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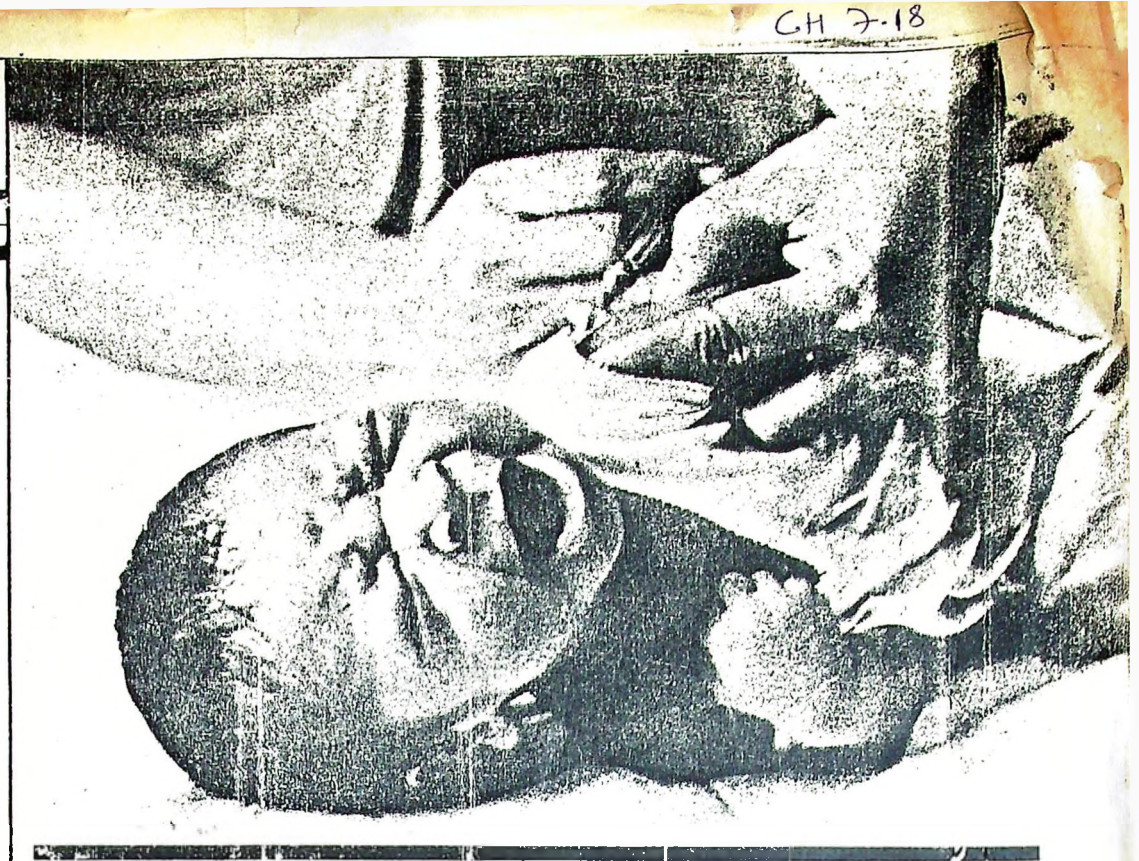


SURVIVAL

VANAJA RAMPRASAD

IMMUNISATION MISSION
BOON OR CURSE?

The recent announcement by the Government of India to intervene in five different sensitive areas of people's lives through technology missions, includes the programme of immunisation. This echoes the scale of enthusiasm pronounced at the international level as a social movement. The *State of the World's Children 1986*, a UNICEF annual feature, begins its rhetoric by claiming—'Immunisation leads the way'. It continues to pronounce that several nations have doubled and trebled their levels of immunisation against the vaccine preventable diseases.

However, somewhere along the line of isolation, in which the programme of immunisation is envisaged, the technology mission is likely to miss the wood for the trees. It appears that the task has been given the misplaced honour of playing the principal role in child survival and health care without taking into account the fundamental biological and human aspects of it.

What does the immunisation package consist of? Four vaccines—the DPT (diphtheria pertussis tetanus), BCG (bacillus calmette guerin), polio and measles—against six major diseases—

RISKS OF IMMUNISATION

While immunisation has been touted as vital for disease control, the cases of death and debility resulting from vaccines have gone unnoticed. An evaluation of the immunisation programme in a rural region of Andhra Pradesh

Name	Age	Sex	Caste
Ramanjineyulu S/o Obaiah & Lakshmidevi Muttala, Kudair Block	1 year	Male	Kuruba

Dates of immunisation:

25-11-85	First dose of DPT and polio was given at Muttala.
25-12-85	Second dose of DPT and polio was given at Atmakur.
26-12-85	The child developed mild fever and a Crocin tablet was given.
27-12-85	The parents took the child to a primary health centre (PHC)to get treatment for fever. He was given an injection on 27th and 28th for fever.
30-12-85	The child developed weakness in his left leg.
Outcome:	It was diagnosed as polio by a doctor in Ananthapur.

Name	Age	Sex	Caste
Anusuyamma D/o Malobanna & Suvarnamma Y Kothapalli, Kudair Block	3½ years	Female	Kuruba

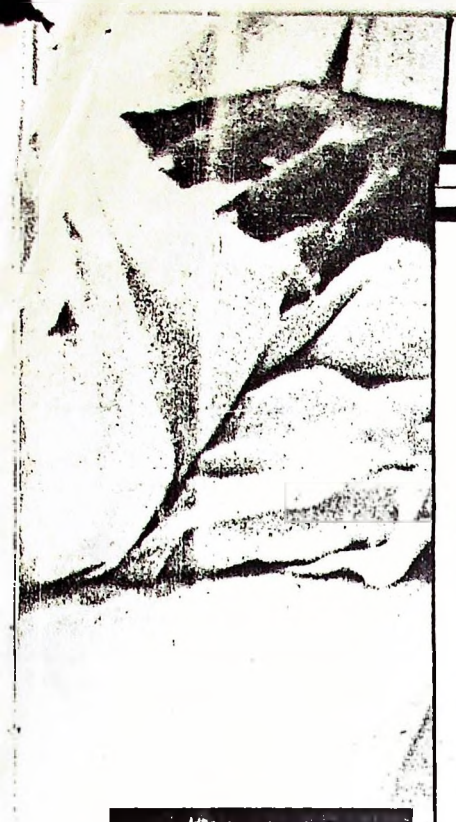
Dates of immunisation:

22-12-85	First dose of DPT and polio was given.
12-1-86	The child developed breathlessness, and was referred to PHC.
Outcome: (12-1-86)	The child died.

Name	Age	Sex	Caste
Ramadevi D/o Sreeramuly & Obulamma, Pampanur, Kudair Block	1½ year	Female	Harijan

Dates of immunisation:

23-11-85	First dose of DPT and polio was given.
26-11-85	The child developed fever and was given wet soaks and a Disprin tablet. Fever was not controlled for one week.
5-12-85	The child developed weakness in her left leg and the parents took herto a hospital in Ananthapur. Paracetamol syrup and Tablet Predinsolin were given. Advised to attend OPD at Atmakur PHC.
7-12-85	The child was taken to a child specialist.
Outcome:	It was diagnosed as polio. The following treatment was given: (1) Laprotil drops—5 drops twice daily (2) Triredigol drops—8 drops twice daily (Both the above are vitamins.) Advised to admit the child in hospital and put her legs in a functional position.



PALASHRANJAN SHARMACK

Will the government's immunisation mission really ensure greater protection against disease?

diphtheria, pertussis (whooping cough), tetanus, tuberculosis, poliomyelitis and measles respectively—that affect a large per cent of Third World children have been advocated to form the package. Each of these vaccines has to be administered under careful conditions to realise maximum efficiency.

The most important of the conditions is storage of the vaccine and the cold chain that is maintained during the time of administration of the vaccine. (Vaccine is an immuno-biological substance designed to produce specific protection against a given disease.)

The immune response is not entirely free from the risk of adverse reactions, especially those resulting from septic conditions due to faulty sterilisation of the equipment and microbial contamination. Use of improperly sterilised syringes and needles carry the hazard of hepatitis virus and staphylo and streptococcal infections. Medical researchers like Dr Sathyamala have documented facts to prove that the increasing incidence of polio in areas where large amounts of polio-vaccine are administered annually is due to the intramuscular injections which predispose the children to paralysis, when subsequently they are exposed to poliomyelitis virus.

The nutritional status of the host before immunisation is also an important factor. Immunocompetence is compromised by severe malnutrition. The body's ability to cope with infection is reduced with poor nutritional status. In isolation, immunisation does not take into account the importance of these factors. Environmental measures against disease transmission and the reduction of exposure customarily involve the provision of clean drinking water, institution of safe disposal of excreta and improved personal and community hygiene besides ensuring adequate nutrition. The huge resources set aside for the operationalisation of an immunisation programme are not without their opportunity costs.

Invisible Risks

The poor information base in the country rarely documents the negative impacts of immunisation programmes on high risk children of poor and deprived families in rural areas. Vaccines have at times left children debilitated. In some cases, they have even resulted in death. While the technology mission advertises immunisation as a new miracle for disease control, [illegible] have been crippled or killed by immunisation go unpublicised. An evaluation of the universal immunisation programme in a rural region of Andhra Pradesh has recorded cases of debility and death induced by vaccinations (see charts):

While one is bombarded with the rhetoric of guaranteed success of the mission and the international agencies in Delhi, the reality of risk lies in the invisible distant villages where children are exposed to the hazards of being crippled or killed by the technocratic approach to health care. Technocratic interventions have anyway never been central to bringing health care to people.

It may come as a surprise to many that in spite of the fact that most medical technologies were not available in India in the early years of this century, death rates began to decline from as early as 1920.

The facilities and services of medical technology were extended to the general population only after India gained independence in 1947. If technology had made an impact on the health status of the population there should have been a sharper decline in the death rate in the period after independence. On the contrary, the figures reveal that the decline in the death rate in the 30 years since independence has been much slower in the 30 years preceding independence.

It is evident from the poignant reports of death and debilitation that the newly propagated strategy for survival using such medical technology without the corresponding efforts for socio-economic change and equitable distribution of resources, has a close resemblance to the much criticised family planning model that has been advocated to control the population of the country.

Invisible benefits

What has not been openly acknowledged by the international interest to thrust immunisation on the Third World is that it is a lucrative 25 million dollar-a-year business for firms in the industrialised countries. According to WHO's own estimates, about 85 per cent of 'cold chain' equipment and products used to keep vaccines safe are produced in the industrialised world, mainly in Denmark, Luxumburg, the US, Sweden and Japan.

Vaccines lose potency if exposed to heat and light and must be stored below 8°C while tetanus and DPT vaccines must not be allowed to freeze. The 3 M company of the US is the sole supplier of chemically treated cards that warn whether the vaccine is usable or not. Each year it ships 1,50,000 cards at a cost of three dollars each. Similarly, one can name several firms from Denmark, France, Sweden and Britain that will stand to benefit. In the next five years, India expects to spend Rs 2300 million for immunising 85 per cent of the children and 100 per cent of the mothers. According to the ministry of health, the estimated expenditure on syringes and needles alone is Rs 325 million and Rs 820 million on vaccines.

The technocratic approach of the technology mission will ensure that the invisible costs to high-risk children or, on the other hand, the invisible benefits to international economic interests will never reach the public in an open and honest way. Hidden beneath the technology mission's preoccupation with immunisation as an exclusive panacea for child survival lie the sad stories of many children who are victims of technocratic insensitiveness. W

This is one of a series of articles concerning Survival. *Any queries regarding these articles and the issues dealt with herein may be addressed to Lokayan, 13 Alipur Road, Delhi 110 054*

Name	Age	Sex	Caste
Naganuju S/o Narasimhulu & Venkatalakshmanna Madigubba, Kudair Block	1 Year	Male	Boya

Dates of immunisation:

25-11-85	First dose of DPT and polio was given
25-12-85	Second dose of DPT and polio was given.
26-12-85	The child got high fever, and was given wet soaks and a Disprin tablet; fever was not controlled.
27-12-85	The child could not move both his legs.
28-12-85	The child was taken to a hospital.
Outcome:	It was diagnosed as polio in both legs and left hand.

Name	Age	Sex	Caste
S Anthamma D/o Verriswamy & Obulamma Sheikshanapalli, Urvakonda Block	14 months	Female	Boya

Dates of immunisation:

21-11-85	First dose of DPT and polio was given. The child had mild diarrhoea.
22-11-85	Onset of fever, diarrhoea, vomiting, symptoms of malnourishment
Treatment:	Paracetamol, an anti-diarrhoea tablet and oral rehydration therapy were given.

IMMUNIZATION

12.1 IMMUNITY

When antigens are introduced into the body by infection with a disease or through immunization, the body responds by manufacturing antibodies to protect itself against them. An individual becomes immune or developes immunity when his body has a sufficiently high level of antibodies against a specific disease or infection. Such an individual has developed a kind of resistance to the disease.

There are two types of immunity:

1. Natural immunity: This is the type that a person has from birth and it is related to race, species and to individual inheritance from parents, e.g., man is immune to some diseases that affect animals.

2. Acquired immunity: This can be developed by the individual either through getting the diseases or through immunization against the disease. It may be acquired actively where the body is stimulated to produce its own antibodies, or passively where the body is temporarily protected against disease by the administration of already prepared antibodies.

Many infants and children living in the villages still die needlessly from a number of communicable diseases such as tuberculosis, diphtheria, whooping cough and tetanus, which can be prevented by immunization.

