESSENTIAL DRUGS : A KEY ELEMENT IN PRIMARY HEALTH CARE

The International Conference on Primary Health Care (PHC) held in Alma Ata in September 1978 declared, inter alia, that primary health care was the key to attaining the goal of Health for All by the Year 2000. It stressed that primary health care should focus on the main health problems in the community and recommended that primary health should include, at least, the following elements:

1. Education concerning prevailing health problems and the methods of identifying, preventing and controlling them;
2. Promotion of food supply and proper nutrition;
3. An adequate supply of safe water and basic sanitation;
4. Maternal and child health care, including family planning;
5. Immunization against major infectious diseases;
6. Prevention and control of locally endemic diseases;
7. Appropriate treatment of common diseases and injuries;
8. **Provision of essential drugs.**

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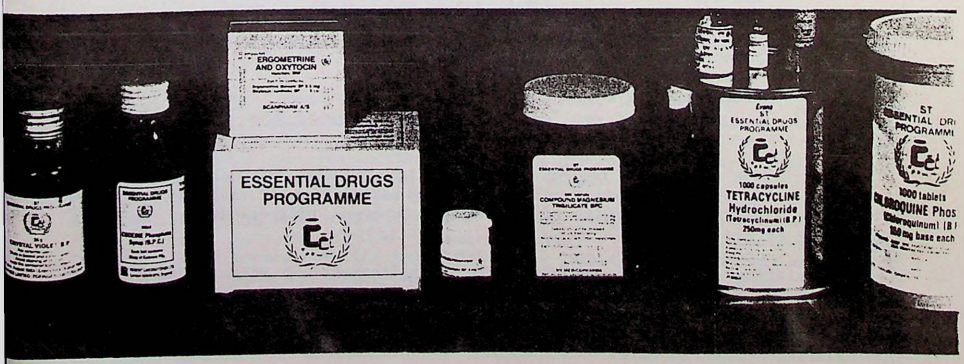

From the point of view of implementing a good primary health care system encompassing the whole country it is vital to have a list of drugs which are not only comprehensive but are chosen as essential on the basis of specific criteria. These criteria could include disease morbidity patterns, diseases of public health significance, drugs with high benefit/risk ratio, drugs that are economical and easy to manufacture, drugs containing a single ingredient, etc. It is equally important to recognize the value of traditional systems in providing succour and thus include traditional medicines suitably in the overall lists of drugs for primary health care. The drugs included in such a list (which can then be termed "essential drugs") must not only be commensurate with the existing spectrum of disease in the community/country, but must also be of adequate quality and be available in abundance at the primary health care level to meet the health needs of the people.

Factors affecting the selection of drugs for primary health care

A WHO Expert Committee on the Selection of Essential Drugs recommended some time ago the compilation of a separate list of drugs appropriate for use in primary health care. Having regard to situations in which a traditional healer or community health worker rather than a qualified doctor is the patient's first point of reference, they selected 22 substances or types of substance .

A model list of drugs for primary health care

acetylsalicylic acid
activated charcoal
an antacid
an antihaemorrhoidal drug
atropina (antispasmodic)
benzoic acid + salicylic acid
benzyl benzoate
calamine lotion
chlorhexidine solution
chloroquine
chlorphenamine
ephedrine (asthma)
ergometrine (postpartum haemorrhage)
iodine
ipecacuanha
iron/folic acid (nutritional supplement during pregnancy)
lindane
mebendazole
oral rehydration salts
paracetamol
piperazine
tetracycline eye ointment

It cannot be emphasized too strongly that, in practice, the selection must be determined nationally since the training and responsibilities of these workers vary within wide limits. The following considerations, however, will inevitably influence the content of the list:

(1) **Existing systems of medicine.** The establishment of primary health care services should not result in abrupt disruption of prevailing cultural patterns in rural communities, but the work of traditional healers should be adapted and supplemented in such a way as to ensure that innovation is successfully integrated into existing systems of care.

(2) **The national health infrastructure.** The type of primary health care service that a country requires is dependent upon the proximity and nature of the first referral facilities. It is still not unusual in some countries for the nearest permanently manned health post to be one or more days' travelling time from isolated villages in its catchment area.

(3) **Training and supplies.** The numbers of trained personnel, the facilities placed at their disposal, and the supplies entrusted to them determine both the scope and the limitations of the primary health care system. Workers with one or more years' vocational training can obviously accomplish more than personnel who rely upon an intensive course of practical instruction lasting only a few weeks. But, whatever the circumstances, little can be accomplished unless continuity of essential supplies and information is assured.

(4) **The pattern of endemic disease.** The prevalence of major endemic infections and parasitic diseases may vary from region to region, and within a country in conformity with climatic, geographical, topographical, social, economic, and occupational factors. Careful planning and, in some cases, epidemiological surveys are required to ensure that the most effective drugs are provided, and to obtain full benefit from limited resources.

MANAGEMENT OF ESSENTIAL DRUGS

- **Appoint** a committee consisting of representatives from medicine, pharmacology and pharmacy, and peripheral health workers.
- **Select** and list the essential drugs.
- **Identify** drugs and pharmaceuticals under generic names.
- **Provide** a cross index of non-proprietary and proprietary names.
- **Prepare** concise, accurate and comprehensive drug information.
- **Assure** quality, stability and bio-availability of drugs.
- **Organize** efficient administration of drug supply, storage and distribution (with a special facility for short-life products).
- **Manage** efficiently the drug stock.
- **Plan** stock inventory.
- **Control** the production and sale of drugs.
- **Conduct research** - chemical and pharmaceutical, to help evaluate which product is best.

The selected drugs can be used effectively and safely by responsible individuals with little formal medical knowledge. The list is adapted to the needs of a malarious area (free from chloroquine resistance) where helminthic infestations are also endemic; the instructions for using the drugs can be based upon the recognition of a few basic clinical signs and symptoms.

The World Health Organization's action programme has resulted in a comprehensive list of 200-250 'essential drugs', including vaccines, salts, nutrients and vitamins. It has had a favourable impact on many developing countries and has helped them in developing their own list of essential drugs for primary health care. At intervals, a constant evaluation and ranking of products with regard to their therapeutic value for each indication and the prevailing economic condition must be undertaken.

HEALTH FOR ALL – ALL FOR HEALTH

ESSENTIAL DRUGS SAVE LIVES AND MONEY

INFORMATION KIT

OCTOBER 1988

ACTION PROGRAMME ON ESSENTIAL DRUGS

Countries in the South-East Asia Region have made determined and concerted efforts towards the goal of health for all by the year 2000. Health for All has now become a movement for health development, sharply focusing on improved management, strengthening of infrastructure and absorbing and applying appropriate health technology through the primary health care approach.

The last few decades have seen considerable progress in the pharmaceutical field. While most Governments prior to 1950 were trying to focus their attention mainly on quality, the thalidomide tragedy brought into sharp focus the problems of safety of drugs. The growing attention on drug policies has sharpened. Since a substantial portion of the health budget is being siphoned for drug purchase, the socio-economic aspects of drugs have attracted a great deal of attention of health planners and managers in the developing countries. Drug policies have gained added relevance because of health policies which are aimed at restructuring health development so as to provide maximum benefit to the under-served and unserved for achieving health for all by the year 2000.

International actions have, therefore, been centered around ensuring the accessibility of drugs to the population of developing countries based on their needs. Pharmaceuticals have thus crossed over from mere technical considerations to more relevant social and economic considerations.

Realizing that the developing countries are handicapped by meagre financial resources and that the expenditure of drugs may constitute as much as 40% of their total health budget, the Twenty-eighth World Health Assembly in 1975 drew attention to the necessity of "developing drug policies linking drug research, production and distribution to the health needs of different countries".

The pharmaceutical supply system is one of the most crucial issues in developing countries. This is reflected in Resolution No. 25 adopted by the Fifth Conference of Heads of States of Government of Non-aligned Countries held in Colombo in 1976 which also emphasized the need for cooperation among developing countries in the pharmaceutical sector.

Drug Policies

While drugs alone are not sufficient to provide adequate health care, they no doubt play an important role in protecting, maintaining and restoring the health of the

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people. This is particularly so in the developing countries where the morbidity still continues to be at a high level.

In recent times, there have been unprecedented advances in the field of drug research. Several transnationals have marketed drugs with not much concern for the health needs and priorities of developing countries. Thus there are several drugs for relieving pain and joint swellings, myriads of drugs for blood pressure or coronary heart disease and many antibiotics for treating infections.

One of the major constraints identified by WHO is the lack of a well-defined drug policy as a part of a country health policy to ensure supply of essential drugs for the health systems based on the primary health care approach. Since the aim of developing a national drug policy is to improve the efficiency of the pharmaceutical supply system through definite objectives and through cooperation and coordination between the different sectors involved, WHO, in the South-East Asia Region, has emphasized a need at the national level to develop a country specific drug policy.

The implementation of the drug policy is through a legal instrument, namely, legislation, giving both the responsibility and authority to the government to regulate the pharmaceutical supply system to achieve the objectives of the drug policy.

Essential Drugs Concept

It is recalled that it is possible to treat most patients with only a few drugs which have proven therapeutic value, assured safety, and are economically priced. Such drugs are to be considered as "Essential Drugs" indicating thereby that they are necessary for the health needs of the population of a country. The Essential Drugs concept is thus a public health approach in drug selection.

Production Facilities

Several countries in this region have established facilities for production of drugs. India and Indonesia are self-sufficient in the formulation and also produce some basic pharmaceuticals or bulk drugs. WHO has collaborated with countries in the training of personnel for production, establishment of production technology, introduction of Good Manufacturing Practices (GMP) and generally strengthening of infrastructure.

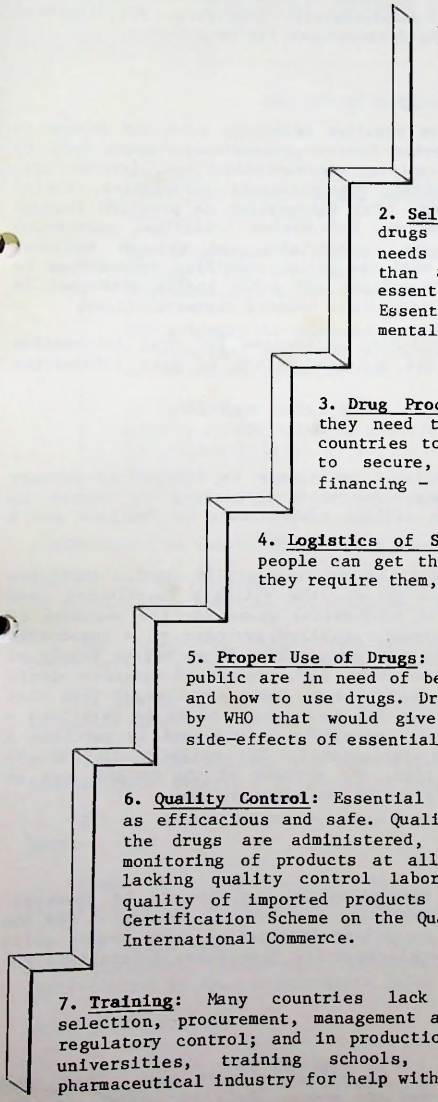
Procurement

Several countries are procuring their drug requirements through import. The procurement system has to be rationalized through training in managerial processes and market intelligence which is the pre-requisite for obtaining quality products from economic sources. The WHO certification scheme is one mechanism utilized by several countries to assure quality of drugs imported from countries participating in the scheme.

Quality assurance

The main thrust of the WHO programme on pharmaceuticals is to develop the capabilities of the countries of the South-East Asia Region in all aspects of quality assurance. WHO collaboration is in the field of training manpower, both technical and managerial; strengthening the infrastructure of the drug testing laboratories through supply of equipment; introducing methodology for drug analysis, training of nationals in GMP; developing adverse drug reaction monitoring centres; establishing a network of collaborating centres, and participating in the WHO certification schemes.

SEVEN STEPS TO SUCCESS IN ESSENTIAL DRUGS SUPPLY*



1. **National Drug Policy**: Every country's comprehensive health policy should include a National Policy on Essential Drugs. WHO's role is to inform governments about the basic concept and the benefits. A national essential drugs policy can provide more drugs to more people at the same cost or even less.

2. **Selection of Essential Drugs**: Essential drugs are those that satisfy the health care needs of the majority of the population. More than 80 countries have now adopted lists of essential drugs based on WHO's Model List of Essential Drugs, as have various nongovernmental organizations and UN agencies.

3. **Drug Procurement**: Often, countries pay more than they need to for their drugs. UNICEF and WHO help countries to strengthen their procurement systems and to secure, if necessary and possible, reliable financing - internal or external - for their purchases.

4. **Logistics of Supply**: WHO's goal is to make sure that people can get the 20 most needed essential drugs whenever they require them, within an hour's travel.

5. **Proper Use of Drugs**: Both health professionals and the general public are in need of better information and education about when and how to use drugs. Drug information sheets are being considered by WHO that would give the indications, contra-indications and side-effects of essential drugs.

6. **Quality Control**: Essential drugs must be of reliable quality as well as efficacious and safe. Quality has to be assured up to the time that the drugs are administered, by good manufacturing practices and by monitoring of products at all stages in the supply line. Any country lacking quality control laboratories can obtain an assurance of the quality of imported products at the time of export through the WHO Certification Scheme on the Quality of Pharmaceutical Products Moving in International Commerce.

7. **Training**: Many countries lack staff trained in policy formulation, selection, procurement, management and use of drugs; in drug legislation and regulatory control; and in production and quality control. WHO is approaching universities, training schools, nongovernmental organizations, and the pharmaceutical industry for help with training materials and courses.

*From World Health, July 1984

Drug Ethics and Marketing Code

These are issues agitating developing countries for several years. Some countries have taken steps for an appropriate drug information system and also for incorporating in their legislation or regulation such problems as human experimentation, etc. There is need for a code of ethics for manufacturers, importers, distributors, prescribers and consumers. WHO has now provided guidelines for Drug Ethics.

Drug Information

Different types of information on drugs are required depending upon the groups to which they are directed. Clinicians and other health professionals would need to know more about the mode of action, indications, contra-indications, adverse drug reactions, drug interactions, dosage required, pharmaceutical preparation, shelf-life, stability at ambient temperatures etc. Drug information is provided through several mechanisms such as medical literature, information bulletins, university courses, product write up, package insert, advertising and through national formularies, seminars and conferences. In most developing countries information to consumers is negligible and information to medical and other health personnel is mostly through manufacturers directly or through their medical representatives.

WHO has supported countries in establishing mechanisms for drug information such as publication of national formularies and preparation of drug information sheets.

Community participation

Several countries in the Region have initiated programmes in support of primary health care through innovative approaches. One such innovation in regard to availability of essential drugs is through village cooperatives in Thailand and a similar pilot-scale project in Nepal.

Three thousand villages in Thailand have already successfully started their own village cooperative medical stores. At the outset, the villages contributed seed money approximately US$1 each, to start the cooperative store for the purchase of essential drugs. As the amount collected would not allow purchase of a reasonable stock, the government helped by providing to each cooperative three months supply of drugs. The village worker responsible for the store, also trained to diagnose simple problems, sells the drugs at a fixed price (which is at least 20% cheaper than that available in the market) to the villager. From the money received he is permitted a deduction of 5% for his personal effort. The remainder is utilized to purchase a fresh stock hence the imprest stock is replenished. The activity is closely supervised by the district health authorities. The success of the project can be evaluated from the fact that it is spreading rapidly to other villages.

Drug Prices

Accessibility of essential drugs to the population in need has to be improved. Affordability is directly linked with the purchasing power of the population and the drug prices. Although some countries have controlled drug prices, some people still cannot afford to buy essential drugs. Several countries have taken initiatives for appropriate pricing policies.

CONCLUSION

Essential Drugs form an important element of primary health care. When used appropriately and rationally, they save lives and money. Their indiscriminate use, however, could expend scarce resources which could be very critical in a developing country for buying food to improve nutrition and prevent disease.

HEALTH FOR ALL – ALL FOR HEALTH

ESSENTIAL DRUGS SAVE LIVES AND MONEY

INFORMATION KIT

OCTOBER 1988

WHO ACTION PROGRAMME ON ESSENTIAL DRUGS

The goal is to ensure that by 1990, almost all peoples in developing countries are assured of the supply of essential drugs when they need these.

The programme is assisting countries to develop rational drug policies and management and improve the efficiency of their pharmaceutical supply system.

WHO activity is focussed on enabling countries to select a list of essential drugs and establish mechanisms at country level for reviewing and updating the list.

In **South-East Asia, WHO's major thrust** is also to improve the country capabilities to establish quality assurance programmes at the national level so as to ensure safety, efficacy and quality of drugs.

ACHIEVEMENTS IN THE SOUTH-EAST ASIA REGION OF WHO

The WHO Action Programme on Drugs has assisted several countries in South-East Asia to develop drug policies and management and promote the concept of essential drugs.

The total WHO budget for 1988-1989 for the Essential Drugs Programme in South-East Asia Region is US$2.04 million.

In **Bhutan** US$1.2 million have been mobilized for developing a drug programme to ensure support to primary health care.

Ten million dollars have been mobilized through SIDA, DANIDA and WHO to assist **Bangladesh** to develop a programme on essential drugs.

2.5 million dollars are being mobilized for the essential drugs programme in **Burma.**

Nepal has been assisted through extra-budgetary resources to strengthen different facets of the essential drugs programme.

Sri Lanka has received substantial extra-budgetary resources for developing drug policies, management, establishment of an essential drugs list and qualification of drug requirements based on the morbidity pattern.

WHO40/1988/October/8

Photo WHO/C Stauffer

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Towards Implementing the Teaching of Essential Drugs and Rational Therapeutics in Undergraduate Medical Education

A note for the Rajiv Gandhi University of Health Sciences (RGUHS)
By
Drug Action Forum – Karnataka (DAF-K) and Community Health Cell (CHC)

1. Introduction

1.1 As the RGUHS is in the process of reviewing the II MBBS curriculum it was considered appropriate to support, the process by putting together current thought and practice about the teaching of rational therapeutics and essential drugs.

The progressive manner in which the I MBBS curriculum was recently revised suggests that a similar approach will be adopted for the II MBBS.

1.2 The RGUHS has already stated in its 'Objectives of Medical Graduate Training' the need for students to "be familiar with the administration of essential drugs and their common side effects" (RGUHS, 1997, p4). In this it reinforced the recommendations of the Medical Council of India (MCI, 1997, p6).

1.3 Concerning Pharmacology, the recent subject-wise curriculum of the MCI, Regulations states that "the broad goal ..... is to inculcate the rational and scientific basis of therapeutics" (*ibid* p27). Under Objectives it has recognised the need to "integrate the concept of rational drug therapy in clinical pharmacology" and "state the principles underlying the concept of Essential Drugs (*ibid*, p28). Integration of pharmacology with clinical disciplines and reinforcement during internship has been highlighted eg., under Community Medicine to "gain information on Essential Drugs and their usage (*ibid*, p70).

1.4 These statements are in keeping with recommendations of global bodies such as the World Health Organization since the mid 1980s (IOCU, 1988). This has resulted in global awareness and action and in the development of the Educators for Rational Drug Use (ERDU) which is a "global network of teachers and administrators of schools of medicine and pharmacy as well as consumer and public interest groups working to introduce changes in undergraduate medical and pharmacy curricula by incorporating the concept of essential drugs and rational drug use (IOCU, 1988, back cover).

Thus the need for teaching regarding Rational Drug Use and Essential Drugs has received recognition by bodies at different levels. Introducing this teaching in the affiliated colleges of the RGUHS and influencing knowledge and therapeutic practice among staff, student and young graduates offers many possibilities and challenges.

2. The Current Scenario

2.1 Despite recommendations and drug action efforts the current Indian pharmaceutical scene is flooded with essential, non-essential, bannable and hazardous drugs prescribed by qualified allopathic doctors and others. There is evidence of irrational use of drugs. Studies also indicate the strong and dominant role played by pharmaceutical companies in the education of doctors and the relatively weaker role played by Universities and medical colleges particularly in continuing education. The ICSSR-ICMR Health for All report, 1981 noted that "eternal vigilance is required to ensure that the health care system does not get medicalized, that the doctor-drug producer axis does not exploit the people, and that the abundance of drugs does not become a vested interest in ill-health".

2.2 The growing commercialization of medical practice has aggravated irrational therapeutic practices. This is occuring alongside an increase in drug prices and in a situation in which a substantial proportion of the population live in conditions of poverty. The economic costs to patients, their families and the country resulting from irrational drug use is difficult to bear and also unnecessary.

2.3 Feedback concerning pharmacology teaching from medical graduates with work experience in rural and primary health care situations found that coverage was too theoretical and exhaustive with time spent on drugs not currently in use (Narayan T & Narayan R, 1993). The making of mixtures and experimental pharmacology was considered not very useful. Time spent on this could be diverted to "rational therapeutics focussing also on cost effective management" and "the use of essential drugs as given by WHO" (*ibid*, p 34-35).

3. Suggestions for introducing the Essential Drug Concept (EDC) into undergraduate medical teaching.

3.1 Staff need to be sensitized to the concept through workshops and seminars. The curriculum needs to be modified and changes defined (IOCU, 1988).

3.2 Specific recommendations include (*ibid*):

A) Student sensitization could begin in the I MBBS through general lectures on health, sociology and behavioural sciences.

B) The Essential Drug List may be introduced in the first few lectures in Clinical Pharmacology, including the criteria of need, efficacy, safety and cost that underline their choice. A few lectures about risk-benefit ratio, cost-benefit ratio and Iatrogenesis could be included. Different lists for primary, secondary and tertiary health care need explaining.

C) In paraclinical and clinical departments, problem solving, active learning methods are encouraged – eg., studying prescriptions, organising integrated teaching including seminars with general practitioners, and undertaking small studies based in the teaching hospital, in pharmacies and with general practitioners. Relating knowledge to practice is important.

D) The use of case studies giving symptoms and signs of a patient along with a prescription generate a lot of discussion and learning (NTTC, 1989).

E) Weekly bedside clinical pharmacology teaching and studying drug dosages, selection of therapy, antibiotic sensitivity patterns, cost effectiveness, drug interactions and side-effect are very helpful. Studies of drug utilization patterns in the community and exposure to traditional medicine / Indian Systems of Medicine is also suggested. (Thomas M, 1986).

F) If each medical college could offer CME programmes including contact programmes on Clinical Pharmacology and Rational Use of Drugs to its alumni, it would improve the quality of therapeutics (*ibid).* This will also counterbalance the present situation where most continuing education is through medical representatives and drug companies.

References

1. MCI, 1997, Medical Council of India Regulations on Graduate Medical Education, MCI, New Delhi.
2. RGUHS 1997, Rajiv Gandhi University of Health Sciences-Karnataka, Ordinance Governing MBBS Degree Programme, RGUHS, Bangalore.
3. IOCU, 1988, Towards Rational Drug Use – Proceedings of the International Consultation on Rational Drug Use in Undergraduate Medical / Pharmacy Education, IOCU, Penang.
4. Narayan T and Narayan R, 1993, Graduate Feedback on Medical Education based on experience in Peripheral Health Institutions, Community Health Cell, Bangalore.
5. NTTC, 1989, Manual for Training on Concept of Essential Drugs and Rationalised Drug Use, National Teachers Training Centre, JIPMER, Pondicherry.
6. Thomas M, 1986, Impact of Clinical Pharmacology in the Training of Physicians, IJME, 25:2, May-Aug 1986.
7. ICSSR and ICMR (Indian Council of Social Science Research and Indian Council of Medical Research), 1981, Health For All – An Alternative Strategy, Indian Institute of Education, Pune.

RATIONAL DRUG THERAPY (PRESCRIBERS' LEVEL)

- ⇒ BE KNOWLEDGEABLE ABOUT DRUGS IN GENERAL AND THE PARTICULAR DRUG BEING PRESCRIBED
- ⇒ EDUCATION, INCLUDING CONTINUING EDUCATION
- ⇒ BE AWARE OF THE BANNED AND HAZARDOUS DRUGS
- ⇒ USE ESTABLISHED DRUGS, DO NOT RUSH FOR THE LATEST
- ⇒ USE ONLY DRUGS INCLUDED IN THE FORMULARY
- ⇒ SPECIFY USAGE, DOSAGE FORM, ROUTE OF ADMINISTRATION, QUANTITY AND DURATION OF TREATMENT
- ⇒ IMPROVE PRESCRIBING HABITS, DRUGS UPDATE
- ⇒ ATTEND CLINICAL MEETINGS AND SEMINARS

- ⇒ EDUCATE THE PATIENT ON THE CORRECT USE OF THE DRUG. IMPROVE INSTRUCTIONS ON HOW TO TAKE THE DRUG.
- ⇒ BE COST CONSCIOUS
- ⇒ AVOID SHOTGUN THERAPY
- ⇒ DO NOT BE CARRIED AWAY BY THE PROMOTIONAL ACTIVITIES OF THE FIRMS AND THEIR REPRESENTATIVES
- ⇒ HAVE ETHICAL CONSIDERATIONS

ADVANTAGES OF THE CONCEPT OF ESSENTIAL DRUGS

MEDICAL

MEDICALLY, THERAPEUTICALLY AND SCIENTIFICALLY SOUND
LIMITS USE OF IRRATIONAL AND HAZARDOUS DRUGS
DECREASE IATROGENESIS
IMPROVES MONITORING OF ADVERSE DRUG REACTIONS

ECONOMIC

PREVENTS WASTAGE OF SCARCE RESOURCES ON NON-ESSENTIALS
LARGER PRODUCTION OF PRIORITY DRUGS BRINGS DOWN THEIR PRICES
CURTAILS AGGRESSIVE MARKETING OF NON ESSENTIALS

SOCIAL

RESPONDS TO THE REAL NEEDS OF PEOPLE
DISSEMINATION OF CORRECT INFORMATION TO MEDICAL PERSONNEL AND CONSUMERS
MAKES IT IMPERATIVE TO DRAW UP PRIORITIES

ADMINISTRATIVE

ORGANISATIONALLY SOUND AND MAKES QUALITY CONTROL EASIER
FACILITATES THE STREAMLINING OF PRODUCTION, STORAGE AND DISTRIBUTION OF DRUGS
HELPS IN CLEAN IDENTIFICATION OF DRUGS
FACILITATES FIXING OF PRICES AS WELL AS REVISION/WITHDRAWAL OF EXCISE DUTIES AND SALES TAX.

ESSENTIAL DRUGS LIST : Prepared by Community Health Cell for Govt. of Karnataka.

Sl. No.	Name of Drug	Tablets	Capsule	Injections	Syrup	Others
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANAESTHETICS					
1.	Ether, Anaesthetic					Inhalation
2.	Halothane					Inhalation
3.	Thiopental			0.5g amp		
4.	Nitrous Oxide					Inhalation
5.	Oxygen	(Refer Emergency Drugs)				
	ANALGESIC/ANTIPYRETICS					
1.	Paracetamol	500mg.		300mg./2ml.amp	125mg/5ml	
2.	Aspirin	300mg				
3.	Ibuprofen	200mg 400mg				
4.	Indomethacin		25mg			
5.	Pentazocine Lactate	25mg		30mg/ml		
6.	Pethidine			50mg/ml		
	ANTI-ALLERGICS					
	Chlorpheniramine maleate	4mg				
2.	Promethazine	10mg 25mg		25mg/ml	5mg/5ml	
3.	Adrenaline			1 in 1000, 1ml amp		
4.	Dexamethasone	0.5mg		4mg/ml, 2ml vial		
	ANTI-EPILEPTICS					
1.	Phenobarbitone	30mg 60mg		200mg/ml		
2.	Diazepam	— 10mg		5mg/ml	2mg/5ml	
3.	Phenyl - Sodium	100mg		50mg/ml	100mg/4ml	
4.	Carbamazepine	100mg 200mg				

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANTIDOTES					
1.	Atropine sulphate			0.6mg/ml		
2.	Magnesium Sulphate					4g/10ml (pow
3.	Pralidoxime			0.5g powd. in vial		
	ANTI-INFECTIVES					
	Anti-helminthic					
1.	Mebendazole	100mg			100mg/5ml	
	Anti-aerobic					
1.	Metronidazole	200mg 400mg			100mg/5ml	
	Anti bacterial					
1.	Benzyl Pencillin			500000U/vial 1000000U/vial		
2.	Procaine Pencillin			400000U/vial 2000000U/vial		
3.	Benzathine Pencillin			600000U/vial 1200000U/vial 2400000U/vial		
4.	Tetracycline		250mg			
5.	Doxycycline		100mg			
6.	Chloramphenicol		250mg	1g/vial	150mg/5ml	
7.	Co-trimoxazole	T.80mg+5.400mg			T.40mg+5.200mg/5ml	
8.	Erythromycin	250mg			125mg/5ml	
9.	Amoxycillin		250mg	100mg/vial	125mg/5ml	
10.	Ampicillin		250mg	250mg/vial	125mg/5ml	
	ANTI-LEPROSY					
1.	Dapsone	25mg 50mg 100mg				
2.	Rifampicin		150mg 300mg			
3.	Clofazimine		50mg 100mg			

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANTI-TUBERCULAR					
1.	INH	100mg				
2.	Streptomycin			1g/vial		
3.	Thioacetazone	150mg				
4.	Rifampicin	(Refer Anti-Leprosy)				
5.	Ethambutol	200mg 400mg				
	(Please see National Tuberculosis Control Programme & banned combinations in the treatment of Tuberculosis)					
	ANTI-FILARIAL					
1.	Di-ethyl carbamazine	50mg			120mg/5ml	
	ANTI-FUNGAL					
1.	Griseofulvin	125mg				
2.	Amphotericin B			50mg/vial		
	ANTI-MALARIAL					
1.	Chloroquin	100mg base		40mg/ml		
2.	Primaquin	2.5mg				
3.	Sulfadoxine/Pyrenthamine	5.500mg/0.25mg				
4.	Quinine Sulphate	300mg		300mg/amp		
	HAEMOPOIETIC					
1.	Ferrous Sulphate+Folic Acid	200mg+0.5mg				
2.	Ferrous Fumarate+Folic Acid	150mg+2.5mg				
3.	Folic Acid	5mg				
	CARDIOVASCULAR					
	Anti-anginal					
1.	Isosorbide Nitrate	10mg				
2.	Propranolol	10mg 40mg				

(1)	(2)	(3)	(4)	(5)	(6)
	Anti-hypertensive				
1.	Hydrochlorothiazide	50mg			
2.	Reserpine	0.1mg			
3.	Hydralazine	25mg			
4.	Atenolol	50mg 100mg			
	Cardiac glycoside				
1.	Digoxin	0.25mg		0.25mg/ml	
	DIURETICS				
1.	Frusemide	40mg		10mg/ml	
2.	Spironolactone	25mg			
3.	Mannitol			20% infusion	
	GASTRO INTESTINAL				
	Antacids				
1.	Aluminium Hydroxide	250mg			
2.	Magnesium trisilicate	500mg			
3.	Ranitidine	150mg		25mg/ml	
	Anti-emetics				
1.	Metoclopramide	10mg		5mg/ml	5mg/5ml
2.	Promethazine	(Refer Anti Allergics)			
	Anti spasmodic				
1.	Atropine sulphate (Refer Antidotes)	0.5mg		0.6mg/ml	
2.	Dicyclomin	10mg			
3.	Promethazine (Refer Anti-Allergics)				
	ANTI-DIARRHOEALS				
1.	ORS Packets (WHO) Formula)				
2.	Loperamide Hydrochloride (not for children)	2mg			
	LAXATIVES				
1.	Ispaghula husk				Granules
2.	Paraffin, liquid				Liquid by mo
3.	Glycerine				Suppository

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	HORMONES					
1.	Prednisolone	5mg 10mg				
2.	Hydrocortisone sodium succinate			25mg/ml		
3.	Dexamethasone (Refer Anti Allergics)	4mg		4mg/ml		
	ANTI DIABETIC					
1.	Insulin (Plain) Insulin (Lente)			40U/ml 40U/ml		
2.	Glibenclamide	5mg				
	PSYCHOTHERAPEUTIC					
1.	Imipramine	25mg				
2.	Chlorpromazine	10mg 25mg		25mg/ml		
3.	Diazepam (Refer Anti Epileptics)					
	RESPIRATORY					
	Anti asthmatic					
1.	Theophylline	100mg		110mg/ml	60mg/5ml	
2.	Aminophylline	100mg		25mg/ml		
3.	Salbutamol	2mg 4mg			2mg/5ml	
4.	Terbutaline	2.5mg 5mg		0.5mg/ml		
5.	Oxygen					Inhalation
	Anti-tussive					
1.	Codeine Phosphate	30mg				
	OPHTHALMICS					
1.	Methergin	0.25mg		0.2mg/ml		
2.	Oxytocin			5 IU/ml 10 IU/ml		

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	REHYDRATION ACID BASE ELECTROLYTE balance					
1.	I.V. Dextrose			5%,10% in 500ml 25%,50% in 25ml		
2.	I.V. Sodium Chloride			0.9% in 500ml		
3.	I.V. Dextrose/Saline			0.5%+5.0.9% in 500ml		
4.	I.V. Molar Lactate			500ml		
5.	I.V. Sodium Bicarbonate			7.5% in 10ml/25ml amp		
6.	Potassium Chloride					3g/30ml (a
	VITAMINS/MINERALS					
1.	Ascorbic Acid	100mg				
2.	Vitamin A	5000 IU	50000 IU	50000 IU/ml		
3.	Vitamin B complex	Yes	Yes	Yes	Yes	
	SKIN & SID					
1.	Zinc Oxide (ointment)					2% (ointme
2.	Whitfield (ointment)					2% (ointme
3.	Benzyl Benzoate (emulsion)					25% (emulsi
4.	Hexycin+Bacitracin					Powder, Oin
5.	Gentian Violet					1% solution
6.	Miconazole (ointment)					2% (ointme
7.	Penicillins	(Refer Anti-Bacterials above)				
8.	Oxycyclin	(Refer Anti-Bacterials above)				
9.	Norfloxacin	400mg				
	EYE DROPS					
1.	Tetracycline					1% (ointment
2.	Pilocarpine					1% (drops)
3.	Homatropine					1% (drops)
4.	Chloramphenicol					1% (ointment 0.4% (drops)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	EMERGENCY DRUGS					
1.	Oxygen cylinders on trolleys, with flow meters and mask					
2.	Dopamine			200ug/5ml		
3.	Hydro cortisone	(Refer Hormones)				
4.	Lignocaine			1%, 2%		
5.	Atropine	(Refer in Antispasmodics)				
6.	Sodium Bicarbonate	(Refer Rehydration)				
7.	Pralidoxime	(Refer Antidotes)		0.5g pwd./vial		
8.	Adrenaline	(Refer Anti-Allergics)		1 in 1000/ml amp		
9.	Mephenteramine			15mg/ml amp		
10.	Mannitol	(Refer Diuretics)		20% in 350ml		
11.	Magnesium sulphate	(Refer Antidotes)		50% in amp		
12.	Tracheotomy set, 24, 27, 30, 34					
	ACCESSORIES					
1.	Water for injection			Ampules		
2.	Hydrogen peroxide					6% Solution
3.	Chlorhexidine					4% W/V Liquid
4.	Absorbent Cotton					
5.	Gauze, small & large					
6.	Bandage					
7.	Butterfly (scalp) venesels, 18, 21, 24					
8.	Sutures					
	Black braided silk - 1, 1.0, 2, 2.0, 3, 3.0 Mersilk - 1.0, 2.0, 4.0 Catgut, plain - 1, 1.0, 2, 2.0, 3, 3.0 Catgut, chromic - 1, 1.0, 2, 2.0, 3.0 Prolene, atraumatic - 1, 1.0, 2.0, 3.0 Vicryl - 5.0, 4.0, 3.0 Cotton thread					
9.	Suture Needles					
10.	Hypodermic Needles					
11.	Gloves, surgical, 6, 6½/2, 7					
12.	Ryles tubes					

(1)	(2)	(3)	(4)	(5)	(6)	(7)
13.	Adhesive Plaster, 1", 2", 4" width					
14.	Elastocrepe bandage, 2", 4" rolls					
15.	Plaster of Paris					
16.	Surgical Spirit					
17.	Drip set : administrations fluid, blood					
18.	Cannula, IV for venesection, 16, 19, 22 and paediatric sizes					
19.	Syringes					
20.	Catheters, plain, 3, 6, 9 Catheters, Foley's, 8, 12, 16, 20					
21.	Bleaching powder					
	VACCINES & SERA					
1.	All Vaccines as per National Universal Immunization Programme					
2.	Anti Rabies Serum					5ml, 10ml amps
3.	Anti Snake Venom Serum					10ml
	DIAGNOSTIC AGENTS					
	As needed					

This list has been prepared using the following lists for reference

1. W.H.O. model list of essential list.
2. Essential drugs in Primary Health Care in India, Southern region list, prepared at National Seminar conducted by MIPCCO.
3. Lists of drugs received from Government and other sources.
4. CMAI-CMAI formulary.

ESSENTIAL DRUGS LIST : Prepared by Community Health Cell for Govt. of Karnataka.

Sl. No.	Name of Drug	Tablets	Capsule	Injections	Syrup	Others
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANAESTHETICS					
1.	Ether, Anaesthetic					Inhalation
2.	Halothane					Inhalation
3.	Thiopental			0.5g amp		
4.	Nitrous Oxide					Inhalation
5.	Oxygen	(Refer Emergency Drugs)				
	ANALGESIC/ANTIPYRETICS					
1.	Paracetamol	500mg.		300mg./2ml.amp	125mg/5ml	
2.	Aspirin	300mg				
3.	Ibuprofen	200mg 400mg				
4.	Indomethacin		25mg			
5.	Pentazocine Lactate	25mg		30mg/ml		
6.	Pethidine			50mg/ml		
	ANTI-ALLERGICS					
	Chlorpheniramine maleate	4mg				
2.	Promethazine	10mg 25mg		25mg/ml	5mg/5ml	
3.	Adrenaline			1 in 1000, 1ml amp		
4.	Dexamethasone	0.5mg		4mg/ml, 2ml vial		
	ANTI-EPILEPTICS					
1.	Phenobarbitone	30mg 60mg		200mg/ml		
2.	Diazepam	— 10mg		5mg/ml	2mg/5ml	
3.	Phenytoin Sodium	100mg		50mg/ml	100mg/4ml	
4.	Carbamazepine	100mg 200mg				

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANTIDOTES					
1.	Atropine sulphate			0.6mg/ml		
2.	Magnesium Sulphate					4g/10ml (pow
3.	Pralidoxime			0.5g powd. in vial		
	ANTI-INFECTIVES					
	Anti-helminthic					
1.	Mebendazole	100mg			100mg/5ml	
	Anti-amoebic					
1.	Metronidazole	200mg 400mg			100mg/5ml	
	Anti bacterial					
1.	Benzyl Penicillin			500000U/vial 1000000U/vial		
2.	Procaine Penicillin			400000U/vial 2000000U/vial		
3.	Benzathine Penicillin			600000U/vial 1200000U/vial 2400000U/vial		
4.	Tetracycline		250mg			
5.	Doxycycline		100mg			
6.	Chloramphenicol		250mg	1g/vial	150mg/5ml	
7.	Co-trimoxazole	T.80mg+5.400mg			T.40mg+5.200mg/5ml	
8.	Erythromycin	250mg			125mg/5ml	
9.	Ampicillin		250mg	100mg/vial	125mg/5ml	
10.	Aspicillin		250mg	250mg/vial	125mg/5ml	
	ANTI-LEPROSY					
1.	Dapsone	25mg 50mg 100mg				
2.	Rifampicin		150mg 300mg			
3.	Clofazimine		50mg 100mg			

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANTI-TUBERCULAR					
1.	INH	100mg				
2.	Streptomycin			1g/vial		
3.	Thioacetazone	150mg				
4.	Rifampicin	(Refer Anti-Leprosy)				
5.	Ethambutol	200mg 400mg				
	(Please see National Tuberculosis Control Programme & banned combinations in the treatment of tuberculosis)					
	ANTI-FILARIAL					
1.	Di-ethyl carbamazine	50mg			120mg/5ml	
	ANTI-FUNGAL					
1.	Griseofulin	125mg				
2.	Amphotericin B			50mg/vial		
	ANTI-MALARIAL					
1.	Chloroquin	100mg base		40mg/ml		
2.	Primaquin	2.5mg				
3.	Sulfadoxine/Pyrimethamine	5.500mg/0.25mg				
4.	Quinine Sulphate	300mg		300mg/amp		
	HAEMOPOIETIC					
1.	Ferrous Sulphate/Folic Acid	200mg/0.5mg				
2.	Ferrous Fumarate/Folic Acid	150mg/2.5mg				
3.	Folic Acid	5mg				
	CARDIOVASCULAR					
	Anti-anginal					
1.	Isosorbide Nitrate	10mg				
2.	Propranolol	10mg 40mg				

(1)	(2)	(3)	(4)	(5)	(6)
	Anti-hypertensive				
1.	Hydrochlorothiazide	50mg			
2.	Reserpine	0.1mg			
3.	Hydralazine	25mg			
4.	Atenolol	50mg 100mg			
	Cardiac glycoside				
1.	Digoxin	0.25mg		0.25mg/ml	
	DIURETICS				
1.	Frusemide	40mg		10mg/ml	
2.	Spironolactone	25mg			
3.	Mannitol			20% infusion	
	GASTRO INTESTINAL				
	Antacids				
1.	Aluminium Hydroxide	250mg			
2.	Magnesium trisilicate	500mg			
3.	Ranitidine	150mg		25mg/ml	
	Anti-emetics				
1.	Metoclopramide	10mg		5mg/ml	5mg/5ml
2.	Promethazine	(Refer Anti Allergics)			
	Anti spasmodic				
1.	Atropine sulphate (Refer Antidotes)	0.5mg		0.6mg/ml	
2.	Dicyclomin	10mg			
3.	Fenoverine (Refer Anti-Allergics)				
	ANTI-DIARRHOEALS				
1.	ORS Packets (SWG) Furazolol				
2.	Loperamide Hydrochloride (not for children)	2mg			
	LAXATIVES				
1.	Isaphula husk				Granules
2.	Paraffin, liquid				Liquid by mo
3.	Glycerine				Suppository

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	HORMONES					
1.	Prednisolone	5mg 1mg				
2.	Hydrocortisone sodium succinate			25mg/ml		
3.	Corticosteroid (Refer Anti Allergics)	4.5mg		4mg/ml		
	ANTI DIABETIC					
1.	Insulin (Actrapid Insulin Lente)			40IU/ml 40IU/ml		
2.	Glibenclamide	5mg				
	PSYCHO TROPHIC					
1.	Imipramine	25mg				
2.	Chlorpromazine	10mg 25mg		25mg/ml		
3.	Diazepam (Refer Anti Epileptics)					
	RESPIRATORY					
	Anti asthmatics					
1.	Theophylline	100mg		110mg/ml	60mg/5ml	
2.	Aminophylline	125mg		25mg/ml		
3.	Salbutamol	2mg 4mg			2mg/5ml	
4.	Terbutaline	2.5mg 5mg		0.5mg/ml		
5.	Oxygen					Inhalation
	Anti-tussive					
1.	Codeine Phosphate	30mg				
	OBSTETRICS					
1.	Methergin	0.75mg		0.2mg/ml		
2.	Oxytocin			5 IU/ml 10 IU/ml		

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	REHYDRATION ACID BASE ELECTROLYTE balance					
1.	I.V. Dextrose			5%,10% in 500ml 25%,50% in 25ml		
2.	I.V. Sodium Chloride			0.9% in 500ml		
3.	I.V. Dextrose+Saline			0.5%+5.0.9% in 500ml		
4.	I.V. Molar Lactate			500ml		
5.	I.V. Sodium Bicarbonate			7.5% in 10ml/25ml amp		
6.	Potassium Chloride					1g/10ml (a
	VITAMINS/MINERALS					
1.	Ascorbic Acid	100mg				
2.	Vitamin A	5000 IU	50000 IU	50000 IU/ml		
3.	Vitamin B complex	Yes	Yes	Yes	Yes	
	SKIN & SIB					
1.	Zinc Oxide (ointment)					2% (ointmen
2.	Whitfield (ointment)					2% (ointmen
3.	Benzyl Benzoate (emulsion)					25% (emulsi
4.	Neomycin+Bacitracin					Powder, Oin
5.	Gentian Violet					1% solution
6.	Miconazole (ointment)					2% (ointmen
7.	Penicillins	(Refer Anti-Bacterials above)				
8.	Oxycyclin	(Refer Anti-Bacterials above)				
9.	Norfloxacin	400mg				
	EYE DROPS					
1.	Tetracycline					1% (ointment
2.	Pilocarpine					1% (drops)
3.	Homatropine					1% (drops)
4.	Chloramphenicol					1% (ointment 0.4% (drops)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	EMERGENCY DRUGS					
1.	Oxygen cylinders on trolleys, with flow meters and mask					
2.	Dopamine			200mg/5ml		
3.	Hydro cortisone	(Refer Hormones)				
4.	Lignocaine			1%, 2%		
5.	Atropine	(Refer in Antispasmodics)				
6.	Sodium Bicarbonate	(Refer Rehydration)				
7.	Fralidomide	(Refer Antidotes)		0.5g powd./vial		
8.	Adrenaline	(Refer Anti-Allergics)		1 in 1000/ml amp		
9.	Mephenteramine			15mg/ml amp		
10.	Mannitol	(Refer Diuretics)		20% in 350ml		
11.	Magnesium sulphate	(Refer Antidotes)		50% in amp		
12.	Tracheostomy set, 24, 27, 30, 36					
	ACCESSORIES					
1.	Water for injection			Ampules		
2.	Hydrogen peroxide					6% Solution
3.	Chlorhexidine					4% W/V Liquid
4.	Absorbent Cotton					
5.	Gauze, small & large					
6.	Bandage					
7.	Butterfly (scalp) venesels, 18, 21, 24					
8.	Sutures					
	Black braided silk - 1, 1.0, 2, 2.0, 3, 3.0 Mersilk - 1.0, 2.0, 4.0 Catgut, plain - 1, 1.0, 2, 2.0, 3, 3.0 Catgut, chromic - 1, 1.0, 2, 2.0, 3.0 Prolene, atraumatic - 1, 1.0, 2.0, 3.0 Vicryl - 5.0, 4.0, 3.0 Cotton thread					
9.	Suture Needles					
10.	Hypodermic Needles					
11.	Gloves, surgical, 6, 6½/2, 7					
12.	Ryles tubes					

(1)	(2)	(3)	(4)	(5)	(6)	(7)
13.	Adhesive Plaster, 1", 2", 4" width					
14.	Elastocrepe bandage, 2", 4" rolls					
15.	Plaster of Paris					
16.	Surgical Spirit					
17.	Drip set : administration: fluid, blood					
18.	Cannula, IV for venesection, 16, 19, 22 and paediatric sizes					
19.	Syringes					
20.	Catheters, plain, 3, 6, 9 Catheters, Foley's, 8, 12, 16, 20					
21.	Bleaching powder					
	VACCINES & SERA					
1.	All Vaccines as per National Universal Immunization Programme					
2.	Anti Rabies Serum				5ml, 10ml amps	
3.	Anti Snake Venom Serum				10ml	
	DIAGNOSTIC AGENTS					
	As needed					

This list has been prepared using the following lists for reference

1. W.H.O. model list of essential list.
2. Essential drugs in Primary Health Care in India, Southern region list, prepared at National Seminar conducted by NIPCCD.
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4. CMAI-CMAI formulary.