This situation persists because of the following facts:

1. Parents and other adults often do not know that children can be protected from many communicable diseases by giving them the necessary immunization.

2. The services for immunization may not be available in the villages at a time and place that is convenient to the people.

3. Individuals may have religious or other beliefs that interfere with their accepting immunization.

4. Pregnant women do not get tetanus toxoid immunization and as a result the newborn child is exposed to the risk of tetanus.

The immunizations most commonly used in India are those against the following diseases:

i. Smallpox
ii. Tuberculosis (BCG)
iii. Diphtheria
iv. Pertussis (whooping cough) } (DPT)
v. Tetanus
vi. Poliomyelitis
vii. Measles
viii. Cholera
ix. Typhoid (TAB)

Smallpox, BCG and DPT vaccines are administered routinely to infants and young children. Tetanus toxoid is administered to pregnant women as part of prenatal health care. However, protection against poliomyelitis, cholera and typhoid is usually limited to communities that have a high or frequent occurrence of these diseases, or where there are outbreaks of such diseases.

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The protection that is possible through immunization does not last for a lifetime. The lenght of protection from various diseases depends on the particular immunization, e.g., for cholera it is six months and for smallpox three years. This is the reason why the same immunizations have to be repeated regularly for the same individual over a period of time. The immunizations that are administered after the initial dose or doses at regular time intervals in order to maintain a high level of protection are called booster doses.

12.2 RESPONSIBILITIES OF HEALTH WORKER (MALE) RELATED TO IMMUNIZATION

In the intensive area

i. To administer DPT vaccine, BCG vaccine, and wherever available, oral poliomyelitis vaccine to children one to five years.

ii. To give primary vaccination against smallpox to children above one year and to adults.

iii. To revaccination all children and adults against smallpox every three years or earlier in the event of an outbreak of smallpox.

iv. To assist the Health Assistant (Male) in conducting immunization of school children against smallpox, diphtheria, tetanus, tuberculosis, and other diseases.

v. To give cholera, TAB or poliomyelitis vaccine in the case of an outbreak of cholera, typhoid or poliomyelitis.

vi. To educate the community about the necessity for immunization

vii. To plan your activities related to immunization with the Health Worker (Female).

viii. To maintain the required records and submit reports.

In the twilight area

In addition to the eight activities listed above, your additional tasks in the twilight area are as follows:

ix. To administer DPT vaccine, BCG vaccine, and wherever available, oral poliomyelitis vaccine to children aged zero to one year.

x. To give primary vaccination against smallpox to all children aged zero to one year.

xi. To administer tetanus toxoid to pregnant women.

12.3 IMMUNIZATION SCHEDULES

In order to make sure that the susceptibel groups within the community are well protected against preventable communicable diseases, immunization schedules have been developed. You will note that some immunizations are to be given to newborn infants as well as to infants during the first year of life and subsequently booster doses are to be given or revaccination must be carried out.

Schedule of immunizations for children.

Age	Immunization
At birth or as soon as possible after birth	Smallpox vaccination BCG Vaccination.

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4 to 9 months	DPT (Triple Vaccine): 2 doses at intervals of 8 to 12 weeks Poliomyelitis (trivalent oral vaccine): 3 doses at intervals of 4 to 6 weeks
1 year	Smallpox revaccination
5 - 6 years (school entry) or soon thereafter	Smallpox revaccination DT booster, 1 dose TAB vaccine 2 doses at intervals of one month (Repeat every year)
Every 3 to 5 years	Smallpox revaccination
During outbreaks, e.g., cholera, typhoid or poliomyelitis	Cholera vaccine: 2 doses at 10-day intervals T/B: 2 doses at 10-day intervals Poliomyelitis (Trivalent oral vaccine) : as above
Following injury	Tetanus toxoid booster

Schedule for tetanus immunization of pregnant women

Duration of pregnancy	Tetanus toxoid
20-26 weeks	Ist dose*
30-36 weeks	2nd dose

*There should be on interval of 8-12 weeks between the first and second dose. The second dose should be given at least 2 to 4 weeks before the expected date of delivery.

12.4 CONTRAINDICATIONS TO IMMUNIZATION

Immunizations should not be administered to individuals who are sick, because illness interferes with the production of antibodies by the body. However, during epidemics, this general rule may be relaxed in order to protect as many as possible who are exposed to the disease.

Generally, the following symptoms in an individual are considered as contra-indications for administering immunizations:

i. Feverishness, cough, running nose, lethargy.
ii. Skin conditions, especially rashes.
iii. Vomiting and diarrhoea if an oral vaccine is to be administered.

REMEMBER THAT IMMUNIZATIONS SHOULD NORMALLY BE ADMINISTERED ONLY TO WELL INDIVIDUALS AND SHOULD BE POSTPONED IF THEY ARE ILL.

Malnutrition is not a contraindication for administering immunizations to children. Such children have a low level of resistance to infections and need the protection that can be given by immunizations. Their parents will have to be informed that additional protein foods will have to be given for several days following immunization

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to help the body develop immunity. Such children will also need to be given additional carbohydrates so that the body can utilize the proteins properly.

12.5. METHODS OF ADMINISTERING IMMUNIZATION

To maximize their effectiveness, immunizations are administered by various routes. The routes that you will be using for giving immunizations are as follows:

i. By mouth, e.g., poliomyelitis vaccine.
ii. On the skin using multiple puncture, e.g., smallpox vaccination
iii. Into the upper layer of the skin (intradermal), e.g., BCG vaccination.
iv. Into the muscle (intramuscular) e.g., DPT vaccination.

BEFORE GIVING ANY VACCINE, YOU MUST MAKE SURE THAT YOU KNOW THE PROPER ROUTE FOR ADMINISTERING IT.

12.6 CARE AND STORAGE OF VACCINES

The vaccines which you will use for immunization contain the following:

1. Live organisms that have been weakened or diluted so that they are no longer capable of producing the disease, but are still capable of producing immunity.
2. Dead organisms which can also stimulate the production of protective antibodies.
3. Toxoids which are toxins produced by organisms, but which have been treated so as to destry their toxicity without destroying their ability to stimulate the body to produce its own immunity.

ALL LIVE VACCINES MUST BE:
i. STORED AT A TEMPERATURE WITHIN THE RANGE PRESCRIBED BY THE MANUFACTURER.
II. PROTECTED FROM SUNLIGHT.
iii. PREVENTED FROM CONTACT WITH ANTISEPTIC SOLUTIONS SUCH AS SPIRIT OR SAVLON.

Vaccine	Form	Type	Store/refrigerate
DPT, DT and Tetanus toxoid	Liquid	Toxoid	2° to 10°C
BCG	Freeze-dried	live organisms	2° to 10°C
Smallpox	Freeze-dried	Live organisms	4° to 10°C
Cholera	Liquid	Dead organisms	4° to 6 °C
Typhoid and paratyphoid A and B	Liquid	Dead organisms	2° to 8 °C
Poliomyelitis	Liquid	Live organisms	Minus 20°C (keep frozen)

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Since there is a lack of refrigeration facilities at the sub-centres, you will have to remember to order only what is needed each week from the Primary Health Centre. Use care in transporting it from the Primary Health Centre to the subcentre and improvise ways of keeping the vaccines as cool as possible. Vaccines should be carried in a thermos flask packed with ice or cold water. They should be stored in the coolest place in the subcentre, preferably in an earthenware container which is covered with a wet cloth.

ALL VACCINES MUST BE STORED AT TEMPERATURES RECOMMENDED BY THE MANUFACTURER OTHERWISE THEY WILL DETERIORATE AND BECOME USELESS.

DISCARD ALL UNUSED LIVE VACCINE AT THE END OF THE WORKING DAY BECAUSE ITS POTENCY DETERIORATES RAPIDLY WHEN NOT REFRIGERATED.

12.7 PREPARATION OF VACCINES FOR ADMINISTRATION

The vaccines that you will be using to administer immunizations to children and pregnant women are avilable either in liquid or in powder form. It is important that both forms are kept sterile during preparation, reconstitution and administration. If this is not done, the results may not be valid and there may be infection.

The vaccines in liquid form generally come in multiple-dose vials with a sealed rubber cap at the top, in sealed ampoules, or in small bottles with screwtops which have attached calibrated or non-calibrated medicine droppers. The vaccines which come in powder form are packed in sealed glass ampoules. The diluents or liquid which must be used for mixing them into solution are usually packed in either multiple-dose vials or in sealed glass ampoules.

Points to remember

1. Clean the rubber cap of the vial with spirit before inserting the needle.
2. Inject air into multiple-dose vials before withdrawing a dose or doses in order to equalize pressure and facilitate withdrawal of the solution.
3. Protect fingers when filing and opening glass ampoules so that cuts are avoided.
4. Avoid making bubbles when reconstituting vaccines because this can interfere with accurate measurement.

12.8 SITES USED FOR ADMINISTERING VACCINES

Because of the danger of injury to nerves and the need to avoid injecting vaccines into large blood vessels, certain sites on the body are selected for administering injections. The commonly used sites are as follows:

1. For intramuscular injections (DPT, DT, Tetanus Toxoid, TAB Cholera):
   i. The upper arm two to three finger widths below the point of the shoulder on the outer aspect (see fig. 12.1). Be careful to avoid the radial nerve which runs along the inner aspect of the arm.

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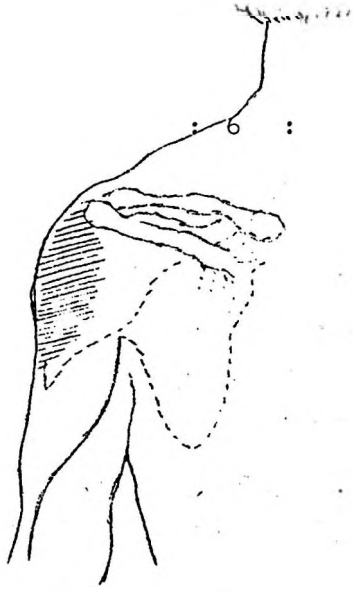


Fig. 12.1 Site for intramuscular injection - upper arm

ii. The buttocks can be divided with imaginary lines into four parts and the injection given in the upper part as shown in figure 12.2. Be careful to avoid the sciatic nerve in the hip. Usually this site is not used for infants who are not yet walking since it is not sufficiently well developed.

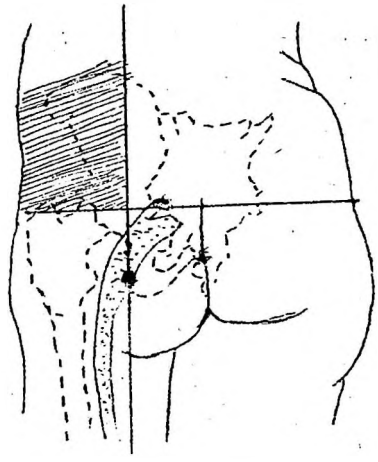


Fig. 12.2: Site for intramuscular injection - buttock

iii. The front of the thigh (see fig.12.3). This site does not have large nerves and is easily accessible. It is commonly used in children. Discomfort of the injection can be minimized by slight flexion of the thigh and knee before injection.

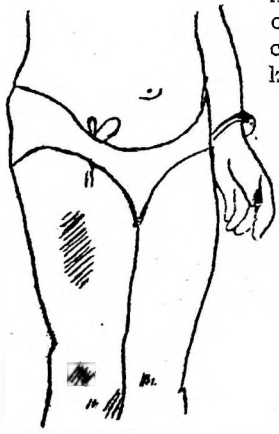
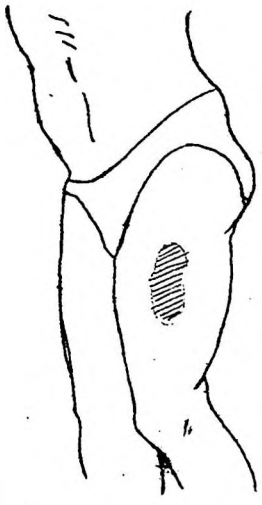


Fig.12.3:Site for intramuscular injection - front of thigh



iv. The out side of the thigh closer to the knee than the hip as shown in figure 12.4.

Fig.12.4:Site for intramuscular injection – out side of thigh

2. For intradermal injections (BCG vaccination) (see fig.12.5)

Fig.12.5:Site for intradermal injection (BCG)

The site used is dependent on whether BCG and smallpox vaccinations are administered at the same time.

i. If BCG and smallpox vaccinations are given at the same time, use the right upper arm outer portion for BCG and the left upper arm outer portion for smallpox. The use of different sites is necessary to reduce the possibility of complications.

ii. If BCG is given after the smallpox scab has fallen off, use the left upper arm outer portion.

3. Multiple-puncture method (smallpox vaccination):

2. For primary vaccination, the left upper arm, outer aspect is used (see fig. 12.6).

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Fig. 12.6:Multiple-puncture technique

ii. For revaccination the front aspect of the left forearm is used (see fig. 12.7).

Fig. 12.7:Site for smallpox revaccination - front of forearm

12.9 POINTS TO BE KEPT IN MIND ABOUT ROUTINE AND MASS RING IMMUNIZATIONS

1. Selection of site should be done by:
   i. Inspecting the size of the muscle.
   ii. Ascertaining that the site is free of bruises or any sore areas.
   iii. Avoiding an area that has any scratches, cuts or skin disease.
   iv. Reviewing that the area selected is anatomically correct.