DR14:7

ESSENTIAL DRUG LIST

(PREPARED BY COMMUNITY HEALTH CELL)

Sl. No.	Name of Drug	Sl. No.	Name of Drug
	ANAESTHETICS		ANALGESIC/ANTIPYRETICS
1.	Ether	1.	Paracetamol
2.	Halothene	2.	Aspirin
3.	Thiopental	3.	Ibuprofen
4.	Nitrous Oxide	4.	Indomethacin
5.	Oxygen	5.	Pentazocine Lactate
		6.	Pethidine
	ANTI - ALLERGICS		ANTI - EPILEPTICS
1.	Chlorpheniramine maleate	1.	Phenobarbitone
2.	Promethazine	2.	Diazepam
3.	Adrenaline	3.	Phenytoin Sodium
4.	Dexamethasone	4.	Carbamazepine
	ANTIBODIES		ANTI - INFECTIVES
1.	Atropine sulphate	1.	Mebendazole
2.	Magnesium Sulphate	2.	Metronidazole
3.	Pralidoxime	3.	Benzyl Pencillin
		4.	Procaine Pencillin
		5.	Benzathine Pencillin
		6.	Tetracycline
		7.	Doxycycline
		8.	Chloramphenicol
		9.	Co-trimoxazole
		10.	Erythromycin
		11.	Amoxycillin
		12.	Ampicillin
	ANTI - LEPROSY		ANTI - TUBERCULAR
1.	Dapsone	1.	INH
2.	Rifampicin	2.	Streptomycin
3.	Clofazimine	3.	Thioacetazone
		4.	Rifampicin
		5.	Ethambutol

ANTI - FILARIAL

1. Di-ethyl carbamazine

ANTI - MALARIAL

1. Chloroquin
2. Primaquin
3. Sulfadoxin Pyremethamine
4. Quinine Sulphate

CARDIOVASCULAR

1. Isosorbide Nitrate
2. Propranolol

CARDIAC GLYCOSIDE

1. Digoxin

GASTRO INTESTINAL

Antacids

1. Aluminium Hydroxide
2. Magnesium Trisilicate
3. Ranitidine

Anti-emetics

1. Metoclopramide
2. Promethazine

Anti spasmodic

1. Atropine sulphate
2. Dicyclomin
3. Promethazine

Anti -Diarrhoeals

ORS packets
Loperamide Hydrochloride
(not for children)

ANTI - FUNGAL

Griseofulvin
Amphotericin B

HAEMOPOIETIC

1. Ferrous Sulphate + folic Acid
2. Ferrous Fumarate + folic Acid
3. Folic Acid

ANTI - HYPERTENSIVE

1. Hydrochlorothiazide
2. Reserpine
3. Hydralazine
4. Atenlol

DIURETICS

1. Frusemide
2. Spiranolactone
3. Mannitol

LAXATIVES

1. Isapaghula husk
2. Paraffin, liquid
3. Glycerine

HARMONES

1. Prednisolone
2. Hydrocortisone sodium succinate

PSYCHO THERAPEUTIC

1. Imipramine
2. Chlorpromazine
3. Diazepam

OBSTETRICS

1. Methergin
2. Oxytocin

VITAMINS / MINERALS

1. Ascorbic Acid
2. Vitamin A
3. Vitamin B complex

ANTI DIABETIC

1. Insulin (plain)
2. Insulin (Lente)
3. Glibenclamide

RESPIRATORY

Anti asthmatic

1. Deriphylline
2. Aminophylline
3. Salbutamol
4. Terbutaline
5. Oxygen

Anti-tussive

1. Codeine Phosphate

REHYDRATION ACID BASE ELECTROLYTE balance

1. I.V. Dextrose
2. I.V. Sodium Chloride
3. I.V. Dextrose + Saline
4. I.V. Molar Lactate
5. I.V. Sodium Bicabonate
6. Potassium Chloride

SKIN & STD

1. Zinc Oxide Ointment
2. Whitfield ointment
3. Benzyl benzate
4. Neomycin+bacitracin
5. Gention violet
6. Miconazole ointment
7. Pencillin
8. Doxycyclin
9. Norfloxacin

EYE DROPS

1. Tetracycline
2. Pilocarpine
3. Humatropine
4. Chloramphenical

EMERGENCY DRUGS

1. Oxygen cylinders on trolleys, with
2. flow meters and mask
3. Dopamine
4. Hydro cortisone
5. Lignocaine
6. Atropine
7. Sodium Bicarbonate
8. Pralidoxime
9. Adrenaline
10. Mephentermine
11 Mannitol
12. Magnesium sulphate
13. Trachestomy set, 24,27,30,36

ACCESSORIES

1. Water for injection
2. Hydrogen peroxide
3. Chlorhexidine
4. Absorbent Cotton
5. Gauze, small & large
6. Bandage
7. Butterfly (scalp) venesets 18,21,24
8. Sutures
   - Black braided silk
   - Mersilk
   - Catgut, plain
   - Catgut Chromic
   - Prolene, atraumatic
   - Vicryl
   - Cotton thread
9. Suture Needles
10. Hypodermic Needles
11. Gloves, surgical
12. Ryles Tubes
13. Adhesive Plaster
14. Elastocrepe bandage
15. Plaster of Paris
16. Surgical Spirit
17. Drip set : administration; fluid, blood
    Cannula, IV for venesection
18. Syringes
19. Catheters, plain
20. Catheters, Foley's
21. Bleaching powder

VACCINES & SERA

1. All vaccines as per National
2. Universal Immunization Programme
3. Anti Rabies serum
4. Anti Snake Venom Serum

DIAGNOSTIC AGENTS
As needed

This list has been prepared using the following lists for reference:

1. model list of essential list
2. Essential drugs in Primary Health Care in India, Southern region list, prepared at National Seminar conducted by NIPCCD.
3. Lists of drugs received from Government and other sources
4. CHAI-CMAI formulary.

Volume 13, Number 4, 1999 World Health Organization, Geneva

WHO Drug Information

Contents

Essential Drugs

WHO Model List (revised December 1999)

Section 1: Anaesthetics

1.1 GENERAL ANAESTHETICS AND OXYGEN

ether, anaesthetic (1c) (2)	inhalation
halothane (2)	inhalation
ketamine (2)	injection, 50 mg (as hydrochloride)/ml in 10-ml vial
nitrous oxide (2)	inhalation
oxygen	inhalation (medicinal gas)
[a]thiopental (2)	powder for injection, 0.5 g, 1.0 g (sodium salt) in ampoule

1.2 LOCAL ANAESTHETICS

[a]bupivacaine (2, 9)	injection, 0.25%, 0.5% (hydrochloride) in vial
	injection for spinal anaesthesia, 0.5% (hydrochloride) in 4-ml ampoule to be mixed with 7.5% glucose solution
[a]lidocaine	injection, 1%, 2% (hydrochloride) in vial
	injection, 1%, 2% (hydrochloride) + epinephrine 1:200 000 in vial
	injection for spinal anaesthesia, 5% (hydrochloride) in 2-ml ampoule to be mixed with 7.5% glucose solution
	topical forms, 2–4% (hydrochloride)
	dental cartridge, 2% (hydrochloride) + epinephrine 1:80 000

Complementary drug

ephedrine (C)	injection, 30 mg (hydrochloride)/ml in 1-ml ampoule
(For use in spinal anaesthesia during delivery to prevent hypotension)	

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

Explanatory Notes

When the strength of a drug is specified in terms of a selected salt or ester, this is mentioned in brackets; when it refers to the active moiety, the name of the salt or ester in brackets is preceded by the word "as".

Many drugs included in the list are preceded by a box (°) to indicate that they represent an example of a therapeutic group and that various drugs could serve as alternatives. It is imperative that this is understood when drugs are selected at national level, since choice is then influenced by the comparative cost and availability of equivalent products. Examples of acceptable substitutions include:

° Hydrochlorothiazide: any other thiazide-type diuretic currently in broad clinical use.
° Hydralazine: any other peripheral vasodilator having an antihypertensive effect.
° Senna: any stimulant laxative (either synthetic or of plant origin).
° Sulfadiazine: any other short-acting, systemically active sulfonamide unlikely to cause crystalluria.

Numbers in parentheses following drug names indicate:
(1) Drugs subject to international control under: (a) the Single Convention on Narcotic Drugs (1961); (b) the Convention on Psychotropic Substances (1971); or (c) the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances (1988).
(2) Specific expertise, diagnostic precision, individualization of dosage or special equipment required for proper use.
(3) Greater potency or efficacy.
(4) In renal insufficiency, contraindicated or dosage adjustments necessary.
(5) To improve compliance.
(6) Special pharmacokinetic properties.
(7) Adverse effects diminish benefit/risk ratio.
(8) Limited indications or narrow spectrum of activity.
(9) For epidural anaesthesia.
(10) Sustained-release preparations are available. A proposal to include such a product in a national list of essential drugs should be supported by adequate documentation.
(11) Monitoring of therapeutic concentrations in plasma can improve safety and efficacy.

Letters in parentheses following the drug names indicate the reasons for the inclusion of *complementary drugs:*
(A) When drugs in the main list cannot be made available.
(B) When drugs in the main list are known to be ineffective or inappropriate for a given individual.
(C) For use in rare disorders or in exceptional circumstances.
(D) Reserve antimicrobials to be used only when there is significant resistance to other drugs on the list.

Drugs are listed in alphabetical order.

1.3 PREOPERATIVE MEDICATION & SEDATION FOR SHORT-TERM PROCEDURES

atropine	injection, 1 mg (sulfate) in 1-ml ampoule
chloral hydrate	syrup, 200 mg/5 ml
[a]diazepam (1b)	injection, 5 mg/ml in 2-ml ampoule
	tablet, 5 mg
[a]morphine (1a)	injection, 10 mg (sulfate or hydrochloride) in 1-ml ampoule
[a]promethazine	elixir or syrup, 5 mg (hydrochloride)/5 ml

Section 2: Analgesics, Antipyretics, Nonsteroidal Anti-Inflammatory Drugs (NSAIDs), Drugs Used to Treat Gout and Disease-Modifying Agents used in Rheumatic Disorders (DMARDs)

2.1 NON-OPIOID ANALGESICS & NSAIDs

acetylsalicylic acid	tablet, 100–500 mg
	suppository, 50–150 mg
[a]ibuprofen	tablet, 200 mg, 400 mg
paracetamol	tablet, 100–500 mg
	suppository, 100 mg
	syrup, 125 mg/5 ml

2.2 OPIOID ANALGESICS

[a]codeine (1a)	tablet, 30 mg (phosphate)
[a]morphine (1a)	injection, 10 mg (sulfate or hydrochloride) in 1-ml ampoule
	oral solution, 10 mg (hydrochloride or sulfate))/5 ml
	tablet, 10 mg (sulfate)
Complementary drug	
[a]pethidine (A) (1a, 4)	injection, 50 mg (hydrochloride) in 1-ml ampoule
	tablet, 50 mg, 100 mg (hydrochloride)

2.3 DRUGS USED TO TREAT GOUT

allopurinol (4)	tablet, 100 mg
colchicine (7)	tablet, 500 µg

2.4 DISEASE-MODIFYING AGENTS USED IN RHEUMATIC DISORDERS

azathioprine (2)	tablet, 50 mg
chloroquine (2)	tablet, 100 mg, 150 mg (as phosphate or sulfate)
cyclophosphamide (2)	tablet, 25 mg
methotrexate (2)	tablet, 2.5 mg (as sodium salt)
penicillamine (2)	capsule or tablet, 250 mg
sulfasalazine (2)	tablet, 500 mg

Section 3: Antiallergics and Drugs Used in Anaphylaxis

[a]chlorphenamine	tablet, 4 mg (hydrogen maleate)
	injection, 10 mg (hydrogen maleate) in 1-ml ampoule
[a]dexamethasone	tablet, 500 µg, 4 mg
	injection, 4 mg dexamethasone phosphate (as disodium salt) in 1-ml ampoule
epinephrine	injection, 1 mg (as hydrochloride or hydrogen tartrate) in 1-ml ampoule
hydrocortisone	powder for injection, 100 mg (as sodium succinate) in vial
[a]prednisolone	tablet, 5 mg

Section 4: Antidotes and Other Substances Used in Poisonings

4.1 NON-SPECIFIC

[a]charcoal, activated	powder
ipecacuanha	syrup, containing 0.14% ipecacuanha alkaloids calculated as emetine

4.2 SPECIFIC

acetylcysteine	injection, 200 mg/ml in 10-ml vial
atropine	injection, 1 mg (sulfate) in 1-ml ampoule
calcium gluconate (2, 8)	injection, 100 mg/ml in 10-ml ampoule
deferoxamine	powder for injection, 500 mg (mesilate) in vial

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

dimercaprol (2)	injection in oil, 50 mg/ml in 2-ml ampoule
°DL-methionine	tablet, 250 mg
methylthioninium chloride (methylene blue)	injection, 10 mg/ml in 10-ml ampoule
naloxone	injection, 400 µg (hydrochloride) in 1-ml ampoule
penicillamine (2)	capsule or tablet, 250 mg
potassium ferric hexacyanoferrate(II) $2H_2O$ (Prussian blue)	powder for oral administration
sodium calcium edetate (2)	injection, 200 mg/ml in 5-ml ampoule
sodium nitrite	injection, 30 mg/ml in 10-ml ampoule
sodium thiosulfate	injection, 250 mg/ml in 50-ml ampoule

Section 5: Anticonvulsants/ Antiepileptics

carbamazepine (10, 11)	scored tablet, 100 mg, 200 mg
°diazepam (1b)	injection, 5 mg/ml in 2-ml ampoule (intravenous or rectal)
ethosuximide	capsule, 250 mg
	syrup, 250 mg/5 ml
magnesium sulfate	injection, 500 mg/ml in 2-ml ampoule and 10-ml ampoule
phenobarbital (1b, 11)	tablet, 15–100 mg
	elixir, 15 mg/5 ml
phenytoin (7, 11)	capsule or tablet, 25 mg, 50 mg, 100 mg (sodium salt)
	injection, 50 mg (sodium salt)/ml in 5-ml vial
valproic acid (7, 11)	enteric coated tablet, 200 mg, 500 mg (sodium salt)
Complementary drug	
°clonazepam (B) (1b)	scored tablet, 500 µg

Section 6: Anti-infective Drugs

6.1 ANTHELMINTHICS

6.1.1 INTESTINAL ANTHELMINTHICS

albendazole	chewable tablet, 400 mg
levamisole	tablet, 50 mg, 150 mg (as hydrochloride)
°mebendazole	chewable tablet, 100 mg, 500 mg
niclosamide	chewable tablet, 500 mg
praziquantel	tablet, 150 mg, 600 mg
pyrantel	chewable tablet, 250 mg (as embonate)
	oral suspension, 50 mg (as embonate)/ml

6.1.2 ANTIFILARIALS

diethylcarbamazine	tablet, 50 mg, 100 mg (dihydrogen citrate)
ivermectin	scored tablet, 3 mg, 6 mg
Complementary drug	
suramin sodium (B) (2, 7)	powder for injection, 1 g in vial

6.1.3 ANTISCHISTOSOMALS AND OTHER ANTITREMATODE DRUGS

praziquantel	tablet, 600 mg
triclabendazole	tablet, 250 mg
Complementary drug	
oxamniquine (C) (8)	capsule, 250 mg
	syrup, 250 mg/5 ml

6.2 ANTIBACTERIALS

6.2.1 BETA LACTAM DRUGS

°amoxicillin	capsule or tablet, 250 mg, 500 mg (anhydrous)
	powder for oral suspension, 125 mg (anhydrous)/5 ml
ampicillin	powder for injection, 500 mg, 1 g (as sodium salt) in vial
benzathine benzylpenicillin	powder for injection, 1.44 g benzylpenicillin (= 2.4 million IU) in 5-ml vial
benzylpenicillin	powder for injection, 600 mg (= 1 million IU), 3 g (= 5 million IU) (sodium or potassium salt) in vial

° Example of a therapeutic group. *Various drugs can serve as alternatives.*

°cloxacillin	capsule, 500 mg, 1 g (as sodium salt)
	powder for oral solution, 125 mg (as sodium salt)/5 ml
	powder for injection, 500 mg (as sodium salt) in vial
phenoxymethylpenicillin	tablet, 250 mg (as potassium salt)
	powder for oral suspension, 250 mg (as potassium salt)/5 ml
procaine benzylpenicillin	powder for injection, 1 g (= 1 million IU), 3 g (= 3 million IU) in vial
Restricted indications	
°amoxicillin + °clavulanic acid (D)	tablet, 500 mg + 125 mg
ceftazidime (D)	powder for injection, 250 mg (as pentahydrate) in vial
°ceftriaxone (D)	powder for injection, 250 mg (as sodium salt) in vial
imipenem + cilastatin (D)	powder for injection, 250 mg (as monohydrate) + 250 mg, (as sodium salt) 500 mg (as monohydrate) + 500 mg in vial (as sodium salt)

6.2.2 OTHER ANTIBACTERIALS

°chloramphenicol (7)	capsule, 250 mg
	oral suspension, 150 mg (as palmitate)/5 ml
	powder for injection, 1 g (sodium succinate) in vial
°ciprofloxacin	tablet, 250 mg (as hydrochloride)
°doxycycline (5, 6)	capsule or tablet, 100 mg (hydrochloride)
°erythromycin	capsule or tablet, 250 mg (as stearate or ethyl succinate)
	powder for oral suspension, 125 mg (as stearate or ethyl succinate)
	powder for injection, 500 mg (as lactobionate) in vial
°gentamicin (2, 4, 7, 11)	injection, 10 mg, 40 mg (as sulfate)/ml in 2-ml vial
°metronidazole	tablet, 200–500 mg
	injection, 500 mg in 100-ml vial
	suppository, 500 mg, 1 g
	oral suspension, 200 mg (as benzoate)/5 ml
nalidixic acid (8)	tablet, 250 mg, 500 mg
nitrofurantoin (4, 8)	tablet, 100 mg
spectinomycin (8)	powder for injection, 2 g (as hydrochloride) in vial
°sulfadiazine (4)	tablet, 500 mg
	injection, 250 mg (sodium salt) in 4-ml ampoule
°sulfamethoxazole + trimethoprim (4)	tablet, 100 mg + 20 mg, 400 mg + 80 mg
	oral suspension, 200 mg + 40 mg/5 ml
	injection, 80 mg + 16 mg/ml in 5-ml and 10-ml ampoule
trimethoprim (8)	tablet, 100 mg, 200 mg
	injection, 20 mg/ml in 5-ml ampoule
Complementary drugs	
chloramphenicol (C)	oily suspension for injection, 0.5 g (as sodium succinate)/ml in 2-ml ampoule
clindamycin (B) (8)	capsule, 150 mg
	injection, 150 mg (as phosphate)/ml
Restricted indications	
vancomycin (D)	powder for injection 250 mg (as hydrochloride) in vial

6.2.3 ANTILEPROSY DRUGS

clofazimine	capsule, 50 mg, 100 mg
dapsone	tablet, 25 mg, 50 mg, 100 mg
rifampicin	capsule or tablet, 150 mg, 300 mg

6.2.4 ANTITUBERCULOSIS DRUGS

ethambutol (4)	tablet, 100–400 mg (hydrochloride)
isoniazid	tablet, 100–300 mg
isoniazid + ethambutol (5)	tablet, 150 mg + 400 mg

° Example of a therapeutic group. *Various drugs can serve as alternatives.*

pyrazinamide	tablet, 400 mg
rifampicin	capsule or tablet, 150 mg, 300 mg
rifampicin + isoniazid (5)	tablet, 60 mg + 30 mg, 150 mg + 75 mg, 300 mg + 150 mg
	tablet, 60 mg + 60 mg, 150 mg + 150 mg *(for intermittent use 3 times weekly)*
rifampicin + isoniazid + pyrazinamide (5)	tablet, 60 mg + 30 mg + 150 mg, 150 mg + 75 mg + 400 mg
	tablet, 150 mg + 150 mg + 500 mg *(for intermittent use 3 times weekly)*
rifampicin + isoniazid + pyrazinamide + ethambutol	tablet, 150 mg + 75 mg + 400 mg + 275 mg
streptomycin (4)	powder for injection, 1 g (as sulfate) in vial

Complementary drug

thioacetazone + isoniazid (A) (5, 7)	tablet, 50 mg + 100 mg, 150 mg + 300 mg

Additional reserve antituberculosis drugs for the treatment of drug-resistant tuberculosis should be used in specialized centres only with WHO-recommended TB control strategy, DOTS, and treatment programmes.

6.3 ANTIFUNGAL DRUGS

amphotericin B (4)	powder for injection, 50 mg in vial
°fluconazole	capsule, 50 mg
	injection, 2 mg/ml in vial
	oral suspension, 50 mg/5-ml
griseofulvin (7)	capsule or tablet, 125 mg, 250 mg
nystatin	tablet, 100 000, 500 000 IU
	lozenge, 100 000 IU
	pessary, 100 000 IU

Complementary drugs

flucytosine (B) (4, 8)	capsule, 250 mg
	infusion, 2.5 g in 250 ml
potassium iodide (A)	saturated solution

6.4 ANTIVIRAL DRUGS

6.4.1 ANTIHERPES DRUGS

aciclovir (8)	tablet, 200 mg
	powder for injection, 250 mg (as sodium salt) in vial

6.4.2 ANTIRETROVIRAL DRUGS

Adequate resources and specialist oversight are a prerequisite for the introduction of this class of drugs.

nevirapine (8)	tablet, 200 mg
	oral solution, 50 mg/5 ml
zidovudine (8)	capsule, 100 mg, 250 mg
	injection, 10 mg/ml in 20-ml vial
	oral solution, 50 mg/5 ml

Drugs for treatment of HIV/AIDS include nucleoside reverse transcriptase inhibitors (NRTIs), non-nucleoside reverse transcriptase inhibitors (NNRTIs) and protease inhibitors (PIs). Zidovudine and nevirapine have been shown to reduce or prevent mother-to-child transmission of HIV infection. **This is the only indication for which they are included here.** Single drug use with zidovudine, except in pregnancy, is now regarded as obsolete because of the development of resistance. Triple therapy is beyond the budgets of most national drug programmes and therefore HIV/AIDS treatment policies must be decided at country or institutional level.

6.5 ANTIPROTOZOAL DRUGS

6.5.1 ANTIAMOEBIC AND ANTIGIARDIASIS DRUGS

° diloxanide	tablet, 500 mg (furoate)
°metronidazole	tablet, 200–500 mg
	injection, 500 mg in 100-ml vial
	oral suspension, 200 mg (as benzoate)/5 ml

6.5.2 ANTILEISHMANIASIS DRUGS

°meglumine antimoniate	injection, 30%, equivalent to approx. 8.5% antimony, in 5-ml ampoule
pentamidine (5)	powder for injection, 200 mg, 300 mg (isetionate) in vial

Complementary drug

amphotericin B (B) (4)	powder for injection, 50 mg in vial

6.5.3 ANTIMALARIAL DRUGS

(a) FOR CURATIVE TREATMENT

°chloroquine	tablet, 100 mg, 150 mg (as phosphate or sulfate)
	syrup, 50 mg (as phosphate or sulfate)/5 ml
	injection, 40 mg (as hydrochloride, phosphate or sulfate)/ml in 5-ml ampoule

° Example of a therapeutic group. *Various drugs can serve as alternatives.*

primaquine — tablet, 7.5 mg, 15 mg (as diphosphate)

°quinine — tablet, 300 mg (as bisulfate or sulfate)

injection, 300 mg (as dihydrochloride)/ml in 2-ml ampoule

Complementary drugs

°doxycycline (B) *(for use only in combination with quinine)* — capsule or tablet, 100 mg (hydrochloride)

mefloquine (B) — tablet, 250 mg (as hydrochloride)

°sulfadoxine + pyrimethamine (B) — tablet, 500 mg + 25 mg

Restricted indications

artemether (D) — injection, 80 mg/ml in 1-ml ampoule

artesunate (D) — tablet, 50 mg

(b) FOR PROPHYLAXIS

chloroquine — tablet, 150 mg (as phosphate or sulfate)

syrup, 50 mg (as phosphate or sulfate)/5 ml

doxycycline — capsule or tablet, 100 mg (hydrochloride)

mefloquine — tablet, 250 mg (as hydrochloride)

proguanil *(for use only in combination with chloroquine)* — tablet, 100 mg (hydrochloride)

6.5.4 ANTIPNEUMOCYSTOSIS AND ANTITOXOPLASMOSIS DRUGS

pentamidine (2) — tablet, 200 mg, 300 mg

pyrimethamine — tablet, 25 mg

sulfamethoxazole + trimethoprim — injection, 80 mg + 16 mg/ml in 5-ml and 10-ml ampoule

6.5.5 ANTITRYPANOSOMAL DRUGS

(a) AFRICAN TRYPANOSOMIASIS

melarsoprol (2) — injection, 3.6% solution

pentamidine (2) — powder for injection, 200 mg, 300 mg (isetionate) in vial

suramin sodium — powder for injection, 1 g in vial

Complementary drug

eflornithine (C) — injection, 200 mg (hydrochloride)/ml in 100-ml bottles

(b) AMERICAN TRYPANOSOMIASIS

benznidazole (7) — tablet, 100 mg

nifurtimox (2, 8) — tablet, 30 mg, 120 mg, 250 mg

6.6 INSECT REPELLENTS

diethyltoluamide — topical solution, 50%, 75%

Section 7: Antimigraine Drugs

7.1 FOR TREATMENT OF ACUTE ATTACK

acetylsalicylic acid — tablet, 300–500 mg

ergotamine (1c) (7) — tablet, 1 mg (tartrate)

paracetamol — tablet, 300–500 mg

7.2 FOR PROPHYLAXIS

°propranolol — tablet, 20 mg, 40 mg (hydrochloride)

Section 8: Antineoplastic and Immunosuppressive Drugs and Drugs Used in Palliative Care

8.1 IMMUNOSUPPRESSIVE DRUGS

Adequate resources and specialist oversight are a prerequisite for the introduction of this class of drugs.

°azathioprine (2) — tablet, 50 mg

powder for injection, 100 mg (as sodium salt) in vial

°ciclosporin (2) *(for organ transplantation)* — capsule, 25 mg

concentrate for injection, 50 mg/ml in 1-ml ampoule

8.2 CYTOTOXIC DRUGS

Adequate resources and specialist oversight are a prerequisite for the introduction of this class of drugs.

asparaginase (2) — powder for injection, 10 000 IU in vial

bleomycin (2) — powder for injection, 15 mg (as sulfate) in vial

calcium folinate (2) — tablet, 15 mg

injection, 3 mg/ml in 10-ml ampoule

chlorambucil (2) — tablet, 2 mg

chlormethine (2) — powder for injection, 10 mg (hydrochloride) in vial

° Example of a therapeutic group. *Various drugs can serve as alternatives.*

cisplatin (2)	powder for injection, 10 mg, 50 mg in vial
cyclophosphamide (2)	tablet, 25 mg
	powder for injection, 500 mg in vial
cytarabine (2)	powder for injection, 100 mg in vial
dacarbazine (2)	powder for injection, 100 mg in vial
daunorubicin (2)	powder for injection, 50 mg (as hydrochloride) in vial
dactinomycin (2)	powder for injection 500 µg in vial
[a]doxorubicin (2)	powder for injection, 10 mg, 50 mg (hydrochloride) in vial
etoposide (2)	capsule, 100 mg
	injection, 20 mg/ml in 5-ml ampoule
fluorouracil (2)	injection, 50 mg/ml in 5-ml ampoule
levamisole (2)	tablet, 50 mg (as hydrochloride)
mercaptopurine (2)	tablet, 50 mg
methotrexate (2)	tablet, 2.5 mg (as sodium salt)
	powder for injection, 50 mg (as sodium salt) in vial
procarbazine	capsule, 50 mg (as hydrochloride)
vinblastine (2)	powder for injection, 10 mg (sulfate) in vial
vincristine (2)	powder for injection, 1 mg, 5 mg (sulfate) in vial

8.3 HORMONES AND ANTIHORMONES

[a]prednisolone	tablet, 5 mg
	powder for injection, 20 mg, 25 mg (as sodium phosphate or sodium succinate) in vial
tamoxifen	tablet, 10 mg, 20 mg (as citrate)

8.4 DRUGS USED IN PALLIATIVE CARE

The WHO Expert Committee on Essential Drugs recommended that all the drugs mentioned in the WHO publication *Cancer Pain Relief: with a Guide to Opioid Availability, 2nd edition*, be considered essential. The drugs are included in the relevant sections of the model list according to their therapeutic use, e.g. analgesics.

Section 9: Antiparkinsonism Drugs

[a]biperiden	tablet, 2 mg (hydrochloride)
	injection, 5 mg (lactate) in 1-ml ampoule
levodopa + [a]carbidopa (5, 6)	tablet, 100 mg + 10 mg, 250 mg + 25 mg

Section 10: Drugs affecting the Blood

10.1 ANTIANAEMIA DRUGS

ferrous salt	tablet, equivalent to 60 mg iron
	oral solution, equivalent to 25 mg iron (as sulfate)/ml
ferrous salt + folic acid *(nutritional supplement for use during pregnancy)*	tablet, equivalent to 60 mg iron + 400 µg folic acid
folic acid (2)	tablet, 1 mg, 5 mg
	injection, 1 mg (as sodium salt) in 1-ml ampoule
hydroxocobalamin (2)	injection, 1 mg in 1-ml ampoule

Complementary drug

[a]Iron dextran (8) (5)	injection, equivalent to 50 mg iron/ ml in 2-ml ampoule

10.2 DRUGS AFFECTING COAGULATION

desmopressin (8)	injection, 4 µg (acetate)/ml in 1-ml ampoule
	nasal spray, 10 µg (acetate)/ metered dose
heparin sodium	injection, 1000 IU/ml, 5000 IU/ml, 20 000 IU/ml in 1-ml ampoule
phytomenadione	injection, 10 mg/ml in 5-ml ampoule
	tablet, 10 mg
protamine sulfate	injection, 10 mg/ml in 5-ml ampoule
[a]warfarin (2, 6)	tablet, 1 mg, 2 mg and 5 mg (sodium salt)

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

Section 11: Blood Products and Plasma Substitutes

11.1 PLASMA SUBSTITUTES

°dextran 70	injectable solution, 6%
°polygeline	injectable solution, 3.5%

11.2 PLASMA FRACTIONS FOR SPECIFIC USE [1]

Complementary drugs

°factor VIII concentrate (C) (2, 8)	dried
°factor IX complex (coagulation factors II, VII, IX, X) concentrate (C) (2, 8)	dried

Section 12: Cardiovascular Drugs

12.1 ANTIANGINAL DRUGS

°atenolol	tablet, 50 mg, 100 mg
glyceryl trinitrate	tablet (sublingual), 500 µg
°isosorbide dinitrate	tablet (sublingual), 5 mg
°verapamil (10)	tablet, 40 mg, 80 mg (hydrochloride)

12.2 ANTIARRHYTHMIC DRUGS

°atenolol	tablet, 50 mg, 100 mg
digoxin (4, 11)	tablet, 62.5 µg, 250 µg
	oral solution, 50 µg/ml
	injection, 250 µg/ml in 2-ml ampoule
lidocaine	injection, 20 mg (hydrochloride)/ml in 5-ml ampoule
verapamil (8, 10)	tablet, 40 mg, 80 mg (hydrochloride)
	injection, 2.5 mg (hydrochloride)/ml in 2-ml ampoule
Complementary drugs	
epinephrine (C)	injection, 1 mg (as hydrochloride)/ml
isoprenaline (C)	injection, 20 µg (hydrochloride)/ml
°procainamide (B)	tablet, 250 mg, 500 mg (hydrochloride)
	injection, 100 mg (hydrochloride)/ml in 10-ml ampoule
°quinidine (A) (7)	tablet, 200 mg (sulfate)

12.3 ANTIHYPERTENSIVE DRUGS

°atenolol	tablet, 50 mg, 100 mg
°captopril	scored tablet, 25 mg
°hydralazine	tablet, 25 mg, 50 mg (hydrochloride)
	powder for injection, 20 mg (hydrochloride) in ampoule
°hydrochlorothiazide	scored tablet, 25 mg
methyldopa (7)	tablet, 250 mg
°nifedipine (10)	sustained-release formulations
	tablet, 10 mg
°reserpine	tablet, 100 µg, 250 µg
	injection, 1 mg in 1-ml ampoule
Complementary drugs	
prazosin	tablet, 500 µg, 1 mg (mesilate)
°sodium nitroprusside (C) (2, 8)	powder for infusion, 50 mg in ampoule

12.4 DRUGS USED IN HEART FAILURE

°captopril	scored tablet, 25 mg
digoxin (4, 11)	tablet, 62.5 µg, 250 µg
	oral solution, 50 µg/ml
	injection, 250 µg/ml in 2-ml ampoule
dopamine	injection, 40 mg (hydrochloride)/ml in 5-ml vial
°hydrochlorothiazide	tablet, 25 mg, 50 mg

12.5 ANTITHROMBOTIC DRUGS

acetylsalicylic acid	tablet, 100 mg
Complementary drug	
streptokinase (C)	powder for injection, 100 000 IU, 750 000 IU in vial

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° Example of a therapeutic group. *Various drugs can serve as alternatives.*

[1] All plasma fractions should comply with the Requirements for the Collection, Processing and Quality Control of Blood, Blood Components and Plasma Derivatives (Revised 1992). WHO Technical Report Series, No. 840, 1994, Annex 2.

12.6 LIPID-LOWERING AGENTS

The WHO Expert Committee on Essential Drugs recognizes the value of lipid-lowering drugs in treating patients with hyperlipidaemia. Beta-hydroxy-beta-methylglutaryl-coenzyme A (HMG CoA) reductase inhibitors, often referred to as "statins", are potent and effective lipid-lowering drugs with a good tolerability profile. Several of these drugs have been shown to reduce the incidence of fatal and non-fatal myocardial infarction, stroke and mortality (all causes), as well as the need for coronary bypass surgery. All remain very costly but may be cost-effective for secondary prevention of cardiovascular disease as well as for primary prevention in some very high-risk patients. Since no single drug has been shown to be significantly more effective or less expensive than others in the group, none is included in the model list; the choice of drug for use in patients at highest risk should be decided at national level.

Section 13: Dermatological Drugs (topical)

13.1 ANTIFUNGAL DRUGS

benzoic acid + salicylic acid	ointment or cream, 6% + 3%
[a]miconazole	ointment or cream, 2% (nitrate)
sodium thiosulfate	solution, 15%
Complementary drug	
selenium sulfide (C)	detergent-based suspension, 2%

13.2 ANTI-INFECTIVE DRUGS

[a]methylrosanilinium chloride (gentian violet)	aqueous solution, 0.5% tincture, 0.5%
neomycin + [a]bacitracin (7)	ointment, 5 mg neomycin sulfate + 500 IU bacitracin zinc/g
potassium permanganate	aqueous solution, 1:10 000
silver sulfadiazine	cream, 1%, in 500-g container

13.3 ANTI-INFLAMMATORY AND ANTIPRURITIC DRUGS

[a]betamethasone (3)	ointment or cream, 0.1% (as valerate)
[a]calamine lotion	lotion
[a]hydrocortisone	ointment or cream, 1% (acetate)

13.4 ASTRINGENT DRUGS

aluminium diacetate	solution, 13% for dilution

13.5 DRUGS AFFECTING SKIN DIFFERENTIATION AND PROLIFERATION

benzoyl peroxide	lotion or cream, 5%
coal tar	solution, 5%
dithranol	ointment, 0.1–2%
fluorouracil	ointment, 5%
[a]podophyllum resin (7)	solution, 10–25%
salicylic acid	solution 5%
urea	ointment or cream, 10%

13.6 SCABICIDES AND PEDICULICIDES

[a]benzyl benzoate	lotion, 25%
permethrin	cream, 5%
	lotion, 1%

13.7 ULTRAVIOLET-BLOCKING AGENTS

Complementary drugs

topical sun protection agent with activity against UVA and UVB (C)	cream, lotion or gel

Section 14: Diagnostic Agents

14.1 OPHTHALMIC DRUGS

fluorescein	eye drops, 1% (sodium salt)
[a]tropicamide	eye drops, 0.5%

14.2 RADIOCONTRAST MEDIA

[a]amidotrizoate	injection, 140–420 mg iodine (as sodium or meglumine salt)/ml in 20-ml ampoule
barium sulfate	aqueous suspension
[a]iohexol	injection, 140–350 mg iodine/ml in 5-ml, 10-ml and 20-ml ampoule
[a]iopanoic acid	tablet, 500 mg
[a]propyliodone *(For administration only into the bronchial tree).*	oily suspension, 500–600 mg/ml in 20-ml ampoule
Complementary drug	
[a]meglumine iotroxate (C)	solution, 5 – 8 g iodine in 100–250 ml

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

Section 15: Disinfectants and Antiseptics

15.1 ANTISEPTICS

°chlorhexidine	solution, 5% (digluconate) for dilution
°ethanol	solution, 70% (denatured)
°polyvidone iodine	solution, 10%

15.2 DISINFECTANTS

°chlorine base compound	powder (0.1% available chlorine) for solution
°chloroxylenol	solution, 4.8%
glutaral	solution, 2%

Section 16: Diuretics

°amiloride (4, 7, 8)	tablet, 5 mg (hydrochloride)
°furosemide	tablet, 40 mg
	injection, 10 mg/ml in 2-ml ampoule
°hydrochlorothiazide	tablet, 25 mg, 50 mg
spironolactone (8)	tablet, 25 mg
Complementary drug	
°mannitol (C)	injectable solution, 10%, 20%

Section 17: Gastrointestinal Drugs

17.1 ANTACIDS AND OTHER ANTIULCER DRUGS

aluminium hydroxide	tablet, 500 mg
	oral suspension, 320 mg/5 ml
°cimetidine	tablet, 200 mg
	injection, 200 mg in 2-ml ampoule
magnesium hydroxide	oral suspension, equivalent to 550 mg magnesium oxide/10 ml

17.2 ANTIEMETIC DRUGS

metoclopramide	tablet, 10 mg (hydrochloride)
	injection, 5 mg (hydrochloride)/ml in 2-ml ampoule
°promethazine	tablet, 10 mg, 25 mg (hydrochloride)
	elixir or syrup, 5 mg (hydrochloride)/5 ml
	injection, 25 mg (hydrochloride)/ml in 2-ml ampoule

17.3 ANTIHAEMORRHOIDAL DRUGS

°local anaesthetic, astringent and anti-inflammatory drug	ointment or suppository

17.4 ANTI-INFLAMMATORY DRUGS

hydrocortisone	suppository, 25 mg (acetate)
	° retention enema
°sulfasalazine (2)	tablet, 500 mg
	suppository, 500 mg
	retention enema

17.5 ANTISPASMODIC DRUGS

°atropine	tablet, 0.6 mg (sulfate)
	injection, 1 mg (sulfate) in 1-ml ampoule

17.6 LAXATIVES

°senna	tablet, 7.5 mg (sennosides) (or traditional dosage forms)

17.7 DRUGS USED IN DIARRHOEA

17.7.1 ORAL REHYDRATION

oral rehydration salts (for glucose–electrolyte solution) — powder, 27.9 g/l

Components	*g/l*
sodium chloride	3.5
trisodium citrate dihydrate [2]	2.9
potassium chloride	1.5
glucose	20.0

° Example of a therapeutic group. *Various drugs can serve as alternatives.*

[2] Trisodium citrate dihydrate may be replaced by sodium bicarbonate (sodium hydrogen carbonate) 2.5 g/l. However, as the stability of this latter formulation is very poor under tropical conditions, it is only recommended when manufactured for immediate use.

17.7.2 ANTIDIARRHOEAL (SYMPTOMATIC) DRUGS

°codeine (1a)	tablet, 30 mg (phosphate)

Section 18: Hormones, other Endocrine Drugs and Contraceptives

18.1 ADRENAL HORMONES AND SYNTHETIC SUBSTITUTES

°dexamethasone	tablet, 500 µg, 4 mg
	injection, 4 mg dexamethasone phosphate (as disodium salt) in 1-ml ampoule
hydrocortisone	powder for injection, 100 mg (as sodium succinate) in vial
°prednisolone	tablet, 1 mg, 5 mg
Complementary drug	
fludrocortisone (C)	tablet, 100 µg (acetate)

18.2 ANDROGENS

Complementary drug	
testosterone (C) (2)	injection, 200 mg (enantate) in 1-ml ampoule

18.3 CONTRACEPTIVES

18.3.1 HORMONAL CONTRACEPTIVES

°ethinylestradiol + [a]levonorgestrel	tablet, 30 µg + 150 µg,
°ethinylestradiol + [a]levonorgestrel	tablet, 50 µg + 250 µg (pack of four)
°ethinylestradiol + [b]norethisterone	tablet, 35 µg + 1.0 mg
levonorgestrel	tablet, 0.75 mg (pack of two)
Complementary drugs	
[a]levonorgestrel (B)	tablet, 30 µg
medroxyprogesterone acetate (B) (7, 8)	depot injection, 150 mg in 1-ml vial
norethisterone enantate (B) (7, 8)	oily solution, 200 mg/ml in 1-ml ampoule

18.3.2 INTRAUTERINE DEVICES

copper-containing device	

18.3.3 BARRIER METHODS

condoms with or without spermicide (nonoxinol)	
diaphragms with spermicide (nonoxinol)	

18.4 ESTROGENS

°ethinylestradiol	tablet, 10 µg, 50 µg

18.5 INSULINS AND OTHER ANTIDIABETIC AGENTS

°glibenclamide	tablet, 2.5 mg, 5 mg
insulin injection (soluble)	injection, 40 IU/ml in 10-ml vial, 100 IU/ml in 10-ml vial
intermediate-acting insulin (as compound	injection, 40 IU/ml in 10-ml vial, 100 IU/ml in 10-ml vial insulin zinc suspension or isophane insulin)
metformin	tablet, 500 m (hydrochloride)

18.6 OVULATION INDUCERS

°clomifene (2, 8)	tablet, 50 mg (citrate)

18.7 PROGESTOGENS

norethisterone	tablet, 5 mg
Complementary drug	
medroxyprogesterone acetate (B)	tablet, 5 mg

18.8 THYROID HORMONES AND ANTITHYROID DRUGS

levothyroxine	tablet, 50 µg, 100 µg (sodium salt)
potassium iodide	tablet, 60 mg
°propylthiouracil	tablet, 50 mg

Section 19: Immunologicals

19.1 DIAGNOSTIC AGENTS

tuberculin,[3] purified protein derivative (PPD)	injection

° Example of a therapeutic group. *Various drugs can serve as alternatives.*

[3] All tuberculins should comply with the Requirements for Tuberculins (Revised 1985). WHO Technical Report Series, No. 745, 1987, Annex 1.