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2. It is necessary to restrain children while administering immunizations. This can be done be a parent or otheradult so that accidents such as the needle breaking during injection can be avoided.
3. Health teaching is important for gaining the confidence of parents. Unless they know about the kinds of discomforts that can be expected after immunization and what action is to be taken, parents may not all allow immunization of their children. Information regarding the care of the site is especially important after an individual has been vaccinated against smallpox.
4. The vaccine must be properly stored and any vaccine that has been improperly kept or left over must be discarded.
5. Proper technique is necessary for ensuring good results.

12.10 SMALLPOX VACCINATION

Your responsibilities with regard to smallpox vaccination are of two kinds:

1. To give primary vaccination and revaccination to all unprotected persons in the community.
2. To vaccinate all persons in the event of an outbreak of smallpox irrespective of when they were last vaccinated.

12.10.1 CONTRAINDICATIONS FOR ADMINISTERING SMALLPOX VACCINE

In the absence of an epidemic or exposure to a case of, smallpox, the following individuals should not be given smallpox vaccination:

i. If the person has a skin rash with discharge.
ii. If the child is malnourished, e.g., if it has kwashiorkor.
iii. If the child is just recovering from a serious disease.
iv. If the woman is pregnant.

12.10.2 STORING AND TRANSPORTING THE VACCINE

1. Freeze-dried smallpox vaccine is used in India and this vaccine must be stored between 4°C and 10°C.
2. The vaccine should be kept as cool as possible by keeping the ampoules in an earthenware pot covered with a damp cloth.
3. If the vaccine has been out of the refrigerator for for over four weeks, it should be discarded.

REMEMBER, ORDER ONLY ENOUGH VACCINE REQUIRED FOR A MAXIMUM OF TWO WEEKS AT A TIME TO AVOID WASTING IT BECAUSE OF LACK OF PROPER REFREGERATION FACILITIES.

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4. Use a thermos or other container to carry the vaccine. The container should be packed with ice if possible or insulated by wrapping it in wet cloths.

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Steps to be followed:

1. Clean the site with cotton wool that has been moistened with water and allow it to dry. Do not scrub the skin vigorously. Do not use spirit or other antiseptic.
2. Insert a sterile, cold, bifurcated needle into the ampoule of reconstituted vaccine. When it is withdrawn, a droplet of vaccine, sufficient for vaccination is contained within the fork of the needle.
3. a. Hold the needle at an angle 90° to the skin as in the figure with your wrist resting against the arm (see fig. 12.6).
   b. Touch the points of the needle lightly to the skin so that the droplet of vaccine is deposited on the skin.
   c. Make 15 up and down strokes of the needle in an area about 5 m.m. across through the droplet of vaccine. The strokes should be hard enough so that a trace of blood appears at the vaccination site.
4. Allow the vaccine to dry before the individual rolls down his sleeve or goes away.
5. No dressing should be applied after the vaccination.
6. Record the administration of vaccine in the individual health card and in the infant and child immunization register.

A VISIT SHOULD BE MADE TO THE HOME OF THE CHILD BETWEEN THE SIXTH AND NINTH DAY TO CHECK WHETHER THE VACCINATION HAS BEEN SUCCESSFUL.

12.10.5 STERLIZATION OF BIFURCATED NEEDLES

The needles can be sterilized by flaring or boiling. However, it is referable to boil rather than flame needles to sterilize them.

1. Flaring: The needle is passed through the flame of a spirit lamp. It should not remain in the flame for more than 3 seconds.

COOL THE NEEDLE BY EXPOSING TO THE AIR BEFORE INSERTING INTO THE VACCINE AMPOULE. A HOT NEEDLE WILL KILL THE ORGANISMS IN THE VACCINE MAKING IT USELESS.

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2. Boiling: The needles can be sterilized by boiling for 20 minuts. They can be boiled in the plastic container that holds the bifurcated needles (see fig. 12.8). Remove the container from the water and stand it on its end to drain out the water after first shaking it hard to remove as much water as possible. Put the container in the standing position to dry.

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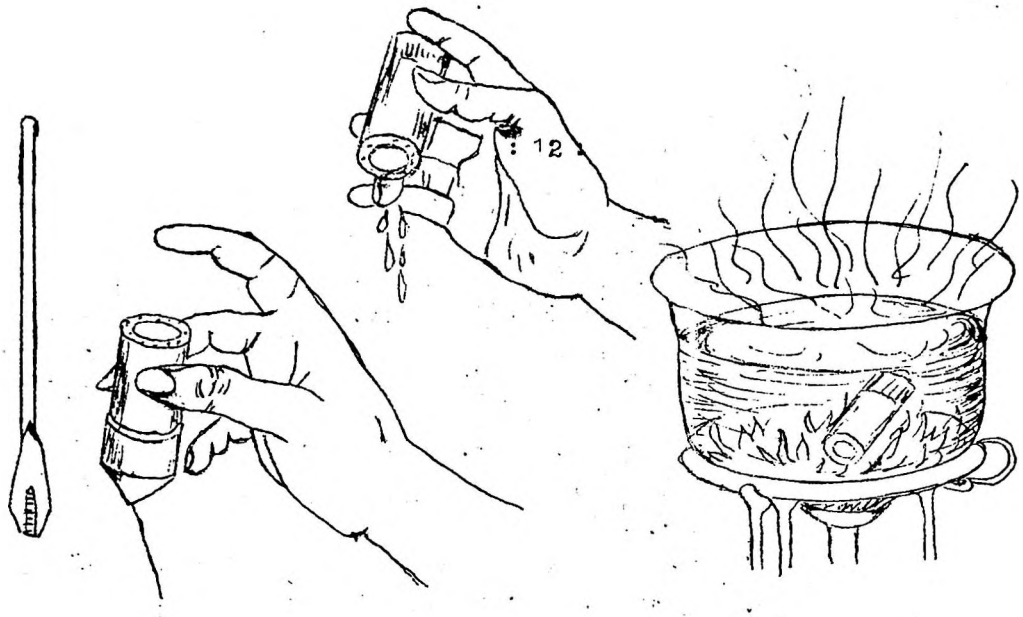

Fig. 12.8: Sterilizing bifurcated needles

THE FORK OF THE NEEDLE MUST NOT CONTAIN A DROP OF WATER WHEN IT IS INSERTED INTO THE VACCINE AMPOULE. WATER WILL WEAKEN THE STRENGHT OF THE VACCINE.

NEVER USE A NEEDLE MORE THAN ONCE WITHOUT STERILIZING IT BACAUSE OF THE DANGER OF SPREADING INFECTION.

12.10.6 REACTION TO VACCINATION

A primary vaccination is one that is given to an individual for the first time. Any subsequent vaccinations are called revaccintions. When there has been a successful or positive reaction to a primary va vaccination, it is called a 'take'.

The usual course of a successful take is as follows:

i. A blister forms at the vaccination site between three to five days after vaccination.
ii. The clear fluid in the blister turns into pus and by the 8the and 9th day the blister becomes larger.
iii. By the 11th or 12th day it dries and forms a scab.
iv. The dry scab falls off about 14 to 21 days after the vaccination, leaving a scar at the site.

IF THERE IS NO PUS FORMATION AT THE SITE OF A PRIMARY VACCINATION THE PROCEDURE HAS BEEN DONE INCORRECTLY OR THE VACCINE WAS NOT POTENT AND VACCINATION MUST BE REPEATED.

12.10.7 HEALTH EDUCATION

It is important to emphasize certain facts about vaccination.

1. It is harmless and practically painless.
2. It is important for every individual to be protected against smallpox.

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3. After vaccination nothing should be applied on the vaccination because water, bandages, tight sleeves, ointments, herbs or unclean things can interfere with the action of the vaccine.
4. If there is no reaction at the site between the 3rd and 5th days, the individual should return to the subcentre to have the vaccination repeated.

12.11 BCG VACCINATION

In order to protect an individual from tuberculosis, BCG vaccine must be administered before he is exposed to the disease. It is for this reason that a high priority is given to administering BCG to infants as soon after birth as possible. Since children and young persons in the community are also exposed to the disease and need protection, BCG is also given to them up to the age of 20 years.

ALL INFANTS AND CHILDREN SHOULD BE GIVEN BCG VACCINATION AS EARLY AS POSSIBLE TO PROTECT THEM AGAINST TUBERCULOSIS.

12.11.1. PERSONS ELIGIBLE TO RECEIVE BCG VACCINATION

The eligible groups in the community for BCG vaccination include the following:

i. All newborn infants.
ii. All children between zero and five years of age.
iii. All persons between 5 and 20 years of age.

However, you will be responsible for administering BCG vaccine to the following groups:

i. All children between one and five years in the intensive area. The Health Worker (Female) will administer BCG Vaccination to infants aged zero to one year in the intensive area.
ii. All children from zero to five years in the twilight area.
iii. All school children. You will assist the Health Assistant (Male) in carrying out this programme.

12.11.2 CONTRAINDICATIONS TO THE USE OF BCG VACCINE

Individuals with the following characteristics should not be given BCG vaccination:

1. A person who already has two or more BCG scars.
2. A person who is a known case of tuberculosis (although it would not cause harm if the vaccinationis given by mistake).

BCG Vaccine should be postponed if:

i. A person has a generalized skin disease.
ii. A person has a high fever or is acutely ill.
iii. A person is severely malnourished unless additional protein and energy-giving foods can be started right away.

12.11.3 STORING AND TRANSPORTING THE VACCINE

1. BCG vaccine available in India is a freeze-dried vaccine which must be stored at 2 to 10°C, but not frozen.

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2. It can be kept in a refrigerator for up to six months or in an ice chest up to three months. At room temperature it can be kept for two to four weeks. This means that vaccine for use at the subcentre must be obtained at least twice a month since refrigeration is not available.

3. An alternative to keeping the vaccine under refrigeration is the use of an earthenware container which is kept covered with a wet cloth and which is kept in the coolest part of the building. The vaccine can thus be stored for about four weeks.

4. Carry the vaccine in a thermos packed with ice when transporting it for any distance, e.g., from the PHC to the subcentre.

5. Light rapidly destroys BCG vaccine either freeze-dried or in the reconstituted form. The vaccine should be protected against light throughout, during storage as well as during transport and use in the field.

ALWAYS REMEMBER TO PROTECT BCG VACCINE FROM HEAT AND LIGHT TO ENSURE ITS POTENCY.

12.11.4 RECONSTITUTING BCG VACCINE

Equipment required:

i. Sterile 5 ml syringe
ii. Sterile 22 gauge needles
iii. BCG vaccine ampoules
iv. BCG diluent ampoules
v. Ampoule files
vi. Plastic sheet.

Proceed as follows:

1. Examine the ampoules and discard them if:
   i. There are colour changes;
   ii. The powder appears to be wet;
   iii. There are cracks or the ampoule is broken;
   iv. There is no label on the ampoule;
   v. The date of expiry is over.

2-8. Follow steps 2 to 8 under the procedure for reconstituting smallpox vaccine (see section 12.10.3) except substitute the use of the plastic sheet instead of cotton swab.

9. Follow the manufacturer's instructions regarding the amount of diluent to be added to the dry powder.

10. Fix the 22 gauge needle into the 5 ml. syringe, withdraw the required amount of diluent from the ampoule and gently inject it into the ampoule containing the dry powder.

THE USE OF TOO MUCH FORCE IN INJECTING THE DILUENT WILL CAUSE B BUBBLES TO FORM IN THE SOLUTION. AVOID THIS BECAUSE IT WILL INTERFERE WITH ACCURATE MEASUREMENT OF THE CAVVINE.

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11. Withdraw and re-inject the vaccine into the ampoule at least 4 times to make sure that it is thoroughly mixed.

IF ANY OF THE DILUENT IS LOST DURING RECONSTITUTION THE STRENGTH OF THE SOLUTION WILL NOT BE ACCURATE SO YOU MUST OPEN ANOTHER AMPOULE OF POWDER AND DILUENT AND BEGIN THE PROCEDURE OVER AGAIN.

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12. Keep the ampoule of reconstituted vaccine in the ampoule holder in a cool place protected from light by wrapping black paper in the shape a cone around it.

REMEMBER THAT BCG IS A LIVE VACCINE WHICH CAN EASILY LOSE ITS POTENCY IF IT IS NOT HANDLED PROPERLY.

12.11.5 TECHNIQUE FOR INTRADERMAL ADMINISTRATION OF BCG VACCINE

An intradermal injection is given in the uppermost or superficial layer of the skin. In order to be able to inject a vaccine or drug intradermally, a special sized needle and a special syringe with fine markings (tuberculin syringe) are needed (see fig. 12.9) and the needle must be introduced at a particular angle to the skin.

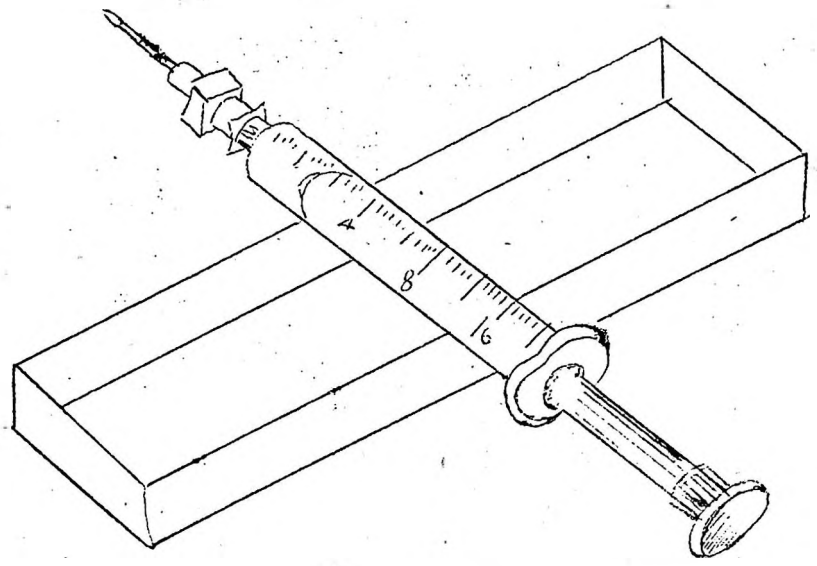

Fig. 12.9. Tuberculin syringe and needle

Equipment and supplies required:

i. Sterile metal box containing needles and syringes
ii. Sterile needles 26 gauge, 1 cm
iii. Sterile tuberculin syringes (calibrated in 1/100 ml)
iv. Wooden block for holding opened ampoules
v. Spirit lamp and bottle of spirit
vi. Metal shield for spirit lamp
vii. Blackpaper for covering BCG vaccine
viii. Mantoux ruler for measuring intradermal weal.

Proceed as follows:

1. Assemble the tuberculin syringe using the proper technique to avoid contamination and attach the 26 gauge needle to it.
2. Make sure that the 'eye' or opening of the needle and the markings on the syringe are on the same plane. This is important so that the correct dose can be injected (see fig. 12.10).

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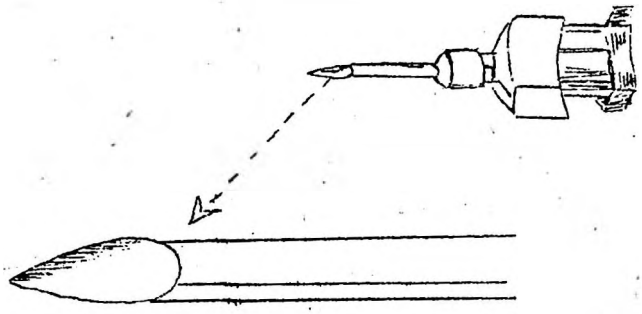

Fig. 12.10: Intradermal needle showing the "eye"

3. Draw up the vaccine into the syringe taking care not to touch the needle with the fingers or other unsterile objects.
4. Place the loaded syringe on a sterile surface.
5. Select the site for vaccination. BCG vaccine is usually given on the left upper arm just below the point of the shoulder. (Refer to section 12.8).
6. Cleaning the site is not necessary unless it is grossly dirty in which case wipe it with a clean, wet cloth.
7. Make the skin of the site taut by stretching it slightly between the thumb and forefinger.
8. Keep the 'eye' of the needle up, hold the syringe parallel or flat along the skin and insert the needle into the upper or superficial layer of the skin (see fig.12.11).

Fig. 12.11: Intradermal injection technique

REMEMBER, DEEP INJECTION OF BCG VACCINE CAUSE ABSCESSES AND TAKE A LONG TIME TO HEAL.

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9. Inject the required dose which is:
   i. 0.05 ml. for infants under four weeks of age.
   ii. 0.10 ml. for all other children.
   A weal or elevation of the skin should form at the site of vaccination. A proper intradermal injection of 0.10 ml. of vaccine will form a weal of about 8 mm. in diameter. This should be check using the Mantoux ruler for every tenth person vaccinated.
10. Remove the needle after administering the vaccine and do not rub the site of vaccination.
11. Replace the used needle by a sterile needle or flame it between use.
12. Administer the vaccine to the next individual using the same procedure.
13. Record the administration of vaccine in the individual health card and in the infant and child immunization register.

ANY BCG VACCINE WHICH IS NOT USED WITHIN 4 HOURS OF RECONSTITUTION MUST BE DISCARDED.

12.11.6 WHAT TO EXPECT AFTER BCG VACCINATION

Explain to parents the changes which they should expect to see at the site where the vaccination has been given and alert them to those symptoms which requires referral to the Primary Health Centre for further attention.

The process of scare formation is as follows:
1. The BCG weal or raised spot in the skin is usually absorbed and is not visible after 30 minutes.
2. After three to four weeks, there is redness and swelling and a lump appears at the site of vaccination. This is about 3 to 8 mm. in diameter.
3. By six to eight weeks, the area increases in size to 6 to 8 mm. in diameter. Crusting or pus may be present. Deep abscess formation always indicates that the injection was given incorrectly either into the subcutaneous tissue or into the muscle. Depending on the severity of the abscess, refer to the PHC.

By 12 weeks, there should be a well-healed scar at the site of vaccination.

12.11.7 HEALTH EDUCATION

Points to emphasize should include the following:
1. Babies and children need to be immunized as early as possible with BCG so that they can be protected against tuberculosis.
2. BCG vaccination is a simple, safe procedure which consists in injecting vaccine into the skin.
3. Within three months after the vaccination, there will be a scar showing that the individual is protected against tuberculosis.
4. BCG vaccination can be taken at the subcentre or at other convenient places in the village where groups can be gathered together.
5. A second vaccination will be required to be given to the child during the school years.

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12.12 DPT, DT, DIPHTHERIA AND TETANUS TOXOID

The vaccine used for immunizing persons against diphtheria, pertussis and tetanus is available either in a combined form, i.e. as DPT or DT, or as a single vaccine which protects against diphteria or tetanus. Every opportunity should be taken to protect children under five years of age against diphtheria, pertussis and tetanus, and pregnant women against tetanus.

12.12.1 PERSONS ELIGIBLE TO RECEIVE DPT, DT, DIPHTHERIA OR TETANUS TOXOID

Groups eligible for DPT are as follos:
i. Infants from four to 12 moths of age.
ii. Children from one to five years of age.

Groups eligible for DT are as follows:
i. Children from five to ten years of age (they no longer need pertussis vaccine).

Groups eligible for tetanus toxoid are as follows;
i. Pregnant women.
ii. Others in the community who have not received DPT or DT as children.
iii. Those who sustain an injury.

In the event of an epidemic of diphtheria in the community, all groups should be immunized with diphtheria toxoid.

12.12.2 CONTRAINDICATIONS FOR ADMINISTERING DPT, DT AND TETANUS TOXOID

Those persons with the following characterisites should not be given DPT, Dt or tetanus toxoid:

1. Anyone who is ill or is just recovering from an illness.
2. History of convulsions.
3. History of allergies, i.e. inflammatory skin conditions with blisters, crusts or discharge, or weals with or without itching, or wheezing respiration.
4. History of previous unexpected reactions to medicine or vaccine.

Immunization of anyone who is ill should be postponed and those who have other contraindications should be examined and screened by the doctor.

12.12.3 STORING AND TRANSPORTING THE VACCINE

(See section 12.6)

12.12.4 DOSAGE OF VACCINE

The dose of the vaccine can vary according to the manufacturer and the type of vaccine to be administered. For full protection children under five years of age should receive two doses of DPT at intervals of eight to 12 weeks followed by a booster dose of DPT at one and a half yar to two years of age and a second booster dose of DT on entry to School or soon after.

Pregnant women need to have two doses of tetanus toxoid with an interval of eight to 12 weeks between each dose. The second dose should be administered two to four weeks before the expected date of delivery in order to protect the infant at birth against tetanus.

12.12.5 PROCEDURE FOR ADMINISTRATION OF DPT, DT AND TETANUS TOXOID

Equipment required:
i. Sterile 2 ml. or 5 ml. syringe

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ii. Sterile needles 1.5 cm (for children) 23 gauge
3.5 cm (for adults) 23 gauge
3.5 cm (for withdrawing vaccine from vials) 20 or 21 gauge
iii. Vaccine (DPT, DT or tetanus toxoid)
iv. Cotton swabs.
v. Antiseptic such as spirit or savlon.

Proceed as follows:

i. Assemble the syringe.
ii. Withdraw the required amount of vaccine into the syringe.
iii. Clean the skin site selected.
iv. Inject the prescribed dose.
v. Record the date and amount of vaccine given on the individual's health card and in the register.
vi. Tell the mother what to expect and advise her what to do.
(Refer also to Chapter 28, 'Sterilization and Disinfection' and to section 30.8.4).

12.12.6 POINTS TO REMEMBER ABOUT ADMINISTERING DPT, DT AND TETANUS TOXOID

1. Read the label of the vial to make sure that you have the correct vaccine for the immunization to be given.
2. Measure each dose carefully when giving more than one dose from a single syringe.
3. Never use a needle more than once without first flaming it or boiling it for 20 minutes.
4. The dose is the same whether it is the first or second injection or the booster dose. The dose that is usually prescribed is as follows:

DPT	- 0.5 ml.	for infants and children up to five years.
DT	- 0.5 ml	for children over five years.
Tetanus Toxoid	- 0.5 ml.	for pregnant women.

However, make sure of the dose indicated by the manufacturer on the vial before administering the vaccine because this may vary.

12.12.7 REACTIONS TO DPT, DT AND TETANUS TOXOID

Expected symptoms
Slight fever, sore arm and irritability for a day or two.

Treatment:
i. Apply hot wet copress.
ii. Give ASC (1/4 tablet under 1 year
1/2 tablet one to five years).

Unexpected symptoms
i. Discolouration or bruising of injection site.

Treatment:
Apply hot wet copress.
ii. High fever, abscess formation, convulsions.
Refer anyone with these complications to the Primary Health Centre.

12.12.8 HEALTH TEACHING ABOUT DPT, DT AND TETANUS TOXOID

Points for discussion should include the following:
1. Infants and young children are vulnerable to diphtheria, whooping cough and tetanus and many die each year from the effects of such infections. They need protection from all three diseases through immunization.

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2. At least 2 doses of DIT given not more than three months apart are needed to build up protection in infants and young children. Later, booster doses are needed. One injection is not enough to protect infants and young children against diphtheria, whooping cough and tetanus.
3. All pregnant women need to get tetanus toxoid during pregnancy in order to protect the baby at birth.
4. Children need a booster dose when they are ready to enter school since there will be more exposure to infection and they should be protected.
5. Immunizations are available either at the subcentre or in the home.
6. After immunization there may be slight fever, soreness of the site and irritability for a day or two. These symptoms are expected reactions and should not be a cause for worry or for not taking the second dose.

IT IS IMPORTANT TO EXPLAIN THAT TWO CONSECTIVE INJECTIONS ARE NEEDED FOR DEVELOPING FULL PROTECTION AGAINST THESE DISEASE

12.12.9 TETANUS TOXOID IN PREGNANCY

One of your important tasks in the villages of the twilight area is to immunize as many pregnant women as possible against tetanus. This is necessary because their newborn babies often contract the disease as a result of being delivered by untrained dais who do not care properly for the umbilical cord. A large number of babies die from tetanus infection each year in India. Such deaths can be prevented by immunizing pregnant women with tetanus toxoid during the prenatla period.

In order to be able to do this, you will have to develop good working relationships with village dais since they are the only ones who take care of pregnant women in the twilight area. Some of the ways in which you can do this are as follows:

i. Seek them out whenever you make a regular visit to the village to show that you recognize their work.
ii. Publicly recognize their assistance in promoting the use of family planning and other health services by the people in the village.
iii. Impress upon them the health benefits of tetanus toxoid for the pregnant women under their care.
iv. Inform the dai after you have given the tetanus toxoid to the pregnant woman.

The Health Worker (Female) may also be able to offer further suggestions for approaching dais whom she may already know thro through her work in assisting the Health Assistant (Female) in the training of dais. These additional sources of assistance should be regularly used since they may often lead to more effective ways of working withwomen in the village.

One of the problems that you may find that pregnant women may not allow you to immunize them in their homes because of social customs. In order to get around this you may have to take the following steps:

i. Ask a number of women to gather in a convenient place so that the vaccine can be administered to a group of women.

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ii. Hold a combined clinic for administering tetanus toxoid to pregnant women and DPT for pre-school children on a regularly scheduled day in the village.

iii. Ask the dais to assist you in gathering together women and children who live in the same area, so that immunizations can be administered to the residents of every sector in the village over a period of months.

12.13 POLIOMYELITIS VACCINATION(ORAL SABIN VACCINE)

In India, poliomyelitis is administered on a mass basis only when there is an outbreak of the disease in a community, i.e. when a high or unusual number of cases are found in a locality.

12.13.1 ELIGIBILITY FOR VACCINATION

Wherever available the vaccine is given to infants between four to six months since this is the period when the body is able to begin manufacturing its own antibodies. The vaccine can be given at the same time as DPT vaccine.

12.13.2 CONTRAINDICATIONS TO VACCINATION AGAINST POLIOMYELITIS

Vaccination against poliomyelitis should not be given if the following conditions are present:

i. Acute infectious disease
ii. High fever
iii. Vomiting.
iv. Dysentery.

USUALLY POLIOMYELITIS VACCINE IS NOT ADMINISTERED DURING THE SUMMER AND MONSOON SEASONS BECAUSE OF THE HIGH INCIDENCE OF GASTRO-INTESTINAL DISEASES.

12.13.3 STORAGE OF VACCINE

Because the poliomyelitis vaccine that is used in India is a live vaccine, certain precautions must be followed in storing it before it is administered.

Fig.12.12:Procedure for administering oral drops to children.