19.2 SERA AND IMMUNOGLOBULINS [4]

anti-D immunoglobulin (human)	injection, 250 µg in single-dose vial
[c]antitetanus immunoglobulin (human)	injection, 500 IU in vial
antivenom serum	injection
diphtheria antitoxin	injection, 10 000 IU, 20 000 IU in vial
immunoglobulin, human normal (2)	injection (intramuscular)
immunoglobulin, human normal (2, 8)	injection (intravenous)
[c]rabies immunoglobulin	injection, 150 IU/ml

19.3 VACCINES [5]

19.3.1 FOR UNIVERSAL IMMUNIZATION

BCG

diphtheria

pertussis

tetanus

hepatitis B

measles

poliomyelitis

19.3.2 FOR SPECIFIC GROUPS OF INDIVIDUALS

influenza

meningitis

mumps

rabies

rubella

typhoid

yellow fever

Section 20: Muscle Relaxants (peripherally acting) and Cholinesterase Inhibitors

[c]alcuronium chloride (2)	injection, 5 mg/ml in 2-ml ampoule
[c]neostigmine	tablet, 15 mg (bromide)
	injection, 500 µg, 2.5 mg (metilsulfate) in 1-ml ampoule
pyridostigmine bromide (2, 8)	tablet, 60 mg
	injection, 1 mg in 1-ml ampoule
suxamethonium chloride (2)	injection, 50 mg/ml in 2-ml ampoule
	powder for injection
Complementary drug	
vecuronium bromide (C)	powder for injection, 10 mg in vial

Section 21: Ophthalmological Preparations

21.1 ANTI-INFECTIVE AGENTS

[c]gentamicin	solution (eye drops), 0.3% (as sulfate)
[c]idoxuridine	solution (eye drops), 0.1%
	eye ointment, 0.2%
silver nitrate	solution (eye drops), 1%
[c]tetracycline	eye ointment, 1% (hydrochloride)

21.2 ANTI-INFLAMMATORY AGENTS

[c]prednisolone	solution (eye drops), 0.5% (sodium phosphate)

21.3 LOCAL ANAESTHETICS

[c]tetracaine	solution (eye drops), 0.5% (hydrochloride)

21.4 MIOTICS AND ANTIGLAUCOMA DRUGS

acetazolamide	tablet, 250 mg

[c] Example of a therapeutic group. *Various drugs can serve as alternatives.*
[4] All plasma fractions should comply with the Requirements for the Collection, Processing and Quality Control of Blood, Blood components and Plasma Derivatives (Revised 1992). WHO Technical Report Series, No. 840, 1994, Annex 2.
[5] All vaccines should comply with current WHO recommendations for biological substances.

°pilocarpine	solution (eye drops), 2%, 4% (hydrochloride or nitrate)
°timolol	solution (eye drops), 0.25%, 0.5% (as maleate)

21.5 MYDRIATICS

atropine	solution (eye drops), 0.1%, 0.5%, 1% (sulfate)

Complementary drug

epinephrine (A)	solution (eye drops), 2% (as hydrochloride)

Section 22: Oxytocics and Antioxytocics

22.1 OXYTOCICS

°ergometrine (1c)	tablet, 200 µg (hydrogen maleate)
	injection, 200 µg (hydrogen maleate) in 1-ml ampoule
oxytocin	injection, 10 IU in 1-ml ampoule

22.2 ANTIOXYTOCICS

°salbutamol (2)	tablet, 4 mg (as sulfate)
	injection, 50 µg (as sulfate)/ml in 5-ml ampoule

Section 23: Peritoneal Dialysis Solution

intraperitoneal dialysis solution (of appropriate composition)	parenteral solution

Section 24: Psychotherapeutic Drugs

24.1 DRUGS USED IN PSYCHOTIC DISORDERS

°chlorpromazine	tablet, 100 mg (hydrochloride)
	syrup, 25 mg (hydrochloride)/5 ml
	injection, 25 mg (hydrochloride)/ml in 2-ml ampoule
°fluphenazine (5)	injection, 25 mg (decanoate or enantate) in 1-ml ampoule
°haloperidol	tablet, 2 mg, 5 mg
	injection, 5 mg in 1-ml ampoule

24.2 DRUGS USED IN MOOD DISORDERS

24.2.1 DRUGS USED IN DEPRESSIVE DISORDERS

°amitriptyline	tablet, 25 mg (hydrochloride)

24.2.2 DRUGS USED IN BIPOLAR DISORDERS

carbamazepine (10, 11)	scored tablet, 100 mg, 200 mg
lithium carbonate (2, 4)	capsule or tablet, 300 mg
valproic acid (7, 11)	enteric coated tablet, 200 mg, 500 mg (sodium salt)

24.3 DRUGS USED IN GENERALIZED ANXIETY AND SLEEP DISORDERS

°diazepam (1b)	scored tablet, 2 mg, 5 mg

24.4 DRUGS USED IN OBSESSIVE COMPULSIVE DISORDERS AND PANIC ATTACKS

clomipramine	capsules, 10 mg, 25 mg (hydrochloride)

Section 25: Drugs Acting on the Respiratory Tract

25.1 ANTIASTHMATIC DRUGS

°aminophylline (2)	injection, 25 mg/ml in 10-ml ampoule
°beclometasone	inhalation (aerosol), 50 µg, 250 µg, (dipropionate) per dose
°epinephrine	injection, 1 mg (as hydrochloride or hydrogen tartrate) in 1-ml ampoule
ipratropium bromide	inhalation (aerosol), 20 µg/dose
°salbutamol	tablet, 2 mg, 4 mg (as sulfate)
	inhalation (aerosol), 100 µg (as sulfate) per dose
	syrup, 2 mg (as sulfate)/5 ml
	injection, 50 µg (as sulfate)/ml in 5-ml ampoule
	respirator solution for use in nebulizers, 5 mg (as sulfate)/ml
theophylline (10, 11)	tablet, 100 mg, 200 mg, 300 mg

Complementary drug

°cromoglicic acid (B)	inhalation (aerosol), 20 mg (sodium salt) per dose

° Example of a therapeutic group. *Various drugs can serve as alternatives.*

25.2 ANTITUSSIVES

[a]dextromethorphan	oral solution, 3.5 mg (bromide)/5 ml

Section 26: Solutions correcting Water, Electrolyte and Acid–base Disturbances

26.1 ORAL

oral rehydration salts (for glucose–electrolyte solution)	for composition see section 17.7.1
potassium chloride	powder for solution

26.2 PARENTERAL

glucose	injectable solution, 5% isotonic, 10% isotonic, 50% hypertonic
glucose with sodium chloride	injectable solution, 4% glucose, 0.18% sodium chloride (equivalent to Na^+ 30 mmol/l Cl^- 30 mmol/l)
potassium chloride (2)	11.2% solution in 20-ml ampoule, (equivalent to K^+ 1.5 mmol/ml, Cl^- 1.5 mmol/ml)
sodium chloride	injectable solution, 0.9% isotonic (equivalent to Na^+ 154 mmol/l, Cl^- 154 mmol/l)
sodium hydrogen carbonate	injectable solution, 1.4% isotonic (equivalent to Na^+ 167 mmol/l, HCO_3^- 167 mmol/l)
	8.4% solution in 10-ml ampoule (equivalent to Na^+ 1000 mmol/l, HCO_3^- 1000 mmol/l)
[a] compound solution of sodium lactate	injectable solution

26.3 MISCELLANEOUS

water for injection	2-ml, 5-ml, 10-ml ampoules

Section 27: Vitamins and Minerals

ascorbic acid	tablet, 50 mg
[a]ergocalciferol	capsule or tablet, 1.25 mg (50 000 IU)
	oral solution, 250 µg/ml (10 000 IU/ml)
iodine (8)	iodized oil, 1 ml (480 mg iodine), 0.5 ml (240 mg iodine) in ampoule (oral or injectable)
	solution, 0.57 ml, (308 mg iodine) in dispenser bottle
	capsule, 200 mg
[a]nicotinamide	tablet, 50 mg
pyridoxine	tablet, 25 mg (hydrochloride)
[a]retinol	sugar-coated tablet, 10 000 IU (as palmitate) (5.5 mg)
	capsule, 200 000 IU (as palmitate) (110 mg)
	oral oily solution, 100 000 IU/ml in multidose dispenser (as palmitate)
	water-miscible injection, 100 000 IU (as palmitate) (55 mg) in 2-ml ampoule
riboflavin	tablet, 5 mg
[a]sodium fluoride	in any appropriate formulation
thiamine	tablet, 50 mg (hydrochloride)

Complementary drug

calcium gluconate (C) (2, 8)	injection,100 mg/ml in 10-ml ampoule

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

The following changes in the WHO Model List were approved by the WHO Expert Committee on the Use of Essential Drugs which met in December 1999. The report of the meeting will be published in the WHO Technical Report Series.

Deletions: , albumin (human); antiscorpion sera.

Additions: acetylcysteine; rifampicin + isoniazid + pyrazinamide + ethambutol; nevirapine; artesunate; chlorambucil; daunorubicin; ethanol; iohexol.

Replacements: fluconazole to replace ketoconazole; prazosin to replace doxazosin.

ESSENTIAL DRUG LIST

(PREPARED BY COMMUNITY HEALTH CELL)

Sl. No.	Name of Drug	Sl. No.	Name of Drug
	ANAESTHETICS		ANALGESIC/ANTIPYRETICS
1.	Ether	1.	Paracetamol
2.	Halothene	2.	Aspirin
3.	Thiopental	3.	Ibuprofen
4.	Nitrous Oxide	4.	Indomethacin
5.	Oxygen	5.	Pentazocine Lactate
		6.	Pethidine
	ANTI - ALLERGICS		ANTI - EPILEPTICS
1.	Chlorpheniramine maleate	1.	Phenobarbitone
2.	Promethazine	2.	Diazepam
3.	Adrenaline	3.	Phenytoin Sodium
4.	Dexamethasone	4.	Carbamazepine
	ANTIBODIES		ANTI - INFECTIVES
1.	Atropine sulphate	1.	Mebendazole
2.	Magnesium Sulphate	2.	Metronidazole
3.	Pralidoxime	3.	Benzyl Pencillin
		4.	Procaine Pencillin
		5.	Benzathine Pencillin
		6.	Tetracycline
		7.	Doxycycline
		8.	Chloramphenicol
		9.	Co-trimoxazole
		10.	Erythromycin
		11.	Amoxycillin
		12.	Ampicillin
	ANTI - LEPROSY		ANTI - TUBERCULAR
1.	Dapsone	1.	INH
2.	Rifampicin	2.	Streptomycin
3.	Clofazimine	3.	Thioacetazone
		4.	Rifampicin
		5.	Ethambutol

ANTI - FILARIAL

1. Di-ethyl carbamazine

ANTI - MALARIAL

1. Chloroquin
2. Primaquin
3. Sulfadoxin Pyremethamine
4. Quinine Sulphate

CARDIOVASCULAR

1. Isosorbide Nitrate
2. Propranolol

CARDIAC GLYCOSIDE

1. Digoxin

GASTRO INTESTINAL

Antacids

1. Aluminium Hydroxide
2. Magnesium Trisilicate
3. Ranitidine

Anti-emetics

1. Metoclopramide
2. Promethazine

Anti spasmodic

1. Atropine sulphate
2. Dicyclomin
3. Promethazine

Anti -Diarrhoeals

ORS packets
Loperamide Hydrochloride
(not for children)

ANTI - FUNGAL

Griseofulvin
Amphotericin B

HAEMOPOIETIC

1. Ferrous Sulphate + folic Acid
2. Ferrous Fumarate + folic Acid
3. Folic Acid

ANTI - HYPERTENSIVE

1. Hydrochlorothiazide
2. Reserpine
3. Hydralazine
4. Atenlol

DIURETICS

1. Frusemide
2. Spiranolactone
3. Mannitol

LAXATIVES

1. Isapaghula husk
2. Paraffin, liquid
3. Glycerine

HARMONES

1. Prednisolone
2. Hydrocortisone sodium succinate

PSYCHO THERAPEUTIC

1. Imipramine
2. Chlorpromazine
3. Diazepam

OBSTETRICS

1. Methergin
2. Oxytocin

VITAMINS / MINERALS

1. Ascorbic Acid
2. Vitamin A
3. Vitamin B complex

ANTI DIABETIC

1. Insulin (plain)
2. Insulin (Lente)
3. Glibenclamide

RESPIRATORY

Anti asthmatic

1. Deriphylline
2. Aminophylline
3. Salbutamol
4. Terbutaline
5. Oxygen

Anti-tussive

1. Codeine Phosphate

REHYDRATION ACID BASE ELECTROLYTE balance

1. I.V. Dextrose
2. I.V. Sodium Chloride
3. I.V. Dextrose + Saline
4. I.V. Molar Lactate
5. I.V. Sodium Bicabonate
6. Potassium Chloride

SKIN & STD

1. Zinc Oxide Ointment
2. Whitfield ointment
3. Benzyl benzate
4. Neomycin+bacitracin
5. Gention violet
6. Miconazole ointment
7. Pencillin
8. Doxycyclin
9. Norfloxacin

EYE DROPS

1. Tetracycline
2. Pilocarpine
3. Humatropine
4. Chloramphenical

EMERGENCY DRUGS

1. Oxygen cylinders on trolleys, with
2. flow meters and mask
3. Dopamine
4. Hydro cortisone
5. Lignocaine
6. Atropine
7. Sodium Bicarbonate
8. Pralidoxime
9. Adrenaline
10. Mephentermine
11. Mannitol
12. Magnesium sulphate
13. Trachestomy set, 24,27,30,36

ACCESSORIES

1. Water for injection
2. Hydrogen peroxide
3. Chlorhexidine
4. Absorbent Cotton
5. Gauze, small & large
6. Bandage
7. Butterfly (scalp) venesets 18,21,24
8. Sutures
   - Black braided silk
   - Mersilk
   - Catgut, plain
   - Catgut Chromic
   - Prolene, atraumatic
   - Vicryl
   - Cotton thread
9. Suture Needles
10. Hypodermic Needles
11. Gloves, surgical
12. Ryles Tubes
13. Adhesive Plaster
14. Elastocrepe bandage
15. Plaster of Paris
16. Surgical Spirit
17. Drip set : administration; fluid, blood
    Cannula, IV for venesection
18. Syringes
19. Catheters, plain
20. Catheters, Foley's
21. Bleaching powder

VACCINES & SERA

1. All vaccines as per National
2. Universal Immunization Programme
3. Anti Rabies serum
4. Anti Snake Venom Serum

DIAGNOSTIC AGENTS
As needed

This list has been prepared using the following lists for reference:

1. model list of essential list
2. Essential drugs in Primary Health Care in India, Southern region list, prepared at National Seminar conducted by NIPCCD.
3. Lists of drugs received from Government and other sources
4. CHAI-CMAI formulary.

ESSENTIAL DRUGS LIST : Prepared by Community Health Cell for Govt. of Karnataka.

Sl. No.	Name of Drug	Tablets	Capsule	Injections	Syrup	Others
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANAESTHETICS					
1.	Ether, Anaesthetic					Inhalation
2.	Halothane					Inhalation
3.	Thiopental			0.5g amp		
4.	Nitrous Oxide					Inhalation
5.	Oxygen	(Refer Emergency Drugs)				
	ANALGESIC/ANTIPYRETICS					
1.	Paracetamol	500mg.		300mg./2ml.amp	125mg/5ml	
2.	Aspirin	300mg				
3.	Ibuprofen	200mg 400mg				
4.	Indomethacin		25mg			
5.	Pentazocine Lactate	25mg		30mg/ml		
6.	Pethidine			50mg/ml		
	ANTI-ALLERGICS					
1.	Chlorpheniramine maleate	4mg				
2.	Promethazine	10mg 25mg		25mg/ml	5mg/5ml	
3.	Adrenaline			1 in 1000, 1ml amp		
4.	Dexamethasone	0.5mg		4mg/ml, 2ml vial		
	ANTI-EPILEPTICS					
1.	Phenobarbitone	30mg 60mg		200mg/ml		
2.	Diazepam	—/ 10mg		5mg/ml	2mg/5ml	
3.	Phenytoin Sodium	100mg		50mg/ml	100mg/4ml	
4.	Carbamazepine	100mg 200mg				

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANTIDOTES					
1.	Atropine sulphate			0.6mg/ml		
2.	Magnesium Sulphate					4g/10ml
3.	Pralidoxime			0.5g powd. in vial		
	ANTI-INFECTIVES					
	Anti-helminthic					
1.	Mebendazole	100mg			100mg/5ml	
	Anti-amoebic					
1.	Metronidazole	200mg 400mg			100mg/5ml	
	Anti bacterial					
1.	Benzyl Penicillin			500000U/vial 1000000U/vial		
2.	Procaine Penicillin			400000U/vial 2000000U/vial		
3.	Benzathine Penicillin			400000U/vial 1200000U/vial 2400000U/vial		
4.	Tetracycline		250mg			
5.	Doxycycline		100mg			
6.	Chloramphenicol		250mg	1g/vial	150mg/5ml	
7.	Co-trimoxazole	T.80mg+5.400mg			T.40mg+5.200mg/5ml	
8.	Erythromycin	250mg			125mg/5ml	
9.	Amoxycillin		250mg	100mg/vial	125mg/5ml	
10.	Ampicillin		250mg	250mg/vial	125mg/5ml	
	ANTI-LEPROSY					
1.	Dapsone	25mg 50mg 100mg				
2.	Rifampicin		150mg 300mg			
3.	Clofazimine		50mg 100mg			

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANTI-TUBERCULAR					
1.	INH	100mg				
2.	Streptomycin			1g/vial		
3.	Thiacetazone	150mg				
4.	Rifampicin	(Refer Anti-Leprosy)				
5.	Ethambutol	200mg 400mg				
	(Please see National Tuberculosis Control Programme's banned combinations in the treatment of tuberculosis)					
	ANTI-FILARIAL					
1.	Di-ethyl carbamazine	50mg			120mg/5ml	
	ANTI-FUNGAL					
1.	Griseofulvin	125mg				
2.	Amphotericin B			50mg/vial		
	ANTI-MALARIAL					
1.	Chloroquin	100mg base		40mg/ml		
2.	Primaquin	2.5mg				
3.	Sulfadoxine/Pyrimethamine	5.550mg/0.25mg				
4.	Quinine Sulphate	300mg		300mg/amp		
	HAEMOPOIETIC					
1.	Ferrous Sulphate/Folic Acid	200mg+0.5mg				
2.	Ferrous Fumarate/Folic Acid	150mg+2.5mg				
3.	Folic Acid	5mg				
	CARDIOVASCULAR					
	Anti-anginal					
1.	Isosorbide Nitrate	10mg				
2.	Propranolol	10mg 40mg				

(1)	(2)	(3)	(4)	(5)	(6)
	Anti-hypertensive				
1.	Hydrochlorothiazide	50mg			
2.	Reserpine	0.1mg			
3.	Hydralazine	25mg			
4.	Atenolol	50mg 100mg			
	Cardiac glycoside				
1.	Digoxin	0.25mg		0.25mg/ml	
	DIURETICS				
1.	Frusemide	40mg		10mg/ml	
2.	Spironolactone	25mg			
3.	Mannitol			20% infusion	
	GASTRO INTESTINAL				
	Antacids				
1.	Aluminium Hydroxide	250mg			
2.	Magnesium Trisilicate	500mg			
3.	Ranitidine	150mg		25mg/ml	
	Anti-emetics				
1.	Metoclopramide	10mg		5mg/ml	5mg/5ml
2.	Promethazine	(Refer Anti Allergics)			
	Anti spasmodic				
1.	Atropine sulphate (Refer Analdoles)	0.5mg		0.4mg/ml	
2.	Dicyclomin	10mg			
3.	Promethazine (Refer Anti-Allergics)				
	ANTI DIARRHOEALS				
1.	ORS Packets (WHO Formula)				
2.	Loperamide Hydrochloride (not for children)	2mg			
	LAXATIVES				
1.	Ispaghula husk				Granules
2.	Paraffin, liquid				Liquid by mo
3.	Glycerine				Suppositori

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	HORMONES					
1.	Prednisolone	5mg 10mg				
2.	Hydrocortisone sodium succinate			25mg/ml		
3.	Corticosteroid (Refer Anti Allergics)	4.5mg		4mg/ml		
	ANTI DIABETIC					
1.	Insulin (Plain) Insulin (Lente)			40IU/ml 40IU/ml		
2.	Glibenclamide	5mg				
	PSYCHOTHERAPEUTIC					
1.	Imipramine	25mg				
2.	Chlorpromazine	10mg 25mg		25mg/ml		
3.	Diazepam (Refer Anti Epileptics)					
	RESPIRATORY					
	Anti asthmatic					
1.	Oxtriphylline	100mg		110mg/ml	60mg/5ml	
2.	Aminophylline	100mg		25mg/ml		
3.	Salbutamol	2mg 4mg			2mg/5ml	
4.	Terbutaline	2.5mg 5mg		0.5mg/ml		
5.	Oxygen					Inhalation
	Anti-tussive					
1.	Codeine Isophate	30mg				
	OPHTHALMICS					
1.	Methergin	0.25mg		0.2mg/ml		
2.	Oxytocin			5 IU/ml 10 IU/ml		

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	REHYDRATION ACID BASE ELECTROLYTE balance					
1.	I.V. Dextrose			5%,10% in 500ml 25%,50% in 25ml		
2.	I.V. Sodium Chloride			0.9% in 500ml		
3.	I.V. Dextrose+Saline			0.5%+5.0.9% in 500ml		
4.	I.V. Ringer Lactate			500ml		
5.	I.V. Sodium Bicarbonate			7.5% in 10ml/25ml amp		
6.	Potassium Chloride					1g/10ml in
	VITAMINS/MINERALS					
1.	Ascorbic Acid	100mg				
2.	Vitamin A	5000 IU	50000 IU	50000 IU/ml		
3.	Vitamin B complex	Yes	Yes	Yes	Yes	
	SKIN & SIB					
1.	Zinc Oxide (ointment)					2% ointment
2.	Whitfield (ointment)					2% ointment
3.	Benzyl Benzoate (emulsion)					25% (emulsi
4.	Neomycin+Bacitracin					Powder, Oin
5.	Gentian Violet					1% solution
6.	Miconazole (ointment)					2% ointmen
7.	Penicillins	(Refer Anti-Bacterials above)				
8.	Doxycyclin	(Refer Anti-Bacterials above)				
9.	Norfloxacin	400mg				
	EYE DROPS					
1.	Tetracycline					1% ointment
2.	Pilocarpine					1% (drops)
3.	Homatropine					1% (drops)
4.	Chloramphenicol					1% (ointment 0.4% (drops)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
EMERGENCY DRUGS						
Oxygen cylinders on trolleys, with flow meters and mask						
Dopamine				200mg/5ml		
Hydro cortisone		(Refer Hormones)				
Lignocaine .				II , 2I		
Atropine		(Refer in Antispasmodics)				
Sodium Bicarbonate		(Refer Rehydration)				
Frolidoxine		(Refer Antidotes)		0.5g powd./vial		
Adrenaline		(Refer Anti-Allergics)		1 in 1000/ml amp		
Mephenteramine				15mg/ml amp		
Mannitol		(Refer Diuretics)		2Cl in 350ml		
Magnesium sulphate		(Refer Antidotes)		50I in amp		
Tracheostomy set, 24, 27, 30, 36						
ACCESSORIES						
Water for injection				Ampules		
Hydrogen peroxide					6% Solution	
Chlorhexidine					4% W/V Liquid	
Absorbent Cotton						
Gauze, small & large						
Bandage						
Butterfly (scalp) venesets, 18, 21, 24						
Sutures						
Black braided silk - 1, 1.0, 2, 2.0, 3, 3.0						
Mersilk - 1.0, 2.0, 4.0						
Catgut, plain - 1, 1.0, 2, 2.0, 3, 3.0						
Catgut, chromic - 1, 1.0, 2, 2.0, 3.0						
Prolene, atraumatic - 1, 1.0, 2.0, 3.0						
Vicryl - 5.0, 4.0, 3.0						
Cotton thread						
Suture Needles						
Hypodermic Needles						
Knives, surgical, 8, 6#1/2, 7						
Nelaton tubes						

(1)	(2)	(3)	(4)	(5)	(6)	(7)
13. Adhesive Plaster, 1", 2", 4" width						
14. Elastocrepe bandage, 2", 4" rolls						
15. Plaster of Paris						
16. Surgical Spirit						
17. Drip set : administration: fluid, blood						
18. Cannula, IV for venesection, 16, 19, 22 and paediatric sizes						
19. Syringes						
20. Catheters, plain, 3, 4, 8 Catheters, Foley's, 8, 12, 16, 20						
21. Bleaching powder						
VACCINES & SERA						
1. All Vaccines as per National Universal Immunization Programme						
2. Anti Rabies Serum					5ml, 10ml amps	
3. Anti Snake Venom Serum					10ml	
DIAGNOSTIC AGENTS						
As needed						

This list has been prepared using the following lists for reference

1. W.H.O. model list of essential list.
2. Essential drugs in Primary Health Care in India, Southern region list, prepared at National Seminar conducted by NIPCCD.
3. Lists of drugs received from Government and other sources.
4. CMAI-CMAI formulary.

ESSENTIAL DRUGS LIST : Prepared by Community Health Cell for Govt. of Karnataka.

Sl. No. (1)	Name of Drug (2)	Tablets (3)	Capsule (4)	Injections (5)	Syrup (6)	Others (7)
	ANAESTHETICS					
1.	Ether, Anaesthetic					Inhalation
2.	Halothane					Inhalation
3.	Thiopental			0.5g asp		
4.	Nitrous Oxide					Inhalation
5.	Oxygen	(Refer Emergency Drugs)				
	ANALGESIC/ANTIPYRETICS					
1.	Paracetamol	500mg.		300mg./2ml.asp	125mg/5ml	
2.	Aspirin	300mg				
3.	Ibuprofen	200mg 400mg				
4.	Indomethacin		25mg			
5.	Pentazocine Lactate	25mg		30mg/ml		
6.	Pethidine			50mg/ml		
	ANTI-ALLERGICS					
1.	Chlorpheniramine maleate	4mg				
2.	Promethazine	10mg 25mg		25mg/ml	5mg/5ml	
3.	Adrenaline			1 in 1000, 1ml asp		
4.	Dexamethasone	0.5mg		4mg/ml, 2ml vial		
	ANTI-EPILEPTICS					
1.	Phenobarbitone	30mg 60mg		200mg/ml		
2.	Diazepam	--- 10mg		5mg/ml	2mg/5ml	
3.	Phenytoin Sodium	100mg		50mg/ml	100mg/4ml	
4.	Carbamazepine	100mg 200mg				

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANTIDOTES					
1.	Atropine sulphate			0.6mg/ml		
2.	Magnesium Sulphate					4g/10ml (pow
3.	Pralidoxime			0.5g powd. in vial		
	ANTI-INFECTIVES					
	Anti-helminthic					
1.	Mebendazole	100mg			100mg/5ml	
	Anti-amebic					
1.	Metronidazole	200mg 400mg			100mg/5ml	
	Anti bacterial					
1.	Benzyl Pencillin			500000U/vial 1000000U/vial		
2.	Procaine Pencillin			400000U/vial 2000000U/vial		
3.	Benzathine Pencillin			600000U/vial 1200000U/vial 2400000U/vial		
4.	Tetracycline		250mg			
5.	Oxycycline		100mg			
6.	Chloramphenicol		250mg	1g/vial	150mg/5ml	
7.	Co-trimoxazole	T.80mg+S.400mg			T.40mg+S.200mg/5ml	
8.	Erythromycin	250mg			125mg/5ml	
9.	Amoxycillin		250mg	100mg/vial	125mg/5ml	
10.	Ampicillin		250mg	250mg/vial	125mg/5ml	
	ANTI-LEPROSY					
1.	Dapsone	25mg 50mg 100mg				
2.	Rifampicin		150mg 300mg			
3.	Clofazimine		50mg 100mg			

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANTI-TUBERCULAR					
1.	INH	100mg				
2.	Streptomycin			1g/vial		
3.	Thioacetazone	150mg				
4.	Rifampicin	(Refer Anti-Leprosy)				
5.	Ethambutol	200mg 400mg				
	(Please see National Tuberculosis Control Programme & banned combinations in the treatment of Tuberculosis)					
	ANTI-FILARIAL					
1.	Di-ethyl carbamazine	50mg			120mg/5ml	
	ANTI-FUNGAL					
1.	Griseofulin	125mg				
2.	Amphotericin B			50mg/vial		
	ANTI-MALARIAL					
1.	Chloroquin	100mg base		40mg/ml		
2.	Primaquin	2.5mg				
3.	Sulfadoxine+Pyrimethamine	500mg+25mg				
4.	Quinine Sulphate	300mg		300mg/amp		
	HAEMOPOIETIC					
1.	Ferrous Sulphate+Folic Acid	200mg+0.5mg				
2.	Ferrous Fumarate+Folic Acid	150mg+0.5mg				
3.	Folic Acid	5mg				
	CARDIOVASCULAR					
	Anti-anginal					
1.	Isosorbide Nitrate	10mg				
2.	Propranolol	10mg 40mg				

(1)	(2)	(3)	(4)	(5)	(6)
	Anti-hypertensive				
1.	Hydrochlorothiazide	50mg			
2.	Reserpine	0.1mg			
3.	Hydralazine	25mg			
4.	Atenolol	50mg 100mg			
	Cardiac glycoside				
1.	Digoxin	0.25mg		0.25mg/ml	
	DIURETICS				
1.	Frusemide	40mg		10mg/ml	
2.	Spironolactone	25mg			
3.	Mannitol			20% infusion	
	GASTRO INTESTINAL				
	Antacids				
1.	Aluminium Hydroxide	250mg			
2.	Magnesium Trisilicate	500mg			
3.	Ranitadine	150mg		25mg/ml	
	Anti-emetics				
1.	Metoclopramide	10mg		5mg/ml	5mg/5ml
2.	Promethazine	(Refer Anti Allergics)			
	Anti spasmodic				
1.	Atropine sulphate (Refer Antidotes)	0.5mg		0.6mg/ml	
2.	Dicyclomin	10mg			
3.	Promethazine (Refer Anti-Allergics)				
	ANTI-DIARRHOEALS				
1.	ORS Packets (WHO formula)				
2.	Loperamide Hydrochloride (not for children)	2mg			
	LAXATIVES				
1.	Isaghula husk				Granules
2.	Paraffin, liquid				Liquid (syrup)
3.	Glycerine				Suppositor,

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	HORMONES					
1.	Prednisolone	5mg 10mg				
2.	Hydrocortisone sodium succinate			25mg/ml		
3.	Dexamethasone (Refer Anti-Allergics)	0.5mg		4mg/ml		
	ANTI DIABETIC					
1.	Insulin (Plain) Insulin (Lente)			40IU/ml 40IU/ml		
2.	Glibenclamide	5mg				
	PSYCHO THERAPEUTIC					
1.	Imipramine	25mg				
2.	Chlorpromazine	10mg 25mg		25mg/ml		
3.	Diazepam (Refer Anti Epileptics)					
	RESPIRATORY					
	Anti asthmatic					
1.	Theophylline	100mg		110mg/ml	60mg/5ml	
2.	Aminophylline	190mg		25mg/ml		
3.	Salbutamol	2mg 4mg			2mg/5ml	
4.	Terbutaline	2.5mg 5mg		0.5mg/ml		
5.	Oxygen					Inhalation
	Anti-tussive					
1.	Codeine Phosphate	30mg				
	OBSTETRICS					
1.	Methergin	0.25mg		0.2mg/ml		
2.	Oxytocin			5 IU/ml 10 IU/ml		

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	REHYDRATION ACID BASE ELECTROLYTE balance					
1.	I.V. Dextrose			5%,10% in 500ml 25%,50% in 25ml		
2.	I.V. Sodium Chloride			0.9% in 500ml		
3.	I.V. Dextrose+Saline			0.5%+5.0.9% in 500ml		
4.	I.V. Molar Lactate			500ml		
5.	I.V. Sodium Bicarbonate			7.5% in 10ml/25ml amp		
6.	Potassium Chloride					1g/10ml (o
	VITAMINS/MINERALS					
1.	Ascorbic Acid	100mg				
2.	Vitamin A	5000 IU	50000 IU	50000 IU/ml		
3.	Vitamin B complex	Yes	Yes	Yes	Yes	
	SKIN & STD					
1.	Zinc Oxide (ointment)					2% ointmen
2.	Whitfield (ointment)					2% ointmen
3.	Benzyl Benzoate (emulsion)					25% (emulsi
4.	Neomycin+Bacitracin					Powder, Oin
5.	Gentian Violet					1% solution
6.	Miconazole (ointment)					2% ointmen
7.	Penicillins	(Refer Anti-Bacterials above)				
8.	Doxycyclin	(Refer Anti-Bacterials above)				
9.	Norfloxacin	400mg				
	EYE DROPS					
1.	Tetracycline					1% ointment
2.	Pilocarpine					1% (drops)
3.	Homatropine					1% (drops)
1.	Chloramphenicol					1% ointment 0.4% (drops)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	EMERGENCY DRUGS					
1.	Oxygen cylinders on trolleys, with flow meters and mask					
2.	Dopamine			200mg/5ml		
3.	Hydro cortisone	(Refer Hormones)				
4.	Lignocaine			1%, 2%		
5.	Atropine	(Refer in Antispasmodics)				
6.	Sodium Bicarbonate	(Refer Rehydration)				
7.	Pralidoxime	(Refer Antidotes)		0.5g powd./vial		
8.	Adrenaline	(Refer Anti-Allergics)		1 in 1000/ml amp		
9.	Nephentedrine			15mg/ml amp		
10.	Mannitol	(Refer Diuretics)		20% in 350ml		
11.	Magnesium sulphate	(Refer Antidotes)		50% in amp		
12.	Tracheostomy set, 24, 27, 30, 36					
	ACCESSORIES					
1.	Water for injection			Ampules		
2.	Hydrogen peroxide				6% Solution	
3.	Chlorhexidine				4% W/V Liquid	
4.	Absorbent Cotton					
5.	Gauze, small & large					
6.	Bandage					
7.	Butterfly (scalp) venesels, 18, 21, 24					
8.	Sutures					
	Black braided silk - 1, 1.0, 2, 2.0, 3, 3.0 Mersilk - 1.0, 2.0, 4.0 Catgut, plain - 1, 1.0, 2, 2.0, 3, 3.0 Catgut, chromic - 1, 1.0, 2, 2.0, 3.0 Prolene, atraumatic - 1, 1.0, 2.0, 3.0 Vicryl - 5.0, 4.0, 3.0 Cotton thread					
9.	Suture Needles					
10.	Hypodermic Needles					
11.	Gloves, surgical, 6, 6½/2, 7					
12.	Ryles Tubes					

(1)	(2)	(3)	(4)	(5)	(6)	(7)
13.	Adhesive Plaster, 1", 2", 4" width					
14.	Elastocrepe bandage, 2", 4" rolls					
15.	Plaster of Paris					
16.	Surgical Spirit					
17.	Drip set : administration: fluid, blood					
18.	Cannula, IV for venesection, 18, 19, 22 and paediatric sizes					
19.	Syringes					
20.	Catheters, plain, 3, 6, 9 Catheters, Foley's, 8, 12, 16, 20					
21.	Bleaching powder					
	VACCINES & SERA					
1.	All Vaccines as per National Universal Immunization Programme					
2.	Anti Rabies Serum				5ml, 10ml amps	
3.	Anti Snake Venom Serum				10ml	
	DIAGNOSTIC AGENTS					
	As needed					

This list has been prepared using the following lists for reference

1. W.H.O. model list of essential list.
2. Essential drugs in Primary Health Care in India. Southern region list, prepared at National Seminar conducted by NIPCCD.
3. Lists of drugs received from Government and other sources.
4. CMAI-CMAI formulary.

ESSENTIAL DRUGS LIST : Prepared by Community Health Cell for Govt. of Karnataka.

Sl. No.	Name of Drug	Tablets	Capsule	Injections	Syrup	Others
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANAESTHETICS					
1.	Ether, Anaesthetic					Inhalation
2.	Halothane					Inhalation
3.	Thiopental			0.5g amp		
4.	Nitrous Oxide					Inhalation
5.	Oxygen	(Refer Emergency Drugs)				
	ANALGESIC/ANTIPYRETICS					
1.	Paracetamol	500mg.		300mg./2ml.amp	(125mg/5ml	
2.	Aspirin	300mg				
3.	Ibuprofen	200mg 400mg				
4.	Indomethacin		25mg			
5.	Pentazocine Lactate	25mg		30mg/ml		
6.	Pethidine			50mg/ml		
	ANTI-ALLERGICS					
1.	Chlorpheniramine maleate	4mg				
2.	Promethazine	10mg 25mg		25mg/ml	5mg/5ml	
3.	Adrenaline			1 in 1000, 1ml amp		
4.	Dexamethasone	0.5mg		4mg/ml, 2ml vial		
	ANTI-EPILEPTICS					
1.	Phenobarbitone	30mg 60mg		200mg/ml		
2.	Diazepam	— 10mg		5mg/ml	2mg/5ml	
3.	Phenytoin Sodium	100mg		50mg/ml	100mg/4ml	
4.	Carbamazepine	100mg 200mg				

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANTIDOTES					
1.	Atropine sulphate			0.6mg/ml		
2.	Magnesium Sulphate					4g/10ml (pa
3.	Pralidoxime			0.5g powd. in vial		
	ANTI-INFECTIVES					
	Anti-Helminthic					
1.	Mebendazole	100mg			100mg/5ml	
	Anti-anaerobic					
1.	Metronidazole	200mg 400mg			100mg/5ml	
	Anti bacterial					
1.	Benzyl Pencillin			500000U/vial 1000000U/vial		
2.	Procaine Pencillin			400000U/vial 2000000U/vial		
3.	Benzathine Pencillin			400000U/vial 1200000U/vial 2400000U/vial		
4.	Tetracycline		250mg			
5.	Doxycycline		100mg			
6.	Chloramphenicol		250mg	1g/vial	150mg/5ml	
7.	Co-trimoxazole	1.80mg+5.400mg			1.40mg+5.200mg/5ml	
8.	Erythromycin	250mg			125mg/5ml	
9.	Amoxycillin		250mg	100mg/vial	125mg/5ml	
10.	Ampicillin		250mg	250mg/vial	125mg/5ml	
	ANTI-LEPROSY					
1.	Dapsone	25mg 50mg 100mg				
2.	Rifampicin		150mg 300mg			
3.	Clofazimine		50mg 100mg			

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANTI-TUBERCULAR					
1.	INH	100mg				
2.	Streptomycin			1g/vial		
3.	Thiacetazone	150mg				
4.	Rifampicin	(Refer Anti-Leprosy)				
5.	Ethambutol	200mg 400mg				
	(Please see National Tuberculosis Control Programme & banned combinations in the treatment of Tuberculosis)					
	ANTI-FILARIAL					
1.	Diethyl carbamazine	50mg			120mg/5ml	
	ANTI-FUNGAL					
1.	Griseofulvin	125mg				
2.	Amphotericin B			5mg/vial		
	ANTI-MALARIAL					
1.	Chloroquin	100mg base		40mg/ml		
2.	Primaquin	2.5mg				
3.	Sulfadoxine/Pyrimethamine	5.500mg/0.25mg				
4.	Quinine Sulphate	300mg		300mg/amp		
	HAEMOPOIETIC					
1.	Ferrous Sulphate/Folic Acid	200mg/0.5mg				
2.	Ferrous Fumarate/Folic Acid	150mg/2.5mg				
3.	Folic Acid	5mg				
	CARDIOVASCULAR					
	Anti-anginal					
1.	Isosorbide Nitrate	10mg				
2.	Propranolol	10mg 40mg				

(1)	(2)	(3)	(4)	(5)	(6)
	Anti-hypertensive				
1.	Hydrochlorothiazide	50mg			
2.	Reserpine	0.1mg			
3.	Hydralazine	25mg			
4.	Atenolol	50mg 100mg			
	Cardiac glycoside				
1.	Digoxin	0.25mg		0.25mg/ml	
	DIURETICS				
1.	Frusemide	40mg		10mg/ml	
2.	Spironolactone	25mg			
3.	Mannitol			20% infusion	
	GASTRO INTESTINAL				
	Antacids				
1.	Aluminium Hydroxide	250mg			
2.	Magnesium Trisilicate	500mg			
3.	Ranitidine	150mg		25mg/ml	
	Anti-emetics				
1.	Metoclopramide	10mg		5mg/ml	5mg/5ml
2.	Promethazine	(Refer Anti Allergics)			
	Anti-spasmodic				
1.	Atropine sulphate (Refer Analgesics)	0.5mg		0.4mg/ml	
2.	Dicyclomin	10mg			
3.	Promethazine (Refer Anti-Allergics)				
	ANTI-DIARRHOEALS				
1.	ORS Packets-(WHO Formula)				
2.	Loperamide Hydrochloride (not for children)	2mg			
	LAXATIVES				
1.	Ispaghula husk				Granules
2.	Paraffin, liquid				Liquid by mo
3.	Glycerine				Suppository

ESSENTIAL DRUGS LIST : Prepared by Community Health Cell for Govt. of Karnataka.

Sl. No.	Name of Drug	Tablets	Capsule	Injections	Syrup	Others
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANAESTHETICS					
1.	Ether, Anaesthetic					Inhalation
2.	Halothane					Inhalation
3.	Thiopental			0.5g amp		
4.	Nitrous Oxide					Inhalation
5.	Oxygen	(Refer Emergency Drugs)				
	ANALGESIC/ANTIPYRETICS					
1.	Paracetamol	500mg.		300mg./2ml.amp	125mg/5ml	
2.	Aspirin	300mg				
3.	Ibuprofen	200mg 400mg				
4.	Indomethacin		25mg			
5.	Pentazocine Lactate	25mg		30mg/ml		
6.	Pethidine			50mg/ml		
	ANTI-ALLERGICS					
1.	Chlorpheniramine maleate	4mg				
2.	Promethazine	10mg 25mg		25mg/ml	5mg/5ml	
3.	Adrenaline			1 in 1000, 1ml amp		
4.	Dexamethasone	0.5mg		4mg/ml, 2ml vial		
	ANTI-EPILEPTICS					
1.	Phenobarbitone	30mg 60mg		200mg/ml		
2.	Diazepam	—/ 10mg		5mg/ml	2mg/5ml	
3.	Phenytoin Sodium	100mg		50mg/ml	100mg/4ml	
4.	Carbamazepine	100mg 200mg				

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	ANTIDOTES					
1.	Atropine sulphate			0.6mg/ml		
2.	Magnesium Sulphate					4g/10ml Ipm
3.	Pralidoxime			0.5g powd. in vial		
	ANTI-INFECTIVES					
	Anti-helminthic					
1.	Mebendazole	100mg			100mg/5ml	
	Anti-amoebic					
1.	Metronidazole	200mg 400mg			100mg/5ml	
	Anti bacterial					
1.	Benzyl Penicillin			500000U/vial 1000000U/vial		
2.	Procaine Penicillin			400000U/vial 2000000U/vial		
3.	Benzathine Penicillin			600000U/vial 1200000U/vial 2400000U/vial		
4.	Tetracycline		250mg			
5.	Doxycycline		100mg			
6.	Chloramphenicol		250mg	1g/vial	150mg/5ml	
7.	Co-trimoxazole	T.80mg+5.400mg			T.40mg+5.200mg/5ml	
8.	Erythromycin	250mg			125mg/5ml	
9.	Amoxycillin		250mg	100mg/vial	125mg/5ml	
10.	Ampicillin		250mg	250mg/vial	125mg/5ml	
	ANTI-LEPROSY					
1.	Dapsone	25mg 50mg 100mg				
2.	Rifampicin		150mg 300mg			
3.	Clofazimine		50mg 100mg			

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	BLOOD'S					
1.	Prednisolone	5mg 1mg				
2.	Hydrocortisone sodium succinate			25mg/ml		
3.	Chlorpheniramine (Refer Anti-Allergics)	0.5mg		1mg/ml		
	ANTI DIABETIC					
1.	Insulin (Plain) Insulin (Lente)			40IU/ml 40IU/ml		
2.	Glibenclamide	5mg				
	PSYCHO THERAPEUTIC					
1.	Imipramine	25mg				
2.	Chlorpromazine	10mg 25mg		25mg/ml		
3.	Diazepam (Refer Anti-Epileptics)					
	RESPIRATORY					
	ANTI asthmatic					
1.	Aminophylline	100mg		110mg/ml	60mg/5ml	
2.	Aminophylline	100mg		25mg/ml		
3.	Salbutamol	2mg 4mg			2mg/5ml	
4.	Terbutaline	2.5mg 5mg		0.5mg/ml		
5.	Oxygen					Inhalation
	Anti-tussive					
1.	Codeine Phosphate	30mg				
	OPHTHALMICS					
1.	Mydriacyl	0.75mg		0.2mg/ml		
2.	Oxytocin			5 IU/ml 10 IU/ml		

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	REHYDRATION ACID BASE ELECTROLYTE balance					
1.	I.V. Dextrose			5%,10% in 500ml 25%,50% in 25ml		
2.	I.V. Sodium Chloride			0.9% in 500ml		
3.	I.V. Dextrose+Saline			0.3%+5.0.9% in 500ml		
4.	I.V. Molar Lactate			500ml		
5.	I.V. Sodium Bicarbonate			7.5% in 10ml/25ml amp		
6.	Potassium Chloride					3g/250ml in
	VITAMINS/MINERALS					
1.	Ascorbic Acid	100mg				
2.	Vitamin A	5000 IU	50000 IU	50000 IU/ml		
3.	Vitamin B complex	Yes	Yes	Yes	Yes	
	SKIN & SID					
1.	Zinc Oxide (ointment)					2% ointment
2.	Whitfield (ointment)					2% ointment
3.	Benzyl Benzoate (emulsion)					25% emulsi
4.	Neomycin+Bacitracin					Powder, Oin
5.	Gentian Violet					1% solution
6.	Miconazole (ointment)					2% ointmen
7.	Penicillins	(Refer Anti-Bacterials above)				
8.	Oxycyclin	(Refer Anti-Bacterials above)				
9.	Norfloxacin	400mg				
	EYE DROPS					
1.	Tetracycline					1% ointment
2.	Pilocarpine					1% (drops)
3.	Homatropine					2% (drops)
4.	Chloramphenicol					1% ointment 0.4% (drops)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	EMERGENCY DRUGS					
1.	Oxygen cylinders on trolleys, with flow meters and mask					
2.	Dopamine			200mg/5ml		
3.	Hydro cortisone	(Refer Hormones)				
4.	Lignocaine			1% , 2%		
5.	Atropine	(Refer in Antispasmodics)				
6.	Sodium Bicarbonate	(Refer Rehydration)				
7.	Pralidoxime	(Refer Antidotes)		0.5g pond./vial		
8.	Adrenaline	(Refer Anti-Allergics)		1 in 1000/ml amp		
9.	Mephenteramine			15mg/ml amp		
10.	Mannitol	(Refer Diuretics)		20% in 350ml		
11.	Magnesium sulphate	(Refer Antidotes)		50% in amp		
12.	Tracheotomy set, 24, 27, 30, 36					
	ACCESSORIES					
1.	Water for injection			Ampules		
2.	Hydrogen peroxide				6% Solution	
3.	Chlorhexidine				4% W/V Liquid	
4.	Absorbent Cotton					
5.	Gauze, small & large					
6.	Bandage					
7.	Butterfly (scalp) venesets, 18, 21, 24					
8.	Sutures					
	Black braided silk - 1, 1.0, 2, 2.0, 3, 3.0 Mersilk - 1.0, 2.0, 4.0 Catgut, plain - 1, 1.0, 2, 2.0, 3, 3.0 Catgut, chromic - 1, 1.0, 2, 2.0, 3.0 Prolene, atraumatic - 1, 1.0, 2.0, 3.0 Vicryl - 5.0, 4.0, 3.0 Cotton thread					
9.	Suture Needles					
10.	Hypodermic Needles					
11.	Gloves, surgical, 6, 6½/2, 7					
12.	Ryles Tubes					

(1)	(2)	(3)	(4)	(5)	(6)
13.	Adhesive Plaster, 1", 2", 4" width				
14.	Elastocrepe bandage, 2", 4" rolls				
15.	Plaster of Paris				
16.	Surgical Spirit				
17.	Drip set : administration: fluid, blood				
18.	Cannula, IV for venesection, 14, 17, 22 and paediatric sizes				
19.	Syringes				
20.	Catheters, plain, 3, 6, 9 Catheters, Foley's, 8, 12, 16, 20				
21.	Bleaching powder				
	VACCINES & SERA				
1.	All Vaccines as per National Universal Immunization Programme				
2.	Anti Rabies Serum				5ml, 10ml amps
3.	Anti Snake Venom Serum				10ml
	DIAGNOSTIC AGENTS				
	As needed				

This list has been prepared using the following lists for reference

1. W.H.O. model list of essential list.
2. Essential drugs in Primary Health Care in India, Southern region list, prepared at National Seminar conducted by NIPCCD.
3. Lists of drugs received from Government and other sources.
4. CMAI-CAAI formulary.

"Quotes" — Drugs

DR-14

Essential drugs are those that satisfy the health care needs of the majority of the people. They should therefore, be available at all times in adequate amounts and in the appropriate dosage forms.

—

Many developing countries have found that only 1% 2% of the drugs on their markets are essential for meeting the basic needs of their people. The Joint Mission Hospitals Equipment Board Ltd (ECHO), which supplies essential drugs to christian mission hospitals around the world, found that about 25 generic drugs were adequate for most patients in some 98 hospitals all over the Third World.

"Drugs and the Third World" Anil Agarwal
An Earthscan publication 1978.

—

As far as sub-standard drugs are concerned, there is a urgent need to tighten up the drug control machinery of the States. This will require, ~~fast and foremost~~, larger resources in the form of trained personnel and fully equipped testing laboratories being made available to the States ~~by the centre. Enforcement~~. The Food and Drug administration of the states need to be made more effective. It is well known that sub-standard & spurious drugs originate largely in those States where the drug control administration is ineffective.

Aspects of the Drug Industry in India.
"Mukarram Bhagat. 1982

—

According to some estimates upto 80% of the present output of many foreign drug companies comprises of simple household remedies and unessential formulations. Essential drugs like insulin, anti-leprosy drugs, anti-TB drugs, ~~cholera~~ vaccines etc account for only 30% of the value of formulations sold by many large firms.

"Drugs on the Market" by Brig. Suraiya
The Statesman. 8 December. 1980.

P10

"Quotes" — Drugs

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"Drugs on the Market" by Jug. Suraiya
The Statesman. 8 December 1980.

P.T.O.

Science Today
A Times of India Publication
Editorial enquiries — Times of India Building
D N Road,
Bombay - 400001

On a world-wide scale, an estimated $ 2 billion are spent annually on Research and Development in drugs. Of this, less than $ 70 million or 3.5% is spent on tropical diseases.
At the same time, over 1 billion poor people, or about 30% of the world's population are extremely vulnerable to these diseases.

"Drugs & the Third World" Anil Agarwal

In India, at present, some 20,000 branded medicines are on the market, a large number of which are considered irrational. The basic bulk drugs used for their formulation number only 400. The Hathi Committee considered just 117 generic drugs (0.6% of the number of drugs currently marketed) sufficient for satisfying the basic requirements of the country.

"Aspects of the Drug Industry in India"
Mukharam Bhapkar

The Lairaj Kumar committee, which investigated the profitability of multinational drug firms during the 1970's, found that their Research and Development outlays accounted for only 0.83% of their total costs, with the exception of only 2 companies. Against this, sales promotion, administrative & overhead expenses accounted for 33% of their total costs.

"Foreign drug firms spend too little on R+D"
The Hindu, 12, March 1980.

A peculiar feature of the drugs industry is that the consumer is 'captive'. He normally does not possess sufficient knowledge to make his choice from a bewildering array of branded products available on the market. Dr. is his physician who makes this choice for him. However, the confusion is no less for the prescribing physician too: it is virtually impossible for him to make a rational evaluation of the thousands of price and quality alternatives the market is flooded with. [Further, most doctors can hardly find enough time to keep abreast of all the latest pharmacological developments in their respective fields through the scientific journals. Thus the doctors mainly depend on the information provided by the large manufacturers as part of their promotional campaign. As one would expect, much of this information transmitted through beautiful pamphlets and company medical representatives (the ubiquitous salesman of the drug industry), is of doubtful objectivity. In the enthusiasm to promote their products, many 'ifs' and 'buts' of vital importance are simply left out in the promotional literature.

'Aspects of the Drug Industry in India'
Mukarram Bhopal.

QUOTES

"As commodities, prescription drugs behave differently from most other items: they are products that the ultimate consumer rarely selects for himself. The producer's sales effort are directed at the "instrumental consumer", the doctor who prescribes but does not pay for the product....Physicians receive their most intensive in-service from agents of the chemical industry."

- Ivan Illich in 'Limits to Medicine'.

"In 1973, the entire drug industry spent an average of $4500 on each practising physician (in U.S.A.) for advertising and promotion".

- Ivan Illich in 'Limits to Medicine'.

Drugs - WHO references

DR-14

(1) TRS No 645 - specifications for pharmaceutical prep's. 1980
(2) TRS No 681 - " " " 1982
(3) The International Pharmacopia - 3rd ed: Vol 2. 1981 / Vol 1 - 1979 - general methods of analysis. quality specifications for pharmaceutical drugs
(4) TRS - 641 - The selection of essential drugs 1977 (2nd report of expert committee)
(5) Drug bulletin - "Drug information" a mimeographed document issued periodically by WHO
(6) TRS - 615 criteria for selection of essential drugs:

"Because of the great differences between countries, the preparation of a drug list of uniform, general applicability and acceptability is not feasible or possible. Therefore each country has the direct responsibility of evaluating & adopting a list of essential drugs, according to its own policy in the field of health

The list of essential drugs based on the guidelines put forward in this report is a model which can furnish a basis for countries to identify their own priorities & to make their own selection.

(7) TRS 567, 1975. specifications for pharmaceutical prep's.
(8) TRS 614, 1977 " " "
(9) WHO Chronicle 36 (3) : 118 1982
(10) World Health - 1983 Feb-March

Use & misuse of the media — Sumanta Banerjee.

"Reporting in 1956 on the excessive amount of space taken up by advertisements in Indian newspapers, the Indian Press Commission commented: "The lamest field of ... objectionable advertising which we feel should be put down by law is of drugs & proprietary medicines. ... The volume of advertising of such commodities ranks next only to the volume of advertising of cosmetics. Quite a number of the drugs & medicines advertised are harmless if not always effective. A number of these preparations are, however, offered to persons suffering from diseases for which drugs of proved therapeutic value have not so far been developed. The harm that arises from such advertising is that the patients might be deluded into dosing themselves with these medicines & delay medical examination & advice till the disease reaches an incurable stage."

The Karnataka Consumer Service Society in Shimoga has produced a film "consumer Awareness" & proposes to print posters & handbills from time to time to explain ill effects of certain types of medicines & foodstuffs, & urge their replacement by natural nutritious food

PTO

- "Although they comprise 75% of the total world population, the people of the Third World consume only about 15% of all drugs produced globally. However some 40 pharmaceutical companies recently agreed to supply 200 drugs listed as essential to these countries under "favourable conditions"
"new era of cooperation" between WHO + IFPMA!

- Dec 83 - Medical Research
- Dr Ernst Lauridsen Director of WHO's action programme on essential drugs
- Ration kit of 39 drugs for Kenya - WH. - Nov 83
- Mozambique WH - 83

A handout prepared as guidelines for exploration of the theme with the participants of the Health Management Course at St John's Medical College, Bangalore

A Rational Drug Policy (issues and prospects)

1. "Eternal vigilance is required to ensure that the health care system does not get medicalised, that the doctor-drug producer axis does not exploit the people and that the abundance of drugs does not become a vested interest in ill-health".

--ICMR/ICSSR Health for All Report, 1981

2. Understanding Irrationalities of the present situation

i. 45000 formulations available in India while WHO says 200 are essential and Hathic Committee in India says 116 are essential.

ii. Twenty percent of drugs are substandard and spurious

iii. The formulations available include:
--irrational combinations
--hazardous drugs
--banned drugs and bannable drugs
--costly drugs

iv. Inadequate drug legislation and drug control

v. Shortages and non-availability of essential drugs and life saving drugs

vi. Non availability of unbiassed drug information

vii. Unethical medical advertising and drug company sponsored misinformation

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viii. Irrational prescribing practices of medical profession induced by doctor-drug producer axis

ix. Tonics, vitamins and enzymes are in excess whereas anti-TB and anti-leprosy drugs and Vit. A are in short supply.

x. Drug policy is an industrial policy not a health policy.

xi. Increasing prices or inadequate price control

xii. Drugs as a substitute for caring--new medical culture.

3. Some issues

a. Brand vs. Generic names

b. Drug/business - dumping
transfer pricing
profit orientation
mis-information
corrupting control systems
doctor-drug producer axis

(one of the biggest and most profitable business in the world today).

c. Inadequacies in Medical/Nursing education and health team training

d. Consumer Awareness/consumer protection forums

e. Absence of health personnel's continuing education

f. Floor moppers to Tap turners off
- the increasing role of preventive/promotive health care

4. Components of a Rational Drug Policy

i. Drug availability/production in consonance with health with health needs of the people.

....3

ii. Elimination of irrational, useless and hazardous drugs

iii. Low cost drugs in adequate quantities particularly essential/priority drugs

iv. Adequate quality control and drug control

v. Availability of unbiased drug information and ethical marketing of drugs

vi. Drug legislation reform

vii. Generic prescribing

viii. Technological self reliance

ix. Increase drug availability through fair price shops and government health infrastructure

x. Training of health personnel in Rational therapeutics and rational drug policy.

5. What can Managers of Hospitals do?

i. Educate yourselves on rational drug policy and rational therapeutic issues.

ii. Share and disseminate information to all staff and colleagues in hospital and associated centres.

iii. Adopt essential drug list using cost, efficacy, safety and quality as criteria. Evolve a hospital formulary and purchase and stock drugs in accordance with this.

iv. Adopt 'generic' concept during purchasing, prescribing and dispensing drugs.

v. Weed out the following types of drugs from the hospital pharmacy:

a. banned and bannable drugs

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b. Irrational combinations

c. imitative or me-too drugs

d. costly drugs with cosmetic embellishments and elegant packaging

e. Drugs with inadequate evidence of greater value

vi. Avoid injection and tonic practice

vii. Avoid drug industry linkages--gifts, sponsorship, unethical trade discounts and other forms of inducement.

viii. Adopt bulk purchasing and or supports cooperative purchasing and production ventures.

ix. Evolve a system of health education on drugs (use, misuse and overuse) for patients and also a continuing education for hospital personnel.

x. Join and participate in groups at local/regional/state/national level who are interested in rational therapeutics/rational drug policy/consumer awareness issues.

xii. seek information on other forms of treatment. Adopt open policy to rationally tested non-allopathic systems and non-drug therapies and incorporate in work.

xii. Promote 'Health for All' priorities:

a. simple home remedies; b. health education

c. community health initiatives;

d. development programme; e. community organization and awareness building.

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Suggestions for Reading

1. A Rational Drug Policy (All India Drug Action Network and Voluntary Health Association of India publication Rs.20.00).

2. Banned and Bannable drugs, Health Action Series 2, VHAI publication, Rs.10

3. Towards a People Oriented Drug Policy (Medical Service, Vol 41 No.9 Oct-Nov 1984 and Vol 42, No.1 January 1985, CHAI)

4. Drugs-Fact, Fallacy and Fraud The Journal of Christian Medical Association of India, Vol LX, September 1983, No.9

5. Getting Essential Drugs to People CONTACT, No.63 August 1981.

6. Strengthening & Regulating the Supply, Distribution and Production of Basic Pharmaceutical Products, CONTACT No.73, June 1983.

7. The Use of essential Drugs, WHO Tech Report Series 722 (1988)

8. Tonics, How Much an Economic Waste, Kamala Jaya Rao, medico friend circle bulletin, November 1976.

9. The Dangerous Drug List, Claude Alvares, Illustrated Weekly of India, 12 July 1987.

10. Formulary and Therapeutic Guide, Kurji Holy Family Hospital January 1983

Items 1, 2, 7, 8, 10 available from VHAI, 40 Institutional Area, South of IIT, New Delhi 110016.

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Seven steps to success in essential drugs supply

(1) National Drug Policy

Every country's comprehensive health policy should include a National Policy on Essential Drugs. WHO's role is to inform governments about the basic concepts and the benefits, then to provide technical support for policy formulation, selection of essential drugs, a plan of action, procurement, quality control, programme management, and aspects such as training, evaluation and legislation. A national essential drug policy can provide more drugs to more people at the same cost or even less.

(2) Selection of Essential Drugs

Essential drugs are those that satisfy the health care needs of the majority of the population. Selections are based on the most common local diseases & conditions, & on the capability of the health workers who use the drugs at different levels in the health care system. More than 80 countries have now adopted lists of essential drugs based on WHO's Model list of Essential Drugs, as have various non-governmental organizations & UN agencies.

(3) Drug procurement

All too often, countries pay more than they need for their drugs. They can get better value for money by putting out bulk orders to international competitive tender on the world market. UNICEF & WHO help countries to strengthen their procurement systems & to secure, if necessary & possible, reliable financing - internal or external - for their purchases.

(4) Logistics of Supply

WHO's goal is to make sure that people can get the 20 most needed essential drugs, whenever they require them, within an hours travel. The supply chain must work: correct ordering, packing & storage; less waste through deterioration, loss or theft; regular transport to the remotest dispensary, despite climatic & geographical conditions or fuel shortage. Several countries have established efficient drug supply management systems, with support from WHO, UNICEF & bilateral agencies. The pharmaceutical industry also provides expertise

(5) Proper use of drugs:

Both health professionals + the general public are in need of better information and education about when + how to use drugs. Common problems are that the former tend to over-prescribe, while the latter may fail to follow the prescribed instructions, or dose themselves. Drug information sheets are being considered by WHO that would give the indications, contra-indications + side-effects of essential drugs. Several countries have produced their own therapeutic guides + standard treatment schedules for use by health workers. Consumer groups do valuable work among + on behalf of the general public.

(6) Quality control

Essential drugs must be of reliable quality as well as efficacious + safe. Quality has to be assured up to the time that the drugs are administered by good manufacturing practices + by monitoring of products at all stages in the supply line. The IFPMA member companies provide training in quality control for nationals of developing countries. Any country lacking quality control laboratories can obtain an assurance of the quality of imported products at the time of export through the WHO certification Scheme on the Quality of Pharmaceutical Products Moving in International Commerce.

(7) Training

Many countries lack staff trained in policy formulation, selection, procurement, management + use of drugs; in drug legislation + regulatory control + in production + quality control. WHO is approaching universities, training schools, non-governmental organizations + the pharmaceutical industry for help with training materials + courses. At seminars + workshops, countries that have developed successful national essential drugs programmes demonstrate to others how it done.

From: World Health, July 1984.

PERSONALITY

Crusader against drug-imperialism

DR. ZAFRULLAH Chowdhury, who won this year's Ramon Magsaysay award for community leadership, said he would continue his struggle against multi-national and other profit-mongering international drug companies, "who exploit the developing Third World countries like Bangladesh by pursuing their policy of medicine-imperialism".

Dr. Chowdhury, the 43-year energetic Bangladesh physician, who in 1972 founded the "Gano -Sasthya Kendra" (Peoples Health Centre), a medical service complex mainly for the rural poor, at Savar, some 35 km off the capital city, told this correspondent in an exclusive interview in Dhaka that he was "happy" with the news of the Magsaysay award.

"I am particularly happy that the cause for which we in Bangladesh are fighting has been recognised by the international forum. This is a recognition of our war against multi-national exploiters who trade on the ignorance of the millions of suffering humanity," Dr. Chowdhury said adding, "but we still have to go a long way to materialise our dream".

A freedom fighter in 1971's war of liberation, Dr. Zafrullah Chowdhury, who had become one of the most debatable men in Bangladesh not only for his role in the medical service but also in politics (although he is not a member of any political party) was given the prestigious Ramon Magsaysay award worth U.S.$20,000 and a gold medal in recognition for engineering Bangladesh's new policy on pharmaceutical drugs and making comprehensive medical care available to ordinary people.

Restless and mobile, Dr. Zafrullah Chowdhury, during his student life in the Sixties, was an activist against Field Marshal Ayub Khan's regime, and later known in the country as a man of "progressive political line". During the liberation war in 1971, he was in London doing FRCS degree but he left U.K. along with some of his friends to join the war.

A man of serious conviction and action, Dr. Chowdhury came to India in the midst of the war and started a field-hospital near the Indo-Bangladesh border to treat the wounded freedom fighters. After the independence of the country in December 1971, he shifted his small war-time hospital at Savar and began his work by constructing a small building after getting a donation of an acre of land from two local philanthrophists.

Within 13 years, the energetic Chowdhury spread his projects over 40 acres of land and his "Gano-Sasthya Trust" has been expanded to a great extent. At present, Dr. Chowdhury has 23 self-reliant units where over one thousand people work. He employs over 65 per cent women, mostly from the poorer sections of society, in his projects including the "Gano-Sasthya Pharmaceuticals Ltd"—which has become one of the leading medicine producing industries in the country within few years. His philosophy to recruit a higher percentage of women in his projects was that the women, who constitute half of the country's population, are the most exploited and they should get proper support to stand on their own feet.

One of the specialities of Dr. Chowdhury's projects is that all these are designed and run on a self-reliant basis. The "Gano-Sasthya Trust", among others, has health magazine publications, printing, agriculture, confectionary, cloth, shoe and furniture producing units. The people who work are all treated equal. There is no bureaucratic structure. All workers, including Dr. Chowdhury, eat the same food and get the same standard of accommodation. "Gano-Sasthya Kendra' is a 'socialist' complex where Dr. Zafrullah Chowdhury is teaching his "self-designed socialism". In the very functioning of the complex.

There is another speciality of Dr. Chowdhury, in that the people who intend to work with "Gano-Sasthya Projects" should be non-smokers. All the workers must get up in the morning and work in the field for a specific time before going to their respective units. All the women workers in the project must know how to ride a bicycle. They must move from door to door in the villages to motivate people about the primary health care. In the initial days, Dr. Chowdhury's plan to send women into the villages on bicycles was vehemently opposed by many people. But now they have realised the usefulness of the women "Gano-Sasthya " workers, who educate the villagers not only in matters of health but also helps them to increase their farm output.

Dr. Zafrullah Chowdhury

Dr. Zafrullah Chowdhury's "Gano-Sasthya Pharmaceuticals", during the last two years, has been producing almost every essential drug and has become a competitor of the big multi-national companies. "I have been a target of the medicine-imperialist because I wanted to help my people by supplying them with cheaper and more useful medicine," he said.

In 1978's Presidential elections, Dr. Zafrullah Chowdhury played a pioneering role in nominating General Ataul Ghani Osmany, a retired General and the Commander-in-Chief of the Bangladesh liberation forces in 1971, as the principal candidate against the President, Lt. Gen. Ziaur Rahman. Although Dr. Chowdhury's nominee failed to win the electoral battle, he successfully projected his political views throughout the country. With this direct involvement in politics, Dr. Chowdhury, who until then was known mainly as a "Crusader" against the multi-nationals in the pharmaceutical sector, also became known in the political arena.

While explaining his past political role, the Magsaysay winner told this correspondent "... I was trying to establish a cause—a justice, that is, cheaper and easier health care to the poorest section of our society. Our poor and simple hearted people had been exploited by the multi-national giants for many years. I could not succeed earlier because there was no political support. Well, I am not at all out of politics as I believe that without political backing it would be very difficult to implement my ideas. So, I supported and worked for Gen. Ataul Ghani Osmany in the Presidential elections..."

The Magsaysay award winner, however, thanked President Lt. Gen. Hussain Mohammad Ershad for his government's "sincere will" to frame and implement the much debatable National Drug Policy. With the new drug policy the military regime of Gen. Ershad has drastically banned over 300 drug items overnight describing them as "useless and injurious to health".

Dr. Zafrullah Chowdhury, who was in the eight-member committee to frame the new drug policy said, "... We also tried persistently to frame and implement such a drug policy during the time of the former government, but failed. I must thank President Ershad for his sincere will in this regard and, of course, his government's courage to implement it despite repeated threats from very powerful external quarters". If I do not praise Ershad it would be a distortion of historical facts".

The debatable drug policy of Bangladesh which was approved by the Council of Advisors of Gen. Ershad on May 29, 1982 and acclaimed in many quarters was still under pressure. Dr. Zafrullah Chowdhury was not just a member of the committee, but played a vital role in its framing and implementation. He said that the new drug policy was not only an "achievement" of the present government but also "a step forward" in providing cheaper medical service to millions of people who suffer from malnutrition and die of simple diseases for want of medicine. "The medicine industry should not be compared with the industry which produces warheads. It should be a service-oriented industry and the companies which are involved should stop trading on human miseries," Dr. Chowdhury remarked.

Dr. Zafrullah Chowdhury married a German

PRIMARY HEALTH CENTRE LEVEL

Sub centre level drugs

18. Penicillin (Procaine, Benzathine)
19. Diethyl carbamazine tablets.
20. Theophylline tablets.
21. Diazepam
22. Digoxin tablets.
23. Primaquine tablets.
24. Prednisolone tablets.
25. B-Complex tablets.
26. Metronidazole tablets
27. Amoxycillin tablets/capsules.
28. Phenobarbitone tablets (30mg/60mg)
29. Isosorbide dinitrate tablets.
30. Nalidixic acid tablets.
31. Inj. Diazepam.
32. Inj. Aminophylline.
33. Inj. Adrenaline.
34. Inj. Dexamethasone.
35 Inj. Oxytocin.
36 Inj. Atropine.
37. Anti snake venom.
38. Anti rabies vaccine.
39. Vaccines - DPT, OPV, BCG, Measles, TT, DT.
40. Tincture iodine.
41. Inj. Pethidine (? Oral morphine)
42. Xylocaine 4%.
43. I.V. fluids (33% Saline, 5% dextrose, 5% dextrose saline Ringar lactate)
44. Inj. Chlorpheniramine maleate.
45. Hydrochlorothiazide.
46. Inj. Insulin.
47. Inj. Calcium Gluconate.
48. Oxygen.
49. Anti-Tubercular drugs (NTCP)
50. Anti-Leprosy drugs (NLEP)
51. Inj. Potassium chloride.
52. Inj. Sodium bicarbonate.

SL NO	DISORDERS	CORRECT DRUG AND CORRECT DOSE.	CORRECT DRUG BUT NO/WRONG DOSE	WRONG DRUG.
1	FEVER.	41	6	0
2	DIARRHOEA.	21	6	20
3	HEADACHE.	36	7	4
4	PAIN ABDOMEN.	42	5	0
5	ASTHMA.	36	11	0
6	INSOMNIA.	32	9	6
7	WORM INFESTATION	39	4	4
8	BACK ACHE.	39	8	0
9	SCABIES.	35	10	2
10	CONVULSION.	18	19	10

TOTAL = 47.

MORBIDITY AND MORTALITY PROFILE OF KARNATAKA AND REQUIREMENT OF ESSENTIAL DRUGS FOR PRIMARY HEALTH CARE

*Vasundhra.M.K.

The State of Karnataka with a population over three crores consists of twenty districts as administrative units. The demo--graphic profile and the availability of health care institutions are indicated in Table.1. The incidence and deaths during the year 1988 (Table 2) indicate that the communicable diseases predominate as cause of sickness as death. Tuberculosis, Acute Respiratory Infections, Diarrhoeal Disorders and Malaria are priority areas. The incidence of P.Falciparum infection is increasing. The vaccine preventable diseases are at high and unacceptable level. The viral infections of public health importance are measles, Japanese Encephalitis and K.F.D. which is peculiar to Karnataka. The most affected age group is below 15 years and the average number of episodes per person per year is 3.

The nutritional disorders include anaemia, protein-energy malnutrition Vitamin A deficiency and endemic goitre. The non-communicable disorders like cancer, Cardiovascular diseases and accidents are increasing. Majority of cancers consist of Carcinoma of Oesophagus among males and carcinoma of cervix among females. 53.2% of cancers among males and 37.0% of cancers among females are tobacco- related and thus preventable.

The management of these maladies need judicious use of drugs thereby saving resources - both human and financial.

The practice of drug utilisation in the country - Karnataka being no exemption - presents a pathetic pieture.

(1) All drugs are not available to everyone as and when needed.

(2) The available drugs are not appropriate as these do not meet the health care needs of the majority of community.

(3) The fraudulent practices help pump spurious drugs in the market.

(4) The avaiability of a large number of drugs under various brand names (70% drug) confuses both the practitioner and the patient. Aggressive advertisements, colourful and

*Professor and Head of Department of Preventive and Social Medicine, Bangalore Medical College, Bangalore.

high-sounding literature along with additional incentives by pursuasive sales representative tend to push new drugs across the doctor's desk. Few doctors pause and question the desir--ability of a new drug. The incidence of latrogenic disorders is on the increase.

(5) The poly pharmacy is a common practice in the fond hope that atleast one of the prescribed drugs would be therapu--tically effective. Our study of drug prescription by medical officers indicated preference of three drugs on an average per disorder. Even the self-limiting drugs are treated aggressively. This "shot-gun therapy" damages both the patient and his pocket.

(6) The transnational companies continue to dump drugs of doubtful value in developing countries. Precious foreign exchange is thus lost (40% of total health budget) on acquiring these drugs thus straining, the already constrained economy. There is little available for preventive and prentive and promotive measures.

(7) The poor patient compliance calls for the need for informed public.

(8) The availability of OTC drugs promotes self ad--ministration. Very often the "experienced patient" prescribes dangerous drugs to fellow beings.

(9). The drug indents are often place on basis of previous drug indents which neither meet the needs of the community nor take into consideration the changing demographic profile,* availability of health facilities training status of the community and the budget provisions.

Essential drugs should not only be theraputically effective and reasonably safe but should cater to the health care needs of the majority of the population, being available at all time ensuring adequate quantity and quality. The accessibility of drugs within one hour walking distance and inclusion of local traditional medicines of proven theraputic value would ensure its acceptability by the community. Rationale use of drug needs continuous monitoring and evaluation.

*The drug indents should be place on basis of morbidity profile,

...3..

The drug requirement will vary at various levels. An attempt is made herein to enlist the most essential drugs at village sub-centre and P H C level (Table).

The pharmaceutical supply systems is thus one of the most critical issues of primary health care in our country. Our concern should, therefore, be to provide the right drug, in right dosage, at right place in right time.

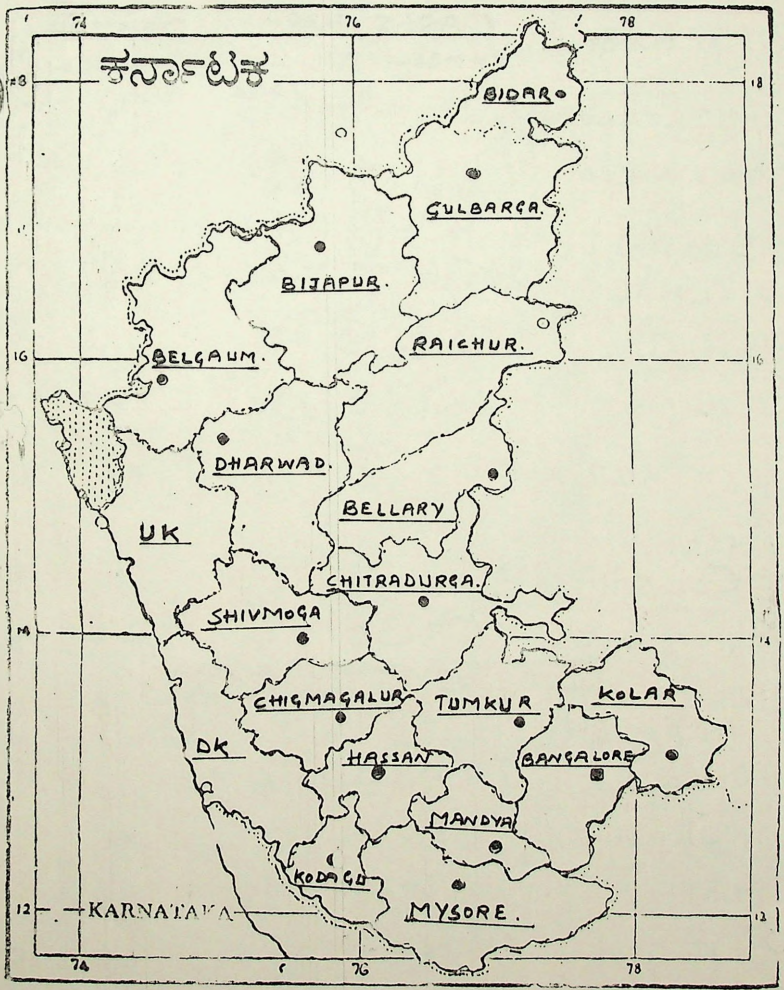
-0-0-0-0-0-0-

vsp.

KARNATAKA

POPULATION: 37136000 (1981)

SL. NO.	DISEASE	CASES 1988 NUMBER	CASES 1988 PREVALANCE / 1000	DEATHS NUMBER	DEATHS PREVALANCE PER 1000
1	TUBERCULOSIS	125303	3.374	1172	0.0315
2	MALARIA	127008 37,667 (P.f)	3.42	-	-
3	DIARRHOEAL DISEASES	205161	5.52	237	0.0064
4	A.R.I	192477	5.18	75	0.0020
5	TETANUS	4841	0.130	299	0.0081
6	DIPHTHERIA	550	0.0148	12	0.0003
7	WHOOPING COUGH	7113	0.1915	12	0.0003
8	POLIOMYLITES	759	0.020	22	0.0006
9	VIRAL HEPATITIS	5413	0.1457	60	0.0016
10	SYPHILIS	5749	0.1548	1	0.00003
11	GONORRHOEA	7260	0.1954	—	—
12	RABIES	3297	0.0887	36	0.0009
13	K.F.D	56	0.0015	6	0.0002
14	J.E	81	0.0021	27	0.0007
15	GUINEA WORM	990	0.0266	—	—
16	LEPROSY	PREVALANCE 3/1000			


ಕರ್ನಾಟಕ
BIDAR
GULBARGA
BIJAPUR
RAICHUR
BELGAUM
DHARWAD
BELLARY
UK
CHITRADURGA
SHIVMOGA
CHIGMAGALUR
TUMKUR
KOLAR
DK
HASSAN
BANGALORE
MANDYA
KODAGU
MYSORE
KARNATAKA
74
76
78
18
16
14
12

DEMOGRAPHIC PROFILE OF KARNATAKA

DISTRICTS : 20

POPULATION 37136000(1981)
4.4.4.85300(1990)

14 YEARS : 39.5%.

60 YEARS 6.7%.

SEX RATIO: 963

DENSITY: 194

C.B.R : 29.0(1986) 28.7

CDR: 8.7 · 2.3.7

IMR: 71 74

LIFE EXPECTANCY: 56.3

HEALTH INSTITUTIONS:

P.H.Cs : 1142

SUB CENTRES: 7793

PHU : 848

DISPENSARIES: 185

U.F.W.C : 102

HOSPITALS: 286

NO OF BEDS: 28,822

MEDICAL COLLAGES: 19

DENTAL COLLAGES: 13

ESSENTIAL DRUGS AT VARIOUS LEVELS

VILLAGE LEVEL

1. ORS Packets.
2. Paracetamol tablets.
3. Iron + folic acid tablets.
4. Mebendazole tablets.
5. Vitamin A Solution.
6. Benzyl Benzoate emulsion.
7. Cotrimoxazole tablets.
8. Chlorpheniramine maleate tablets.
9. Gentian violet granules.
10. Oxytetracycline eye ointment.
11. Boro spirit ear drops.

SUB CENTRE LEVEL

Village Level Drugs.

+

12. Oral contraceptive pills.
13. Salbutamol.
14. Methergin tablets.
15. Aspirin.
16. Chloroquine tablets.
17. Activated Charcoal.

PRIMARY HEALTH CENTRE LEVEL

Sub centre level drugs

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19. Diethyl carbamazine tablets.
20. Theophylline tablets.
21. Diazepam
22. Digoxin tablets.
23. Primaquine tablets.
24. Prednisolone tablets.
25. B-Complex tablets.
26. Metronidazole tablets
27. Amoxycillin tablets/capsules.
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32. Inj. Aminophylline.
33. Inj. Adrenaline.
34. Inj. Dexamethasone.
35. Inj. Oxytocin.
36. Inj. Atropine.
37. Anti snake venom.
38. Anti rabies vaccine.
39. Vaccines - DPT, OPV, BCG, Measles, TT, DT.
40. Tincture iodine.
41. Inj. Pethidine (? Oral morphine)
42. xylocaine 4%.
43. I.V. fluids (33% Saline, 5% dextrose, 5% dextrose saline Ringar lactate)
44. Inj. Chlorpheniramine maleate.
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46. Inj. Insulin.
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8	BACK ACHE.	39	8	0
9	SCABIES.	35	10	2
10	CONVULSION.	18	19	10

TOTAL = 47.

K E R A L A

Area	=	38,864 Sq. Km
Districts	=	14
Taluks	=	61
Villages	=	1451
Develop Blocks	=	151
Panchayatts	=	999
Municipalities	=	44
Township	=	1
Muncipal Corporations	=	3
Population (81 cencus)	=	254.5 laks
Estimate 1990	=	296.7 "
Density of population per Sq. KM	=	655
Total literacy	=	70.42%
No. of M.C	=	5
No. of Govt. Hospital	=	159
Private/Local bodies	=	1894
Total	=	2053
Total No: Beds	=	73684
No. of PHC	=	722
Sub centres	=	4374
Community H.C	=	29
Average population served by :		
Sub Centre	=	5268
P.H. Centre	=	31913
C.H.C	=	764000
Per capita expenditure on Med. & Public Health		Rs.60/-
17.3% Budget (86-87)		
Birth Rate	=	19.9
Death rate	=	6.2
IMR (1988)	=	27
M.M.R	=	1.3
Couple protection rate	=	58
Life expectancy:		
Male	=	67
Female	=	70

Dr. D.K. Nair
Drug Controller
KERALA.

m/pd
27690

DEMOGRAPHY

1. Total population of India	:	6851.8 lakhs
2. Total population of A.P.	:	53549673
3. Andhra Pradesh Contains	:	27379 villages
4. By 1-1-1988 in A.P.	:	1083 PHCs 6994 Subcenters 31 Upgrade PHCs 34 Tribal Area PHCs

HEALTH MANPOWER IN PRIMARY HEALTH CARE
(Number of persons trained upto 31-3-1987 in A.P.)

Medical Officers (at PHCs)	:	1399
Multipurpose workers (M)	:	7946
Multipurpose workers (F)	:	6860
Health Assistants (M)	:	2718
Health Assistants (F)	:	1415
Health Guides	:	35624
Dais	:	44855

TOTAL HOSPITALS & BEDS IN A.P.

	Hospitals	Beds
Rural	165	3716
Urban	450	32684
Total	615	36400

VITAL STATISTICS

Estimated Annual Birth Rates in A.P. per 1000 Population

	1983	1984	1985	1986
Combined	30.8	31.2	29.9	31.6
Rural	31.5	31.4	29.8	32.4
Urban	28.4	30.6	30.2	28.7

Estimated Annual Death Rates in A.P. per 1000 population

	1983	1984	1985	1986
Combined	10.4	11.0	10.3	9.9
Rural	11.2	11.7	11.1	10.7
Urban	7.2	8.6	7.3	7.1

INFANT MORTALITY RATES IN INDIA (Per 1000 live births)

	Rural	Urban	Combined
1982	114	65	105
1983	114	66	105
1984	113	66	104
1985	107	59	97
1986	105	62	96
1988			98

INFANT MORTALITY RATES IN A.P.

	Rural	Urban	Combined
1972	128	65	116
1978	120	62	112
1980	103	40	92
1986	87	59	82

AGE SPECIFIC DEATH RATES IN INDIA (1984)

Age Group	Rural		Urban	
	Male	Female	Male	Female
0 - 4	53.2	59.3	31.1	33.3
5 - 9	5.0	5.4	2.4	2.9
10 - 14	2.2	2.3	1.6	1.2

EXPECTATION OF LIFE AT BIRTH (YEARS)

EO	1951-61	1961-62	1980
India	41.62	41.7	54.4
A.P.	36.9	44.4	55.7

MORTALITY & MORBIDITY PROFILES

REPORTED CASES & DEATHS DUE TO SOME DISEASES

	INDIA		A.P.	
	Cases	Deaths	Cases	Deaths
Cholera	11423	224	206	11
Dysentery	8741081	2109	954741	290
G.E.	1338594	4621	74777	659
Diptheria	10057	329	737	23
Whooping Cough	162506	76	24469	12
Tetanus	29167	4522	3505	486
Measles	228166	639	19644	64
Polio	22021	708	3484	66
Tuberculosis			125789	1182
Enteric Fever			18543	37
Chickenpox			1339	2
Influenza			216817	9
Viral Encephalitis			1956	295
Viral Hepatitis			11109	128
Meningococcal Infection			2580	90
Rabies & Dog Bites			1349	126

SEASONAL INCIDENCE OF CERTAIN DISEASES

Disease	I QUARTER			II QUARTER			III QUARTER			IV QUARTER		
	Jan	Feb	Mar	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Diarrhoea	1066			1428			1261			998		
Encephalitis	80			69			82			101		
Pyogenic Meningitis	102			91			111			100		
Pneumonia	165			135			105			126		
Nutritional Disorders	294			240			267			245		
Rheumatic heart disease	41			28			49			45		
Septicemia	60			85			70			73		
AGN & Nephrotic Synd.	62			56			89			60		
Tuberculosis	112			93			94			124		
Bronchitis/Bronchiolitis	92			80			111			100		

PROFILE OF COMMON DISEASES IN INDIA

1. **Polio Myelities:**
   - In A.P., prevalence rate of polio/1000 children in 5 to 9 years age : Rural = 6.4; Urban = 5.3
   - Percentage of Polio Myelities as cause of lameness in A.P. Rural = 49.4; Urban = 66.8
   - Annual Incidence of Polio Myelities/100 children in 0 to 4 years. Rural = 1.7; Urban = 1.4

2. **Tetanus:**
   - Estimated mortality rate from tetanus is
     Rural - 13.3/1000 live births
     Urban = 3.2/1000 live births
   - Nealry a quarter million infants died in first month of life.

3. **Pertusis:**
   - Around 3 lakh cases reported annually

4. **Measles:**
   - Estimated no. of cases was 0.96 millions in 1977. The case fatality rate is 1 to 3 percent.

5. **Tuberculosis:**
   - 10 million patients in India.
   - A quarter of them are infectious.
   - 5 lakh deaths occur annually from T.B. Most of them in children below 15 years.

6. **Diarrhoeal Diseases:**
   - About 10% of total infant deaths are due to diarrhoea.
   - An estimated 1.5 million children under 5 yr die of it.

7. **A.R.I.:**
   - Over 17% of infant deaths are on this account.
   - Upto 40% of O.P. patients and upto 35% of Inpatients are children below 5 years.
   - Case fatality rate is 10 to 16%.

8. **Rheumatic Heart Disease:**
   - Estimated prevalence rate is 6/1000 population.
   - About 2 million children between 5 & 15 yrs of age suffer from rheumatic fever and R.H.D.

9. **Hookworm Infestation:**
   - The south, east & west coasts of India are heavily infested. Of 359 million affected in Asia, 205 million are in India.

10. **Filariasis:** About 14 million persons have it. A larger No. are micro filaria carriers. 304 million in endemic areas.

NUTRITION

Percentage Distribution of Malnourished Children 1-5 years (1980) GOMEZ

	N	Normal 90%	Mild 75-90%	Moderate 60-75%	Severe 60%
India	4008	14.8	47.9	32.6	4.7
A.P.	883	14.7	49.4	32.1	3.9

NUTRITIONAL DISORDERS

1. Protein Energy Malnutrition:

- Severe PEM (Marasmus & kwashiorkar) is seen in 1-2% of children of preschool age.
- Around 60-70% of children suffer from mild or moderate degree of PEM.
- In urban slums over 26% of children suffered from severe PEM (IJMR 68; 17-23, 1978).