Special facilities are made available for keeping it at minus 20^{0} to 0^{0}C to ensure that the vaccine retains its potency. Usually special containers and ice are provided for this purpose.,

12.13.4 ADMINISTERING ORAL POLIOMYELITIS VACCINE

Proceed as follows:

1. Note whether the vaccine comes in a container with an attached medicine dropper. If there is no dropper, a clean syringe will be needed for measuring the dose to be given.

2. Examine the dropper provided to make sure that it is not cracked or broken and discard it if this is so.

KEEP THE CONTAINER OF POLIOMYELITIS VACCINE IN A VESSEL CONTAINING ICE WHILE YOU ARE ADMINISTERING IT. IF THIS IS NOT SCRUPULOUSLY FOLLOWED, THE VACCINE WHICH YOU WILL BE DISPENSING WILL BE USELESS SINCE HEAT DESTROYS ITS POTENCY

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3. Measure the dose to be given according to the manufacturer's instructions using either the medicine dropper or the syringe.

4. Ask the parent or adult to hold up the head and shoulders of the baby or child as the vaccine is dropped into his mouth slowly so that he does not choke. If the child will not open his mouth press down gently on his chin(see fig 12.12) or press the cheeks.

5. If the child spits out most of the vaccine, repeat the dose

6. After the vaccine has been given, instruct the mother or adult with the child that no breast milk or hot(temperature) foods should be given for four to six hours following the vaccine. Other food and liquids can be given. This is important for ensuring the effectivdness of the live oral vaccine.

7. Record the dose and date on the child's health card.

8. Give the second and third doses at intervals of four to six weeks.

12.13.5. HEALTH EDUCATION

Points for emphasis should include the following:

1. Poliomyelitis is a serious disease that can paralyse and cripple arms and legs, but it can be prevented by oral poliomyelitis vaccine

2. The vaccine is given in the form of oral drops

3. In order to be protected, three doses given at four to six weeks intervals are needed by the child.

4. Usually a booster dose is necessary after four to five years.

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ANTIBODIES IN BREAST MILK CAN ALSO INACTIVATE LIVE ORAL POLIOMYELITIS VACCINE SO BREAST FEEDING MUST BE WITHHELD FOR FOUR TO SIX HOURS BEFORE AND AFTER AN INFANT HAS BEEN GIVEN THE VACCINE. HOWEVER, IT IS IMPORTANT NOT TO STARVE INFANTS OR CHILDREN WHO HAVE RECEIVED THE VACCINE. THEY CAN BE GIVEN OTHER FOOD AND LIQUIDS AS DESIRED AS LONG AS THEY ARE NOT SERVED HOT.

12.14 CHOLERA VACCINATION

Vaccination against cholera is given to individuals on request and mass programmes for administering the vaccine are carried out in the event of epidemics of the disease in the community.

You will need to be alert to cases of cholera and gastro-enteritis in each village as you make your house-to-house visits since prompt treatment may be necessary to save life. You must immediately inform your supervisor, whenever there is a sudden rise in the number of persons who have signs and symptoms of cholera so that a decision can be made whether a mass programme needs to be organized for the community(see section7.1)

12.14.1 STORING AND TRANSPORTING THE VACCINE

1. The vaccine should be stored in a refrigerator at 2^{o} to 8^{o}C. When a refrigerator is not available, keep the vaccine in an earthenware pot covered with a wet cloth and in a cool place.
2. Transport the vaccine in a thermos flask from the Primary Health Centre to the subcentre
3. Order only enough vaccine that can be used within seven to 14 days since it will deteriorate when kept at room temperature for longer periods.

12.14.2 DOSAGE OF CHOLERA VACCINE

The dose for adults and children over five years is 0.5 ml. followed by a second dose within ten days. The dose for children under five years is half the adult dose. In order to maintain protection against the disease, individuals need to be given re-vaccination every six months.

12.14.13 ADMINISTERING CHOLERA VACCINE

Equipment required:

i. Sterile needles both short and long(for withdrawing vaccine from multiple-dose vials and administration of vaccine)
ii. Sterile 2 and 5 ml syringes
iii. Cotton swabs
iv. Cholera vaccine vials
v. Antiseptic such as spirit or savlon

Proceed as follows:

1. Remove the metal disc covering the rubber cap of the vial and clean the cap with a cotton swab moistened with antiseptic.
2. Assemble the syringe and attach the needle for withdrawing the vaccine
3. Withdraw the required amount of vaccine from the vial
4. Change the needle for administering the vaccine
5. Select the site for administering the vaccine which should be either:
   i. the outer aspect of the upper arm about midway between the shoulder and elbow, or
   ii. the outer aspect of the thigh(see fig 12.4).

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6. Clean the skin site selected using a cotton swab moistened with antiseptic and allow to dry.

7. Inject the prescribed dose of the vaccine intramuscularly

8. Record the date, name and amount of vaccine administered on the health card of the individual

9. Tell the person immunized or the person accompanying a child that after the injection the following reactions may occur:

   i. Soreness and swelling of the site
   ii. Fever
   iii. Headache

These symptoms may last for about two to three days, but should not be a cause for worry. Tell him to take APC to reduce pain and fever and apply warm compresses to the area. If the reactions are more severe than expected tell him to go to the Primary Health Centre.

12.14.4. HEALTH EDUCATION

Points to be emphasized should include the following:

1. Cholera is a serious disease transmitted through contaminated water or food and which can be fatal if teatment is not given immediately.

2. To be protected against the disease, an individual needs to have two doses of vaccine ten days apart. Revaccination every six months is necessary for maintaining a high level of protection.

12.15 TYPHOID, PARATYPHOID A AND PARATYPHOID B VACCINATION (TAB)

In India vaccination against typhoid fever is carried out on a mass scale only when the disease is highly endemic in an area. When there is an epidemic, house-to-house vaccination is carried out.

You will need to be alert to cases of diarrhoea with abdominal pain, headache, skin rash and fever as you go about your work since these are the signs and symptoms of typhoid fever. You must report any sudden increase in the number of sych cases to your supervisor, so that we can decide whether a mass programme needs to be organized. Your responsibility is to assist the Health Assistant (Male) to immunize the eligible population (refer to section 6.1.7).

12.15.1 PERSONS ELIGIBLE TO RECEIVE TAB VACCINATION

The eligible groups in the community for TAB vaccine in an endemic area are, in order of priority:

   i. School-aged children
   ii. Adults up to 50 years of age

However, during an epidemic, all persons in the community should receive the vaccine.

12.15.2 CONTRAINDICATIONS FOR ADMINISTERING ROUTINE TAB VACCINE

Individuals with the following conditions should not be given TAB vaccine except during epidemics

1. Fever with running nose or cough

2. Lethargy associated with illness

In such cases, the administration of the vaccine can be postponed and given to them when these signs and symptoms have subsided.

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12.15.3. STORING AND TRANSPORTING THE VACCINE

1. The vaccine should be stored in the refrigerator at 2° to 8°C. If a refrigerator is not available, keep the vaccine in an earthenware pot covered with a wet cloth and kept in a cool place.

2. It should be transported in a thermos flask from the Primary Health Centre to the subcentre.

3. Order only enough vaccine that can be used within seven to 14 days since it will deteriorate when kept at room temperature.

12.15.4 DOSAGE FOR TAB VACCINE

This can vary according to the manufacturer of the vaccine. Usually the dose for children is half the adult dose. For full protection, an individual needs to receive 2 doses of the vaccine ten days intervals. Annual revaccination is necessary for persons living in endemic areas.

12.15.5 ADMINISTERING TAB VACCINE

TAB vaccine is available at present in vials of 100 dose vials. Therefore, in order to avoid wasting vaccine, you should gather together a sufficient number of persons when planning to administer it in the community.

Equipment required:

i. Sterile 2 or 5 ml syringes in sterile container
ii. Sterile needles: 3.5 cm. length/20 or 21 gauge (for withdrawing vaccine from vial)
1.5 cm length/25 gauge (for administering vaccine)
iii. Cotton swabs
iv. TAB vaccine vials
v. Antiseptic such as spirit or savlon

Proceed as follows:

Steps 1) to 9) are the same as for the administration of cholera vaccine (see section 12.14.3).

12.15.6 HEALTH EDUCATION

Points for discussion should include the following:

1. Typhoid is a serious disease which is transmitted through food and water contaminated with the typhoid bacilus.

2. Individuals can be protected against the disease by obtaining vaccination with TAB vaccine. For full protection, an individual needs to have 2 doses of vaccine ten days apart. Subsequently, if he is living in an endemic area, he should get a booster dose each year.

12.16 SCHOOL IMMUNIZATION PROGRAMME

You are assigned the task of assisting the Health Assistant (Male) to immunize the school children in the villages. Some of these children may need initial immunizations because they were not protected as infants or toddlers, but others may only require boosters or revaccination for BCG or smallpox. Children who attend school are a 'captive' population and can easily be reached for administering immunizations in contrast to pre-school children and pregnant women in the villages who must be identified in their homes.

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12.16.1. SELECTION OF GROUPS TO BE IMMUNIZED

Usually a few classes in the school are designated as the target population for administering immunizations. The criteria used for the selection of classes are as follows:

1. Protection of children as early as possible i.e. vaccination of children entering the 1st standard and all new admissions

2. Maintenance of protection, i.e. periodic booster doses to children in standards 4 and 8.

3. Protection of children before they leave school, i.e. booster doses to children in standard 10. When these groups are immunized annually, together with all new admissions, the total school population is protected within a few years.

12.16.2. TYPES OF IMMUNIZATIONS ADMINISTERED

The types of immunizations that are administered in a school are usually similar to the ones that are administered to pre-school children with one important difference. Instead of DPT, children in school are given DT since they no longer need protection against whooping cough. The immunizations that are usually administered in school are:

i. Diphtheria-Tetanus (DT) (primary and booster)
ii. Smallpox vaccination (primary and revaccination)
iii. BCG vaccination (primary and booster)
iv. Poliomyelitis oral vaccine (primary and booster) given only when there is a high incidence of the disease

When an unusually large number of cholera or typhoid fever cases occur in the community, immunizations against these diseases should also be administered to children in schools.

12.16.3 ARRANGING AND CONDUCTING THE PROGRAMME

The dates for the immunization programme are usually set by the Health Assistant (Male) after he has received the suggested dates from the principal of the school. These dates may change from year to year depending on the request of the teachers, other programme responsibilities and special campaigns, as well as the outbreak of particular diseases in the area.

Your specific activities related to the school immunization programme will generally include the following:

1. Identification of the target population for BCG and smallpox by doing a scar survey. The teachers can also be shown how to look for scars so that they can help to identify the unprotected in their classrooms and in the homes.

2. Compiling a list of children who are to be given immunizations. This should be done classwise.

3. Informing the Health Assistant (Male) about the suggested dates for the programme and the number of children to be given BCG, smallpox and DT vaccination.

4. Obtaining visual aids on immunization from the Primary Health Centre for health education programmes in the school

5. Assisting the teachers in the school to plan and carry out health education activities related to immunization in their classrooms, covering such topics as why immunization is necessary, how it is done, and what happens afterwards.

6. Informing children, teachers, and other school personnel where immunizations can be obtained for other members of their families.

7. Assisting the Health Assistant (Male) in the administration of the immunizations, preparing the equipment, reconstituting the vaccine, and screening children to identify those who are ill.

8. Making arrangements for recording the immunizations administered in each school. This may be in the form of a register.

9. Submitting the required reports to the Health Assistant (Male) and to the Primary Health Center.

REMEMBER, WELL-INFORMED TEACHERS AND CHILDREN CAN BE HELPFUL IN FINDING OUT THE UNPROTECTED, AND IN PERSUADING PARENTS AND RELATIVES TO OBTAIN IMMUNIZATIONS FOR OTHER CHILDREN AT HOME.

12.17 PROMOTING THE USE OF IMMUNIZATIONS IN THE COMMUNITY

Instead of conducting a separate campaign for informing the community about the value of immunizations, it would be more practical and effective to incorporate this topic with your other educational activities pertaining to the prevention of communicable diseases or family planning as a part of family welfare.

IN TALKS GIVEN TO INDIVIDUALS AND GROUPS DURING YOUR REGULAR HOUSE-TO-HOUSE VISITS, YOU SHOULD INCLUDE THE VALUE OF IMMUNIZATION FOR CHILDREN AND PREGNANT WOMEN.

The usual orientation sessions that you conduct for the community leaders and influential individuals regarding other health services should also include the subject of immunization. In this way, you will be able to get their support for this important health measure for preventing the spread of communicable diseases. The help of the community members may be taken for preparing suitable visual aids for use in such sessions. Attractive audio visual aids may also be obatined from the Block Health Assistant.

Together with the Health Worker (Female) you should systematically teach older children in schools, their teachers, and Balwadi workers about the value of immunizations since these groups often have close contact with young children who comprise the target population for immunization. Educating them with regard to the need for administering tetanus toxoid to pregnant women is also an important part of your health educational activities.

12.17.1 WORKING WITH THE HEALTH WORKER (FEMALE)

As you are aware, in the intensive area the Health Worker (Female) will be administering immunizations to the newborn and to pregnant women. Since you will both be visiting the same families, there is a possibility of duplicating your efforts. It is, therefore, necessary for you and the Health Worker (Female) to meet periodically and decide on your respective responsibilities regarding the immunization of the members of each family.