2. Nutritional Anemia:

- In children it is 66.3% in rural areas of A.P. (HYD).
- 50% among children of preschool age (ICMR, 1981).

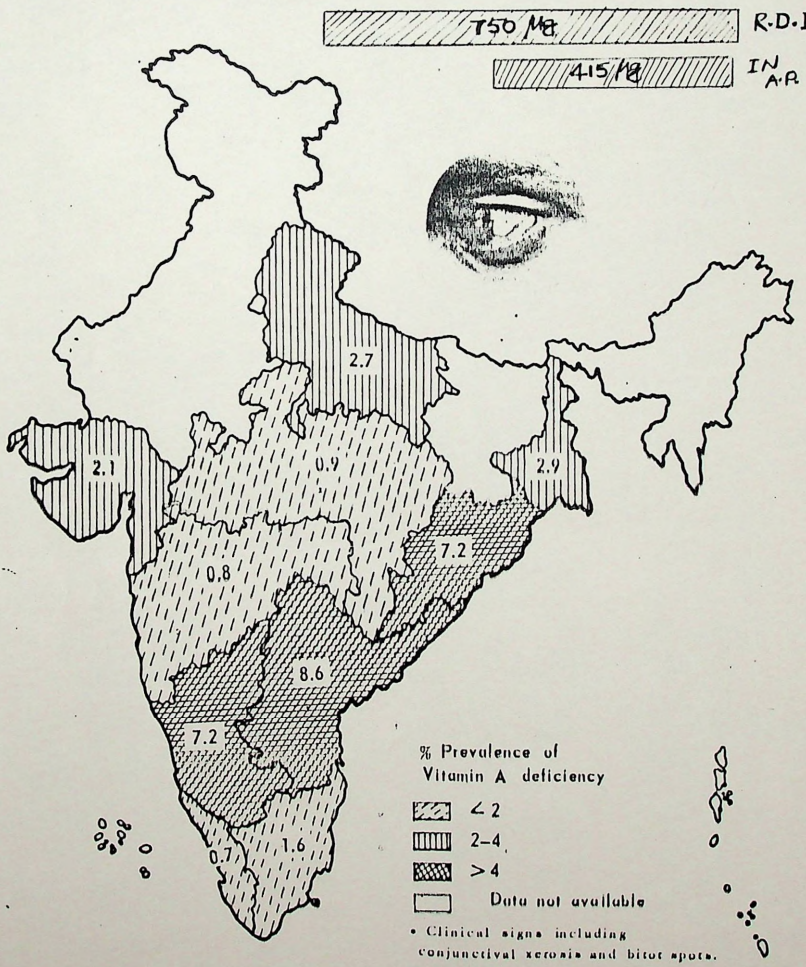
3. Vitamin 'A' Deficiency:

- In A.P. prevalence is 1.4-1.5 in infants 7.2% in preschool, 17.4% in 5-12 years.
- Around 300000 new cases of xeropthalmia, about half of which result in blindness occur each year in India.
- Around 300000 children go blind each year due to serious vitamin 'A' deficiency.

4. Iodine Deficiency:

- About 40 million people are estimated to have iodine deficiency disorders among them 1 million cretines (AIIMS, 1984).

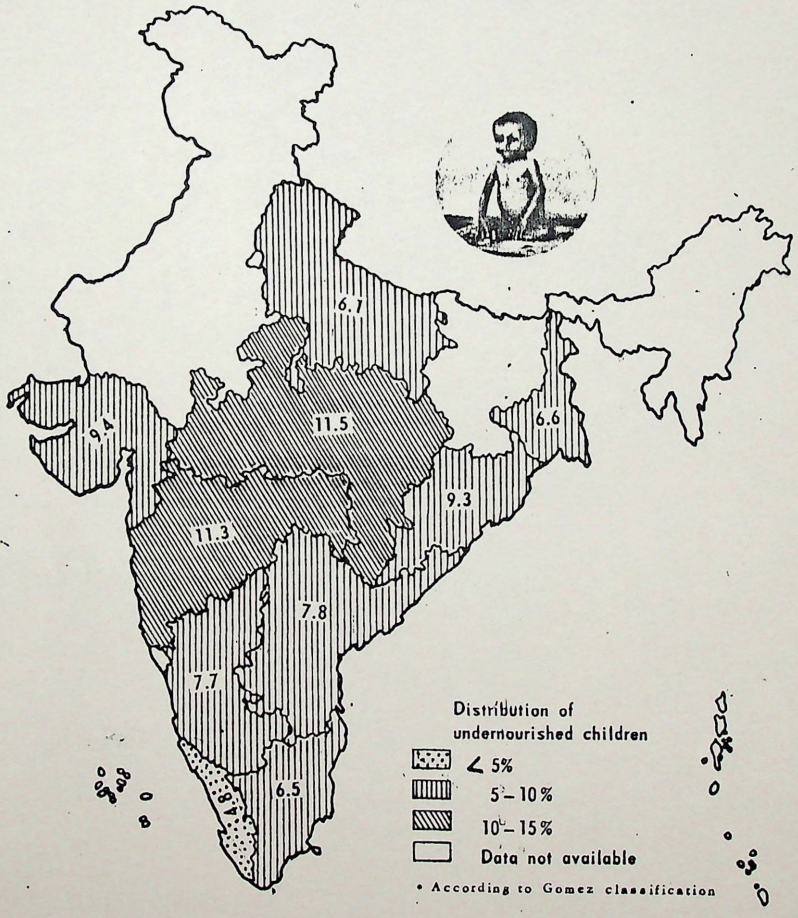
PERCENTAGE PREVALENCE OF VITAMIN-A DEFICIENCY* IN PRESCHOOL CHILDREN – INDIA



Source : NNMB Reports 1979–1981, National Institute of Nutrition, Hyderabad – 500 007, India.

PERCENTAGE DISTRIBUTION OF SEVERELY UNDERNOURISHED* PRESCHOOL CHILDREN – INDIA

(Source : NNMB Reports, NIN)



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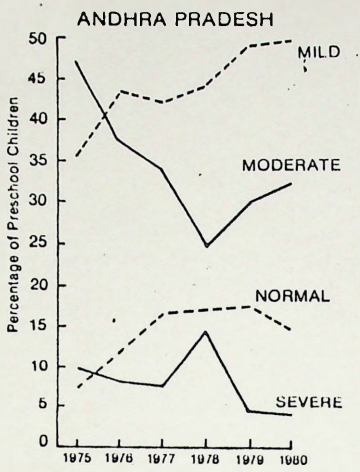
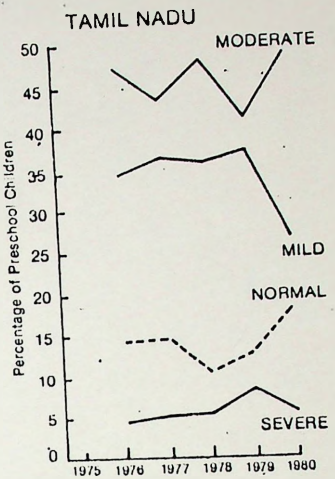
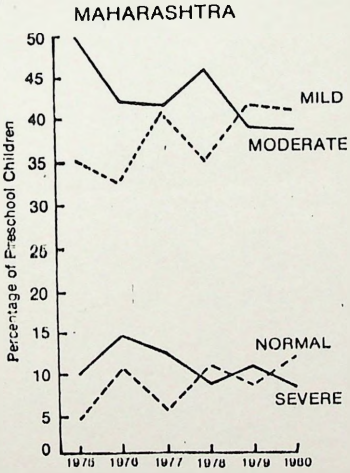
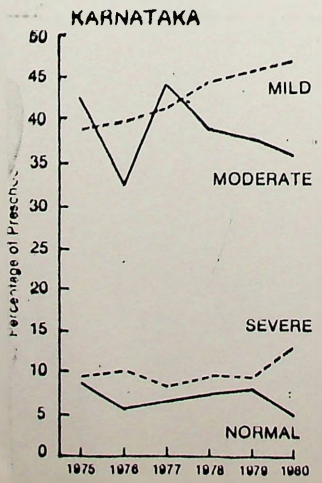
TRENDS IN NUTRITIONAL GRADES OF PRESCHOOL CHILDREN

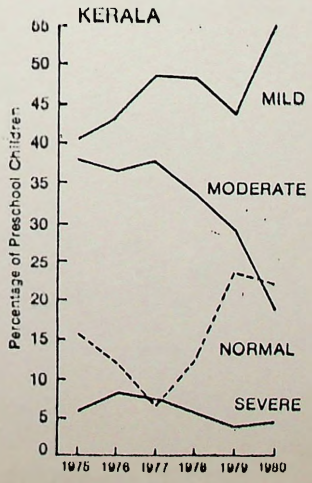
(Source: NNMB Rural Surveys, 1975-80)











PRIMARY HEALTH CARE

"Primary Health Care is essential health care made universally accessible to individuals and acceptable to them, through their full participation and at a cost the community and country can offered."

"It is the key to the attainment of health for all by 2000 A.D."

Elements:
- Promotion of food supplies, proper storage and proper nutrition.
- Education about health problems and their control.
- Safe water supply and basic sanitation.
- Mother & child health and family planning.
- Immunization against infectious diseases.
- Prevention & control of locally endamic diseases.
- Treatment of common diseases and injuries.
- Provision of essential drugs.

Essential Drugs:

Essential drugs are those that satisfy the health care needs of the majority of population & should be available at all times in adequate amounts and the appropriate dosage forms.

Introduction: The selection of essential drugs would depend on the health needs and on the structure and development of health services of each country, and the lists of essential drugs should be drawn up locally and periodically updated, with the advise of experts in public health, medicine, pharmacology, pharmacy and drug management.

Guide Lines for Establishing a National Programme:
- It is based on the recommendations of a local committee which include individuals competent in various fields.
- The international non proprietory (generic) names for drugs or pharmaceutical substances should be used whenever available.
- Consise, accurate and comprehensive drug information should be prepared to accompany the list of drugs.
- Quality, inlcuding stability and bio availability should be assured through testing or regulation.
- Finally the success of entire programme is dependent upon the efficient administration of supply, storage and distribution at every point from the manufacturer to the end user.

Criteria for the Selection of Essential Drugs: Depend on
- Pattern of prevelent diseases.
- The treatment facility.
- The training and experience of the available personnel.
- The financial resources.
- Genetic, demographic and environmental factors.

ESSENTIAL DRUGS IN PRIMARY HEALTH CARE

The basic list of essential drugs under primary health care should be based on the different levels of health services provided, and competence of functionaries involved in it; which in term should be based on morbidity pattern in the community, safety, effectiveness and cost of the drugs.

The following factors will inevitably influence the content of the essential drugs list in primary health care.

1. The National Health Infrastructure:

The type of primary health care service that a country requires is dependent upon the proximity and nature of the first referral facilities.

2. Training and Supplies:

The numbers of trained personnel, the facilities placed at the their disposal, and the supplies entrusted to them determine both the scope and the limitations of the primary health care system.

Workers with one or more years vocational training can obviously accomplish more than personnel who rely upon an intensive course of practical instruction lasting only a few weeks. But whatever the circumstances little can be accomplished unless continuity of essential supplies and information is assured.

3. The Pattern of Endemic Diseases:

The prevalence of major endemic infections and parasitic diseases may vary from region to region within a country in conformity with climatic, geographical, topographical, social, economic and occupational factors.

Careful planning and, in some cases, epidemiological surveys are required to ensure that the most effective and useful drugs are provided and to obtain full benefit from limiting resources.

THE LEVELS OF SERVICES IN PRIMARY HEALTH CARE

a) Anganwadi worker
b) Village health guide
c) Sub centre
d) Primary health centre

I. Essential Drugs Suggested for the kit of A.W.W./ village health guide.

- Vitamin 'A' solution
- Iron & folic acid tablets
- ORS packets
- Chloroquine tablets
- Paracetamol tablets
- Mebendazole tablets
- Chlorpheneramine maleate tabs
- Gention violet granules
- Borospirit ear drops
- Terramycin eye ointment
- Benzyl benzoate emulsion
- Cotrimoxazole (Tb & Syp)
- Zinc sulphate eye drops
- Chlorine tablets (for chlorination of water)
- Salbutamol syp.

II Essential drugs at the subcentre

A. Drugs suggested for the A.W.W./V.H.G.

B. Additional drugs:

Aspirin
Metoclopramide
Contraceptive pills
Tab & Inj methergin
Activated charcoal

III. Essential drugs at the primary health centre

A. Drugs listed for subcentre
B. Additional Drugs

- Pencillin (Procaine & Benzathine)
- Amoxycillin Syp.
- Chloramphenicol
- Digoxin
- Dihydrallazine
- Isosorbide dinitrate
- Phenobarbitone
- Promethazine syp.
- Glybenclamide tab.
- Furazolidine
- Metranidazol
- Theophylline
- Aluminium hydroxide
- B complex
- Vitamin D
- Diazepam
- Antitubercular drugs (available under NTCP)
- antileprosy drugs (available under NLEP)
- Diethylcarbamazipine
- Isoxsuprine HCL
- Povidine iodine vaginal pessary
- Tab prednisalone
- Furosemide
- Tincture iodine
- Whitfield's ointment
- xylocaine 4%, 2% & gelly
- Inj. Aminophylline
- Inj. Adrenaline
- Inj. Dexamethasone
- IV Fluids (Ringer Lactate 5% dextrose 5% dextrose saline)
- Inj. Normal saline
- Inj. Sodium bicarbonate
- Inj. Potassium chloride
- Inj. Oxytocin
- Vaccines & Sera
  DPT
  OPV
  Measles
  BCG
  TT
  DT
  Anti rabies
  Anti snake venom

WORKOUT FOR ESTIMATION & UTILISATION OF DRUGS ACCORDING TO SEASONAL TRENDS

I. Acute Diarrhoeal Diseases:

Total admissions into our hospital per year - 4753 cases
Per each admission case we expect 10 cases in OP
100 cases in community

The average amount of drugs needed for each diarrhoeal episode for O.P. cases
Tab. Furoxone 1 t.d.s (9 tabs) 'for 3 days'
ORS 2 packets
Cost of treatment for each case: Furoxone tab. (0.25p)
ORS packet (1.25)
for 3 days Total = Rs. 4.75

Total No.of cases expected in O.P. per year = 47530

Total costs of drugs per year for O.P. cases
= 47530 x 4.75 = 2,25,767.50

Total No.of cases in community = 4,75,000

About 80% of them will be having mild diarrhoea for which we can advise home remedies like sugar-salt solution, rice based ORS and lemon salt sugar solution.

By this only 20% of cases in community need drug treatment (95,060 cases).
For each case treatment:

tab. sulphaguanidine (6)
tab. furoxone 1 t.d.s (9) for 3 days
ORS packets (2)
Total cost Rs.6/- per case

For total community cases = 97,060 x 6 = 5,70,360

As utilisation factor is about 60%, the amount of cost for communit is Rs.3,42,216 per year.

II. For acute respiratory infections:

Total admissions of A.R.I. in our hospital/yr = 1,337
For each admission case we expect 5 cases in O.P.
50 cases in community
The average amount of drugs needed for each episode for O.P.
Tab. Cotrimoxazole (10) Rs.7/-; Total OP cases = 6,685
Total cost for OP cases = 6685 x 7 = 46,795 per year

For community:
Total cases = 66,850. Among them 80% doesn't need drug treatment. So only 20% cases (13,370) need treatment.
Total cost = 13370 x 7 = 93,590 Rs.
As utilisation factor is about 60%, the amount of investment for community per year = Rs. 56,154/year.

NATIONAL INSTITUTE OF PUBLIC CO-OPERATION & CHILD DEVELOPMENT

Regional Workshop on Essential Drugs in Primary Health Care
(27 - 28, June, 1990)

PROGRAMME SCHEDULE

Wednesday, 27th June, 1990

9.00 a.m - 9.30 a.m	:	Registration
9.30 a.m - 10.00 a.m	:	Opening Session
10.00 a.m - 10.30 a.m	:	COFFEE
10.30 a.m - 1.00 p.m	:	Review of Morbidity & Mortality profile of each State & Essential Drugs in Primary Health Care
10.30 a.m - 11.00 a.m	:	i) Karnataka - Dr.M.K. Vasundhara Bangalore Medical College Bangalore
11.00 a.m - 11.30 a.m	:	ii) Andhra Pradesh - Dr. M.V.G. Subramaniyam Tirupati
11.30 a.m - 12.00 noon	:	iii) Kerala - Dr.K. Rajan Medical College Alleppey Kerala
12.00 noon- 12.30 p.m	:	iv) Tamil Nadu - Dr. A. Parthasarathy Institute of Child Health Egmore, Madras

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12.30 p.m - 1.00 p.m	:	v) Pondicherry - Dr.P. Rajaram Dean JIPMER
1.00 p.m - 1.30 p.m	:	vi) Goa - Dr.S.B. Dixit Professor & Head, Goa Medical College, Goa.
1.30 p.m - 2.30 p.m	:	LUNCH
2.30 p.m - 5.00 p.m	:	Discussion in Sub-groups on i) Essential Drugs for AWW/VHG Kit ii) Essential Drugs at Sub-Centre Level iii) Essential Drugs at P.H.C Level iv) Drugs requirements for 1000 population v) Budget for Essential Drugs vi) Drug Supply System vii) Important guidelines for consumers

Thursday, 28th June 1990

9.00 a.m. - 10.30 a.m.	:	Discussion Continued
10.30 a.m. - 11.00 a.m	:	COFFEE
11.00 a.m - 1.00 p.m	:	Presentation & finalization of Group Reports
1.00 p.m. - 1.30 p.m	:	Concluding Session
1.30 p.m - 2.30 p.m	:	LUNCH
3.00 p.m - 4.00 p.m	:	Disbursement of T.A

m/pd
26690

NATIONAL INSTITUTE OF PUBLIC COOPERATION AND CHILD DEVELOPMENT
Southern Regional Centre, Bangalore.

REGIONAL WORKSHOP ON ESSENTIAL DRUGS IN PRIMARY HEALTH CARE

BANGALORE, 27 - 29TH JUNE, 1990

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DRUG DEPENDENCE - THE DEAD END

INFORMATION KIT | January 1991

Message from Dr U Ko Ko
Regional Director, WHO South-East Asia Region

For thousands of years man has been using substances that have psychoactive effects. In some regions and countries, the use of such substances was closely linked to rituals and prevailing socio-cultural practices. For example, opium, coca leaf, khat and alcohol have been regularly used in different regions of the world in a variety of ways through the ages. The apparent social acceptance of the use of such substances stemmed largely from the fact that there was no abuse. Where there was, it was severely ostracized. Society had very clearly drawn the line and there was no question of condoning any abuse.

Unfortunately, what we are witnessing today, on a global scale, is a virtual epidemic of drug abuse. According to United Nations estimates, there are 15 million drug abusers (excluding cannabis) worldwide. This figure is considered to be a conservative estimate or just the tip of the proverbial iceberg.

Adding a new and disturbing dimension to the problem is the fact that more and more young people are being affected by what can only be described as the sinister network of global drug cartels. In view of the vulnerability of intravenous drug users to AIDS, drug abuse has now assumed even more dangerous proportions.

What, however, needs to be borne in mind is that the various laws and measures to prevent drug trafficking can succeed only if there is genuine community involvement in stemming a tide that, if unchecked, could well engulf humanity. Given the will and determination, countries of the world can work together to put an end to the death, destruction and violence, the pain and the suffering that drug abuse has come to signify the world over.

WHO/1990/January /1

DRUG DEPENDENCE - THE DEAD END

INFORMATION KIT January 1991

Psychosocial Factors in Drug Dependence

During adolescence, two determinants of behaviour appear which are important in the context of drug use: one is the increasing importance of *peers as role models* in addition to the continuing role modelling by parents. The second is a tendency to *take risks* and to *challenge established rules and values.* In combination, these two sets of determinants of behaviour can lead to groups of adolescents taking risks or challenging established rules by a behaviour which none of the group would be likely to show alone, for example group violence, alcohol intoxication or initiation into taking of illicit drugs.

PATHWAYS TO DRUGS

It has been convincingly argued that people take drugs because they are offered to them. It is very rare, at least for illicit drugs, that first drug contacts happen on the initiative of the user. As a rule, careers of drug taking begin with an offer to take the drug. This offer, when successful, normally happens in circumstances where it is difficult to turn the offer down, in a situation which tends to be described - not very aptly - as social pressure or curiosity. More often it is in a situation which could probably best be described as conducive to impetuous or precipitous behaviour: a mixture of peer modelling, risk taking and challenging prescribed rules of behaviour. Or, "it will simply be an offer of the opportunity to join with others in what appears to be a method of extending pleasurable aspects of a conventional recreational situation. So, in spite of being 'anti-drug', he or she evaluates the offer not in terms of the drug education/morality tale (which is still believed) but in terms of the current situation and the normal rules of behaviour (sociability, enjoyment, reciprocity, keeping one's cool, presenting self, etc.) appropriate in such recreational situations. This is true both for early offers of legal drugs (cigarettes, alcohol) and for later offers of illegal drugs".

Hardly any studies have been undertaken to elicit the circumstantial and emotional details of such situations of drug initiation. It is difficult to see how programmes of 'preventive education' can be effective if so little is known about the behaviour which is to be prevented. 'Just say no' is certainly not the full answer, especially when proposed by representatives of the very norms and rules which the behaviour is challenging.

This lack of knowledge on the initiation into drugs has led to the generalization of the medical model of dependence to drug use in general. We are asking for 'causes' of using drugs. There is evidence to suggest that dependence has a certain medical connotation in that there exists a genetic predisposition towards it. However, the behaviour of taking a drug or accepting the offer of a drug does seem to resemble a medical condition about as closely as do other behaviours which imply a definite risk to health like skiing or mountaineering. All these behaviours are pleasurable. And in all of them risk-taking is one component of the pleasure. The fact that people do things which they enjoy doing does not seem to need further explanation. However, it is important to keep in mind that risk-taking can be fun, and especially so during adolescence. The physiological reactions to fear and fun are very similar. From observing only hormonal and some other physiological changes we are normally not able to say whether a person is living through a frightening experience, is enjoying a good joke or is experiencing an orgasm. The smooth and virtually timeless undulations between fright and fun can well be observed on the faces of people on a roller-coaster. It is therefore not surprising that the probability of an adolescent accepting the offer of a drug is not correlated to his knowledge about drugs. The component of pleasure experienced in the *process of drug initiation* in many instances neutralizes the often unpleasant experience of the drug effect itself. This excitement permits, for example, adolescents to become smokers inspite of the initial unpleasant bitter-

ness and cough provocation by cigarettes. They often have to literally 'work' themselves into regular use. Like skiers, mountaineers or car drivers, drug users are convinced that they can control the risk. The facts, however, tell a different story.

Whereas it is quite clear that in the beginning drugs are taken because they are offered, it is much less clear what makes certain people to continue drug use and others to abandon it. A number of occasional users continue to be passive or occasional users, i.e., they take drugs only if they are offered or if otherwise available. This is true even of highly addictive drugs like cigarettes and heroin. It is of course even more true of less addictive drugs like alcohol or cannabis. Unfortunately, nothing seems to be known about the protective mechanisms which permit certain people to occasionally use highly addictive substances without even proceeding to the state of active use, i.e., use where the drug is actively sought and purchased. In contrast, some mechanisms have recently been described which permit regular users of heroin to maintain control over its use without moving on to compulsive use (controlled use meaning regular use with effective controls to make sure that the drug use does not substantially interfere with the user's social and professional life, compulsive use meaning that the drug use has taken such priority over other life concerns that it is continued in spite of adverse consequences for the health or the professional or social life of the user). Such controlled use is of course much easier to achieve with licit substances where unpredictable social (especially legal) sanctions are much less likely to occur, and where therefore the likelihood of consequences affecting the social and professional life of the users are easier to control. Furthermore, occasional users of highly criminalized drugs are much more likely to leave the mainstream of youth and proceed into the 'drug scene' in a process of polarization between the established and a pro-drug-use counterculture, thereby becoming drug dependents.

DRUG DEPENDENCE - THE DEAD END

INFORMATION KIT January 1991

Community Involvement in Drug Abuse Control

One may well ask what role communities could play in the control of drug abuse. Supply reduction is the job of the police. Demand reduction is the job of doctors in their treatment centres. To the extent that the police cannot stop the availability of drugs, let the health service cure those who become drug addicts, in spite of all supply control efforts.

We have ample evidence from all over the world that these traditional strategies alone do not work. Law enforcement will at times drastically reduce the availability of illicit drugs by spectacular seizures, or a vigilant narcotics police may prevent the establishment of a criminal distribution network. But such successes do not seem to be sustainable. Clinics to treat drug addicts may detoxify large numbers of them but the rates of relapse are high worldwide.

Could, then, people and communities achieve what agencies of law enforcement and health do not seem to be able to achieve? The answer is neither yes nor no. The answer is: both agencies need people, communities, to be successful. And, equally important, people, NGO's and communities need Government support to be successful in their strive for a drug-free environment.

Drug abuse, thereby, becomes closely linked to health care, with health services rendering necessary support. But for successful prevention, and for caring for the disabled and chronically ill, community involvement is necessary. Only people, friends, teachers, relatives, community leaders, peers, can prevent others from becoming drug dependent. And only people, families, friends, employers, social workers, can help a drug dependent person to stay drug free.

A community-based study on pathways into drug dependence in Sri Lanka confirmed the appropriateness of a public health model in its application to drug abuse: some people grow up in highly endemic areas, pockets in city slums where anti-social activities, drug peddling and use of illicit drugs are "normal". Such people may socialize into drug use. But the majority become individually infected by others. Drug abuse spreads from person to person. Drug peddlars befriend before they offer the drug for the first time to their victims, free of charge of course for the first few times. How can we immunize youth against becoming infected from a nice, healthy 'friend'?

Awareness is certainly important. But it is not enough. An anti-drug attitude in the community and especially in youth is certainly important. But it is also not enough. It is the social climate where drugs are not 'in' and where no pro-drug subculture exists which protects youth, a social climate which only communities can generate *through* their young. The full involvement of youth and their leaders will be able to increase resistance of youngsters against the befriending drug peddlar. Some youngsters thus prepared will not only say 'no' to the offer of drugs but will be able to initiate action against the peddlar or will help to rehabilitate a friend who has fallen victim to drugs.

A study group convened by WHO/SEARO in 1983 and 1984 reviewed the international experience regarding factors which improve outcome in drug dependent persons. The conclusion was clear: whatever is done in terms of 'treatment' to the dependent person has little, if any, impact on long-term outcome. *But the social environment in which the detoxified ex-user lives largely determines the long-term outcome.* A drug free environment, return into a family or another socially supportive environment, long-term social support, return to school or work, existence of self-help groups of ex-users and of affected families, factual knowledge about drugs and optimism in the family, are such factors. All show the need to involve communities fully. How can community involvement be achieved?

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There are some examples of effective community involvement in the South-East Asia Region. As a preparation, people in a locality are mobilized to take care of their drug problems, drug users identified and motivated to undergo detoxification together, their parents and relatives are taught ways to handle drug problems including the skills of detoxification (for opiates). A detoxification camp is then set up and ideally all drug dependent persons in the locality detoxified together. Efforts are then made to transform them into self-help and perhaps vigilant groups to keep the locality drug free. In this fully community-based approach most of the factors known to improve outcome in dependent persons, but also those known to prevent drug abuse, are included. Such programmes now function in some parts of India, Myanmar, and Sri Lanka. They often rely heavily on ex-users and other volunteers. The degree of professional involvement varies in the different examples of this 'camp approach towards drug free zones'. But it is clear that the scope for effective community involvement of the above type requires a 'community empowerment' to solve their drug problems. It requires professionals to be willing to hand over to the people as much of their skills as possible. Physicians, in their efforts towards effective community involvement should be organizers, teachers, and perhaps outreach workers. Only then will health services encourage and invite community involvement. And only then will drug abuse control programmes be able to make major contributions to the reduction of demand for illicit drugs.

DRUG DEPENDENCE - THE DEAD END

INFORMATION KIT

January 1991

Fact Sheet and Glossary

DRUGS

Mind-altering drugs are used for purposes of intoxication throughout the animal kingdom. Normally, the seasonality in the availability of intoxicating plants prevents animals from addiction. However, intoxicating plants being available for long periods of time can lead to the extinction of certain species of animals or to their disappearance from a locality where these plants grow throughout the year. Laboratory experiments have replicated the finding of a liking for intoxication and an addiction-proneness in many animal species. Humans have early learned the skills of smoking intoxicating products available continuously. Intoxication, and dependence, are known throughout recorded human history. Equally documented are efforts to contain drug dependence by total abstinence/prohibition. Consistently, the efforts towards total abstinence have failed in communities where drug use was well established, leading to a 'tug-of-war between governments and their people' .

DRUG USE AND DEPENDENCE

A major difficulty when discussing problems related to the use of mind-altering drugs lies in the definition of what may be considered a problem. A government may wish that its citizens refrain from using any addictive substance (except, normally, tobacco) and may therefore consider the occasional use of alcohol by some of its citizens as a problem. Other governments may consider use of any mind-altering drug except the traditionally sanctioned substances alcohol and tobacco as a problem. In some countries once-ever use of certain illicit substances is considered a problem whereas in others only compulsive use of the same drug leading to social and/or health problems is seen as such (little difference normally being made between problems related to the substance and those related more to its criminalization).WHO has made efforts to clarify the issues involved by proposing a set of definitions concerning drug use in a WHO memorandum issued in 1984. They are:

Unsanctioned use: use of a drug that is not approved by a society, or a group within that society. When the term is used it should be made clear who is responsible for the disapproval. The term implies that we accept disapproval as a fact in its own right, without having to determine or justify the basis of the disapproval.

Hazardous use: use of a drug that will probably lead to harmful consequences for the user - either to dysfunction or to harm. This concept is similar to the idea of risky behaviour. For instance, smoking twenty cigarettes each day may not be accompanied by any present or actual harm but we know it to be hazardous.

Dysfunctional use: use of a drug that is leading to impaired psychological or social functioning (e.g., loss of job or marital problems).

Harmful use: use of a drug that is known to have caused tissue damage or mental illness in the particular person.

In the same memorandum *drug dependence* is defined as a syndrome manifested by a behavioural pattern in which the use of a given psychoactive drug, or class of drugs, is given a much higher priority than other behaviours that once had

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higher value. The term syndrome is taken to mean no more than a clustering of phenomena so that not all the components need always be present, or not always present with the same intensity. They will probably include some of the following:

- a subjective awareness of compulsion to use a drug or drugs, usually during attempts to stop or moderate drug use;
- a desire to stop drug use in the face of continued use;
- a relatively stereotyped drug-taking habit, i.e., a narrowing in the repertoire of drug-taking behaviour;
- evidence of neuroadaptation (tolerance and withdrawal symptoms);
- use of the drug to relieve or avoid withdrawal symptoms;
- the salience of drug-seeking behaviour relative to other important priorities;
- rapid reinstatement of the syndrome after a period of abstinence.

CANNABIS

The plant from which the various cannabis products are produced grows wild in many parts of the world and is easy to cultivate. Cannabis products have been used for ceremonial and recreational purposes since times immemorial in many parts of South-East Asia.

Cannabis is either smoked (e.g., charas) or ingested in food or as a concoction (e.g. bhang). It produces a sense of relaxation and well-being. The addictive potential, i.e., the likelihood for users to become dependent on the drug is quite low. But it is accused of being a 'gate-way' drug to harder i.e. more addictive drugs. However, since no negative health effects of the drug are known todate, some countries have decriminalized cannabis products in an effort towards 'separation of markets', i.e. to separate the markets and distribution networks for more dangerous drugs from the ones for less dangerous drugs like cannabis products. A recent WHO publication has drawn the conclusion that "the criminalization of drug use as currently applied should probably be seen as a punitive measure without noticeable preventive effects. It may instead possess the potential to amplify the problem, particularly when applied in an indiscriminate fashion to youngsters or to people who display no other forms of criminal or antisocial behaviour".

OPIOIDS

Drugs of this group may be synthesized, not chemically resembling the natural products or their derivatives. But at least for the illicit market they largely derive from the cultivation of the poppy plant (opiates). The bulk of the international illicit supply comes from countries of the 'Golden Triangle' (Myanmar, Laos, Thailand) and the 'Golden Crescent' (Afghanistan, Pakistan, Iran). The preparations most frequently used are opium (smoked or ingested as concoction) and the about 10 times more effective distillation product heroin (inhaled, smoked or injected). Medicinal preparations used as substitutes by drug dependents are mainly codeine (in many cough syrups) and morphine in its various medicinal preparations and equivalents.

Opium, like cannabis, has been used since times immemorial in many South-East Asian countries or communities. In contrast to cannabis products, opium dependence has also been recognized as a problem in those communities, especially where poppy was not grown locally, generating an economic dependence on outside suppliers.

Heroin, the ten-fold more powerful and addictive derivative of opium, entered the market in several countries of South-East Asia shortly after opium use was prohibited. There is good reason to suggest that the criminalization of established networks of distribution of a traditional drug was conducive to the propagation of the more profitable heroin (being more addictive and therefore generating more reliable buyers).

The opioids produce a state of relaxation and a feeling of happiness. The latter may be a shortlived feeling of bliss or ecstasy. But many opiate dependent persons continue taking the drugs for simply avoiding withdrawal symptoms (cramps, pains, tears, sweating, diarrhoea, and the like. But all of these symptoms are highly amenable to environmental and social manipulation).

OTHER DRUGS

In many countries of the South-East Asian Region the use of alcohol poses a much higher public health problem than any of the illicit drugs. This is probably true of tobacco also. Other illicit drugs like cocaine and amphetamines are too expensive relative to opioids and cannabis to pose public health threats to the Region.

Licit drugs like benzodiazepines and barbiturates are sometimes substituted by opiate users in the Region, but do not seem to pose a serious problem as drugs of primary dependence.

DRUG DEPENDENCE - THE DEAD END

INFORMATION KIT

January 1991

Drug Abuse in South-East Asia : An Overview

HISTORICAL BACKGROUND

Since times immemorial, in most of the countries of the South-East Asia Region drugs have traditionally been used, in addition to alcohol, for ritual, religious, and recreational purposes. These drugs are mainly cannabis products and opium. Even though opium dependence was usually ostracized in most communities, it was rarely considered as being more than an individual problem. Many countries permitted the requirements of the opium dependent population to be met through official or officially tolerated opium outlets.

However, 'wars on drugs' were also sometimes fought, as, for example, the civil war in Thailand following an opium ban in 1811. Finally, the opium franchise was enacted in 1851 permitting opium trading under official control.

The increase in drug abuse in the West led to increasing pressure, often from abroad, on countries in the Region to introduce and enforce a ban on drugs.

The ban on opium in Thailand in 1959 was followed almost immediately by the first heroin epidemic in the country.

ISSUES IN THE EPIDEMIOLOGY OF DRUG DEPENDENCE

Drug use is transmitted from person to person like an infectious disease. In addition, there is also a disease vector, viz., the drug dealers, often themselves drug dependent. Rates of cure through treatment in medical terms are low.

Knowledge about the dangers of drugs has well been established to lack the protective quality of a vaccine. Furthermore, the process of becoming drug dependent has a high predictive value for outcome: people who become dependent through aggressive marketing have a much better chance of recovery than those who became dependent in the process of pleasure seeking. And persons who have become opiate dependent through treatment of chronic severe pain tend to have the normal withdrawal symptoms but do not normally experience craving afterwards.

DRUG DEPENDENCE IN THE SOUTH-EAST ASIA REGION

In most countries of the Region, nicotine and alcohol dependence with its well established health consequences are the major public health concerns. However, in view of the special economic, social, and security considerations in relation to illicit drugs, we shall limit ourselves to the use of cannabis and opioids.

Virtually no data exists on the use of cannabis in the South-East Asia Region. In view of the fact that the plant grows wild and abundantly in many parts of the Region, and that the use of cannabis products is traditional in some and probably of little public health concern in almost all, the lack of such data seems justifiable.

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The only other widely abused illicit drugs are opiates. Again, reliable data on the extent of the problem are scarce. Furthermore, existing survey data tend to lack a denominator, i.e. they cannot be translated into national or other population estimates.

For example, a national drug dependence registry in Myanmar now contains some 44 000 cases. However, in the absence of validatory community surveys, no extrapolation can be made to the general prevalence of drug dependence. Furthermore, the register is cumulative since 1974 with no mechanism for deregistration. Nor is there a mechanism for an effective control of multiple registrations.

In Thailand, 80 000 opium smokers were registered in 1958, before the ban. Since then, treatment data are being registered and eventually linked and analysed on a regular basis. However, these data are rarely validated in relation to their meaning for populations or communities. The magnitude of the problem can be guessed from the fact that over 30 000 opiate dependents are treated every year.

Unfortunately, it is impossible to estimate with any precision the population prevalence of opioid dependence from treatment data although it is known from community surveys in Sri Lanka and Thailand that at least 60% of actual active opioid dependents have been treated at some stage. This is so because the rate of treatments per year of active drug use is not known. Estimates of actual opioid dependents in Thailand vary roughly between 150 000 and 300 000.

For the other affected countries like Bangladesh, India, Nepal, and Sri Lanka, only vague overall estimates are available, the basis of which are not clear in most instances. For India an estimate of several hundred thousand heroin dependents has recently been put forward in a UN project document. For the South of Sri Lanka and for Nepal, official estimates put forward are in the order of 25 000-35 000. Such estimates may derive from a multiplication of treatment or prison data by some "UN factor'. Such multipliers (e.g. one out of ten dependent persons comes for treatment per year) generally lack international and even more so national or local validation. It is quite clear, often, that such estimates are put forward for reasons of anti-drug advocacy rather than for reasons of facilitating epidemiology-based interventions.

1. Introduction

The WHO Expert Committee on the Use of Essential Drugs met in Geneva from 15 to 19 November 1993. The meeting was opened on behalf of the Director-General by Dr F.S. Antezana, Assistant Director-General, who emphasized that the concept of essential drugs was fundamental both to WHO's revised drug strategy (*1*), as endorsed by the World Health Assembly in resolution WHA39.27 in 1986 (*2*), and to the development of comprehensive national drug policies. Regular updating of WHO's Model List of Essential Drugs sustained the momentum of the revised drug strategy and was a basic element of the validated information required by most of WHO's Member States for optimal rationalization of drug procurement and supply.

The Expert Committee decided to prepare its report as a self-contained document and to incorporate into it those parts of the previous report (*3*) that required no modification or merely bringing up to date. The eighth Model List of Essential Drugs will be found in section 16 of this report, and explanations of the changes in section 17. The Committee agreed to annex to its report the report of a WHO consultation on the provision and dissemination of drug information (Annex 1), together with guidelines prepared by various WHO consultations on antimicrobial susceptibility testing (Annex 2) and on good clinical practice for trials on pharmaceutical products (Annex 3) in order to bring them to the attention of those in charge of national drug policies.

In a report (*4*) to the Twenty-eighth World Health Assembly in 1975, the Director-General reviewed the main drug problems facing the developing countries and outlined possible new drug policies. The Director-General also referred to the experience gained in some countries where schemes of basic or essential drugs had been implemented. Such schemes were intended to extend the accessibility and rational use of the most necessary drugs to populations whose basic health needs could not be met by the existing supply system. The Director-General pointed out that the selection of these essential drugs would depend on the health needs and on the structure and development of the health services of each country. Lists of essential drugs should be drawn up locally, and periodically updated, with the advice of experts in public health, medicine, pharmacology, pharmacy and drug management. He also considered that adequate information on the properties, indications and use of the drugs listed should be provided. By resolution WHA28.66 (*5*), the Health Assembly requested the Director-General to implement the proposals contained in his report and, in particular, to advise Member States on the selection and procurement, at reasonable cost, of essential drugs of established quality corresponding to their national health needs.

Following wide consultation, an initial Model List of Essential Drugs was included in the first report of the Expert Committee on the Selection of Essential Drugs (*6*). This has subsequently been revised and updated in six further reports (*3, 7–11*).

NATIONAL PROGRAMME FOR ESSENTIAL DRUGS.
REPORT OF WHO EXPERT COMMITTEE ON ESSENTIAL DRUGS
WHO Technical Report Series. 1993

In undertaking a further review of the list at its present meeting, the Expert Committee was guided throughout by the following statement contained in the previous reports:

> Because of the great differences between countries, the preparation of a drug list of uniform, general applicability is not feasible or possible. Therefore, each country has the direct responsibility of evaluating and adopting a list of essential drugs, according to its own policy in the field of health.
>
> The list of essential drugs based on the guidelines put forward in this report is a model which can furnish a basis for countries to identify their own priorities and to make their own selection.

The Committee also drew attention to the following guidelines set out in the initial report:

1. The extent to which countries implement schemes or establish lists of essential drugs is a national policy decision of each country.
2. As far as health services in developing countries are concerned, the organized procurement and use of essential drugs have many advantages in terms of economy and effectiveness. However, the concept of "essential drug lists" must accommodate a variety of local situations if the lists are ever to meet the real health needs of the majority of the population.
3. There are convincing justifications for WHO to propose "model" or "guiding" lists of essential drugs as a contribution to solving the problems of Member States whose health needs far exceed their resources and who may find it difficult to initiate such an endeavour on their own.
4. Such "guiding" or "model" lists should be understood as a tentative identification of a "common core" of basic needs which has universal relevance and applicability. In certain situations, there is a need to make available additional drugs essential for rare diseases. The further local needs move away from the core, the more the health authorities or specific sectors of the health services will have to adjust the lists. However, any list proposed by WHO should set out to indicate priorities in drug needs, with the full understanding that exclusion does not imply rejection. A list of essential drugs does not imply that no other drugs are useful, but simply that in a given situation these drugs are the most needed for the health care of the majority of the population and, therefore, should be available at all times in adequate amounts and in the proper dosage forms.
5. The selection of essential drugs is a continuing process, which should take into account changing priorities for public health action and epidemiological conditions, as well as progress in pharmacological and pharmaceutical knowledge. It should be accompanied by a concomitant effort to supply information and give education and training to health personnel in the proper use of the drugs.

6. Finally, the WHO Action Programme on Essential Drugs should be a focal point for organized and systematic investigation of this approach. Thus it will identify plans of action and research at the national and international level to meet unsatisfied basic health needs of populations which, at present, are denied access to the most essential prophylactic and therapeutic substances.

2. Guidelines for establishing a national programme for essential drugs

Since the first report on the selection of essential drugs was published in 1977, the concept of essential drugs has been widely applied. It has provided a rational basis not only for drug procurement at national level but also for establishing drug requirements at various levels within the health care system. In fact, many developing countries have already selected essential drugs according to their needs and the related programmes are, in some cases, at an advanced stage of implementation. The Committee was informed that a WHO Expert Committee on National Drug Policies would be convened in 1994 to review the guidelines for developing national drug policies (*12*).

In order to ensure that an essential drugs programme is adequately instituted at national level, several steps are recommended:

1. A standing committee of health care professionals should be appointed to give technical advice to the national programme. The committee should include individuals competent in the fields of medicine, pharmacology and pharmacy, as well as peripheral health workers. Where individuals with adequate training are not available within the country, cooperation from WHO could be sought until such individuals can be trained. The first task of the committee should be to recommend a list of essential drugs for the national programme. The committee should remain a part of the national programme for essential drugs, continually advising on matters of technical importance.
2. The international nonproprietary (generic) names for drugs or pharmaceutical substances (*13*) should be used whenever available, and prescribers should be provided with a cross-index of nonproprietary and proprietary names.
3. Concise, accurate and comprehensive drug information should be prepared to accompany the list of essential drugs, in the form of a prescriber's formulary to serve as a pocket guide to rational drug use. More detailed information about drugs should be made available at drug and poison information centres, pharmacies and all educational institutes concerned with training health professionals.
4. Quality, including drug content, stability and bioavailability, should be assured through testing or regulation, as discussed in section 5. Where national resources are not available for this type of control, the

suppliers should provide documentation of the product's compliance with the required specifications.

5. Competent health authorities should decide the level of expertise required to prescribe individual drugs or a group of drugs in a therapeutic category. Consideration should be given, in particular, to the competence of the personnel to make a correct diagnosis. In some instances, while individuals with advanced training are necessary to prescribe initial therapy, individuals with less training could be responsible for maintenance therapy.
6. The success of the entire essential drugs programme is dependent upon the efficient administration of supply, storage and distribution at every point from the manufacturer to the end-user. Government intervention may be necessary to ensure the availability of some drugs in the formulations listed, and special arrangements may need to be instituted for the storage and distribution of drugs that have a short shelf-life or require refrigeration.
7. Efficient management of stocks is necessary to eliminate waste and to ensure continuity of supplies. Procurement policy should be based upon detailed records of turnover. In some instances, drug utilization studies may contribute to a better understanding of true requirements.
8. Research, both clinical and pharmaceutical, is sometimes required to settle the choice of a particular drug product under local conditions. Facilities and trained personnel for such research must be provided. Clinical trials on pharmaceutical products should follow the Guidelines for Good Clinical Practice (GCP) for Trials on Pharmaceutical Products included as Annex 3.
9. A national drug regulatory authority should be established along the lines recommended in the guiding principles for small national drug regulatory authorities presented in Annex 1 of the Committee's previous report (3). The authority should interact with other interested bodies, including organizations responsible for drug procurement in the public and private sectors and the committee referred to in item 1.

3. Criteria for the selection of essential drugs

Essential drugs are those that satisfy the health care needs of the majority of the population; they should therefore be available at all times in adequate amounts and in the appropriate dosage forms.

The choice of such drugs depends on many factors, such as the pattern of prevalent diseases; the treatment facilities; the training and experience of the available personnel; the financial resources; and genetic, demographic and environmental factors.

Because of differing views on the definition of an essential drug in terms of what is meant by the "health care needs of the majority" of the population, the model list has been gradually expanded since its introduction. Some drugs are included that are essential only if a

therapeutic programme is planned to address the diseases for which these drugs are used. For example, the cytotoxic drugs (section 8.2 of the model list) are essential only if a comprehensive cancer treatment programme is planned. Such a programme requires adequate hospital, diagnostic and clinical laboratory facilities for its implementation. In contrast, the drugs used in palliative care (section 8.4) are always essential, even when a comprehensive cancer treatment programme does not exist.

Only those drugs should be selected for which sound and adequate data on efficacy and safety are available from clinical studies and for which evidence of performance in general use in a variety of medical settings has been obtained.

Each selected drug must be available in a form in which adequate quality, including bioavailability, can be assured; its stability under the anticipated conditions of storage and use must be established.

Where two or more drugs appear to be similar in the above respects, the choice between them should be made on the basis of a careful evaluation of their relative efficacy, safety, quality, price and availability.

In cost comparisons between drugs, the cost of the total treatment, and not only the unit cost of the drug, must be considered. The cost/benefit ratio is a major consideration in the choice of some drugs for the list. In some cases the choice may also be influenced by other factors, such as comparative pharmacokinetic properties, or by local considerations such as the availability of facilities for manufacture or storage.

Most essential drugs should be formulated as single compounds. Fixed-ratio combination products are acceptable only when the dosage of each ingredient meets the requirements of a defined population group and when the combination has a proven advantage over single compounds administered separately in therapeutic effect, safety or compliance.

4. Guidelines for the selection of pharmaceutical dosage forms

The purpose of selecting dosage forms and strengths for the drugs in the model list is to provide guidance to countries wishing to standardize or minimize the number of preparations in their own drug lists. As a general rule, pharmaceutical forms are selected on the basis of their general utility and their wide availability internationally. In many instances, a choice of preparations is provided, particularly in relation to solid dosage forms. Tablets are usually less expensive than capsules, but, while cost should be taken into account, the selection should also be based on a consideration of pharmacokinetics, bioavailability, stability under ambient climatic conditions, availability of excipients, and established local preference.

In a few instances where there is no uniformity of tablet strength, for example acetylsalicylic acid and paracetamol, a dosage range is provided from within which suitable tablet strengths should be selected on the basis of local availability and need. When precise dosage is not mandatory, the use of scored tablets is recommended as a simple method of making dosage more flexible if so required and, in some instances, to provide a convenient paediatric dose. Specific paediatric dosages and formulations are included in the list only when indicated by special circumstances. In many instances, dosage is specified in terms of a selected salt or ester, but in others – for example chloroquine – it is calculated, in accordance with common practice, in terms of the active moiety.

For certain drugs with short half-lives that are rapidly metabolized, such as carbamazepine, calcium-channel blockers and theophylline, conventional-release dosage forms must often be taken three or four times a day to maintain drug levels in the required narrow range. Sustained-release dosage forms can reduce the frequency of drug administration, thereby improving compliance and, often, the therapeutic effectiveness of the drug by maintaining a more constant drug level than can be obtained using traditional dosage forms. Because the preparation of sustained-release products is difficult and requires special expertise, a proposal to include such a product in a national list of essential drugs should be justified by adequate documentation.

5. Quality assurance

Quality assurance of drugs, as embodied in product development, good manufacturing practice and subsequent monitoring of quality throughout the distribution chain to utilization, is a crucial element in any essential drugs programme. All aspects of these procedures have been dealt with at length in the twenty-sixth to thirty-third reports of the WHO Expert Committee on Specifications for Pharmaceutical Preparations (*14–21*).

Priority should be given to ensuring that the available drugs have been made according to good manufacturing practices (*20*, Annex 1) and are of generally recognized quality. This requires knowledge of and confidence in the origin of the product. The risks of procuring drugs from anonymous sources cannot be overstressed. It is recommended that drugs are purchased directly from known manufacturers, their duly accredited agents or recognized international agencies known to apply high standards in selecting their suppliers.

The Committee emphasized the importance of WHO's Certification Scheme on the Quality of Pharmaceutical Products Moving in International Commerce, particularly in countries with inadequate laboratory facilities for drug analysis which may be unable to carry out the process of quality control. This scheme has been available since 1975 as a means of exchanging information between regulatory authorities in importing and exporting countries. Its purposes are:

1. To provide assurance that a given product has been authorized to be placed on the market in the exporting country, and, if not, to explain why authorization has been withheld.
2. To provide assurance that the plant in which the product is manufactured is subject to inspections at suitable intervals and conforms to the requirements for good practices in the manufacture and quality control of drugs, as recommended by WHO.
3. To provide for exchange of information on the implementation of inspections and controls by the authorities in the exporting country. In the case of serious quality defects inquiries may also be made.

In 1988 the scope of the certification scheme was extended, in accordance with World Health Assembly resolution WHA41.18, to provide for a more comprehensive exchange of information between governments (*22*). Drug substances as well as finished dosage forms were included within the scheme and provision was made for the exchange of officially approved, product-specific prescribing information on the safety and efficacy of finished products.

The Committee wishes to encourage national authorities to issue certificates in precise conformity with the format proposed by WHO in order to ensure that clear details are given about a product's place of manufacture or assembly and whether WHO's standards of good manufacturing practice have been applied. Countries that have not already done so are urged to extend the system of licensing to manufacturers of pharmaceutical products destined exclusively for export. The licensing system should ensure that these manufacturers are subject to inspection, that they comply with internationally recognized requirements for good manufacturing practices, and that every reasonable precaution is taken to ensure that the quality of their products meets pharmacopoeial specifications.

Poor bioavailability of a pharmaceutical product can result in treatment failure just as readily as can a deficiency of active ingredients in the product. The bioavailability of essential drugs should therefore continue to receive consideration since it is a key factor in quality assurance.

The Committee appreciates that the development of the Model List of Essential Drugs has provided a natural focus for the third edition of *The international pharmacopoeia* (*23*), thus enhancing its potential value to developing countries. Essential drugs are accorded priority and all quality specifications are supported by classical methods of testing and analysis. A plan for a small quality-control laboratory in which most of these tests can be performed has been available since 1984 (*17*). Since quality assurance of essential drugs is so important, the Committee recommends to national governments the setting up of such laboratories and the adoption of *The international pharmacopoeia* by those currently lacking the means to confirm independently the quality of the supplies they procure. Where national capacity is lacking, a regional effort involving several countries may be useful. In this context, attention is

also drawn to the WHO publication *Basic tests for pharmaceutical substances* (24), which enables the identity of drug substances to be verified and gross degradation to be excluded when laboratory facilities for full pharmacopoeial analyses are not available.

The Committee emphasizes the need to extend the coverage of *The international pharmacopoeia* to include not only essential drug substances, but also the dosage forms (25) specified in the Model List of Essential Drugs, together with additional information on bioavailability, stability and recommended packaging and storage conditions.

6. Reserve anti-infective agents and monitoring of resistance

The increasing prevalence of strains of common pathogenic bacteria resistant to widely available, relatively cheap antimicrobials included in the model list is, in many cases, dangerously eroding their effectiveness. The need for more systematic and coordinated international approaches to laboratory monitoring of antimicrobial sensitivity is important and urgent. It has already been emphasized that reference laboratories need to be established in developing as well as developed countries in order to monitor the resistance of important bacterial pathogens (26, 27). Each Member country should have a national reference laboratory to monitor the local resistance patterns of important microorganisms. Knowledge of prevailing sensitivity patterns is vital to the proper selection and use of antimicrobials and to the development of appropriate prescribing policies. Without these data the health of seriously ill patients could be jeopardized. Knowledge of sensitivity patterns should come from proper laboratory investigations. However, in countries with inadequate facilities for monitoring resistance, clinical evidence of lack of efficacy of a particular antimicrobial against a particular infectious disease should be utilized to modify the drug treatment for the particular disease in the community concerned.

It is becoming increasingly common for important pathogens to emerge in a country or locality that are shown, on sensitivity testing, to have developed resistance to all normally appropriate essential drugs. In these circumstances a reserve antimicrobial is needed. A reserve antimicrobial is an antimicrobial that is useful for a wide range of infections but, because of the need to reduce the risk of development of resistance and because of its relatively high cost, it would be inappropriate to recommend its unrestricted use.

The concept of reserve antimicrobials is of practical relevance only when information is available on the prevailing sensitivities of important bacterial pathogens. Within this context the second- and third-generation cefalosporins, the fluoroquinolones and vancomycin are most important.

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WHO Drug Information

Contents

Essential Drugs

WHO Model List (revised December 1999)

Section 1: Anaesthetics

1.1 GENERAL ANAESTHETICS AND OXYGEN

ether, anaesthetic (1c) (2)	inhalation
halothane (2)	inhalation
ketamine (2)	injection, 50 mg (as hydrochloride)/ml in 10-ml vial
nitrous oxide (2)	inhalation
oxygen	inhalation (medicinal gas)
°thiopental (2)	powder for injection, 0.5 g, 1.0 g (sodium salt) in ampoule

1.2 LOCAL ANAESTHETICS

°bupivacaine (2, 9)	injection, 0.25%, 0.5% (hydrochloride) in vial
	injection for spinal anaesthesia, 0.5% (hydrochloride) in 4-ml ampoule to be mixed with 7.5% glucose solution
°lidocaine	injection, 1%, 2% (hydrochloride) in vial
	injection, 1%, 2% (hydrochloride) + epinephrine 1:200 000 in vial
	injection for spinal anaesthesia, 5% (hydrochloride) in 2-ml ampoule to be mixed with 7.5% glucose solution
	topical forms, 2–4% (hydrochloride)
	dental cartridge, 2% (hydrochloride) + epinephrine 1:80 000

Complementary drug

ephedrine (C)	injection, 30 mg
(For use in spinal anaesthesia during delivery to prevent hypotension)	(hydrochloride)/ml in 1-ml ampoule

° Example of a therapeutic group. *Various drugs can serve as alternatives.*

Explanatory Notes

When the strength of a drug is specified in terms of a selected salt or ester, this is mentioned in brackets; when it refers to the active moiety, the name of the salt or ester in brackets is preceded by the word "as".

Many drugs included in the list are preceded by a box (°) to indicate that they represent an example of a therapeutic group and that various drugs could serve as alternatives. It is imperative that this is understood when drugs are selected at national level, since choice is then influenced by the comparative cost and availability of equivalent products. Examples of acceptable substitutions include:

° Hydrochlorothiazide: any other thiazide-type diuretic currently in broad clinical use.
° Hydralazine: any other peripheral vasodilator having an antihypertensive effect.
° Senna: any stimulant laxative (either synthetic or of plant origin).
° Sulfadiazine: any other short-acting, systemically active sulfonamide unlikely to cause crystalluria.

Numbers in parentheses following drug names indicate:
(1) Drugs subject to international control under: (a) the Single Convention on Narcotic Drugs (1961); (b) the Convention on Psychotropic Substances (1971); or (c) the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances (1988).
(2) Specific expertise, diagnostic precision, individualization of dosage or special equipment required for proper use.
(3) Greater potency or efficacy.
(4) In renal insufficiency, contraindicated or dosage adjustments necessary.
(5) To improve compliance.
(6) Special pharmacokinetic properties.
(7) Adverse effects diminish benefit/risk ratio.
(8) Limited indications or narrow spectrum of activity.
(9) For epidural anaesthesia.
(10) Sustained-release preparations are available. A proposal to include such a product in a national list of essential drugs should be supported by adequate documentation.
(11) Monitoring of therapeutic concentrations in plasma can improve safety and efficacy.

Letters in parentheses following the drug names indicate the reasons for the inclusion of *complementary drugs:*
(A) When drugs in the main list cannot be made available.
(B) When drugs in the main list are known to be ineffective or inappropriate for a given individual.
(C) For use in rare disorders or in exceptional circumstances.
(D) Reserve antimicrobials to be used only when there is significant resistance to other drugs on the list.

Drugs are listed in alphabetical order.

1.3 PREOPERATIVE MEDICATION & SEDATION FOR SHORT-TERM PROCEDURES

atropine	injection, 1 mg (sulfate) in 1-ml ampoule
chloral hydrate	syrup, 200 mg/5 ml
°diazepam (1b)	injection, 5 mg/ml in 2-ml ampoule
	tablet, 5 mg
°morphine (1a)	injection, 10 mg (sulfate or hydrochloride) in 1-ml ampoule
°promethazine	elixir or syrup, 5 mg (hydrochloride)/5 ml

Section 2: Analgesics, Antipyretics, Nonsteroidal Anti-Inflammatory Drugs (NSAIDs), Drugs Used to Treat Gout and Disease-Modifying Agents used in Rheumatic Disorders (DMARDs)

2.1 NON-OPIOID ANALGESICS & NSAIDs

acetylsalicylic acid	tablet, 100–500 mg
	suppository, 50–150 mg
°ibuprofen	tablet, 200 mg, 400 mg
paracetamol	tablet, 100–500 mg
	suppository, 100 mg
	syrup, 125 mg/5 ml

2.2 OPIOID ANALGESICS

°codeine (1a)	tablet, 30 mg (phosphate)
°morphine (1a)	injection, 10 mg (sulfate or hydrochloride) in 1-ml ampoule
	oral solution, 10 mg (hydrochloride or sulfate))/5 ml
	tablet, 10 mg (sulfate)
Complementary drug	
°pethidine (A) (1a, 4)	injection, 50 mg (hydrochloride) in 1-ml ampoule
	tablet, 50 mg, 100 mg (hydrochloride)

2.3 DRUGS USED TO TREAT GOUT

allopurinol (4)	tablet, 100 mg
colchicine (7)	tablet, 500 µg

2.4 DISEASE-MODIFYING AGENTS USED IN RHEUMATIC DISORDERS

azathioprine (2)	tablet, 50 mg
chloroquine (2)	tablet, 100 mg, 150 mg (as phosphate or sulfate)
cyclophosphamide (2)	tablet, 25 mg
methotrexate (2)	tablet, 2.5 mg (as sodium salt)
penicillamine (2)	capsule or tablet, 250 mg
sulfasalazine (2)	tablet, 500 mg

Section 3: Antiallergics and Drugs Used in Anaphylaxis

°chlorphenamine	tablet, 4 mg (hydrogen maleate)
	injection, 10 mg (hydrogen maleate) in 1-ml ampoule
°dexamethasone	tablet, 500 µg, 4 mg
	injection, 4 mg dexamethasone phosphate (as disodium salt) in 1-ml ampoule
epinephrine	injection, 1 mg (as hydrochloride or hydrogen tartrate) in 1-ml ampoule
hydrocortisone	powder for injection, 100 mg (as sodium succinate) in vial
°prednisolone	tablet, 5 mg

Section 4: Antidotes and Other Substances Used in Poisonings

4.1 NON-SPECIFIC

°charcoal, activated	powder
ipecacuanha	syrup, containing 0.14% ipecacuanha alkaloids calculated as emetine

4.2 SPECIFIC

acetylcysteine	injection, 200 mg/ml in 10-ml vial
atropine	injection, 1 mg (sulfate) in 1-ml ampoule
calcium gluconate (2, 8)	injection, 100 mg/ml in 10-ml ampoule
deferoxamine	powder for injection, 500 mg (mesilate) in vial

° Example of a therapeutic group. *Various drugs can serve as alternatives.*

dimercaprol (2)	injection in oil, 50 mg/ml in 2-ml ampoule
°DL-methionine	tablet, 250 mg
methylthioninium chloride (methylene blue)	injection, 10 mg/ml in 10-ml ampoule
naloxone	injection, 400 µg (hydrochloride) in 1-ml ampoule
penicillamine (2)	capsule or tablet, 250 mg
potassium ferric hexacyanoferrate(II) $\cdot 2H_2O$ (Prussian blue)	powder for oral administration
sodium calcium edetate (2)	injection, 200 mg/ml in 5-ml ampoule
sodium nitrite	injection, 30 mg/ml in 10-ml ampoule
sodium thiosulfate	injection, 250 mg/ml in 50-ml ampoule

Section 5: Anticonvulsants/ Antiepileptics

carbamazepine (10, 11)	scored tablet, 100 mg, 200 mg
°diazepam (1b)	injection, 5 mg/ml in 2-ml ampoule (intravenous or rectal)
ethosuximide	capsule, 250 mg
	syrup, 250 mg/5 ml
magnesium sulfate	injection, 500 mg/ml in 2-ml ampoule and 10-ml ampoule
phenobarbital (1b, 11)	tablet, 15–100 mg
	elixir, 15 mg/5 ml
phenytoin (7, 11)	capsule or tablet, 25 mg, 50 mg, 100 mg (sodium salt)
	injection, 50 mg (sodium salt)/ml in 5-ml vial
valproic acid (7, 11)	enteric coated tablet, 200 mg, 500 mg (sodium salt)
Complementary drug	
°clonazepam (B) (1b)	scored tablet, 500 µg

Section 6: Anti-infective Drugs

6.1 ANTHELMINTHICS

6.1.1 INTESTINAL ANTHELMINTHICS

albendazole	chewable tablet, 400 mg
levamisole	tablet, 50 mg, 150 mg (as hydrochloride)
°mebendazole	chewable tablet, 100 mg, 500 mg
niclosamide	chewable tablet, 500 mg
praziquantel	tablet, 150 mg, 600 mg
pyrantel	chewable tablet, 250 mg (as embonate)
	oral suspension, 50 mg (as embonate)/ml

6.1.2 ANTIFILARIALS

diethylcarbamazine	tablet, 50 mg, 100 mg (dihydrogen citrate)
ivermectin	scored tablet, 3 mg, 6 mg
Complementary drug	
suramin sodium (B) (2, 7)	powder for injection, 1 g in vial

6.1.3 ANTISCHISTOSOMALS AND OTHER ANTITREMATODE DRUGS

praziquantel	tablet, 600 mg
triclabendazole	tablet, 250 mg
Complementary drug	
oxamniquine (C) (8)	capsule, 250 mg
	syrup, 250 mg/5 ml

6.2 ANTIBACTERIALS

6.2.1 BETA LACTAM DRUGS

°amoxicillin	capsule or tablet, 250 mg, 500 mg (anhydrous)
	powder for oral suspension, 125 mg (anhydrous)/5 ml
ampicillin	powder for injection, 500 mg, 1 g (as sodium salt) in vial
benzathine benzylpenicillin	powder for injection, 1.44 g benzylpenicillin (= 2.4 million IU) in 5-ml vial
benzylpenicillin	powder for injection, 600 mg (= 1 million IU), 3 g (= 5 million IU) (sodium or potassium salt) in vial

° Example of a therapeutic group. *Various drugs can serve as alternatives.*

°cloxacillin	capsule, 500 mg, 1 g (as sodium salt)
	powder for oral solution, 125 mg (as sodium salt)/5 ml
	powder for injection, 500 mg (as sodium salt) in vial
phenoxymethylpenicillin	tablet, 250 mg (as potassium salt)
	powder for oral suspension, 250 mg (as potassium salt)/5 ml
procaine benzylpenicillin	powder for injection, 1 g (= 1 million IU), 3 g (= 3 million IU) in vial
Restricted indications	
°amoxicillin + °clavulanic acid (D)	tablet, 500 mg + 125 mg
ceftazidime (D)	powder for injection, 250 mg (as pentahydrate) in vial
°ceftriaxone (D)	powder for injection, 250 mg (as sodium salt) in vial
imipenem + cilastatin (D)	powder for injection, 250 mg (as monohydrate) + 250 mg, (as sodium salt) 500 mg (as monohydrate) + 500 mg in vial (as sodium salt)

6.2.2 OTHER ANTIBACTERIALS

°chloramphenicol (7)	capsule, 250 mg
	oral suspension, 150 mg (as palmitate)/5 ml
	powder for injection, 1 g (sodium succinate) in vial
°ciprofloxacin	tablet, 250 mg (as hydrochloride)
°doxycycline (5, 6)	capsule or tablet, 100 mg (hydrochloride)
°erythromycin	capsule or tablet, 250 mg (as stearate or ethyl succinate)
	powder for oral suspension, 125 mg (as stearate or ethyl succinate)
	powder for injection, 500 mg (as lactobionate) in vial
°gentamicin (2, 4, 7, 11)	injection, 10 mg, 40 mg (as sulfate)/ml in 2-ml vial
°metronidazole	tablet, 200–500 mg
	injection, 500 mg in 100-ml vial
	suppository, 500 mg, 1 g
	oral suspension, 200 mg (as benzoate)/5 ml
nalidixic acid (8)	tablet, 250 mg, 500 mg
nitrofurantoin (4, 8)	tablet, 100 mg
spectinomycin (8)	powder for injection, 2 g (as hydrochloride) in vial
°sulfadiazine (4)	tablet, 500 mg
	injection, 250 mg (sodium salt) in 4-ml ampoule
°sulfamethoxazole + trimethoprim (4)	tablet, 100 mg + 20 mg, 400 mg + 80 mg
	oral suspension, 200 mg + 40 mg/5 ml
	injection, 80 mg + 16 mg/ml in 5-ml and 10-ml ampoule
trimethoprim (8)	tablet, 100 mg, 200 mg
	injection, 20 mg/ml in 5-ml ampoule
Complementary drugs	
chloramphenicol (C)	oily suspension for injection, 0.5 g (as sodium succinate)/ml in 2-ml ampoule
clindamycin (B) (8)	capsule, 150 mg
	injection, 150 mg (as phosphate)/ml
Restricted indications	
vancomycin (D)	powder for injection 250 mg (as hydrochloride) in vial

6.2.3 ANTILEPROSY DRUGS

clofazimine	capsule, 50 mg, 100 mg
dapsone	tablet, 25 mg, 50 mg, 100 mg
rifampicin	capsule or tablet, 150 mg, 300 mg

6.2.4 ANTITUBERCULOSIS DRUGS

ethambutol (4)	tablet, 100–400 mg (hydrochloride)
isoniazid	tablet, 100–300 mg
isoniazid + ethambutol (5)	tablet, 150 mg + 400 mg

° Example of a therapeutic group. *Various drugs can serve as alternatives.*

pyrazinamide — tablet, 400 mg

rifampicin — capsule or tablet, 150 mg, 300 mg

rifampicin + isoniazid (5) — tablet, 60 mg + 30 mg, 150 mg + 75 mg, 300 mg + 150 mg

tablet, 60 mg + 60 mg, 150 mg + 150 mg *(for intermittent use 3 times weekly)*

rifampicin + isoniazid + pyrazinamide (5) — tablet, 60 mg + 30 mg + 150 mg, 150 mg + 75 mg + 400 mg

tablet, 150 mg + 150 mg + 500 mg *(for intermittent use 3 times weekly)*

rifampicin + isoniazid + pyrazinamide + ethambutol — tablet, 150 mg + 75 mg + 400 mg + 275 mg

streptomycin (4) — powder for injection, 1 g (as sulfate) in vial

Complementary drug

thioacetazone + isoniazid (A) (5, 7) — tablet, 50 mg + 100 mg, 150 mg + 300 mg

Additional reserve antituberculosis drugs for the treatment of drug-resistant tuberculosis should be used in specialized centres only with WHO-recommended TB control strategy, DOTS, and treatment programmes.

6.3 ANTIFUNGAL DRUGS

amphotericin B (4) — powder for injection, 50 mg in vial

[a]fluconazole — capsule, 50 mg

injection, 2 mg/ml in vial

oral suspension, 50 mg/5 ml

griseofulvin (7) — capsule or tablet, 125 mg, 250 mg

nystatin — tablet, 100 000, 500 000 IU

lozenge, 100 000 IU

pessary, 100 000 IU

Complementary drugs

flucytosine (B) (4, 8) — capsule, 250 mg

infusion, 2.5 g in 250 ml

potassium iodide (A) — saturated solution

6.4 ANTIVIRAL DRUGS

6.4.1 ANTIHERPES DRUGS

aciclovir (8) — tablet, 200 mg

powder for injection, 250 mg (as sodium salt) in vial

6.4.2 ANTIRETROVIRAL DRUGS

Adequate resources and specialist oversight are a prerequisite for the introduction of this class of drugs.

nevirapine (8) — tablet, 200 mg

oral solution, 50 mg/5 ml

zidovudine (8) — capsule, 100 mg, 250 mg

injection, 10 mg/ml in 20-ml vial

oral solution, 50 mg/5 ml

Drugs for treatment of HIV/AIDS include nucleoside reverse transcriptase inhibitors (NRTIs), non-nucleoside reverse transcriptase inhibitors (NNRTIs) and protease inhibitors (PIs). Zidovudine and nevirapine have been shown to reduce or prevent mother-to-child transmission of HIV infection. **This is the only indication for which they are included here.** Single drug use with zidovudine, except in pregnancy, is now regarded as obsolete because of the development of resistance. Triple therapy is beyond the budgets of most national drug programmes and therefore HIV/AIDS treatment policies must be decided at country or institutional level.

6.5 ANTIPROTOZOAL DRUGS

6.5.1 ANTIAMOEBIC AND ANTIGIARDIASIS DRUGS

[a] diloxanide — tablet, 500 mg (furoate)

[a]metronidazole — tablet, 200–500 mg

injection, 500 mg in 100-ml vial

oral suspension, 200 mg (as benzoate)/5 ml

6.5.2 ANTILEISHMANIASIS DRUGS

[a]meglumine antimoniate — injection, 30%, equivalent to approx. 8.5% antimony, in 5-ml ampoule

pentamidine (5) — powder for injection, 200 mg, 300 mg (isetionate) in vial

Complementary drug

amphotericin B (B) (4) — powder for injection, 50 mg in vial

6.5.3 ANTIMALARIAL DRUGS

(a) FOR CURATIVE TREATMENT

[a]chloroquine — tablet, 100 mg, 150 mg (as phosphate or sulfate)

syrup, 50 mg (as phosphate or sulfate)/5 ml

injection, 40 mg (as hydrochloride, phosphate or sulfate)/ml in 5-ml ampoule

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

primaquine	tablet, 7.5 mg, 15 mg (as diphosphate)
°quinine	tablet, 300 mg (as bisulfate or sulfate)
	injection, 300 mg (as dihydrochloride)/ml in 2-ml ampoule

Complementary drugs

°doxycycline (B) *(for use only in combination with quinine)*	capsule or tablet, 100 mg (hydrochloride)
mefloquine (B)	tablet, 250 mg (as hydrochloride)
°sulfadoxine + pyrimethamine (B)	tablet, 500 mg + 25 mg

Restricted indications

artemether (D)	injection, 80 mg/ml in 1-ml ampoule
artesunate (D)	tablet, 50 mg

(b) FOR PROPHYLAXIS

chloroquine	tablet, 150 mg (as phosphate or sulfate)
	syrup, 50 mg (as phosphate or sulfate)/5 ml
doxycycline	capsule or tablet, 100 mg (hydrochloride)
mefloquine	tablet, 250 mg (as hydrochloride)
proguanil *(for use only in combination with chloroquine)*	tablet, 100 mg (hydrochloride)

6.5.4 ANTIPNEUMOCYSTOSIS AND ANTITOXOPLASMOSIS DRUGS

pentamidine (2)	tablet, 200 mg, 300 mg
pyrimethamine	tablet, 25 mg
sulfamethoxazole + trimethoprim	injection, 80 mg + 16 mg/ml in 5-ml and 10-ml ampoule

6.5.5 ANTITRYPANOSOMAL DRUGS

(a) AFRICAN TRYPANOSOMIASIS

melarsoprol (2)	injection, 3.6% solution
pentamidine (2)	powder for injection, 200 mg, 300 mg (isetionate) in vial
suramin sodium	powder for injection, 1 g in vial

Complementary drug

eflornithine (C)	injection, 200 mg (hydrochloride)/ml in 100-ml bottles

(b) AMERICAN TRYPANOSOMIASIS

benznidazole (7)	tablet, 100 mg
nifurtimox (2, 8)	tablet, 30 mg, 120 mg, 250 mg

6.6 INSECT REPELLENTS

diethyltoluamide	topical solution, 50%, 75%

Section 7: Antimigraine Drugs

7.1 FOR TREATMENT OF ACUTE ATTACK

acetylsalicylic acid	tablet, 300–500 mg
ergotamine (1c) (7)	tablet, 1 mg (tartrate)
paracetamol	tablet, 300–500 mg

7.2 FOR PROPHYLAXIS

°propranolol	tablet, 20 mg, 40 mg (hydrochloride)

Section 8: Antineoplastic and Immunosuppressive Drugs and Drugs Used in Palliative Care

8.1 IMMUNOSUPPRESSIVE DRUGS

Adequate resources and specialist oversight are a prerequisite for the introduction of this class of drugs.

°azathioprine (2)	tablet, 50 mg
	powder for injection, 100 mg (as sodium salt) in vial
°ciclosporin (2) *(for organ transplantation)*	capsule, 25 mg
	concentrate for injection, 50 mg/ml in 1-ml ampoule

8.2 CYTOTOXIC DRUGS

Adequate resources and specialist oversight are a prerequisite for the introduction of this class of drugs.

asparaginase (2)	powder for injection, 10 000 IU in vial
bleomycin (2)	powder for injection, 15 mg (as sulfate) in vial
calcium folinate (2)	tablet, 15 mg
	injection, 3 mg/ml in 10-ml ampoule
chlorambucil (2)	tablet, 2 mg
chlormethine (2)	powder for injection, 10 mg (hydrochloride) in vial

° Example of a therapeutic group. *Various drugs can serve as alternatives.*

cisplatin (2)	powder for injection, 10 mg, 50 mg in vial
cyclophosphamide (2)	tablet, 25 mg
	powder for injection, 500 mg in vial
cytarabine (2)	powder for injection, 100 mg in vial
dacarbazine (2)	powder for injection, 100 mg in vial
daunorubicin (2)	powder for injection, 50 mg (as hydrochloride) in vial
dactinomycin (2)	powder for injection 500 µg in vial
[a]doxorubicin (2)	powder for injection, 10 mg, 50 mg (hydrochloride) in vial
etoposide (2)	capsule, 100 mg
	injection, 20 mg/ml in 5-ml ampoule
fluorouracil (2)	injection, 50 mg/ml in 5-ml ampoule
levamisole (2)	tablet, 50 mg (as hydrochloride)
mercaptopurine (2)	tablet, 50 mg
methotrexate (2)	tablet, 2.5 mg (as sodium salt)
	powder for injection, 50 mg (as sodium salt) in vial
procarbazine	capsule, 50 mg (as hydrochloride)
vinblastine (2)	powder for injection, 10 mg (sulfate) in vial
vincristine (2)	powder for injection, 1 mg, 5 mg (sulfate) in vial

8.3 HORMONES AND ANTIHORMONES

[a]prednisolone	tablet, 5 mg
	powder for injection, 20 mg, 25 mg (as sodium phosphate or sodium succinate) in vial
tamoxifen	tablet, 10 mg, 20 mg (as citrate)

8.4 DRUGS USED IN PALLIATIVE CARE

The WHO Expert Committee on Essential Drugs recommended that all the drugs mentioned in the WHO publication *Cancer Pain Relief: with a Guide to Opioid Availability, 2nd edition*, be considered essential. The drugs are included in the relevant sections of the model list according to their therapeutic use, e.g. analgesics.

Section 9: Antiparkinsonism Drugs

[a]biperiden	tablet, 2 mg (hydrochloride)
	injection, 5 mg (lactate) in 1-ml ampoule
levodopa + [a]carbidopa (5, 6)	tablet, 100 mg + 10 mg, 250 mg + 25 mg

Section 10: Drugs affecting the Blood

10.1 ANTIANAEMIA DRUGS

ferrous salt	tablet, equivalent to 60 mg iron
	oral solution, equivalent to 25 mg iron (as sulfate)/ml
ferrous salt + folic acid *(nutritional supplement for use during pregnancy)*	tablet, equivalent to 60 mg iron + 400 µg folic acid
folic acid (2)	tablet, 1 mg, 5 mg
	injection, 1 mg (as sodium salt) in 1-ml ampoule
hydroxocobalamin (2)	injection, 1 mg in 1-ml ampoule
Complementary drug	
[a]iron dextran (B) (5)	injection, equivalent to 50 mg iron/ ml in 2-ml ampoule

10.2 DRUGS AFFECTING COAGULATION

desmopressin (8)	injection, 4 µg (acetate)/ml in 1-ml ampoule
	nasal spray, 10 µg (acetate)/ metered dose
heparin sodium	injection, 1000 IU/ml, 5000 IU/ml, 20 000 IU/ml in 1-ml ampoule
phytomenadione	injection, 10 mg/ml in 5-ml ampoule
	tablet, 10 mg
protamine sulfate	injection, 10 mg/ml in 5-ml ampoule
[a]warfarin (2, 6)	tablet, 1 mg, 2 mg and 5 mg (sodium salt)

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

Section 11: Blood Products and Plasma Substitutes

11.1 PLASMA SUBSTITUTES

[a]dextran 70	injectable solution, 6%
[a]polygeline	injectable solution, 3.5%

11.2 PLASMA FRACTIONS FOR SPECIFIC USE [1]

Complementary drugs

[a]factor VIII concentrate (C) (2, 8)	dried
[a]factor IX complex (coagulation factors II, VII, IX, X) concentrate (C) (2, 8)	dried

Section 12: Cardiovascular Drugs

12.1 ANTIANGINAL DRUGS

[a]atenolol	tablet, 50 mg, 100 mg
glyceryl trinitrate	tablet (sublingual), 500 µg
[a]isosorbide dinitrate	tablet (sublingual), 5 mg
[a]verapamil (10)	tablet, 40 mg, 80 mg (hydrochloride)

12.2 ANTIARRHYTHMIC DRUGS

[a]atenolol	tablet, 50 mg, 100 mg
digoxin (4, 11)	tablet, 62.5 µg, 250 µg
	oral solution, 50 µg/ml
	injection, 250 µg/ml in 2-ml ampoule
lidocaine	injection, 20 mg (hydrochloride)/ml in 5-ml ampoule
verapamil (8, 10)	tablet, 40 mg, 80 mg (hydrochloride)
	injection, 2.5 mg (hydrochloride)/ml in 2-ml ampoule
Complementary drugs	
epinephrine (C)	injection, 1 mg (as hydrochloride)/ml
isoprenaline (C)	injection, 20 µg (hydrochloride)/ml
[a]procainamide (B)	tablet, 250 mg, 500 mg (hydrochloride)
	injection, 100 mg (hydrochloride)/ml in 10-ml ampoule
[a]quinidine (A) (7)	tablet, 200 mg (sulfate)

12.3 ANTIHYPERTENSIVE DRUGS

[a]atenolol	tablet, 50 mg, 100 mg
[a]captopril	scored tablet, 25 mg
[a]hydralazine	tablet, 25 mg, 50 mg (hydrochloride)
	powder for injection, 20 mg (hydrochloride) in ampoule
[a]hydrochlorothiazide	scored tablet, 25 mg
methyldopa (7)	tablet, 250 mg
[a]nifedipine (10)	sustained-release formulations
	tablet, 10 mg
[a]reserpine	tablet, 100 µg, 250 µg
	injection, 1 mg in 1-ml ampoule
Complementary drugs	
prazosin	tablet, 500 µg, 1 mg (mesilate)
[a]sodium nitroprusside (C) (2, 8)	powder for infusion, 50 mg in ampoule

12.4 DRUGS USED IN HEART FAILURE

[a]captopril	scored tablet, 25 mg
digoxin (4, 11)	tablet, 62.5 µg, 250 µg
	oral solution, 50 µg/ml
	injection, 250 µg/ml in 2-ml ampoule
dopamine	injection, 40 mg (hydrochloride)/ml in 5-ml vial
[a]hydrochlorothiazide	tablet, 25 mg, 50 mg

12.5 ANTITHROMBOTIC DRUGS

acetylsalicylic acid	tablet, 100 mg
Complementary drug	
streptokinase (C)	powder for injection, 100 000 IU, 750 000 IU in vial

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[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

[1] All plasma fractions should comply with the Requirements for the Collection, Processing and Quality Control of Blood, Blood Components and Plasma Derivatives (Revised 1992). WHO Technical Report Series, No. 840, 1994, Annex 2.

12.6 LIPID-LOWERING AGENTS

The WHO Expert Committee on Essential Drugs recognizes the value of lipid-lowering drugs in treating patients with hyperlipidaemia. Beta-hydroxy-beta-methylglutaryl-coenzyme A (HMG CoA) reductase inhibitors, often referred to as "statins", are potent and effective lipid-lowering drugs with a good tolerability profile. Several of these drugs have been shown to reduce the incidence of fatal and non-fatal myocardial infarction, stroke and mortality (all causes), as well as the need for coronary bypass surgery. All remain very costly but may be cost-effective for secondary prevention of cardiovascular disease as well as for primary prevention in some very high-risk patients. Since no single drug has been shown to be significantly more effective or less expensive than others in the group, none is included in the model list; the choice of drug for use in patients at highest risk should be decided at national level.

Section 13: Dermatological Drugs (topical)

13.1 ANTIFUNGAL DRUGS

benzoic acid + salicylic acid	ointment or cream, 6% + 3%
[a]miconazole	ointment or cream, 2% (nitrate)
sodium thiosulfate	solution, 15%
Complementary drug	
selenium sulfide (C)	detergent-based suspension, 2%

13.2 ANTI-INFECTIVE DRUGS

[a]methylrosanilinium chloride (gentian violet)	aqueous solution, 0.5% tincture, 0.5%
neomycin + [a]bacitracin (7)	ointment, 5 mg neomycin sulfate + 500 IU bacitracin zinc/g
potassium permanganate	aqueous solution, 1:10 000
silver sulfadiazine	cream, 1%, in 500-g container

13.3 ANTI-INFLAMMATORY AND ANTIPRURITIC DRUGS

[a]betamethasone (3)	ointment or cream, 0.1% (as valerate)
[a]calamine lotion	lotion
[a]hydrocortisone	ointment or cream, 1% (acetate)

13.4 ASTRINGENT DRUGS

aluminium diacetate	solution, 13% for dilution

13.5 DRUGS AFFECTING SKIN DIFFERENTIATION AND PROLIFERATION

benzoyl peroxide	lotion or cream, 5%
coal tar	solution, 5%
dithranol	ointment, 0.1–2%
fluorouracil	ointment, 5%
[a]podophyllum resin (7)	solution, 10–25%
salicylic acid	solution 5%
urea	ointment or cream, 10%

13.6 SCABICIDES AND PEDICULICIDES

[a]benzyl benzoate	lotion, 25%
permethrin	cream, 5%
	lotion, 1%

13.7 ULTRAVIOLET-BLOCKING AGENTS

Complementary drugs	
topical sun protection agent with activity against UVA and UVB (C)	cream, lotion or gel

Section 14: Diagnostic Agents

14.1 OPHTHALMIC DRUGS

fluorescein	eye drops, 1% (sodium salt)
[a]tropicamide	eye drops, 0.5%

14.2 RADIOCONTRAST MEDIA

[a]amidotrizoate	injection, 140–420 mg iodine (as sodium or meglumine salt)/ml in 20-ml ampoule
barium sulfate	aqueous suspension
[a]iohexol	injection, 140–350 mg iodine/ml in 5-ml, 10-ml and 20-ml ampoule
[a]iopanoic acid	tablet, 500 mg
[a]propyliodone *(For administration only into the bronchial tree).*	oily suspension, 500–600 mg/ml in 20-ml ampoule
Complementary drug	
[a]meglumine iotroxate (C)	solution, 5 – 8 g iodine in 100–250 ml

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

Section 15: Disinfectants and Antiseptics

15.1 ANTISEPTICS

°chlorhexidine	solution, 5% (digluconate) for dilution
°ethanol	solution, 70% (denatured)
°polyvidone iodine	solution, 10%

15.2 DISINFECTANTS

°chlorine base compound	powder (0.1% available chlorine) for solution
°chloroxylenol	solution, 4.8%
glutaral	solution, 2%

Section 16: Diuretics

°amiloride (4, 7, 8)	tablet, 5 mg (hydrochloride)
°furosemide	tablet, 40 mg
	injection, 10 mg/ml in 2-ml ampoule
°hydrochlorothiazide	tablet, 25 mg, 50 mg
spironolactone (8)	tablet, 25 mg
Complementary drug	
°mannitol (C)	injectable solution, 10%, 20%

Section 17: Gastrointestinal Drugs

17.1 ANTACIDS AND OTHER ANTIULCER DRUGS

aluminium hydroxide	tablet, 500 mg
	oral suspension, 320 mg/5 ml
°cimetidine	tablet, 200 mg
	injection, 200 mg in 2-ml ampoule
magnesium hydroxide	oral suspension, equivalent to 550 mg magnesium oxide/10 ml

17.2 ANTIEMETIC DRUGS

metoclopramide	tablet, 10 mg (hydrochloride)
	injection, 5 mg (hydrochloride)/ml in 2-ml ampoule
°promethazine	tablet, 10 mg, 25 mg (hydrochloride)
	elixir or syrup, 5 mg (hydrochloride)/5 ml
	injection, 25 mg (hydrochloride)/ml in 2-ml ampoule

17.3 ANTIHAEMORRHOIDAL DRUGS

°local anaesthetic, astringent and anti-inflammatory drug	ointment or suppository

17.4 ANTI-INFLAMMATORY DRUGS

hydrocortisone	suppository, 25 mg (acetate)
	° retention enema
°sulfasalazine (2)	tablet, 500 mg
	suppository, 500 mg
	retention enema

17.5 ANTISPASMODIC DRUGS

°atropine	tablet, 0.6 mg (sulfate)
	injection, 1 mg (sulfate) in 1-ml ampoule

17.6 LAXATIVES

°senna	tablet, 7.5 mg (sennosides) (or traditional dosage forms)

17.7 DRUGS USED IN DIARRHOEA

17.7.1 ORAL REHYDRATION

oral rehydration salts (for glucose–electrolyte solution) — powder, 27.9 g/l

Components	*g/l*
sodium chloride	3.5
trisodium citrate dihydrate [2]	2.9
potassium chloride	1.5
glucose	20.0

° Example of a therapeutic group. *Various drugs can serve as alternatives.*

[2] Trisodium citrate dihydrate may be replaced by sodium bicarbonate (sodium hydrogen carbonate) 2.5 g/l. However, as the stability of this latter formulation is very poor under tropical conditions, it is only recommended when manufactured for immediate use.