.....Contd/28-

12.18 RECORDS AND REPORTS

You are expected to submit to the Primary Health Centre a monthly report of your activities regarding immunizations given. This should cover the following points:

1. Numbers and types of beneficiaries given various types of immunizations, i.e. zero to one year, one to five years, pregnant women, school-going children, and other groups in the community given smallpox vaccination (Primary and revaccination), DPT, DT, Tetanus toxoid, BCG, Poliomyelitis, TAB, Cholera and any other vaccination.

2. Receipt, issue and balance of stock of vaccine. IN order to submit these reports you will be required to maintain the following records:

   i. Individual health cards for children and mothers to be kept in the family folder.
   ii. Health cards for school children.
   iii. Register of individuals receiving immunization.
   iv. Stock register of vaccines received and used.

************* @@@@@@ @**********

CH 2.19

GOVERNMENT OF KARNATAKA

NO.UIP.187/88-89

Directorate of Health & F.W.Services
Bangalore-9. Dated: 5th April 1989.

C I R C U L A R

SUB: Immunization Targest for the year 1989-90 and guidelines.

- - - -

Please find enclosed herewith the immunization targets and vaccine allocation for the year 1989-90. Following guidelines are issued for implementation of the programme.

1. TARGETS :

a) Targets for primary immunization :

i) 1981 census population has been projected to mid 1989-90 based on the Expert Committee report on Population projections.

ii) The pregnant women beneficiaries are calculated taking 27.3 per thousand estimated population as birth rate i.e. pregnant woman = estimated population x .0273.

iii) Eligible infants are worked out based on the survivors at the age of one year taking 84 infant mortality rate per thousand live births. Margin is given for the still births out of the total women. The actual survivor rate at the age of one year works out to 911.66 per thousand live births.

iv) All the estimated pregnant women and infant survivors at the age of one year are targetted for full immunization coverages. Efforts should be made to achieve 100% of the estimated beneficiary. However in case of infant coverages upto atleast 85% may be acceptable because of the multiple antigen, multiple dose, drop outs etc., and herd-immunity.

v) Though estimates are made and communicated if the enumeration is complete the local authorities may adopt higher or lower targets based on the actuals enumerated. However the responsibility of defending the altered targets rests with the local authorities.

II. BOOSTER DOSE :

The achievements of the booster dose and for the children receiving three doses of DPT and Polio during the year 1987-88 in the year 1988-89 has been aroung 50% only. All out efforts must be made to give booster dose to all infants who had received third dose of DPT and Polio in the year 1988-89. During the ensuing year of 1989-90.

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III. Targets for Secondary Immunization :

Survivors at the different age groups (5, 10 and 16 years) has been worked out and the target is indicated and 85% of the eligible estimated children at the particular age.

IV. Vaccine allocation :

The vaccine allocation is indicated for each antigen for every district. Vaccine wastage provided is 25% for all vaccines except BCG and Measles for which 50% wastage is allowed.

V. Vaccine indenting and procuring :

The vaccine allocated are to be procured from the concerned bulk stores. Vaccine balance as on 1.4.89 is to be deducted out of the total allocation for the year 1989-90. The districts in turn should store the vaccines for three months requirement but supply only one months requirement to the Primary Health Centres and other users. If the vaccine requirement for any particular month are more or less than the average monthly allocation, the bulk storage institutes must be kept informed atleast one month ahead to take suitable measures. This will avoid unnecessary wastage of vaccines.

ALL VACCINES MUST BE STORED, TRANSPORTED AND MAINTAINING PROPER COLD CHAIN. VACCINES LIKE DPT, DT AND TT SHOULD NOT BE FROZEN

VI. IMMUNIZATION SCHEDULE :

The following revised National Immunization schedule should be adhered at all levels.

	Beneficiaries	Age	Vaccine	No. of doses	Route of administration
A.	INFANTS	6 weeks to 9 months	DPT	3	Intramuscular
			POLIO	3	Oral
			B.C.G.	1*	Intra-dermal
		9-12 months	MEASLES	1	Subcutaneous
	*For institutional deliveries B.C.G. may be given at Birth				
B.	CHILDREN	16 to 24 months	DPT	1*	Intramuscular
			POLIO	1*	Oral
		Booster Dose			
		5-6 years	DT	1*	Intramuscular
		10 years	TT	1*	I.M.
		16 years	TT	1*	I.M.
C.	PREGNANT WOMEN	16-36 weeks of pregnancy	TT	1*	I.M.

*dose to be given if not vaccinated earlier

...

year of birth must be entered on data card against the child's name. Vaccination dates also must be entered. putting a "✓" mark should be avoided.

Every month in addition to informing the antigen - wise dose-wise performance, the number of children who are fully immunized during the month should be invariably reported.

X. Calculation of Beneficiaries :

The following criteria are applied for considering beneficiaries achievements.

i) Primary Immunization :

Fully immunized i.e. three doses of DPT, 3 doses of Polio, 1 dose of BCG and one dose of Maeasles before the age of one year and a minimum interval of four weeks in between the multiple doses of antigens.

Tetanus Toxoid (Pregnant women)	- 2 doses + Booster dose
D. T.	- 2 doses + Booster dose
T.T. (10 years)	- 2 doses + Booster dose
(16 years)	- 2 doses of T.T. only

XI. Surveillance :

Data of vaccine preventable diseases should be maintained in all the institutions and reported monthly. In each case of death, vaccination status should be clearly indicated. Active surveillance of diseases like Measles, Acute Paralytic Polio, Whooping cough and Neonatal Tetanus should also be given in the community through the Health Workers in their regular visits.

ALL DISTRICT HOSPITALS, MEDICAL COLLEGE HOSPITALS, SUB! DIVISIONAL HOSPITALSANDTALUK LEVEL PRIMARY HEALTH CENTRES WOULD ACT SENTINEL AS SURVEILLANCE CENTRES AND THEY SHOULD REPORT THE VACCINE PREVENTABLE DISEASES DATA TO THE CONCERNED DISTRICT HEALTH AND FAMILY WELFARE OFFICER WITH A COPY MARKED TO THE DEPUTY DIRECTOR (MCH&UIP) DIRECTORATE OF HEALTH & F.W. SERVICES BANGALORE.

XII. Reporting :

Monthly reports whether sent in MIES form or special UIP proform the figures should tally to one another. The report must reach before 7th of the succeeding month to the Assistant Commissioner (Immunization) Government of India, Ministry of Health and Family Welfare, Nirman Bhavan, New Delhi - 110 011.

The following information must be indicated.

i) antigen-wise, dose-wise performance during the month and comulative achievement.

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VII. VACCINATION SERVICES :

Vaccination services must be provided through out the year uniformly. All the medical institutions (Primary Health Centre, Primary Health Unit, General Hospital etc.,) must provide vaccination atleast once a week. If the institutions do not possess a refrigerator, the vaccine must be brought in a vaccine carrier on the day of vaccination session from the nearest refrigerator.

Routine outreach sessionsmust be planned in the subcentes and bigger villages. The vaccine should be delivered in the vaccine carriorsand arranged to be returned the same evening or atleast by next morning. The doctor's perticipation in vaccination sessions go a long way in creating demand for vaccine. Routine vaccination outreach sessions should be arranged in all the villages having one thousand or more population every month. However BCG and Measles can be given once in two three months.

Private practitioners wherever available should be motivated to provide immunization services. Vaccines to these people should be given and the performance collected at the end of every month. Practitioners who have a refrigerator can be given on month's vaccines and those who do not have a refrigerator can be requested to collect the vaccines from the local Government institutions on the date of the session and return it/the next morning./(both used and unused vials).

VIII. Technique of Vaccination :

One sterilized syringe and one sterilized needle per prick per child should be ensured. Auto-claving the syringes and needle should be the choice of sterilizing syringes and needles. If this is not feasible for some local reasons on the spot boiling in clean water for atleast 20 minutes must be ensured. Where many beneficiaries are catered in a session and many syringes may not be available atleast there should be no compromise in using separate sterilized needle for every prick.

ONE VIAL OF EACH ANTIGEN MUST BE OPENED AT A TIME
DO NOT CARRY AND USE OPENED VIALS FOR SUBSEQUENT
SESSIONS/DAYS. DO NOT USE EXPIRED VACCINES. DO
NOT USE FROZEN VACCINES.

IX. Maintainence of records :

Enumeration and updating of beneficiaries at the village level must be ensured. A master register of immunization done in the areas of Primary Health Centres/Primary Health Units/Post Partum Centres/ Urban Family Welfare Centres should be maintained in the institutions concerned.

Vaccination card should be issued to all beneficiaries making proper entries for each dose of vaccine. Date or atleast month and

...4/-

ii) Fully immunized children, achievement during the month and cumulative achievement.

iii) Performance of primary immunization under one year and over one year separately.

b) Vaccine position :

Individual vaccines on hand, received during the month of report, utilised during the month of report and balance at the end of the month.

c) Cold Chain Equipments position :

Item-wise cold chain equipment position should be indicated.

d) Disease wise surveillance :

No. of casesof each of the vaccine proventable disease during the month and cumulative indicating the immunization status.

VIII. Vaccine related accidents :

All vaccines related accidents and reactions should be reported to the Divisional Joint Director of Health and Family Welfare Services of the concerned Division who is the Chairman for the Committee constituted for investigation of such accidents and reactions. Once the F.I.R. is received, the Divisional Joint Director of Health and Family Selfare Servicesshould take up immediate action along with the Committee Members to investigate and report to this Directorate.

ADDITIONAL DIRECTOR (FW&MCH)

...6/-

No. UIP/187/88-89

GOVERNMENT OF KARNATAKA
DIRECTORATE OF HEALTH AND FAMILY WELFARE SERVICES

Sl. No.	District	Est. Popln.	ESTIMATED & TARGET Pre-Wom	Infants	DPT & POLIO	VACCINE ALLOCATION B.C.G.	Measles
1.	Bangalore (c)	27736	75700	69100	345500	138200	138200
2.	Bangalore (UD)	8713	23800	21700	108500	43400	43400
3.	Bangalore (RD)	17353	47400	43200	216000	86400	86400
4.	Chitradurga	21893	59800	54500	272500	109000	109000
5.	Kolar	32201	63600	58000	290000	116000	116000
6.	Shimoga	20421	55700	50800	254000	101600	101600
7.	Tumkur	24032	65600	59800	299000	119600	119600
I	BANGALORE Dvn.	143449	391600	357100	1785500	714200	714200
8.	Chickmagalur	11051	30200	27500	137500	55000	55000
9.	D. Kannedda	28644	78200	71300	356500	142600	142600
10.	Hassan	15456	44900	41000	205000	82000	82000
11.	Kodagu	4821	13200	12000	60000	24000	24000
12.	Mandya	17113	46700	42600	213000	85200	85200
13.	Mysore	29562	80700	73600	368000	147200	147200
II	MYSORE Dvn.	107647	293900	268000	1340000	536000	536000

...7/-

1	2	3	4	5	6	7	8
14.	Belgaum	36061	98300	89600	448000	179200	179200
15.	Bijapur	28727	78400	71500	357500	143000	143000
16.	Dharwad	36042	98400	89700	448500	179400	179400
17.	Uttara Kannada	13148	35900	32700	163500	65400	65400
BELGAUM Dvn. Total		113918	311000	283500	1417500	567000	567000
18.	Bellary	18773	51300	46700	233500	93400	93400
19.	Bidar	11906	32500	29600	148000	59200	59200
20.	Gulbarga	24835	67800	61800	309000	123600	123600
21.	Raichur	21851	59700	54400	272000	108800	108800
GULBARGA Dvn. Total		77365	211300	192500	962500	385000	385000
GRAND TOTAL		442379	1207800	1101100	5505500	2202200	2202200

...8/-

GOVERNMENT OF KARNATAKA

DIRECTORATE OF HEALTH AND FAMILY WELFARE SERVICES

BANGALORE

No. UIP/187/88-89

Sl. No.	District	Target			Vaccine Allocation		
		T.T. (P.W)	T.T.10 years	T.T. 16 years	D.T.	T.T.	D.T.
1	2	3	4	5	6	7	8
1.	Bangalore (C)	75700	56000	53200	57800	462250	144500
2.	Bangalore (UD)	23800	17540	16740	18160	145200	45400
3.	Bangalore (RD)	47400	34860	33290	36100	288875	90250
4.	Chitradurga	59800	43980	41990	45560	364425	113900
5.	Kolar	63600	46800	44710	48500	387775	121250
6.	Shimoga	55700	41040	39180	42500	339800	106250
7.	Tumkur	65600	48260	46070	49980	399825	124960
BANGALORE Dvn. Total		391600	288480	275180	298600	2388150	746500
8.	Chickmagalur	30200	22230	21200	23000	184075	57500
9.	D. Kannada	78200	57570	54950	59620	476800	149050
10.	Hassan	44900	33150	31650	34340	274250	85850
11.	Kodagu	13200	9700	9250	10040	80375	25100
12.	Mandya	46700	34400	32800	35600	284750	89000
13.	Mysore	80700	59550	56750	61600	492500	15400
MYSORE Dvn. Total		293900	216600	206600	224200	1792750	560500