17.7.2 ANTIDIARRHOEAL (SYMPTOMATIC) DRUGS

[a]codeine (1a)	tablet, 30 mg (phosphate)

Section 18: Hormones, other Endocrine Drugs and Contraceptives

18.1 ADRENAL HORMONES AND SYNTHETIC SUBSTITUTES

[a]dexamethasone	tablet, 500 µg, 4 mg
	injection, 4 mg dexamethasone phosphate (as disodium salt) in 1-ml ampoule
hydrocortisone	powder for injection, 100 mg (as sodium succinate) in vial
[a]prednisolone	tablet, 1 mg, 5 mg
Complementary drug	
fludrocortisone (C)	tablet, 100 µg (acetate)

18.2 ANDROGENS

Complementary drug	
testosterone (C) (2)	injection, 200 mg (enantate) in 1-ml ampoule

18.3 CONTRACEPTIVES

18.3.1 HORMONAL CONTRACEPTIVES

[a]ethinylestradiol + [c]levonorgestrel	tablet, 30 µg + 150 µg,
[a]ethinylestradiol + [c]levonorgestrel	tablet, 50 µg + 250 µg (pack of four)
[a]ethinylestradiol + [a]norethisterone	tablet, 35 µg + 1.0 mg
levonorgestrel	tablet, 0.75 mg (pack of two)
Complementary drugs	
[c]levonorgestrel (B)	tablet, 30 µg
medroxyprogesterone acetate (B) (7, 8)	depot injection, 150 mg in 1-ml vial
norethisterone enantate (B) (7, 8)	oily solution, 200 mg/ml in 1-ml ampoule

18.3.2 INTRAUTERINE DEVICES

copper-containing device	

18.3.3 BARRIER METHODS

condoms with or without spermicide (nonoxinol)	
diaphragms with spermicide (nonoxinol)	

18.4 ESTROGENS

[a]ethinylestradiol	tablet, 10 µg, 50 µg

18.5 INSULINS AND OTHER ANTIDIABETIC AGENTS

[a]glibenclamide	tablet, 2.5 mg, 5 mg
insulin injection (soluble)	injection, 40 IU/ml in 10-ml vial, 100 IU/ml in 10-ml vial
intermediate-acting insulin (as compound	injection, 40 IU/ml in 10-ml vial, 100 IU/ml in 10-ml vial insulin zinc suspension or isophane insulin)
metformin	tablet, 500 m (hydrochloride)

18.6 OVULATION INDUCERS

[a]clomifene (2, 8)	tablet, 50 mg (citrate)

18.7 PROGESTOGENS

norethisterone	tablet, 5 mg
Complementary drug	
medroxyprogesterone acetate (B)	tablet, 5 mg

18.8 THYROID HORMONES AND ANTITHYROID DRUGS

levothyroxine	tablet, 50 µg, 100 µg (sodium salt)
potassium iodide	tablet, 60 mg
[a]propylthiouracil	tablet, 50 mg

Section 19: Immunologicals

19.1 DIAGNOSTIC AGENTS

tuberculin,[3] purified protein derivative (PPD)	injection

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

[3] All tuberculins should comply with the Requirements for Tuberculins (Revised 1985). WHO Technical Report Series, No. 745, 1987, Annex 1.

19.2 SERA AND IMMUNOGLOBULINS [4]

anti-D immunoglobulin (human)	injection, 250 µg in single-dose vial
[a]antitetanus immunoglobulin (human)	injection, 500 IU in vial
antivenom serum	injection
diphtheria antitoxin	injection, 10 000 IU, 20 000 IU in vial
immunoglobulin, human normal (2)	injection (intramuscular)
immunoglobulin, human normal (2, 8)	injection (intravenous)
[c]rabies immunoglobulin	injection, 150 IU/ml

19.3 VACCINES [5]

19.3.1 FOR UNIVERSAL IMMUNIZATION

BCG

diphtheria

pertussis

tetanus

hepatitis B

measles

poliomyelitis

19.3.2 FOR SPECIFIC GROUPS OF INDIVIDUALS

influenza

meningitis

mumps

rabies

rubella

typhoid

yellow fever

Section 20: Muscle Relaxants (peripherally acting) and Cholinesterase Inhibitors

[a]alcuronium chloride (2)	injection, 5 mg/ml in 2-ml ampoule
[c]neostigmine	tablet, 15 mg (bromide)
	injection, 500 µg, 2.5 mg (metilsulfate) in 1-ml ampoule
pyridostigmine bromide (2, 8)	tablet, 60 mg
	injection, 1 mg in 1-ml ampoule
suxamethonium chloride (2)	injection, 50 mg/ml in 2-ml ampoule
	powder for injection
Complementary drug	
vecuronium bromide (C)	powder for injection, 10 mg in vial

Section 21: Ophthalmological Preparations

21.1 ANTI-INFECTIVE AGENTS

[a]gentamicin	solution (eye drops), 0.3% (as sulfate)
[a]idoxuridine	solution (eye drops), 0.1%
	eye ointment, 0.2%
silver nitrate	solution (eye drops), 1%
[a]tetracycline	eye ointment, 1% (hydrochloride)

21.2 ANTI-INFLAMMATORY AGENTS

[a]prednisolone	solution (eye drops), 0.5% (sodium phosphate)

21.3 LOCAL ANAESTHETICS

[a]tetracaine	solution (eye drops), 0.5% (hydrochloride)

21.4 MIOTICS AND ANTIGLAUCOMA DRUGS

acetazolamide	tablet, 250 mg

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*
[4] All plasma fractions should comply with the Requirements for the Collection, Processing and Quality Control of Blood, Blood components and Plasma Derivatives (Revised 1992). WHO Technical Report Series, No. 840, 1994, Annex 2.
[5] All vaccines should comply with current WHO recommendations for biological substances.

[a]pilocarpine	solution (eye drops), 2%, 4% (hydrochloride or nitrate)
[a]timolol	solution (eye drops), 0.25%, 0.5% (as maleate)

21.5 MYDRIATICS

atropine	solution (eye drops), 0.1%, 0.5%, 1% (sulfate)

Complementary drug

epinephrine (A)	solution (eye drops), 2% (as hydrochloride)

Section 22: Oxytocics and Antioxytocics

22.1 OXYTOCICS

[a]ergometrine (1c)	tablet, 200 µg (hydrogen maleate)
	injection, 200 µg (hydrogen maleate) in 1-ml ampoule
oxytocin	injection, 10 IU in 1-ml ampoule

22.2 ANTIOXYTOCICS

[a]salbutamol (2)	tablet, 4 mg (as sulfate)
	injection, 50 µg (as sulfate)/ml in 5-ml ampoule

Section 23: Peritoneal Dialysis Solution

intraperitoneal dialysis solution (of appropriate composition)	parenteral solution

Section 24: Psychotherapeutic Drugs

24.1 DRUGS USED IN PSYCHOTIC DISORDERS

[a]chlorpromazine	tablet, 100 mg (hydrochloride)
	syrup, 25 mg (hydrochloride)/5 ml
	injection, 25 mg (hydrochloride)/ml in 2-ml ampoule
[a]fluphenazine (5)	injection, 25 mg (decanoate or enantate) in 1-ml ampoule
[a]haloperidol	tablet, 2 mg, 5 mg
	injection, 5 mg in 1-ml ampoule

24.2 DRUGS USED IN MOOD DISORDERS

24.2.1 DRUGS USED IN DEPRESSIVE DISORDERS

[a]amitriptyline	tablet, 25 mg (hydrochloride)

24.2.2 DRUGS USED IN BIPOLAR DISORDERS

carbamazepine (10, 11)	scored tablet, 100 mg, 200 mg
lithium carbonate (2, 4)	capsule or tablet, 300 mg
valproic acid (7, 11)	enteric coated tablet, 200 mg, 500 mg (sodium salt)

24.3 DRUGS USED IN GENERALIZED ANXIETY AND SLEEP DISORDERS

[a]diazepam (1b)	scored tablet, 2 mg, 5 mg

24.4 DRUGS USED IN OBSESSIVE COMPULSIVE DISORDERS AND PANIC ATTACKS

clomipramine	capsules, 10 mg, 25 mg (hydrochloride)

Section 25: Drugs Acting on the Respiratory Tract

25.1 ANTIASTHMATIC DRUGS

[a]aminophylline (2)	injection, 25 mg/ml in 10-ml ampoule
[a]beclometasone	inhalation (aerosol), 50 µg, 250 µg, (dipropionate) per dose
[a]epinephrine	injection, 1 mg (as hydrochloride or hydrogen tartrate) in 1-ml ampoule
ipratropium bromide	inhalation (aerosol), 20 µg/dose
[a]salbutamol	tablet, 2 mg, 4 mg (as sulfate)
	inhalation (aerosol), 100 µg (as sulfate) per dose
	syrup, 2 mg (as sulfate)/5 ml
	injection, 50 µg (as sulfate)/ml in 5-ml ampoule
	respirator solution for use in nebulizers, 5 mg (as sulfate)/ml
theophylline (10, 11)	tablet, 100 mg, 200 mg, 300 mg

Complementary drug

[a]cromoglicic acid (B)	inhalation (aerosol), 20 mg (sodium salt) per dose

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

25.2 ANTITUSSIVES

[a]dextromethorphan	oral solution, 3.5 mg (bromide)/5 ml

Section 26: Solutions correcting Water, Electrolyte and Acid–base Disturbances

26.1 ORAL

oral rehydration salts (for glucose–electrolyte solution)	for composition see section 17.7.1
potassium chloride	powder for solution

26.2 PARENTERAL

glucose	injectable solution, 5% isotonic, 10% isotonic, 50% hypertonic
glucose with sodium chloride	injectable solution, 4% glucose, 0.18% sodium chloride (equivalent to Na^+ 30 mmol/l Cl^- 30 mmol/l)
potassium chloride (2)	11.2% solution in 20-ml ampoule, (equivalent to K^+ 1.5 mmol/ml, Cl^- 1.5 mmol/ml)
sodium chloride	injectable solution, 0.9% isotonic (equivalent to Na^+ 154 mmol/l, Cl^- 154 mmol/l)
sodium hydrogen carbonate	injectable solution, 1.4% isotonic (equivalent to Na^+ 167 mmol/l, HCO_3^- 167 mmol/l)
	8.4% solution in 10-ml ampoule (equivalent to Na^+ 1000 mmol/l, HCO_3^- 1000 mmol/l)
[a] compound solution of sodium lactate	injectable solution

26.3 MISCELLANEOUS

water for injection	2-ml, 5-ml, 10-ml ampoules

Section 27: Vitamins and Minerals

ascorbic acid	tablet, 50 mg
[c]ergocalciferol	capsule or tablet, 1.25 mg (50 000 IU)
	oral solution, 250 µg/ml (10 000 IU/ml)
iodine (8)	iodized oil, 1 ml (480 mg iodine), 0.5 ml (240 mg iodine) in ampoule (oral or injectable)
	solution, 0.57 ml, (308 mg iodine) in dispenser bottle
	capsule, 200 mg
[a]nicotinamide	tablet, 50 mg
pyridoxine	tablet, 25 mg (hydrochloride)
[c]retinol	sugar-coated tablet, 10 000 IU (as palmitate) (5.5 mg)
	capsule, 200 000 IU (as palmitate) (110 mg)
	oral oily solution, 100 000 IU/ml in multidose dispenser (as palmitate)
	water-miscible injection, 100 000 IU (as palmitate) (55 mg) in 2-ml ampoule
riboflavin	tablet, 5 mg
[a]sodium fluoride	in any appropriate formulation
thiamine	tablet, 50 mg (hydrochloride)

Complementary drug

calcium gluconate (C) (2, 8)	injection, 100 mg/ml in 10-ml ampoule

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

The following changes in the WHO Model List were approved by the WHO Expert Committee on the Use of Essential Drugs which met in December 1999. The report of the meeting will be published in the WHO Technical Report Series.

Deletions: , albumin (human); antiscorpion sera.

Additions: acetylcysteine; rifampicin + isoniazid + pyrazinamide + ethambutol; nevirapine; artesunate; chlorambucil; daunorubicin; ethanol; iohexol.

Replacements: fluconazole to replace ketoconazole; prazosin to replace doxazosin.

Community Health Cell

From: "Dr. Hogerzeil" <hogerzeilh@who.int>
To: "INDIA DRUG" <india-drug@usa.healthnet.org>
Sent: Tuesday, May 13, 2003 10:12 PM
Subject: [india-drug] 13th WHO Model List of Essential Medicines

Can we get a copy of
1. 13th WHO Model List of Essential Medicines,
2. Report of the 13th Expert Committee on the Selection and Use of Essential Medicines (2003) and the summary of their recommendations?
Acd CM 19/5 CM 15/5

13th WHO Model List of Essential Medicines

Dear all,

The 13th WHO Model List of Essential Medicines has been posted on the WHO/Medicines web site, together with the unedited report of the 13th Expert Committee on the Selection and Use of Essential Medicines (2003), and the summary of their recommendations. All materials can be found at the www.who.int/medicines website under "latest" and then "Expert Commitee on the Selection and Use of Essential Medicines". The direct address is http://www.who.int/medicines/organization/par/edl/expertcomm.shtml.

The main recommendations of the Expert Committee and changes in the 13th Model List are summarized below. For the underlying evidence and the reasoning of the Committee, please see the original applications and the report of the Committee.

We are working hard to get the other five language translations of the Model list on the web; and to adapt the WHO Model Formulary accordingly for the 2003 edition.

With best regards,

Hans V. Hogerzeil, MD, PhD, FRCP Edin
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Department of Essential Drugs and Medicines Policy
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<hogerzeilh@who.int>

Summary of recommendations of the Expert Committee and changes in the 13th
Model List of Essential Medicines

Added:
- amodiaquine tablet, 153 mg or 200 mg (base);
- azithromycin 250 or 500mg capsule, and suspension 200mg/5ml.
- 1.5 mg single levonorgestrel (new dosage form)

Rejected: paediatric ibuprofen, porcine insulin suspension (insulin semilente), miconazole buccal tablets, misoprostol and valaciclovir.

CMP 14/5

Deleted:
- ethinylestradiol + levonorgestrel tablet, 50 micrograms + 250 micrograms
(pack of four)
- nonoxinol and spermicides with condoms and diaphragms
- chloral hydrate
- dextromethorphan
- fludrocortisone
- folic acid injection
- ipecacuanha syrup
- human immunoglobulin
- pethidine
- cyclophosphamide in section 2.4
- trimethoprim injection
- iron dextran injection
- prazosin
- hydralazine
- reserpine
- desmopressin

Changed:
- ORS: to 75 mEq/l sodium (sodium chloride 2.6 g/liter) and 75 mmol/l (13.5 g/liter) glucose
- streptokinase: dosage changed to powder for injection 1.5 million IU in vial.

The Committee decided to define the criteria for core and complementary lists, as follows:
The core list presents a list of minimum medicine needs for a basic health care system, listing the most efficacious, safe and cost effective medicine for priority conditions. Priority conditions are selected on the basis of current and estimated future public health relevance, and potential for safe and cost-effective treatment.
The complementary list presents essential medicines for priority diseases,for which specialized diagnostic or monitoring facilities, and/or specialist medical care, and/or specialist training are needed. In case of doubt medicines may also be listed as complementary on the basis of consistent higher costs or less attractive cost-effectiveness in a variety of settings.

The Committee recommended that the core and complementary list be combined as one, with medicines on the complementary list printed in italics or otherwise identified.

Moved from the core list to the complementary list:
amphotericin-B, aminophylline, azathioprine, clomifene, diethylcarbamazine,dopamine, ethosuximide, hydrocortisone rectal preparations, intraperitoneal dialysis solution, methotrexate, penicillamine, pentamidine, pyridostigmine,sulfadiazine and sulfasalazine.

Moved from the complementary list to the core list:
amoxicillin/clavulanic acid, chloramphenicol oily solution, epinephrine

(adrenaline) injection, levonorgestrel, mannitol and norethisterone enantate.

The Committee agreed to use the square box symbol on the basis of the following description:
"The square box symbol is primarily intended to indicate similar clinical performance within a pharmacological class. The listed medicine should be the example of the class for which there is the best evidence for effectiveness and safety. In some cases, this may be the first medicine that is licensed for marketing; in other instances, subsequently licensed compounds may be safer or more effective. Where there is no difference in terms of efficacy and safety data, the listed medicine should be the one that is generally available at the lowest price, based on international drug price information sources. Therapeutic equivalence is only indicated on the basis of reviews of efficacy and safety and when consistent with WHO clinical guidelines. National lists should not use a similar symbol and should be specific in their final selection, which would depend on local availability and price."

Square box symbol removed:
amiloride, amoxicillin, amoxicillin/clavulinic acid, antitetanus immunoglobulin, azathioprine, chloramphenicol, chloroquine, ciclosporin,clomifene, charcoal activated, codeine, cycloserine, dexamethasone, diloxanide, DL-methionine, doxorubicin, doxycycline, epinephrine/adrenaline,ethionamide, hydrocortisone, glibenclamide, ibuprofen, mannitol, morphine,neostigmine, promethazine, quinine, sodium nitroprusside, retinol,sulfadiazine, sulfadoxine/pyrimethamine, sulfamethoxazole/trimethoprim and verapamil.

Square box symbol retained but listed medicine changed:
- cloxacillin to be replaced by dicloxacillin
- captopril to be replaced by enalapril
- cimetidine to be replaced by ranitidine

Review of corticosteroids:
Core list: section 3:
- prednisolone tablets 5mg and 25mg with square box
- dexamethasone, injection 4mg dexamethasone phosphate (as disodium salt) in 1ml
- hydrocortisone, powder for injection, 100mg (as sodium succinate) in vial both
Complementary list, section 8.3: same items listed
Section 18.1: all corticosteroids deleted

Review of antihypertensive drugs:
Deleted: reserpine, hydralazine and prazosin
Captopril be replaced by enalapril with square box
Critical review to be carried out of the justification of the use of dihydropyridine calcium channel blockers as first-line treatment for hypertension.
Methyldopa kept on core list, but only for use in pregnancy
In summary, the Committee recommended that boxed atenolol tablet 50mg,

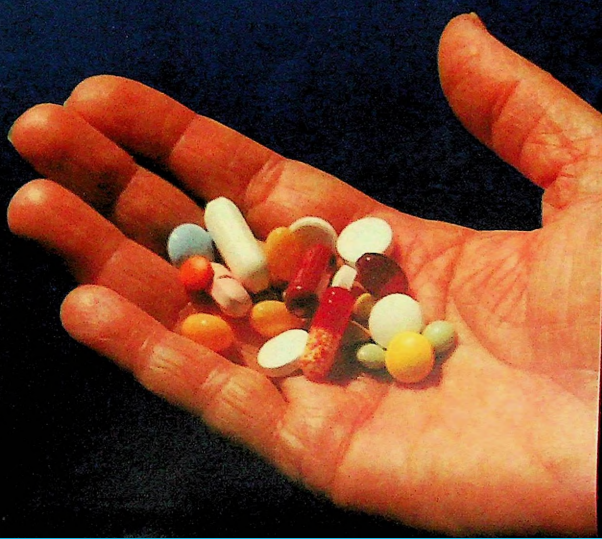
100mg; enalapril tablet 25mg; boxed hydrochlorothiazide scored tablet 25mg;
methyldopa tablet 250mg and boxed nifedipine be listed on the core list

of
section 12.3; and that sodium nitroprusside, powder for infusion, 50mg in
ampoule be listed on the complementary list.

Proposals for fast-track deletion in 2004
Ether, codeine, colchicine, clonazepam, niclosamide, pyrantel, triclabendazole, oxamniquine, imipenem/cilastatin, nalidixic acid, spectinomycin, levofloxacin, thioacetazone/isoniazid, diethyltoluamide, ergotamine, polygeline, Factors VIII and IX, isoprenaline, procainamide,quinidine, nifedepine, topical sun protection agent, local anaesthetic/astringent ointment, atropine in section 17.4, medroxyprogesterone acetate, silver nitrate eye solution, ergometrine, salbutamol in section 22.2.2, aminophylline, cromoglicic acid, calcium gluconate and sodium fluoride.
The Committee recommended that these items be marked in the list with the following footnote: "The public health relevance and/or efficacy and/or safety of this item has been questioned and its continued inclusion on the list will be reviewed at the next meeting of the Expert Committee.

A PROGRAMME OF THE

Rational Use of Drugs



Delhi Society for Promotion of Rational Use of Drugs

A Programme on Rational Use of Drugs

What is Rational use of Drugs ?

Rational Use of Drugs or RUD is a sensible and reasonable way for patients to receive medicines. Medicines are necessary for prevention and cure of their medical condition, in appropriate doses and for a suitable time period. Most importantly, availability of quality medicines, independent of where they live in India, at the cheapest rates.

Cost advantage in supply of essential drugs by pooled procurement

Drugs	Open tender	Pooled procurement	% cost reduction
Syr Amoxycillin	14.65	7.50	50
Tab Erythromycin (250mg)	3.24	1.54	50
Tab Atenolol (50mg)	0.42	0.17	60
Inj Ranitidine	1.87	1.63	12.50
Inj Diazepam	5.53	0.93	80

Cost of same drug in different years for Delhi government hospitals

Name of Drug	Pooled procurement rate 1993	2002
Cap. Amoxycillin (500 mg.)	Rs.21.50 per 10	Rs.13.83 per 10
Cap. Ciprofloxacin (500 mg.)	Rs.24.30 per 10	Rs.9.48 per 10
Inj. Ceftazidime (1 gm.)	Rs. 214 per vial	Rs. 62.15 per vial
Inj. Streptokinase (15 M.U.)	Rs. 1770.00 per inj.	Rs. 885.00 per inj.

Holding the price line

Medical Care: The present status

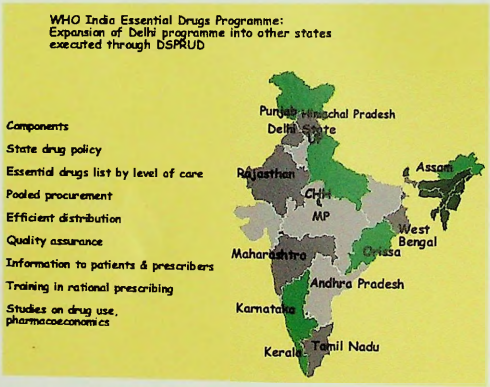
Good medical care means access to and availability of medicines for the sick and needy. Although, a good percentage of the health budget state-wise is allocated for providing drugs, we are faced with the problem of shortages and even spurious medicines at public health facilities. Lack of medicines is a constraint to health care. This has a direct effect on the economic health of India.

Is there scope for change ?

The answer is 'Yes'. There is a working model already in place. This model can improve the quality of therapy, reduce wastage in resources, limit unnecessary expenditure and minimize adverse side effects. Specifically designed to educate the patient, the model chooses the 'best' for health care.

The Delhi Model: a success story

The 'Delhi Model' is a joint initiative on the rational use of drugs between the 'World Health Organization' (WHO), DSPRUD and the Government of Delhi. Today, patients in Delhi State Hospitals receive free good quality medicines. *Ninety percent of drugs prescribed are actually handed out to patients.*



Problems faced prior to the Model

Before 1993:

- Prescribed drugs not available or in short supply
- Drugs when available were of poor quality
- Stocking of unnecessary drugs and combinations
- Inadequate quality control mechanism
- No state list of essential drugs; each hospital has its own list
- Drugs procured and distributed in a disorganized way
- Doctor's prescriptions resulted in use of expensive brand names
- No information given to the patients on how to use prescribed drugs

About DSPRUD

The Delhi Society for Promotion of Rational Use of Drugs, DSPRUD in short, is a registered Society with its office in New Delhi. DSPRUD, headed by Prof. Ranjit Roy Chaudhury, eminent clinical pharmacologist with a team of committed professionals, implement the programme.

Estimates of potential savings from drug policy

	Avg. %	Worth Rs.
Selection of drugs EML	10	1.10
Quantification of requirment	15	1.26
Procurement by generic names	25	1.58
Use of competitive bidding system	10	1.75
Proper storage conditions	10	1.92
Good inventory management	15	2.20
Reduction of theft and pilferage	20	2.64
Rotional prescription	50	3.96
Improved patient compliance	20	4.75

RUD's steps to success

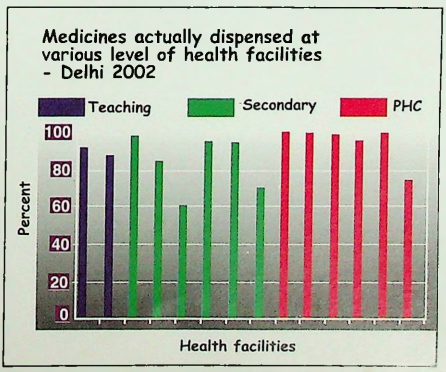
- Developing a Drug Policy
- Selecting an Essential Medicines List
- Pooled procurement of medicines by a Central Committee
- Establishment of a quality assurance system
- Preparation of a Drug Formulary
- Preparation of Standard Treatment Guidelines
- Training at all levels for those who administer health care in rational prescribing of medicines
- Objective information about medicines to doctors and patients
- Research and monitoring all aspects of drug use

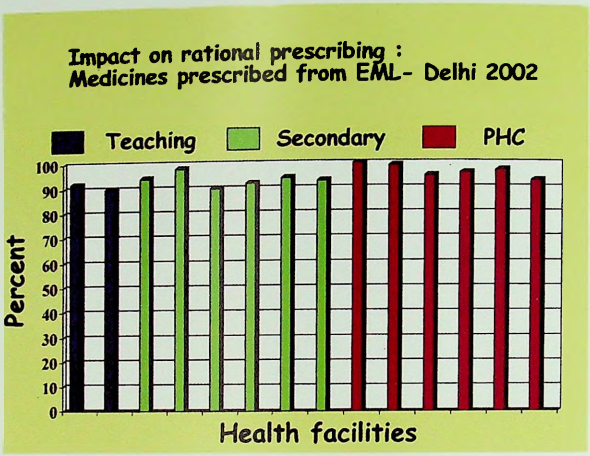
Results from the RUD programme

- Drug prices contained over the years
- Drugs can be purchased at 35% cheaper rates with pooled procurement
- 90% of prescribed drugs from list of essential medicines
- Additional savings can be made by use of Standard Treatment Guidelines.
- Quality of drugs distributed in government hospitals is ensured
- Increased accessibility with 90% of medicines being dispensed in public health facilities
- Quality of prescribing is good
- Improved prescribing- not more than three medicines on an average

Impact on drug quality in public facilities:
Results of quality tests (Delhi State)

Total no. of batches tested (July 2000 to October 2002)	3529
Batches not of standard quality	28 (0.79%)
Total expenditure	0.53% of the budget for drugs





Make India Healthy

Make India Wealthy

Adopt RUD

The expertise of the Delhi Society for Promotion of Rational Use of Drugs is available for introducing the 'Delhi Model' in any State or any organization.

Delhi Society for Promotion of Rational Use of Drugs

(Registered under Societies Registration Act of 1860, Regn. No. S 30330 of 1996)

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DR-14.

Essential Drugs

WHO Model List (revised December 1999)

Section 1: Anaesthetics

1.1 GENERAL ANAESTHETICS AND OXYGEN

ether, anaesthetic (1c) (2)	inhalation
halothane (2)	inhalation
ketamine (2)	injection, 50 mg (as hydrochloride)/ml in 10-ml vial
nitrous oxide (2)	inhalation
oxygen	inhalation (medicinal gas)
[a]thiopental (2)	powder for injection, 0.5 g, 1.0 g (sodium salt) in ampoule

1.2 LOCAL ANAESTHETICS

[a]bupivacaine (2, 9)	injection, 0.25%, 0.5% (hydrochloride) in vial
	injection for spinal anaesthesia, 0.5% (hydrochloride) in 4-ml ampoule to be mixed with 7.5% glucose solution
[a]lidocaine	injection, 1%, 2% (hydrochloride) in vial
	injection, 1%, 2% (hydrochloride) + epinephrine 1:200 000 in vial
	injection for spinal anaesthesia, 5% (hydrochloride) in 2-ml ampoule to be mixed with 7.5% glucose solution
	topical forms, 2–4% (hydrochloride)
	dental cartridge, 2% (hydrochloride) + epinephrine 1:80 000

Complementary drug

ephedrine (C) *(For use in spinal anaesthesia during delivery to prevent hypotension)*	injection, 30 mg (hydrochloride)/ml in 1-ml ampoule

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

Explanatory Notes

When the strength of a drug is specified in terms of a selected salt or ester, this is mentioned in brackets; when it refers to the active moiety, the name of the salt or ester in brackets is preceded by the word "as".

Many drugs included in the list are preceded by a box ([a]) to indicate that they represent an example of a therapeutic group and that various drugs could serve as alternatives. It is imperative that this is understood when drugs are selected at national level, since choice is then influenced by the comparative cost and availability of equivalent products. Examples of acceptable substitutions include:

- [a] Hydrochlorothiazide: any other thiazide-type diuretic currently in broad clinical use.
- [a] Hydralazine: any other peripheral vasodilator having an antihypertensive effect.
- [a] Senna: any stimulant laxative (either synthetic or of plant origin).
- [a] Sulfadiazine: any other short-acting, systemically active sulfonamide unlikely to cause crystalluria.

Numbers in parentheses following drug names indicate:
(1) Drugs subject to international control under: (a) the Single Convention on Narcotic Drugs (1961); (b) the Convention on Psychotropic Substances (1971); or (c) the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances (1988).
(2) Specific expertise, diagnostic precision, individualization of dosage or special equipment required for proper use.
(3) Greater potency or efficacy.
(4) In renal insufficiency, contraindicated or dosage adjustments necessary.
(5) To improve compliance.
(6) Special pharmacokinetic properties.
(7) Adverse effects diminish benefit/risk ratio.
(8) Limited indications or narrow spectrum of activity.
(9) For epidural anaesthesia.
(10) Sustained-release preparations are available. A proposal to include such a product in a national list of essential drugs should be supported by adequate documentation.
(11) Monitoring of therapeutic concentrations in plasma can improve safety and efficacy.

Letters in parentheses following the drug names indicate the reasons for the inclusion of *complementary drugs:*
(A) When drugs in the main list cannot be made available.
(B) When drugs in the main list are known to be ineffective or inappropriate for a given individual.
(C) For use in rare disorders or in exceptional circumstances.
(D) Reserve antimicrobials to be used only when there is significant resistance to other drugs on the list.

Drugs are listed in alphabetical order.

kib Essential Drugs file

1.3 PREOPERATIVE MEDICATION & SEDATION FOR SHORT-TERM PROCEDURES

atropine	injection, 1 mg (sulfate) in 1-ml ampoule
chloral hydrate	syrup, 200 mg/5 ml
[a]diazepam (1b)	injection, 5 mg/ml in 2-ml ampoule
	tablet, 5 mg
[a]morphine (1a)	injection, 10 mg (sulfate or hydrochloride) in 1-ml ampoule
[a]promethazine	elixir or syrup, 5 mg (hydrochloride)/5 ml

Section 2: Analgesics, Antipyretics, Nonsteroidal Anti-Inflammatory Drugs (NSAIDs), Drugs Used to Treat Gout and Disease-Modifying Agents used in Rheumatic Disorders (DMARDs)

2.1 NON-OPIOID ANALGESICS & NSAIDs

acetylsalicylic acid	tablet, 100–500 mg
	suppository, 50–150 mg
[a]ibuprofen	tablet, 200 mg, 400 mg
paracetamol	tablet, 100–500 mg
	suppository, 100 mg
	syrup, 125 mg/5 ml

2.2 OPIOID ANALGESICS

[a]codeine (1a)	tablet, 30 mg (phosphate)
[a]morphine (1a)	injection, 10 mg (sulfate or hydrochloride) in 1-ml ampoule
	oral solution, 10 mg (hydrochloride or sulfate))/5 ml
	tablet, 10 mg (sulfate)
Complementary drug	
[a]pethidine (A) (1a, 4)	injection, 50 mg (hydrochloride) in 1-ml ampoule
	tablet, 50 mg, 100 mg (hydrochloride)

2.3 DRUGS USED TO TREAT GOUT

allopurinol (4)	tablet, 100 mg
colchicine (7)	tablet, 500 µg

2.4 DISEASE-MODIFYING AGENTS USED IN RHEUMATIC DISORDERS

azathioprine (2)	tablet, 50 mg
chloroquine (2)	tablet, 100 mg, 150 mg (as phosphate or sulfate)
cyclophosphamide (2)	tablet, 25 mg
methotrexate (2)	tablet, 2.5 mg (as sodium salt)
penicillamine (2)	capsule or tablet, 250 mg
sulfasalazine (2)	tablet, 500 mg

Section 3: Antiallergics and Drugs Used in Anaphylaxis

[a]chlorphenamine	tablet, 4 mg (hydrogen maleate)
	injection, 10 mg (hydrogen maleate) in 1-ml ampoule
[a]dexamethasone	tablet, 500 µg, 4 mg
	injection, 4 mg dexamethasone phosphate (as disodium salt) in 1-ml ampoule
epinephrine	injection, 1 mg (as hydrochloride or hydrogen tartrate) in 1-ml ampoule
hydrocortisone	powder for injection, 100 mg (as sodium succinate) in vial
[a]prednisolone	tablet, 5 mg

Section 4: Antidotes and Other Substances Used in Poisonings

4.1 NON-SPECIFIC

[a]charcoal, activated	powder
ipecacuanha	syrup, containing 0.14% ipecacuanha alkaloids calculated as emetine

4.2 SPECIFIC

acetylcysteine	injection, 200 mg/ml in 10-ml vial
atropine	injection, 1 mg (sulfate) in 1-ml ampoule
calcium gluconate (2, 8)	injection, 100 mg/ml in 10-ml ampoule
deferoxamine	powder for injection, 500 mg (mesilate) in vial

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

dimercaprol (2)	injection in oil, 50 mg/ml in 2-ml ampoule
[a]DL-methionine	tablet, 250 mg
methylthioninium chloride (methylene blue)	injection, 10 mg/ml in 10-ml ampoule
naloxone	injection, 400 µg (hydrochloride) in 1-ml ampoule
penicillamine (2)	capsule or tablet, 250 mg
potassium ferric hexacyanoferrate(II) $\cdot 2H_2O$ (Prussian blue)	powder for oral administration
sodium calcium edetate (2)	injection, 200 mg/ml in 5-ml ampoule
sodium nitrite	injection, 30 mg/ml in 10-ml ampoule
sodium thiosulfate	injection, 250 mg/ml in 50-ml ampoule

Section 5: Anticonvulsants/ Antiepileptics

carbamazepine (10, 11)	scored tablet, 100 mg, 200 mg
[a]diazepam (1b)	injection, 5 mg/ml in 2-ml ampoule (intravenous or rectal)
ethosuximide	capsule, 250 mg
	syrup, 250 mg/5 ml
magnesium sulfate	injection, 500 mg/ml in 2-ml ampoule and 10-ml ampoule
phenobarbital (1b, 11)	tablet, 15–100 mg
	elixir, 15 mg/5 ml
phenytoin (7, 11)	capsule or tablet, 25 mg, 50 mg, 100 mg (sodium salt)
	injection, 50 mg (sodium salt)/ml in 5-ml vial
valproic acid (7, 11)	enteric coated tablet, 200 mg, 500 mg (sodium salt)
Complementary drug	
[a]clonazepam (B) (1b)	scored tablet, 500 µg

Section 6: Anti-infective Drugs

6.1 ANTHELMINTHICS

6.1.1 INTESTINAL ANTHELMINTHICS

albendazole	chewable tablet, 400 mg
levamisole	tablet, 50 mg, 150 mg (as hydrochloride)
[a]mebendazole	chewable tablet, 100 mg, 500 mg
niclosamide	chewable tablet, 500 mg
praziquantel	tablet, 150 mg, 600 mg
pyrantel	chewable tablet, 250 mg (as embonate)
	oral suspension, 50 mg (as embonate)/ml

6.1.2 ANTIFILARIALS

diethylcarbamazine	tablet, 50 mg, 100 mg (dihydrogen citrate)
ivermectin	scored tablet, 3 mg, 6 mg
Complementary drug	
suramin sodium (B) (2, 7)	powder for injection, 1 g in vial

6.1.3 ANTISCHISTOSOMALS AND OTHER ANTITREMATODE DRUGS

praziquantel	tablet, 600 mg
triclabendazole	tablet, 250 mg
Complementary drug	
oxamniquine (C) (8)	capsule, 250 mg
	syrup, 250 mg/5 ml

6.2 ANTIBACTERIALS

6.2.1 BETA LACTAM DRUGS

[a]amoxicillin	capsule or tablet, 250 mg, 500 mg (anhydrous)
	powder for oral suspension, 125 mg (anhydrous)/5 ml
ampicillin	powder for injection, 500 mg, 1 g (as sodium salt) in vial
benzathine benzylpenicillin	powder for injection, 1.44 g benzylpenicillin (= 2.4 million IU) in 5-ml vial
benzylpenicillin	powder for injection, 600 mg (= 1 million IU), 3 g (= 5 million IU) (sodium or potassium salt) in vial

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

[a]cloxacillin	capsule, 500 mg, 1 g (as sodium salt)
	powder for oral solution, 125 mg (as sodium salt)/5 ml
	powder for injection, 500 mg (as sodium salt) in vial
phenoxymethylpenicillin	tablet, 250 mg (as potassium salt)
	powder for oral suspension, 250 mg (as potassium salt)/5 ml
procaine benzylpenicillin	powder for injection, 1 g (= 1 million IU), 3 g (= 3 million IU) in vial
Restricted indications	
[a]amoxicillin + [a]clavulanic acid (D)	tablet, 500 mg + 125 mg
ceftazidime (D)	powder for injection, 250 mg (as pentahydrate) in vial
[a]ceftriaxone (D)	powder for injection, 250 mg (as sodium salt) in vial
imipenem + cilastatin (D)	powder for injection, 250 mg (as monohydrate) + 250 mg, (as sodium salt) 500 mg (as monohydrate) + 500 mg in vial (as sodium salt)

6.2.2 OTHER ANTIBACTERIALS

[a]chloramphenicol (7)	capsule, 250 mg
	oral suspension, 150 mg (as palmitate)/5 ml
	powder for injection, 1 g (sodium succinate) in vial
[a]ciprofloxacin	tablet, 250 mg (as hydrochloride)
[a]doxycycline (5, 6)	capsule or tablet, 100 mg (hydrochloride)
[a]erythromycin	capsule or tablet, 250 mg (as stearate or ethyl succinate)
	powder for oral suspension, 125 mg (as stearate or ethyl succinate)
	powder for injection, 500 mg (as lactobionate) in vial
[a]gentamicin (2, 4, 7, 11)	injection, 10 mg, 40 mg (as sulfate)/ml in 2-ml vial
[a]metronidazole	tablet, 200–500 mg
	injection, 500 mg in 100-ml vial
	suppository, 500 mg, 1 g
	oral suspension, 200 mg (as benzoate)/5 ml
nalidixic acid (8)	tablet, 250 mg, 500 mg
nitrofurantoin (4, 8)	tablet, 100 mg
spectinomycin (8)	powder for injection, 2 g (as hydrochloride) in vial
[a]sulfadiazine (4)	tablet, 500 mg
	injection, 250 mg (sodium salt) in 4-ml ampoule
[a]sulfamethoxazole + trimethoprim (4)	tablet, 100 mg + 20 mg, 400 mg + 80 mg
	oral suspension, 200 mg + 40 mg/5 ml
	injection, 80 mg + 16 mg/ml in 5-ml and 10-ml ampoule
trimethoprim (8)	tablet, 100 mg, 200 mg
	injection, 20 mg/ml in 5-ml ampoule
Complementary drugs	
chloramphenicol (C)	oily suspension for injection, 0.5 g (as sodium succinate)/ml in 2-ml ampoule
clindamycin (B) (8)	capsule, 150 mg
	injection, 150 mg (as phosphate)/ml
Restricted indications	
vancomycin (D)	powder for injection 250 mg (as hydrochloride) in vial

6.2.3 ANTILEPROSY DRUGS

clofazimine	capsule, 50 mg, 100 mg
dapsone	tablet, 25 mg, 50 mg, 100 mg
rifampicin	capsule or tablet, 150 mg, 300 mg

6.2.4 ANTITUBERCULOSIS DRUGS

ethambutol (4)	tablet, 100–400 mg (hydrochloride)
isoniazid	tablet, 100–300 mg
isoniazid + ethambutol (5)	tablet, 150 mg + 400 mg

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

pyrazinamide	tablet, 400 mg
rifampicin	capsule or tablet, 150 mg, 300 mg
rifampicin + isoniazid (5)	tablet, 60 mg + 30 mg, 150 mg + 75 mg, 300 mg + 150 mg
	tablet, 60 mg + 60 mg, 150 mg + 150 mg *(for intermittent use 3 times weekly)*
rifampicin + isoniazid + pyrazinamide (5)	tablet, 60 mg + 30 mg + 150 mg, 150 mg + 75 mg + 400 mg
	tablet, 150 mg + 150 mg + 500 mg *(for intermittent use 3 times weekly)*
rifampicin + isoniazid + pyrazinamide + ethambutol	tablet, 150 mg + 75 mg + 400 mg + 275 mg
streptomycin (4)	powder for injection, 1 g (as sulfate) in vial
Complementary drug	
thioacetazone + isoniazid (A) (5, 7)	tablet, 50 mg + 100 mg, 150 mg + 300 mg

Additional reserve antituberculosis drugs for the treatment of drug-resistant tuberculosis should be used in specialized centres only with WHO-recommended TB control strategy, DOTS, and treatment programmes.

6.3 ANTIFUNGAL DRUGS

amphotericin B (4)	powder for injection, 50 mg in vial
[a]fluconazole	capsule, 50 mg
	injection, 2 mg/ml in vial
	oral suspension, 50 mg/5-ml
griseofulvin (7)	capsule or tablet, 125 mg, 250 mg
nystatin	tablet, 100 000, 500 000 IU
	lozenge, 100 000 IU
	pessary, 100 000 IU
Complementary drugs	
flucytosine (B) (4, 8)	capsule, 250 mg
	infusion, 2.5 g in 250 ml
potassium iodide (A)	saturated solution

6.4 ANTIVIRAL DRUGS

6.4.1 ANTIHERPES DRUGS

aciclovir (8)	tablet, 200 mg
	powder for injection, 250 mg (as sodium salt) in vial

6.4.2 ANTIRETROVIRAL DRUGS

Adequate resources and specialist oversight are a prerequisite for the introduction of this class of drugs.

nevirapine (8)	tablet, 200 mg
	oral solution, 50 mg/5 ml
zidovudine (8)	capsule, 100 mg, 250 mg
	injection, 10 mg/ml in 20-ml vial
	oral solution, 50 mg/5 ml

Drugs for treatment of HIV/AIDS include nucleoside reverse transcriptase inhibitors (NRTIs), non-nucleoside reverse transcriptase inhibitors (NNRTIs) and protease inhibitors (PIs). Zidovudine and nevirapine have been shown to reduce or prevent mother-to-child transmission of HIV infection. **This is the only indication for which they are included here.** Single drug use with zidovudine, except in pregnancy, is now regarded as obsolete because of the development of resistance. Triple therapy is beyond the budgets of most national drug programmes and therefore HIV/AIDS treatment policies must be decided at country or institutional level.

6.5 ANTIPROTOZOAL DRUGS

6.5.1 ANTIAMOEBIC AND ANTIGIARDIASIS DRUGS

[a] diloxanide	tablet, 500 mg (furoate)
[a]metronidazole	tablet, 200–500 mg
	injection, 500 mg in 100-ml vial
	oral suspension, 200 mg (as benzoate)/5 ml

6.5.2 ANTILEISHMANIASIS DRUGS

[a]meglumine antimoniate	injection, 30%, equivalent to approx. 8.5% antimony, in 5-ml ampoule
pentamidine (5)	powder for injection, 200 mg, 300 mg (isetionate) in vial
Complementary drug	
amphotericin B (B) (4)	powder for injection, 50 mg in vial

6.5.3 ANTIMALARIAL DRUGS

(a) FOR CURATIVE TREATMENT

[a]chloroquine	tablet, 100 mg, 150 mg (as phosphate or sulfate)
	syrup, 50 mg (as phosphate or sulfate)/5 ml
	injection, 40 mg (as hydrochloride, phosphate or sulfate)/ml in 5-ml ampoule

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

primaquine	tablet, 7.5 mg, 15 mg (as diphosphate)
[a]quinine	tablet, 300 mg (as bisulfate or sulfate)
	injection, 300 mg (as dihydrochloride)/ml in 2-ml ampoule

Complementary drugs

[a]doxycycline (B) *(for use only in combination with quinine)*	capsule or tablet, 100 mg (hydrochloride)
mefloquine (B)	tablet, 250 mg (as hydrochloride)
[a]sulfadoxine + pyrimethamine (B)	tablet, 500 mg + 25 mg

Restricted indications

artemether (D)	injection, 80 mg/ml in 1-ml ampoule
artesunate (D)	tablet, 50 mg

(b) FOR PROPHYLAXIS

chloroquine	tablet, 150 mg (as phosphate or sulfate)
	syrup, 50 mg (as phosphate or sulfate)/5 ml
doxycycline	capsule or tablet, 100 mg (hydrochloride)
mefloquine	tablet, 250 mg (as hydrochloride)
proguanil *(for use only in combination with chloroquine)*	tablet, 100 mg (hydrochloride)

6.5.4 ANTIPNEUMOCYSTOSIS AND ANTITOXOPLASMOSIS DRUGS

pentamidine (2)	tablet, 200 mg, 300 mg
pyrimethamine	tablet, 25 mg
sulfamethoxazole + trimethoprim	injection, 80 mg + 16 mg/ml in 5-ml and 10-ml ampoule

6.5.5 ANTITRYPANOSOMAL DRUGS

(a) AFRICAN TRYPANOSOMIASIS

melarsoprol (2)	injection, 3.6% solution
pentamidine (2)	powder for injection, 200 mg, 300 mg (isetionate) in vial
suramin sodium	powder for injection, 1 g in vial

Complementary drug

eflornithine (C)	injection, 200 mg (hydrochloride)/ml in 100-ml bottles

(b) AMERICAN TRYPANOSOMIASIS

benznidazole (7)	tablet, 100 mg
nifurtimox (2, 8)	tablet, 30 mg, 120 mg, 250 mg

6.6 INSECT REPELLENTS

diethyltoluamide	topical solution, 50%, 75%

Section 7: Antimigraine Drugs

7.1 FOR TREATMENT OF ACUTE ATTACK

acetylsalicylic acid	tablet, 300–500 mg
ergotamine (1c) (7)	tablet, 1 mg (tartrate)
paracetamol	tablet, 300–500 mg

7.2 FOR PROPHYLAXIS

[a]propranolol	tablet, 20 mg, 40 mg (hydrochloride)

Section 8: Antineoplastic and Immunosuppressive Drugs and Drugs Used in Palliative Care

8.1 IMMUNOSUPPRESSIVE DRUGS

Adequate resources and specialist oversight are a prerequisite for the introduction of this class of drugs.

[a]azathioprine (2)	tablet, 50 mg
	powder for injection, 100 mg (as sodium salt) in vial
[a]ciclosporin (2) *(for organ transplantation)*	capsule, 25 mg
	concentrate for injection, 50 mg/ml in 1-ml ampoule

8.2 CYTOTOXIC DRUGS

Adequate resources and specialist oversight are a prerequisite for the introduction of this class of drugs.

asparaginase (2)	powder for injection, 10 000 IU in vial
bleomycin (2)	powder for injection, 15 mg (as sulfate) in vial
calcium folinate (2)	tablet, 15 mg
	injection, 3 mg/ml in 10-ml ampoule
chlorambucil (2)	tablet, 2 mg
chlormethine (2)	powder for injection, 10 mg (hydrochloride) in vial

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

cisplatin (2)	powder for injection, 10 mg, 50 mg in vial
cyclophosphamide (2)	tablet, 25 mg
	powder for injection, 500 mg in vial
cytarabine (2)	powder for injection, 100 mg in vial
dacarbazine (2)	powder for injection, 100 mg in vial
daunorubicin (2)	powder for injection, 50 mg (as hydrochloride) in vial
dactinomycin (2)	powder for injection 500 µg in vial
[a]doxorubicin (2)	powder for injection, 10 mg, 50 mg (hydrochloride) in vial
etoposide (2)	capsule, 100 mg
	injection, 20 mg/ml in 5-ml ampoule
fluorouracil (2)	injection, 50 mg/ml in 5-ml ampoule
levamisole (2)	tablet, 50 mg (as hydrochloride)
mercaptopurine (2)	tablet, 50 mg
methotrexate (2)	tablet, 2.5 mg (as sodium salt)
	powder for injection, 50 mg (as sodium salt) in vial
procarbazine	capsule, 50 mg (as hydrochloride)
vinblastine (2)	powder for injection, 10 mg (sulfate) in vial
vincristine (2)	powder for injection, 1 mg, 5 mg (sulfate) in vial

8.3 HORMONES AND ANTIHORMONES

[a]prednisolone	tablet, 5 mg
	powder for injection, 20 mg, 25 mg (as sodium phosphate or sodium succinate) in vial
tamoxifen	tablet, 10 mg, 20 mg (as citrate)

8.4 DRUGS USED IN PALLIATIVE CARE

The WHO Expert Committee on Essential Drugs recommended that all the drugs mentioned in the WHO publication *Cancer Pain Relief: with a Guide to Opioid Availability, 2nd edition*, be considered essential. The drugs are included in the relevant sections of the model list according to their therapeutic use, e.g. analgesics.

Section 9: Antiparkinsonism Drugs

[a]biperiden	tablet, 2 mg (hydrochloride)
	injection, 5 mg (lactate) in 1-ml ampoule
levodopa + [a]carbidopa (5, 6)	tablet, 100 mg + 10 mg, 250 mg + 25 mg

Section 10: Drugs affecting the Blood

10.1 ANTIANAEMIA DRUGS

ferrous salt	tablet, equivalent to 60 mg iron
	oral solution, equivalent to 25 mg iron (as sulfate)/ml
ferrous salt + folic acid *(nutritional supplement for use during pregnancy)*	tablet, equivalent to 60 mg iron + 400 µg folic acid
folic acid (2)	tablet, 1 mg, 5 mg
	injection, 1 mg (as sodium salt) in 1-ml ampoule
hydroxocobalamin (2)	injection, 1 mg in 1-ml ampoule
Complementary drug	
[a]iron dextran (B) (5)	injection, equivalent to 50 mg iron/ ml in 2-ml ampoule

10.2 DRUGS AFFECTING COAGULATION

desmopressin (8)	injection, 4 µg (acetate)/ml in 1-ml ampoule
	nasal spray, 10 µg (acetate)/ metered dose
heparin sodium	injection, 1000 IU/ml, 5000 IU/ml, 20 000 IU/ml in 1-ml ampoule
phytomenadione	injection, 10 mg/ml in 5-ml ampoule
	tablet, 10 mg
protamine sulfate	injection, 10 mg/ml in 5-ml ampoule
[a]warfarin (2, 6)	tablet, 1 mg, 2 mg and 5 mg (sodium salt)

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

Section 11: Blood Products and Plasma Substitutes

11.1 PLASMA SUBSTITUTES

[a]dextran 70	injectable solution, 6%
[a]polygeline	injectable solution, 3.5%

11.2 PLASMA FRACTIONS FOR SPECIFIC USE [1]

Complementary drugs

[a]factor VIII concentrate (C) (2, 8)	dried
[a]factor IX complex (coagulation factors II, VII, IX, X) concentrate (C) (2, 8)	dried

Section 12: Cardiovascular Drugs

12.1 ANTIANGINAL DRUGS

[a]atenolol	tablet, 50 mg, 100 mg
glyceryl trinitrate	tablet (sublingual), 500 µg
[a]isosorbide dinitrate	tablet (sublingual), 5 mg
[a]verapamil (10)	tablet, 40 mg, 80 mg (hydrochloride)

12.2 ANTIARRHYTHMIC DRUGS

[a]atenolol	tablet, 50 mg, 100 mg
digoxin (4, 11)	tablet, 62.5 µg, 250 µg
	oral solution, 50 µg/ml
	injection, 250 µg/ml in 2-ml ampoule
lidocaine	injection, 20 mg (hydrochloride)/ml in 5-ml ampoule
verapamil (8, 10)	tablet, 40 mg, 80 mg (hydrochloride)
	injection, 2.5 mg (hydrochloride)/ml in 2-ml ampoule

Complementary drugs

epinephrine (C)	injection, 1 mg (as hydrochloride)/ml
isoprenaline (C)	injection, 20 µg (hydrochloride)/ml
[a]procainamide (B)	tablet, 250 mg, 500 mg (hydrochloride)
	injection, 100 mg (hydrochloride)/ml in 10-ml ampoule
[a]quinidine (A) (7)	tablet, 200 mg (sulfate)

12.3 ANTIHYPERTENSIVE DRUGS

[a]atenolol	tablet, 50 mg, 100 mg
[a]captopril	scored tablet, 25 mg
[a]hydralazine	tablet, 25 mg, 50 mg (hydrochloride)
	powder for injection, 20 mg (hydrochloride) in ampoule
[a]hydrochlorothiazide	scored tablet, 25 mg
methyldopa (7)	tablet, 250 mg
[a]nifedipine (10)	sustained-release formulations
	tablet, 10 mg
[a]reserpine	tablet, 100 µg, 250 µg
	injection, 1 mg in 1-ml ampoule

Complementary drugs

prazosin	tablet, 500 µg, 1 mg (mesilate)
[a]sodium nitroprusside (C) (2, 8)	powder for infusion, 50 mg in ampoule

12.4 DRUGS USED IN HEART FAILURE

[a]captopril	scored tablet, 25 mg
digoxin (4, 11)	tablet, 62.5 µg, 250 µg
	oral solution, 50 µg/ml
	injection, 250 µg/ml in 2-ml ampoule
dopamine	injection, 40 mg (hydrochloride)/ml in 5-ml vial
[a]hydrochlorothiazide	tablet, 25 mg, 50 mg

12.5 ANTITHROMBOTIC DRUGS

acetylsalicylic acid	tablet, 100 mg

Complementary drug

streptokinase (C)	powder for injection, 100 000 IU, 750 000 IU in vial

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[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

[1] All plasma fractions should comply with the Requirements for the Collection, Processing and Quality Control of Blood, Blood Components and Plasma Derivatives (Revised 1992). WHO Technical Report Series, No. 840, 1994, Annex 2.

12.6 LIPID-LOWERING AGENTS

The WHO Expert Committee on Essential Drugs recognizes the value of lipid-lowering drugs in treating patients with hyperlipidaemia. Beta-hydroxy-beta-methylglutaryl-coenzyme A (HMG CoA) reductase inhibitors, often referred to as "statins", are potent and effective lipid-lowering drugs with a good tolerability profile. Several of these drugs have been shown to reduce the incidence of fatal and non-fatal myocardial infarction, stroke and mortality (all causes), as well as the need for coronary bypass surgery. All remain very costly but may be cost-effective for secondary prevention of cardiovascular disease as well as for primary prevention in some very high-risk patients. Since no single drug has been shown to be significantly more effective or less expensive than others in the group, none is included in the model list; the choice of drug for use in patients at highest risk should be decided at national level.

Section 13: Dermatological Drugs (topical)

13.1 ANTIFUNGAL DRUGS

benzoic acid + salicylic acid	ointment or cream, 6% + 3%
[a]miconazole	ointment or cream, 2% (nitrate)
sodium thiosulfate	solution, 15%
Complementary drug	
selenium sulfide (C)	detergent-based suspension, 2%

13.2 ANTI-INFECTIVE DRUGS

[a]methylrosanilinium chloride (gentian violet)	aqueous solution, 0.5% tincture, 0.5%
neomycin + [a]bacitracin (7)	ointment, 5 mg neomycin sulfate + 500 IU bacitracin zinc/g
potassium permanganate	aqueous solution, 1:10 000
silver sulfadiazine	cream, 1%, in 500-g container

13.3 ANTI-INFLAMMATORY AND ANTIPRURITIC DRUGS

[a]betamethasone (3)	ointment or cream, 0.1% (as valerate)
[a]calamine lotion	lotion
[a]hydrocortisone	ointment or cream, 1% (acetate)

13.4 ASTRINGENT DRUGS

aluminium diacetate	solution, 13% for dilution

13.5 DRUGS AFFECTING SKIN DIFFERENTIATION AND PROLIFERATION

benzoyl peroxide	lotion or cream, 5%
coal tar	solution, 5%
dithranol	ointment, 0.1–2%
fluorouracil	ointment, 5%
[a]podophyllum resin (7)	solution, 10–25%
salicylic acid	solution 5%
urea	ointment or cream, 10%

13.6 SCABICIDES AND PEDICULICIDES

[a]benzyl benzoate	lotion, 25%
permethrin	cream, 5% lotion, 1%

13.7 ULTRAVIOLET-BLOCKING AGENTS

Complementary drugs

topical sun protection agent with activity against UVA and UVB (C)	cream, lotion or gel

Section 14: Diagnostic Agents

14.1 OPHTHALMIC DRUGS

fluorescein	eye drops, 1% (sodium salt)
[a]tropicamide	eye drops, 0.5%

14.2 RADIOCONTRAST MEDIA

[a]amidotrizoate	injection, 140–420 mg iodine (as sodium or meglumine salt)/ml in 20-ml ampoule
barium sulfate	aqueous suspension
[a]iohexol	injection, 140–350 mg iodine/ml in 5-ml, 10-ml and 20-ml ampoule
[a]iopanoic acid	tablet, 500 mg
[a]propyliodone *(For administration only into the bronchial tree).*	oily suspension, 500–600 mg/ml in 20-ml ampoule
Complementary drug	
[a]meglumine iotroxate (C)	solution, 5 – 8 g iodine in 100–250 ml

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

Section 15: Disinfectants and Antiseptics

15.1 ANTISEPTICS

[a]chlorhexidine	solution, 5% (digluconate) for dilution
[a]ethanol	solution, 70% (denatured)
[a]polyvidone iodine	solution, 10%

15.2 DISINFECTANTS

[a]chlorine base compound	powder (0.1% available chlorine) for solution
[a]chloroxylenol	solution, 4.8%
glutaral	solution, 2%

Section 16: Diuretics

[a]amiloride (4, 7, 8)	tablet, 5 mg (hydrochloride)
[a]furosemide	tablet, 40 mg
	injection, 10 mg/ml in 2-ml ampoule
[a]hydrochlorothiazide	tablet, 25 mg, 50 mg
spironolactone (8)	tablet, 25 mg
Complementary drug	
[a]mannitol (C)	injectable solution, 10%, 20%

Section 17: Gastrointestinal Drugs

17.1 ANTACIDS AND OTHER ANTIULCER DRUGS

aluminium hydroxide	tablet, 500 mg
	oral suspension, 320 mg/5 ml
[a]cimetidine	tablet, 200 mg
	injection, 200 mg in 2-ml ampoule
magnesium hydroxide	oral suspension, equivalent to 550 mg magnesium oxide/10 ml

17.2 ANTIEMETIC DRUGS

metoclopramide	tablet, 10 mg (hydrochloride)
	injection, 5 mg (hydrochloride)/ml in 2-ml ampoule
[a]promethazine	tablet, 10 mg, 25 mg (hydrochloride)
	elixir or syrup, 5 mg (hydrochloride)/5 ml
	injection, 25 mg (hydrochloride)/ml in 2-ml ampoule

17.3 ANTIHAEMORRHOIDAL DRUGS

[a]local anaesthetic, astringent and anti-inflammatory drug	ointment or suppository

17.4 ANTI-INFLAMMATORY DRUGS

hydrocortisone	suppository, 25 mg (acetate)
	[a] retention enema
[a]sulfasalazine (2)	tablet, 500 mg
	suppository, 500 mg
	retention enema

17.5 ANTISPASMODIC DRUGS

[a]atropine	tablet, 0.6 mg (sulfate)
	injection, 1 mg (sulfate) in 1-ml ampoule

17.6 LAXATIVES

[a]senna	tablet, 7.5 mg (sennosides) (or traditional dosage forms)

17.7 DRUGS USED IN DIARRHOEA

17.7.1 ORAL REHYDRATION

oral rehydration salts (for glucose–electrolyte solution) — powder, 27.9 g/l

Components	*g/l*
sodium chloride	3.5
trisodium citrate dihydrate [2]	2.9
potassium chloride	1.5
glucose	20.0

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

[2] Trisodium citrate dihydrate may be replaced by sodium bicarbonate (sodium hydrogen carbonate) 2.5 g/l. However, as the stability of this latter formulation is very poor under tropical conditions, it is only recommended when manufactured for immediate use.

17.7.2 ANTIDIARRHOEAL (SYMPTOMATIC) DRUGS

[a]codeine (1a)	tablet, 30 mg (phosphate)

Section 18: Hormones, other Endocrine Drugs and Contraceptives

18.1 ADRENAL HORMONES AND SYNTHETIC SUBSTITUTES

[a]dexamethasone	tablet, 500 µg, 4 mg
	injection, 4 mg dexamethasone phosphate (as disodium salt) in 1-ml ampoule
hydrocortisone	powder for injection, 100 mg (as sodium succinate) in vial
[a]prednisolone	tablet, 1 mg, 5 mg
Complementary drug	
fludrocortisone (C)	tablet, 100 µg (acetate)

18.2 ANDROGENS

Complementary drug	
testosterone (C) (2)	injection, 200 mg (enantate) in 1-ml ampoule

18.3 CONTRACEPTIVES

18.3.1 HORMONAL CONTRACEPTIVES

[a]ethinylestradiol + [a]levonorgestrel	tablet, 30 µg + 150 µg,
[a]ethinylestradiol + [a]levonorgestrel	tablet, 50 µg + 250 µg (pack of four)
[a]ethinylestradiol + [a]norethisterone	tablet, 35 µg + 1.0 mg
levonorgestrel	tablet, 0.75 mg (pack of two)
Complementary drugs	
[a]levonorgestrel (B)	tablet, 30 µg
medroxyprogesterone acetate (B) (7, 8)	depot injection, 150 mg in 1-ml vial
norethisterone enantate (B) (7, 8)	oily solution, 200 mg/ml in 1-ml ampoule

18.3.2 INTRAUTERINE DEVICES

copper-containing device	

18.3.3 BARRIER METHODS

condoms with or without spermicide (nonoxinol)	
diaphragms with spermicide (nonoxinol)	

18.4 ESTROGENS

[a]ethinylestradiol	tablet, 10 µg, 50 µg

18.5 INSULINS AND OTHER ANTIDIABETIC AGENTS

[a]glibenclamide	tablet, 2.5 mg, 5 mg
insulin injection (soluble)	injection, 40 IU/ml in 10-ml vial, 100 IU/ml in 10-ml vial
intermediate-acting insulin (as compound	injection, 40 IU/ml in 10-ml vial, 100 IU/ml in 10-ml vial insulin zinc suspension or isophane insulin)
metformin	tablet, 500 m (hydrochloride)

18.6 OVULATION INDUCERS

[a]clomifene (2, 8)	tablet, 50 mg (citrate)

18.7 PROGESTOGENS

norethisterone	tablet, 5 mg
Complementary drug	
medroxyprogesterone acetate (B)	tablet, 5 mg

18.8 THYROID HORMONES AND ANTITHYROID DRUGS

levothyroxine	tablet, 50 µg, 100 µg (sodium salt)
potassium iodide	tablet, 60 mg
[a]propylthiouracil	tablet, 50 mg

Section 19: Immunologicals

19.1 DIAGNOSTIC AGENTS

tuberculin,[3] purified protein derivative (PPD)	injection

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

[3] All tuberculins should comply with the Requirements for Tuberculins (Revised 1985). WHO Technical Report Series, No. 745, 1987, Annex 1.

19.2 SERA AND IMMUNOGLOBULINS [4]

anti-D immunoglobulin (human)	injection, 250 µg in single-dose vial
[a]antitetanus immunoglobulin (human)	injection, 500 IU in vial
antivenom serum	injection
diphtheria antitoxin	injection, 10 000 IU, 20 000 IU in vial
immunoglobulin, human normal (2)	injection (intramuscular)
immunoglobulin, human normal (2, 8)	injection (intravenous)
[a]rabies immunoglobulin	injection, 150 IU/ml

19.3 VACCINES [5]

19.3.1 FOR UNIVERSAL IMMUNIZATION

BCG

diphtheria

pertussis

tetanus

hepatitis B

measles

poliomyelitis

19.3.2 FOR SPECIFIC GROUPS OF INDIVIDUALS

influenza

meningitis

mumps

rabies

rubella

typhoid

yellow fever

Section 20: Muscle Relaxants (peripherally acting) and Cholinesterase Inhibitors

[a]alcuronium chloride (2)	injection, 5 mg/ml in 2-ml ampoule
[a]neostigmine	tablet, 15 mg (bromide)
	injection, 500 µg, 2.5 mg (metilsulfate) in 1-ml ampoule
pyridostigmine bromide (2, 8)	tablet, 60 mg
	injection, 1 mg in 1-ml ampoule
suxamethonium chloride (2)	injection, 50 mg/ml in 2-ml ampoule
	powder for injection
Complementary drug	
vecuronium bromide (C)	powder for injection, 10 mg in vial

Section 21: Ophthalmological Preparations

21.1 ANTI-INFECTIVE AGENTS

[a]gentamicin	solution (eye drops), 0.3% (as sulfate)
[a]idoxuridine	solution (eye drops), 0.1%
	eye ointment, 0.2%
silver nitrate	solution (eye drops), 1%
[a]tetracycline	eye ointment, 1% (hydrochloride)

21.2 ANTI-INFLAMMATORY AGENTS

[a]prednisolone	solution (eye drops), 0.5% (sodium phosphate)

21.3 LOCAL ANAESTHETICS

[a]tetracaine	solution (eye drops), 0.5% (hydrochloride)

21.4 MIOTICS AND ANTIGLAUCOMA DRUGS

acetazolamide	tablet, 250 mg

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*
[4] All plasma fractions should comply with the Requirements for the Collection, Processing and Quality Control of Blood, Blood components and Plasma Derivatives (Revised 1992). WHO Technical Report Series, No. 840, 1994, Annex 2.
[5] All vaccines should comply with current WHO recommendations for biological substances.

[a]pilocarpine	solution (eye drops), 2%, 4% (hydrochloride or nitrate)
[a]timolol	solution (eye drops), 0.25%, 0.5% (as maleate)

21.5 MYDRIATICS

atropine	solution (eye drops), 0.1%, 0.5%, 1% (sulfate)

Complementary drug

epinephrine (A)	solution (eye drops), 2% (as hydrochloride)

Section 22: Oxytocics and Antioxytocics

22.1 OXYTOCICS

[a]ergometrine (1c)	tablet, 200 µg (hydrogen maleate)
	injection, 200 µg (hydrogen maleate) in 1-ml ampoule
oxytocin	injection, 10 IU in 1-ml ampoule

22.2 ANTIOXYTOCICS

[a]salbutamol (2)	tablet, 4 mg (as sulfate)
	injection, 50 µg (as sulfate)/ml in 5-ml ampoule

Section 23: Peritoneal Dialysis Solution

intraperitoneal dialysis solution (of appropriate composition)	parenteral solution

Section 24: Psychotherapeutic Drugs

24.1 DRUGS USED IN PSYCHOTIC DISORDERS

[a]chlorpromazine	tablet, 100 mg (hydrochloride)
	syrup, 25 mg (hydrochloride)/5 ml
	injection, 25 mg (hydrochloride)/ml in 2-ml ampoule
[a]fluphenazine (5)	injection, 25 mg (decanoate or enantate) in 1-ml ampoule
[a]haloperidol	tablet, 2 mg, 5 mg
	injection, 5 mg in 1-ml ampoule

24.2 DRUGS USED IN MOOD DISORDERS

24.2.1 DRUGS USED IN DEPRESSIVE DISORDERS

[a]amitriptyline	tablet, 25 mg (hydrochloride)

24.2.2 DRUGS USED IN BIPOLAR DISORDERS

carbamazepine (10, 11)	scored tablet, 100 mg, 200 mg
lithium carbonate (2, 4)	capsule or tablet, 300 mg
valproic acid (7, 11)	enteric coated tablet, 200 mg, 500 mg (sodium salt)

24.3 DRUGS USED IN GENERALIZED ANXIETY AND SLEEP DISORDERS

[a]diazepam (1b)	scored tablet, 2 mg, 5 mg

24.4 DRUGS USED IN OBSESSIVE COMPULSIVE DISORDERS AND PANIC ATTACKS

clomipramine	capsules, 10 mg, 25 mg (hydrochloride)

Section 25: Drugs Acting on the Respiratory Tract

25.1 ANTIASTHMATIC DRUGS

[a]aminophylline (2)	injection, 25 mg/ml in 10-ml ampoule
[a]beclometasone	inhalation (aerosol), 50 µg, 250 µg, (dipropionate) per dose
[a]epinephrine	injection, 1 mg (as hydrochloride or hydrogen tartrate) in 1-ml ampoule
ipratropium bromide	inhalation (aerosol), 20 µg/dose
[a]salbutamol	tablet, 2 mg, 4 mg (as sulfate)
	inhalation (aerosol), 100 µg (as sulfate) per dose
	syrup, 2 mg (as sulfate)/5 ml
	injection, 50 µg (as sulfate)/ml in 5-ml ampoule
	respirator solution for use in nebulizers, 5 mg (as sulfate)/ml
theophylline (10, 11)	tablet, 100 mg, 200 mg, 300 mg

Complementary drug

[a]cromoglicic acid (B)	inhalation (aerosol), 20 mg (sodium salt) per dose

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

25.2 ANTITUSSIVES

[a]dextromethorphan	oral solution, 3.5 mg (bromide)/5 ml

Section 26: Solutions correcting Water, Electrolyte and Acid–base Disturbances

26.1 ORAL

oral rehydration salts (for glucose–electrolyte solution)	for composition see section 17.7.1
potassium chloride	powder for solution

26.2 PARENTERAL

glucose	injectable solution, 5% isotonic, 10% isotonic, 50% hypertonic
glucose with sodium chloride	injectable solution, 4% glucose, 0.18% sodium chloride (equivalent to Na^+ 30 mmol/l Cl^- 30 mmol/l)
potassium chloride (2)	11.2% solution in 20-ml ampoule, (equivalent to K^+ 1.5 mmol/ml, Cl^- 1.5 mmol/ml)
sodium chloride	injectable solution, 0.9% isotonic (equivalent to Na^+ 154 mmol/l, Cl^- 154 mmol/l)
sodium hydrogen carbonate	injectable solution, 1.4% isotonic (equivalent to Na^+ 167 mmol/l, HCO_3^- 167 mmol/l)
	8.4% solution in 10-ml ampoule (equivalent to Na^+ 1000 mmol/l, HCO_3^- 1000 mmol/l)
[a] compound solution of sodium lactate	injectable solution

26.3 MISCELLANEOUS

water for injection	2-ml, 5-ml, 10-ml ampoules

Section 27: Vitamins and Minerals

ascorbic acid	tablet, 50 mg
[a]ergocalciferol	capsule or tablet, 1.25 mg (50 000 IU)
	oral solution, 250 µg/ml (10 000 IU/ml)
iodine (8)	iodized oil, 1 ml (480 mg iodine), 0.5 ml (240 mg iodine) in ampoule (oral or injectable)
	solution, 0.57 ml, (308 mg iodine) in dispenser bottle
	capsule, 200 mg
[a]nicotinamide	tablet, 50 mg
pyridoxine	tablet, 25 mg (hydrochloride)
[a]retinol	sugar-coated tablet, 10 000 IU (as palmitate) (5.5 mg)
	capsule, 200 000 IU (as palmitate) (110 mg)
	oral oily solution, 100 000 IU/ml in multidose dispenser (as palmitate)
	water-miscible injection, 100 000 IU (as palmitate) (55 mg) in 2-ml ampoule
riboflavin	tablet, 5 mg
[a]sodium fluoride	in any appropriate formulation
thiamine	tablet, 50 mg (hydrochloride)

Complementary drug

calcium gluconate (C) (2, 8)	injection,100 mg/ml in 10-ml ampoule

[a] Example of a therapeutic group. *Various drugs can serve as alternatives.*

The following changes in the WHO Model List were approved by the WHO Expert Committee on the Use of Essential Drugs which met in December 1999. The report of the meeting will be published in the WHO Technical Report Series.

Deletions: , albumin (human); antiscorpion sera.

Additions: acetylcysteine; rifampicin + isoniazid + pyrazinamide + ethambutol; nevirapine; artesunate; chlorambucil; daunorubicin; ethanol; iohexol.

Replacements: fluconazole to replace ketoconazole; prazosin to replace doxazosin.

DR-44.

THE HINDU
Online edition of India's National Newspaper
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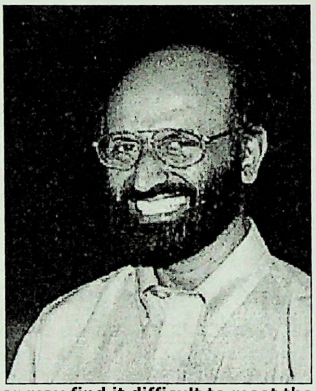
Kerala

Kerala

Kerala model of healthcare in peril, says Ekbal

Special Correspondent

'Prescribe only necessary essential drugs'



`The poor may find it difficult to meet the medical expenses.'

THIRUVANANTHAPURAM: The former Kerala University vice-chancellor, B. Ekbal, has said that the "good health at low cost" Kerala model of healthcare based on social justice and equity is in danger of being dismantled following the switchover from process patency to product patency regime.

Speaking on `Indian Patent Laws Changes and the Medical Profession' at the 13th State annual conference of the Qualified Private Medical Practitioners' Association (QPMPA) here on Saturday, Dr. Ekbal said the poor and the middle class were going to find it extremely difficult to meet the

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healthcare expenses in the very near future on account of the changes in the patency regime. Under the product patency regime in existence in the country since 1970, Indian companies could make cheap drugs through different processes for the drugs patented in other countries. However, hereafter, this would not be possible and all new drugs patented would be priced very high. Since majority of the people in Kerala utilised modern medicines, the high drug prices would hit Keralites more than the people in other States, he said.

Role of doctors

Dr. Ekbal, who is also the national convener of the People's Health Movement, said the medical profession has a major role to play in the changed context. The medical practitioners can, for instance, help the people a lot by prescribing only the necessary essential drugs and avoiding non-essential drugs. For this, the doctors should first become drug price conscious. They should also select good quality cheap drugs that are available in the market instead of costly drugs marketed by big multinational companies. At present, the same class of drugs are marketed by different companies at different prices. For example, in the case of Atenolol, a drug commonly used for management of heart diseases, the lowest priced good quality drug marketed by an Indian company, is priced at 40 paise a tablet whereas the price of the widely prescribed brand of a multinational company is Rs. 2.30 a tablet.

Similarly, in the case of Cetrizine, a drug for the management of allergic conditions, the prices at the low end and the high end were 30 paise and Rs. 3.15 a tablet. Besides being price conscious, doctors should avoid prescribing drugs of dubious therapeutic benefits, irrational combination drugs and drugs banned in other countries, he said. Drug companies are spending about 40 per cent of their sales turnover for drug promotion, mostly targeting doctors.

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New York Times EDITORIAL
April 21, 2005

Time to Ban Ephedra

he recent disappointing federal court decision that the Food and Drug Administration lacks the authority to issue a blanket ban on ephedra, a dangerous herbal supplement, is a clarion call to the Bush administration and Congress to change the 1994 law on dietary supplements. The law should be amended to give health regulators clear and unambiguous power to take harmful products off the market, and to require supplement makers to report any adverse reactions.

Ephedra, an adrenalinelike stimulant promoted as a weight-loss aid and energy booster, excites the central nervous system and speeds metabolism, increasing the rate at which a person burns calories. But it can also drive up blood pressure and stress the circulatory system. It has been linked to heart attacks and strokes and dozens of deaths.

A year ago, the F.D.A. imposed a ban on all products containing ephedra on the grounds that it poses "an unreasonable risk of illness or injury." Overturning that decision, Judge Tena Campbell of the Federal District Court in Utah said the agency had erred in using a cost-benefit analysis, weighing the supplement's substantial risks against its dubious benefits. The judge also said that the 1994 law required dose-specific findings to justify a ban. The judge concluded that the agency's assertion that it was impossible to establish a level of safe use failed to meet the burden of proving that the supplement poses an unreasonable risk when taken in the 10-milligram doses contained in the product at issue.

The ruling leaves the ephedra ban intact for products containing doses above 10 milligrams. But by dismissing the F.D.A.'s voluminous evidence of potential danger, the court set an unrealistically high threshold for agency action, and that could undermine the ban even for higher-dose ephedra products.

Under current law, supplement manufacturers may sell products without first having to establish their safety or efficacy. But after the F.D.A. found a significant hazard, it was only reasonable for the agency to weigh ephedra's lack of any real health benefits in deciding on a regulatory response.

The agency should appeal, but the White House and Congress should not let the F.D.A. do all the heavy lifting. The decision is their cue to move promptly to enact overdue legal revisions that will significantly strengthen the agency's power to monitor and police the supplement industry.

Essential Medicines for the Elderly

Delhi Society for
Promotion of Rational
Use of Drugs

and

HelpAge India

2003

Essential Medicines for the Elderly

Delhi Society for Promotion
of Rational Use of Drugs
and
HelpAge India

Foreword

It has not yet been clearly understood that the drugs to be administered to the elderly need careful deliberation before use. There are several reasons for this. The metabolic processes which inactivate a drug become less in the elderly. This means that a reduced quantity of the medicine should be adequate and there may be no need for the higher dose, which needs to be given to a person at the age of 35 or 40 years. Indeed the dose given to the elderly may, for many drugs, induce serious side effects because of the high level of these medicines in the blood.

Elderly people usually need more drugs as they get old. The danger of interaction between drugs increases as the number of drugs being taken are enhanced. Physicians, when prescribing a large number of medicines to the elderly, need to consider carefully, whether any of the medicines being taken at the same time could induce interactions.

It is no wonder therefore that a WHO Technical Report has stated that half of the total drug consumption is by people aged 60 years and over in those countries where the proportion of this age group is high. India is a country where there will be a very large proportion of aged people in the next twenty years. The number of medicines which would be used would be very high. Unless proper doses are used and a programme of rational use of drugs for the elderly set up there would be misuse of the medicines. A WHO group has pointed out

that one fifth of patients entering the geriatric department of a general hospital have symptoms, which can be attributed to the effect of prescribed drugs.

The purpose of this publication is to list those drugs which are suitable for the elderly. An expert group from the Delhi Society for Promotion of Rational Use of Drugs and HelpAge India have prepared this list. This has been further reviewed by other experts. It is hoped that clinicians and hospitals looking after elderly persons would use this information which would lead to optimal use of medicines in the elderly. The formulation and strength of the medicines to be used has also been provided. If used properly medicines could be a boon to the elderly patient. Used inappropriately and irrationally medicines could be hazardous for the elderly.

This list is only one component of a collaborative endeavour of the Delhi Society for Promotion of Rational Use of Drugs and HelpAge India. Such a complementary effort would be of great benefit to the elderly.

New Delhi
17th March, 2003

Professor Ranjit Roy Chaudhury,
President, Delhi Society for
Promotion of Rational Use of Drugs.

PREFACE

In India, today, there are more than 60 million elderly people who are unable to reach basic medical aid. HelpAge India's Mobile Medicare Unit (MMU) Programme enables older people to assume an active role in maintaining and improving their health. These MMUs visit the assigned area the same day week after week to give medical care to older persons. About 50 MMUs are at present serving thousands of older persons residing in slums, resettlement colonies and adjoining rural areas providing medicines, counselling and health care free of cost.

As the joint initiative of the Delhi Society for Promotion of Rational Use of Drugs under the INDIA- WHO Essential Drugs Programme and Helpage India, one of the important steps identified for this purpose was to prepare an Essential Medicines List for the elderly. Eight experts met and prepared this list in July 2002. The Essential Drugs List implies that drugs included in it are adequate to meet the common contemporary health needs of the elderly population, and health administrators should ensure abundant availability of such drugs. The exclusion of any medicines in the List, which is currently available and recommended by physicians, does not imply that they are less effective or unsuitable for the patients. Their exclusion may have been influenced by one or more of the following factors: cost-benefit ratio indicated in the treatment of diseases not considered significant in the context, insufficient experience with the drug in India.

The List is meant to be used as a guideline to the concept of rational therapeutics. The medicines selected are considered adequate to treat diseases commonly encountered in the outpatient department at the mobile health units by HelpAge India. The List is intended to be a dynamic document, subject to change, with addition and/or deletion, as medical knowledge advances and new drugs become available at remunerative prices. The list uses generic names for scientific clarity.

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THE ESSENTIAL MEDICINES CONCEPT

Effective health care requires a judicious balance of preventive and curative services. A crucial and often deficient element in curative services is an adequate supply of appropriate medicines. The health objectives of the Drug Policy is:

- To ensure the availability and accessibility of essential drugs to all citizens
- To ensure good prescribing and dispensing practice
- To promote the rational use of drugs by prescribers, dispensers and patients through provision of the necessary training, education and information

Achieving these objectives requires a comprehensive strategy that not only includes improved supply and distribution, but also appropriate and extensive human resource development. The criteria for the selection of essential medicines include the following points:

- Any drug included must meet the needs of the majority of the population
- Sufficient proven scientific data regarding effectiveness must be available
- Any drug included in the EML
- should have substantial safety and benefit/risk ratio
- All products must be of an acceptable quality, and must be tested on a continuous basis
- The aim, as a rule, is to include only products containing single pharmacologically active ingredients
- Combination products, as an exception, will be included where patient compliance becomes an important factor, or two pharmacologically active ingredients are synergistically active in a product
- Products are listed according to their generic names only
- Where drugs are clinically equally effective, the drugs are compared on the following factors:
    - The best cost advantage
    - The best researched
    - The best pharmacokinetic properties
    - The best patient compliance

A request for a new product to be included in the EDL must be supported by scientific evidence-based data and appropriate references on its advantages and benefits over an existing product.

Essential drugs are those that satisfy the priority needs of the population. They should, therefore, be available at all times, in adequate amounts, and in the appropriate dosage forms.

ESSENTIAL MEDICINES LIST FOR THE ELDERLY

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16	**Diuretics** Frusemide, Triameterene (+ Benzthiazide), Spiranolactone + Frusemide	4
17	**Hormone and anti-hormones** Carbimazole, L-Thyroxine, Glibenclamide, Gliclazide, Metformin, Prednisolone	4
18	**Laxative, Purgatives & Anti-diarrheals** Bisacodyl, Isapgol husk, Paraffin + milk of magnesia, Sodium picosulphate, Loperamide	4

Essential Medicines List for the Elderly

Name & Class of the drug	Formulation & Strength
1. Analgesics & Antipyretics	
Ibuprofen	Tab 200mg, 400mg, 600mg
Dextropropoxyphen[b]	Cap 65mg
Paracetamol[a]	Tab 500mg, 1000mg
Dicyclomine[d]	Tab 20mg
Roficoxib[f]	Tab 12.5mg, 25 mg
2. Antacids	
Omeprazole[f]	Tab 20mg
Ranitidine[f]	Tab 150mg
Combinations of Aluminium hydroxide/silicate/carbonate +Magnesium hydroxide/carbonate/trisilcate +Methyl Polysiloxane (Dimethicone)	Liquid, Tab
3. Antiameobic	
Tinidazole	Tab 500mg, 1000mg
4. Antibiotics	
Amoxycillin	Cap 250mg, 500mg
Ciprofloxacin[d]	Tab 250mg, 500mg
Co-trimoxazole[f]	Tab (SMX 400mg+TMP80mg)
	Tab (SMX 800mg+TMP160mg)
Doxycycline	Cap 100mg
Norfloxacin[d]	Tab 400mg
Roxithromycin[e]	Tab 150mg
Ofloxacin[d]	Tab 200mg

a Contraindicated in renal dysfunction
b Contraindicated in hepatic dysfunction
c Contraindicated in both renal and hepatic dysfunction
d Administer with caution in renal dysfunction
e Adminster with caution in hepatic dysfunction
f Administer with caution in renal and /or hepatic dysfunction

5. Antiemetics

Domperidone[d]	Tab 10mg
Metoclopropamide	Tab 10mg
Prochlorperazine[b]	Tab 5mg, 25mg

6. Antifungal

Fluconazole[b]	Cap 50mg, 100mg
Griseofulvin[b]	Tab 125mg, 250mg

7. Antihelmintic

Albendozole[f]	Tab 400mg
Pyrantel pamoate[b]	Tab 200mg, 250mg

8. Antihistamines

Cetrizine[d]	Tab 10mg
Pheniramine maleate	Tab 25mg, 50mg

9. Antihypertensives

Amlodipine[e]	Tab 2.5mg, 5mg, 10mg
Atenolol[d]	Tab 25mg, 50mg, 100mg
Enalapril[d]	Tab 2.5mg, 5mg, 10mg
Lisinopril[d]	Tab 2.5mg, 5mg, 10mg
Losartan[e]	Tab 25mg, 50mg
Metoprolol	Tab 50mg, 100mg
Nifedipine	Tab 10mg, 20mg
Prazosin	Tab 1, 2mg, 5mg

10. Antimalarials

Chloroquine[b]	Tab 250mg
Pyrimethamine+Sulphadoxine	Tab 25mg +500mg
Quinine[f]	Tab 300mg, 600mg

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11. Anti-tubercular drugs

Ethambutol (E)	Tab 400mg, 600mg, 800mg
Isonaizid (H)	Tab 100mg, 300mg
Pyrazinamide (Z) [b]	Tab 500mg, 750mg
Rifampicin (R)	Cap 300mg, 450mg, 600mg
Fixed dose preparations	
Rifampicin 450mg + Isoniazid 300mg	Cap/Tab
Rifampicin 600mg + Isoniazid 300mg	Cap/Tab
R450 + H300 + E800 + Z1500mg	Kit
R450 + H300 + E800	Kit

12. Antitussives, Cough syrups, Decongestants

Cough syrup with very small quantity of Codeine and no pseudoephedrine)

13. Bronchodilators

Budesonide	MDI 100mcg, 200mcg
Ipratropium	MDI 20mcg
Salbutamol	MDI 200mcg
Salbutamol	Tab 2mg, 4mg
Theophyline-SR[e]	Tab 300mg

14. Cardiovascular drugs

Acenocoumarol[f]	Tab 1mg, 2mg, 4mg
Aspirin[f]	Tab 100mg
Digoxin	Tab 0.25mg
Diltiazem[f]	Tab 30mg, 90mg (SR), 120mg (SR)
Isosorbide dinitrate	Tab 5mg
Isosorbide mononitrate	Tab 10mg, 20mg, 60mg (SR)

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15. Central Nervous System drugs + drugs for psychiatric illness

Carbamazepine[f]	Tab 200mg
Phenytoin[f]	Tab/Cap100mg, 300mg
Sodium valproate[b]	Tab 200mg
Alprazolam	Tab 0.25mg, 0.5mg
Diazepam[f]	Tab 5mg
Fluoxetine[a,f]	Cap 20mg
Imipramine[f]	Tab 25mg, 75mg
Sertraline[f]	Tab, Cap 50mg, 100mg
Cinnarizine	Tab 25, 75mg

16. Diuretics

Frusemide	Tab 40mg
Triamterene (+ Benzthiazide 25mg) [f]	Tab 50mg
Spiranolactone + Frusemide[a,e]	Tab 50mg

17. Hormone and anti-hormones

Carbimazole	Tab 5mg, 10mg
L-Thyroxine	Tab 0.025mg, 0.05mg, 0.1mg
Glibenclamide	Tab 2.5mg, 5mg
Gliclazide[c]	Tab 80mg, 40mg
Metformin	Tab 500mg, 850mg
Prednisolone	Tab 5mg, 10mg, 20mg

18. Laxative, Purgatives & Anti-diarrheals

Bisacodyl	Tab 5mg
Isapgol husk	Powder
Liquid paraffin + milk of magnesia	Liquid
Sodium picosulphate	Tab 10mg
Loperamide	Tab/Cap 2 mg

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19. Nutritional supplements and vitamins

Calcium (carbonate) + Vitamin D_2	Tab 500mg
Folic Acid	Tab 5mg
Iron preparations	
Ferrous sulphate	Tab/Cap 30mg/100mg
Ferros fumarate	Tab/Cap 33.3mg/100mg
(Any one of the above where elemental Iron is = 60mg, equivalent to 200mg)	
Vitamin B Complex	Tab, Cap
Vitamin C	Tab 100mg, 500mg
Vitamin E	Cap 200mg, 400mg
ORS	Sachets (WHO composition)

20. Topical Preparations

20.1 Analgesic

Diclofenac sodium	Oint. 1.16%

20.2 Antibiotic preparations

Povidone Iodine	Oint, Sol 5%
Polymixin B	Oint.
Soframycin	Oint

20.3 Antifungal preparations

Clotrimazole	1% cream
Miconazole	2% cream

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20.4 Eye drops & Ointments

Pillocarpine	1%, 2%, 4%
Timolol	0.25%, 0.5%
Sulphacetamide	10%, 20%
Gentamicin	0.3%
Ciprofloxacin	Eye drop and Oint
Polymyxin B	Eye drop and Oint
Methyl Cellulose	Eye drop and Oint

20.5 ENT preparations

Oxymetazoline nasal drops	0.1%
Ciprofloxacin ear drops	3mg/ml
Gentamicin ear drops	0.3%
Wax softener	Ear drops

20.6 For Scabies

Benzyl Benzoate	Emulsion 25%
Gamma benzene hexachloride	Lotion 1%

20.7 Miscellaneous items

Cotton packet
Diastix
Gauge and bandage
Glycerine
Cetrimide

SOME OTHER PUBLICATIONS

- Delhi Drug Policy.
- Delhi State Essential Drug Formulary.
- List of Essential Drugs for Hospitals and Dispensaries in Delhi and other States.
- Promotion of Rational Use of Drugs in the Indian Scenario.
- The Medicine Scenario in India: Perception and Perspectives.
- Research on Rational Drug Use in India : A Glimpse.
- Standard Treatment Guidelines for Karnataka, Mumbai & Himachal Pradesh.
- HIV/AIDS and Traditional Medicines : A Journey to Dialogue.
- Standard Treatment Guidelines.
- Use Your Medicines Correctly - A User's Guide.

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