...9/-

No. UIP/187/88-89

GOVERNMENT OF KARNATAKA
DIRECTORATE OF HEALTH AND FAMILY WELFARE SERVICES
BANGALORE

Dated

SL.	DISTRICT	TARGET			VACCINE ALLOCATION		
		T.T.(P.W)	T.T.10 YEARS	T.T.16 YEARS	DT	T.T.	DT
1	2	3	4	5	6	7	8
1.	Bangalore (C)	75700	56000	53200	57800	462250	144500
2.	Bangalore (UD)	23800	17540	16740	18160	145200	45400
3.	Bangalore (RD)	47400	34860	33290	36100	288875	90250
4.	Chitradurga	59800	43980	41990	45560	364425	113900
5.	Kolar	63600	46800	44710	48500	387775	121250
6.	Shimoga	55700	41040	39180	42500	339800	106250
7.	Tumkur	65600	48260	46070	49980	399825	124960
8.	Bangalore Dvn., Total	391600	288480	275180	298600	2388150	746500
8.	Chickmagalur	30200	22230	21200	23000	184075	57500
9.	D.Kannada	78200	57570	54950	59620	476800	149050
10.	Hassan	44900	33150	31650	34340	274250	85850
11.	Kodagu	13200	9700	9250	10040	80375	25100
12.	Mandya	46700	34400	32800	35600	284750	89000
13.	Mysore	80700	59550	56750	61600	492500	154000
	Mysore Dvn. Total	293900	216600	206600	224200	1792750	560500

1	2	3	4	5	6	7	8
14.	Belgaum	98300	72420	69100	74960	599550	187400
15.	Bijapur	78400	57760	55100	59830	478150	149575
16.	Dharwad	98400	72420	69100	74960	599800	187400
17.	Uttara Kannada	35900	26400	25200	27350	218750	68375
	Belgaum Dvn.Total	311000	229000	218500	237100	1896250	592725
18.	Bellary	51300	37730	36000	39050	312575	97625
19.	Bidar	32500	23950	22820	24800	198175	62000
20.	Gulbarga	67800	49940	47600	51600	413350	129000
21.	Raichur	59700	43900	41900	45450	363750	113625
22.							
Gulbarga Dvn. Total		211300	155520	148320	160900	1287850	402250
	GRAND TOTAL	1207800	889600	848600	920800	7305000	2301975

SUBMITTED TO :-

1. The Secretary, Health & FW Department, M.S. Buildings, Bangalore for kind information.
2. The Additional Secretary (FW) Health & Fw Department, M.S. Buildings, Bangalore for kind information.
3. The Director of Health & FW Services, Bangalore.
4. The Commissioner, Bangalore City Corporation, Bangalore

COPY WITH COMPLIMENTS TO:-

5. The project Co-ordinator IPP-III, Bangalore
6. The Chief Secretaries, Zilla Parishad..... with a request to arrange for all out efforts right from the begining to achieve the targets.
7. The Deputy Commissioner (MCH), Ministry of Health & FW, Government of India, Nirman Bhavan, New Delhi - 110011.
8. The Assistant Commissioner (Immunization)/Assistant Director General (EPI) Nirman Bhavan, New Delhi - 110011.
9. The Principals and Post partum Centre, Directors of Medical College .....

COPY TO:

10. The Health Officer, city corporation, Bangalore.
11. The Divisional Joint Director ..... Division of Health & FW Services
12. The Joint Director, Public Health Institute, Bangalore Vaccine Institute, Belgaum.
13. The Joint Directors HP&P/CMD, M&F/TB/IPP-III/Leprosy for information - DH&FWS, Bangalore
14. Deputy Directors MCH/FW/NUTRITION/DH&FWS, Bangalore
15. The Demographer, Directorate of Health & FW Services, Bangalore
16. The District Health & FW Officer ..... District
17. The professor and Head of Department/P&SM/Paed./Obst.Gyn Department , Medical College
18. The District Surgeon, Cum Post Partum Centre Director, District Hospital .....
19. The District Immunization Officer .....District
20. Principal, Health & Family Welfare Training Centre, ...
21. Copy with compliments to the Zone Representative, UNICEF SOUTH INDIA OFFICE, 20, Chitharanjan Road, Madras - 18.

ADDITIONAL DIRECTOR (FW & MCH)

IMPLEMENTATION OF EXPANDED PROGRAMME OF IMMUNISATION FROM 1ST APRIL 1978 – IMMUNISATION SCHEDULE

A child needs to be protected against infections through immunisation. Immunisation should be done early in life and repeated periodically.

SCHEDULE OF VACCINATIONS

AGE		VACCINATION
I. PRE-NATAL:		
16–20 weeks	Tetanus Toxoid	1st dose
20–24 weeks	——do——	2nd dose
36–38 weeks	——do——	3rd dose
II. CHILDREN		
3 – 9 months	– Smallpox vaccine B.C.G. Vaccine Diphtheria-Pertusis-Tetanus (Triple Vaccine) 3 doses at an interval of 1–2 months	
9 – 12 months	– Measles vaccine: one dose	
18 – 24 months	– Diphtheria-Pertusis-Tetanus (Triple Vaccine) Booster dose Polio (Trivalent oral vaccine) Booster dose	
5 – 6 years (School entry)	– Diphtheria-Tetanus (Bivalent vaccine) – Booster dose Typhoid (Monovalent or bivalent vaccine) one dose after an interval of 1–2 months the typhoid vaccine one dose	
10 years	– Tetanus Toxoid – Booster dose Typhoid (Monovalent or bivalent vaccine) Booster dose	
16 years	– Tetanus Toxoid – Booster dose Typhoid (Monovalent or bivalent vaccine) Booster dose	

PRE-NATAL : When mothers are registered late in pregnancy, at least two doses of Tetanus toxoid should be given. 3 rd dose may be given after one interval after delivery. For a lady who has been immunised as above in childhood, one booster dose of Tetanus Toxoid should be given in subsequent pregnancy, preferably four weeks before the expected date of delivery.

CHILDREN : Ages indicated are considered to be the best times. However, if there is any delay in starting the first dose of Triple vaccine, the ages may be adjusted accordingly. It should be the aim to ensure that a child receives Smallpox, B.C.G., D.P.T. and polio vaccination where available, before it reaches one year of age. The different vaccines indicated against the various age groups can be given simultaneously; for example, B.C.G., Triple vaccine and polio vaccine, Smallpox, Triple vaccine and Polio etc. When typhoid vaccine is being given for the first time, two doses should be given at an interval of 1–2 months.

Sd/-

for DIRECTOR OF HEALTH & F.W. SERVICES

*Polio (trivalent oral vaccine) 3 doses at an interval of 1–2 months.

Introduction

The Government of India through its National Health Policy has expressed its major concern for improving the health of women and children. The National Immunisation Programme being implemented in this country is one such endeavour, which has been accepted as a priority programme in this direction. Since 1978, the efforts have been mainly concentrated on protecting more and more of the beneficiary population through the Expanded Programme on Immunisation (EPI). For achieving this, various policy changes as well as alternative operational strategies have been tried out. Currently, with the world-wide emphasis on enhancement of child survival programmes and schemes, the Immunisation Programme has attained still higher priority. Dedicated to the memory of the late Prime Minister Smt. Indira Gandhi, the Universal Immunisation Programme (UIP) was launched in 1985 with accelerated efforts for universal coverage of immunisation of young children. The anxiety of the Government to generate a sense of urgency and commitment towards achieving the stated programme goals can be appreciated from the fact that this programme has found a place, in the name of "Technology Mission on Vaccination and Immunisation of the vulnerable population, specially children", among the seven Technology Missions taken up on priority basis by the Government of India.

It is imperative that programmes of this nature which are implemented with clear objectives and specific time-bound goals and targets, be systematically reviewed to examine whether the programme has been effective in achieving the set goals. As an important means for assessing the programme achievements, a large number of coverage evaluation surveys have been conducted in different parts of the country which have shown varying extent of coverage of the beneficiary population. Such achievements though encouraging, have indicated that much needs to be achieved for reaching the stated goals. However, output of a programme by way of programme performance achievement alone will not suffice to enable programme administrators to effectively and efficiently manage the programme. For this, detailed review of the programme, with scope broad enough to include various managerial facets of the programme, is essential. Thus, it requires a close examination of the policies related to the programme, the relevance and feasibility of its

targets, the adequacy and appropriateness of the programme planning procedures and the plan itself. Further, the operational strategies adopted and the implementation processes, with particular reference to qualitative aspects of the programme and results in terms of actual immunisation coverage achieved, and, ultimately, the programme's impact on the magnitude of the problem of vaccine preventable diseases, also need to be looked into. Such indepth reviews would also enable the reviewers to understand the strengths and weaknesses of the programme which, in turn, can help in bringing about improvements in the programme.

It is in this context that the Ministry of Health and Family Welfare decided to undertake a National Review of the Immunisation Programme at the end of about a decade of its implementation.

It is important to appreciate that in a vast country like India, with diversities in population characteristics, cultural features and socio-administrative milieu, no single solution for improving the programme is likely to emerge after such a review. There is need to view the States as independent units and, thus, the scope of the review would naturally be widened to cover the maximum number of States in the country.

The Ministry of Health and Family Welfare identified the National Institute of Health and Family Welfare as the nodal institution and entrusted it with the responsibility of coordination of this massive effort.

OBJECTIVES

1. To review the policies, strategies and plans of action for the EPI/UIP at different levels of health administration i.e. Central, State and district levels.
2. To measure the progress in implementation of the EPI/UIP in relation to targets for acceleration of the programme accessibility, coverage, and mortality/morbidity reduction.
3. To identify the bottlenecks and constraints in the progress of the Immunisation Programme at different levels of programme implementation.
4. To make recommendations for overcoming the constraints and problems and thereby improving the implementation of the programme qualitatively and quantitatively, as well as for assessment of additional resources required for this purpose.

METHODOLOGY

Study Area

Because of the inter-state variations likely to exist in terms of programme policies, strategies, achievements, managerial issues and, consequently, related solutions, 'the State' was considered as a study unit in this review. Thus, all the 25

States were covered during this review. In addition, for obtaining information on similar aspects related to the programme in urban areas, four major urban metropolitan areas viz. Madras, Bombay, Calcutta and Delhi were also included in the review. Thus, the total number of units studied was 29 i.e. 18 major States, seven small North-Eastern States and four urban metropolitan areas.

Four main aspects of the programme received emphasis in this review viz.

i. The programme inputs like policies, plans, resources etc.
ii. The details of processes of implementation, including operational strategies, management of various resources, other programme management aspects like monitoring, supervision, information system, etc.
iii. Programme output in terms of actual performance and extent of coverage of the beneficiary population.
iv. The programme impact in terms of disease occurrence with reference to specific vaccine preventable diseases.

METHODS OF DATA COLLECTION

i. Interviews/discussions with programme officials and staff at Central, State, District, Primary Health Centre (PHC), subcentre and village levels.
ii. Study of records, reports, guidelines, instructions and other relevant documents.
iii. Observation of immunisation activities, service premises, cold chain maintenance, etc.
iv. Vaccination coverage survey using the 30 clusters sampling method among children aged 12-23 months and for pregnant women.
v. Conducting disease survey for lameness and neonatal tetanus.
vi. Interview with community members, leaders and representatives of non-governmental agencies.

SAMPLING PROCEDURE

i. For 18 Major States

From each major State, the Immunisation Programme operations and procedures were studied at the State headquarters and in two selected districts from the State. Immunisation coverage and disease surveys (lameness and neonatal tetanus) were conducted in these two districts.

Selection of Study Districts

For the purpose of selection, in each State, the total districts covered under UIP were grouped into two categories viz. i. those which were included under UIP

during1985-87; and ii. those covered during 1987-88.

From each group, one district each was chosen using the probability proportional to population size sampling (PPS). The list of districts covered within each State is shown in Appendix I.

In each district, apart from coverage evaluation, operational details of the programme were studied in selected PHCs, subcentres, urban health facilities and cluster villages/ localities.

ii. For Seven Small North-Eastern States

Operational details of the Immunisation Programme were studied separately from each State headquarters and at least in one district and sub-units viz. PHCs, subcentres, urban institutions, etc. within this district, in each State. For Immunisation Coverage Evaluation, all seven States were combined together as one unit, in which the districts covered by UIP in 1985-87 and 1987-88 were grouped separately and from these groups, 30 clusters each were selected and studied.

iii. For Urban Metropolitan Areas

Since urban metropolitan areas are not divided into districts as in the States, the units equivalent to districts were identified in the four metropolitan areas as follows:

a. Delhi — The total area of Delhi was divided arbitrarily into two zones i.e. Rural and Urban, and 30 clusters each were selected from the two zones.

b. Madras — The total area was divided into two zones i.e. North and South, and 30 clusters each were selected from the two zones.

c. Calcutta — The total number of 100 urban wards were divided into two groups, 1-50 and 51-100, and 30 clusters each were selected from the two groups.

d. Bombay — The total of four zones in Bombay were grouped into two i.e. 1+2 and 3+4, and 30 clusters each were selected from the two groups.

Apart from discussions with the programme officials in each district/State, the following were also studied:

i. Selected urban health institutions functioning in the area of the urban clusters.
ii. Medical college located in the district headquarters, if any.
iii. Selected private practitioners.
iv. Any Government institution run by agencies other than the State Government like Central Government Health Services (CGHS), Employees' State Insurance Corporation (ESIC), Railways, Armed Forces, etc.
v. Sentinel centres in the district/State headquarters.
vi. Popular leaders identified from the cluster areas.

vii. Anganwadi workers/health guides serving the cluster area.
viii. The paramedical supervisory staff related to the cluster area.
ix. Missed opportunity for immunisation in institutions from the selected study areas.

The total volume of work covered during the review is indicated in Appendix II.

MANPOWER INVOLVED

In order to collect information about various facets of the programme from 29 units (as indicated above), 29 expert teams were identified whose members included faculty from medical colleges and public health experts from various organisations. Each team consisted of a team convenor, three supervisors and team members whose numbers varied between 15 and 20. The names of the Team Convenors are shown in Appendix III.

A team of 20-30 paramedical personnel of the rank of Health Supervisors were deputed for each district for carrying out lameness and neonatal tetanus survey under the supervision of district team members. In order to ensure independent appraisal of the programme, officers and paramedical staff were selected from neighbouring States/districts.

OPERATIONAL DETAILS

In order to advise the Coordinators at NIHFW at various stages of the preparation of the project proposal and its implementation, a *Task Force Group* was constituted with representatives from the Ministry of Health and Family Welfare, ICMR, WHO, UNICEF and the Planning Commission as members. The list of members of the Task Force Group is shown in Appendix IV.

In order to assist the coordinators in the implementation of the review project, including preparation of data collection tools and in deciding an operational strategy, a *Planning and Implementation Group* was constituted with faculty from NIHFW, representatives from WHO, UNICEF and experts in the Immunisation Programme from other institutions as its members. The list of members of the Planning and Implementation Group is indicated in Appendix V.

In order to familiarise the State Health Officials with the details regarding the objectives and methodology of the review and also to seek their support and cooperation, a meeting was organised at NIHFW, New Delhi, on 6 and 7 April, 1989, for State Directors of Health Services and State EPI Officers.

A briefing for the 29 team convenors who were to coordinate the total review in each State was arranged at NIHFW, New Delhi, on 16, 17, 18 April, 1989, and the operational details, including study tools, were discussed in detail.

Before the actual start of the field survey, detailed briefing sessions were

conducted by the Team Convenors at State Headquarters, one for State level supervisors and the other for district team members regarding the methodology and collection of data from various agencies for the National Review.

Briefing of paramedical staff of the level of Health Supervisors for carrying out lameness and neonatal tetanus survey was carried out at the district headquarters by the respective State level supervisors.

At the end of the data collection, which lasted for about 2-3 weeks, the reports for the selected study districts and the State were prepared by the team and the same were discussed with the State officials for necessary clarifications. Based on the findings from the different study units, at NIHFW, a national level report was prepared.

Apart from the routine data collection in the 29 study units by expert teams, in order to give a deeper look at the programme to examine its status and role in the context of national goals of health for all by 2000 A.D. to be achieved through the primary health care approach, a team of five experts was involved in conducting an indepth study in selected States/districts. The main emphasis in this study was on immunisation as a component of primary health care, perception about the programme among community and health functionaries, social mobilisation efforts, innovative experiences, if any, etc.

In addition, a separate cost study of the programme was also undertaken in two districts, one from Maharashtra and the other from Madhya Pradesh by a special team. The report of the cost study is being submitted separately.

Organisational Structure and Programme Delivery System

There are 25 States and 6 Union Territories (UTs) in the country. According to the Constitution of India, health is a State subject and, therefore, planning and implementation of health programmes and provision of all health care services is the State's responsibility. In Union Territories, various programmes and services are Centrally administered. However, even in the major States, some of the national health programmes and schemes are centrally sponsored for which entire planning along with resource provision in varying degrees is the Central Government's responsibility. The Immunisation Programme, being one of the important components of the national family welfare programme, is also a Centrally sponsored programme. The three major divisions of health administration at the Centre and in every State are:

a. the political leadership responsible for policy decisions under the Ministry of Health and Family Welfare;
b. the executive leadership under the Health Secretary; and
c. the technical leadership under the Director General/ Director Health Services supported by their respective subordinate divisions/officials.

Even though immunisation as a service was being given as a component of Maternal and Child Health (MCH) care in the past, special emphasis on this service, with a separate and exclusive programme, was accomplished in 1978, when the Expanded Programme on Immunisation (EPI) was initiated in India. The main objective of the programme was to reduce morbidity and mortality due to six vaccine preventable diseases (VPD) by providing immunisation services to the eligible population. The programme also aimed at achieving self-sufficiency in the production of vaccines required for the programme. Tetanus Toxoid (TT) Immunisation initiated for pregnant mothers in 1975-76, was subsequently integrated with EPI in 1978. Immunisation against polio was included in EPI in 1979-80 (though, initially, in selected urban areas and under the ICDS programme only, it was later integrated, in 1982) and TT for school children was included in 1980-81. BCG was brought under the purview of EPI during 1981-82. Immunisation against measles was initiated under EPI in 1985-86.

The Universal Immunisation Programme (UIP) was launched on 19 November, 1985, to accelerate the immunisation coverage of the eligible population and to ensure betterment of logistics and managerial aspects. Though initially only those districts which had a potential to achieve the programme targets of universal coverage ahead of schedule were included in the UIP, it was to be extended in a systematic manner to cover all the districts in a phased manner by 1989-90, as given below:

Table I

Year-wise Phasing of Districts to be Taken up for UIP

Year	No. of Districts taken for UIP
1985	30
1986	62
1987	90
1988	120
1989	137
TOTAL	439

The UIP targets are to cover 85% of eligible children and 100% of the pregnant women by 1990. One could see that over a period, considering the epidemiological features and the priority needs, there has been a shift in focus towards infants rather than children under five years or under two years, unlike earlier.

Realising the tremendous impact this programme can have on the enhancement of child survival, it has been recently included as an integral part of one of the Technology Missions of the Government of India. The National Immunisation Mission is, thus, a joint responsibility of the Ministry of Health and Family Welfare and the Department of Biotechnology. Under the Mission, the responsibilities have been divided between the two Ministries/departments as follows:

Under Ministry of Health and Family Welfare

Mini Mission I - Storage and distribution of vaccines
Mini Mission II - Administration of vaccines, monitoring and evaluation.

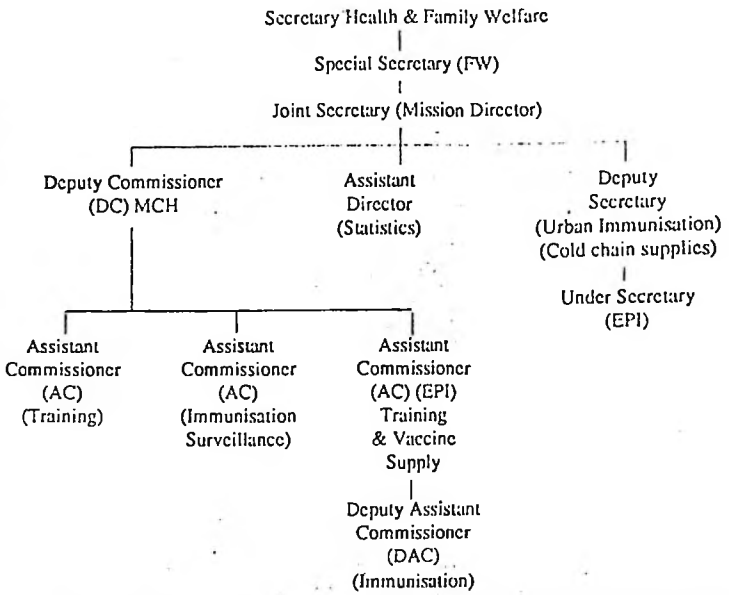
Under Department of Biotechnology

Mini Mission III - Vaccine research and development
Mini Mission IV - Vaccine production

The organisational structure of the Mission Directorate in the Ministry of Health and Family Welfare as proposed by the Government of India, is shown in

Appendix VI. Accordingly, the Mission Director is supported by technical experts like the Deputy Commissioner (MCH) and Assistant Commissioners who mainly look into training, surveillance and the internal evaluation of the mission activities. In addition, support is also available for managing the administration and accounts, supply of vaccines and equipment, including the cold chain system, monitoring and independent evaluation, as well as media activities.

The current organisational set up of the mission on immunisation at the Centre at the time of review is as follows:



The position of AC (Training) in the mission is vacant. The AC (EPI) is looking after the coordination of supply of vaccines to different States and the training programmes are also looked after by him. The AC(EPI) is assisted by the DAC(I). The Mission Director also has technical support from the Directorate General of Health Services (DGHS) and Indian Council of Medical Research (ICMR). In the DGHS, the Immunisation Programme is being looked after alongwith other Public Health Programmes by the Deputy Director General, DDG(P) who is overall in-charge of all Public Health Programmes. The Assistant Director General, ADG(EPI) looks after the EPI programme exclusively. The ADG(EPI) is supported by two Deputy Assistant Directors General (DADG) and the main responsibility of this

section is currently related to the administration of the vaccine production institutions under the Ministry of Health and Family Welfare. By and large, a major share of the management of the programme is with the Mission, and the bifurcation into the Ministry and DGHS appears to be somewhat peculiar with a very marginal share of responsibilities lying with DGHS. This could generate problems of coordination. However, the same is being presently taken care of by the DC(MCH) who has a horizontal relationship with the ADG(EPI) in technical matters. The ADG(EPI) was stated to be responsible also for organising training activities on planning and management of EPI, though here also, these activities need to be undertaken with close liaison with the Mission in order to avoid duplication of efforts.

At the State level, in the Department of Health and Family Welfare, the Immunisation Programme forms an important component of the Integrated Maternal and Child Health and Family Welfare Programme. There has been variation between States in regard to organisational structures. The organisational structure at the State level is shown at Appendix VI(a). However, most of the time, one officer in the Directorate of Health Services has been identified to look after EPI/UIP, either as a sole responsibility or as one among many responsibilities. The State EPI officer is responsible for the planning and management of the programme in the whole State by ensuring coordination between the various implementing agencies. Districts are the major administrative units responsible for the implementation of all health programmes including EPI/UIP. The Chief Medical Officers (CMOs) are in direct line command with the Director Health Services (DHS) and the State EPI officer is functioning as staff officer to the Director Family Welfare and/or Director Health Services.

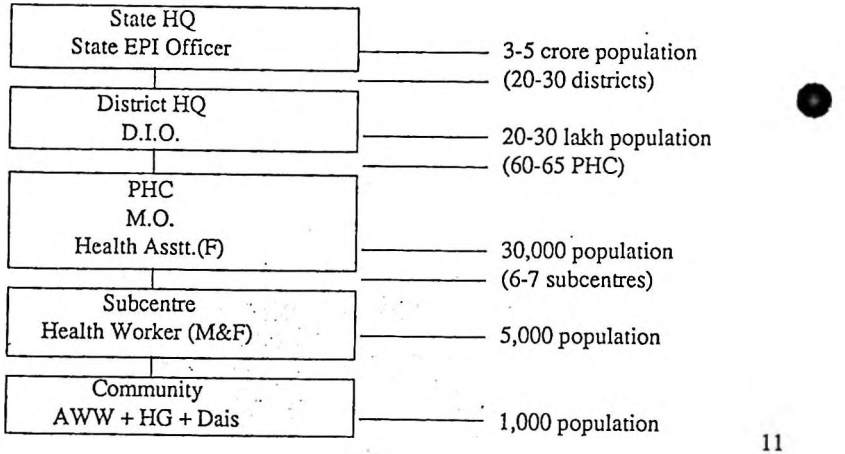
With the involvement of medical colleges in UIP, the Directorate of Medical Education also has a joint role in this programme. Moreover, the responsibility of implementing UIP in the three PHCs adopted by Medical Colleges under the Reorientation of Medical Education (ROME) scheme makes their involvement still more essential. The state EPI officer is, therefore, required to maintain liaison with the Medical Education Directorate and medical colleges also. Health services for specific population groups are being provided by various agencies like the Railways, Armed Forces, Public Sector Undertakings, ESIC, CGHS, etc. and proper coordination with such agencies also is to be ensured by the state EPI officer with regard to the Immunisation Programme. Large urban populations in major cities are provided health care through major health institutions run by State and other health agencies, and the preventive health care programmes are mainly to be provided by the Municipal authorities. In bigger cities, Municipal Corporations, within their available resources, provide these services including immunisation. The state EPI officer has to act in liaison with this agency also. At present, these relationships between the

State Health Directorate and other agencies mentioned above are not so well defined all over the country.

At the district level, the District CMO or District Health Officer (DHO) is the chief of all health programmes, including EPI/UIP. By and large, the basic organisational structure at the district remains the same all over the country but minor variations do exist in nomenclatures, numbers and categories of divisions/departments, etc. Till recently, the total responsibility of implementing EPI was with the district officer in-charge of family welfare with delegated responsibility from the CMO. However, under UIP, a new post of District Immunisation Officer (DIO) has been sanctioned at the district level exclusively, for improving the management of the Immunisation Programme and to function under the direct control of the CMO.

Below the district level, the Immunisation Programme is totally integrated with primary health care and is being delivered at the rural health infrastructure including the Community Health Centre (CHC), Primary Health Centre (PHC) and subcentre through the available medical, nursing and para professional personnel. While the female Multipurpose Health Worker (MPW) and Female Supervisor may be identified as the key persons responsible for implementing the programme, every functionary at this level has a definite share in this responsibility, though of varying degrees. In addition, in the rural as well as urban areas where the Integrated Child Development Services (ICDS) scheme has been operational, the functionaries like Anganwadi Workers (AWWs) under this scheme also share a major part of the responsibility with the primary health care personnel including Health Guides (HGs) and Dais.

Thus, the administrative/functional units as well as the average population covered at different levels in the hierarchy for the Immunisation Programme in the States is as follows:



Community health centres have not been included in the diagram because these are 30 bedded upgraded PHCs mainly responsible to provide referral services to the community.

The various responsibilities under the Immunisation Programme broadly divided among Central and State Governments are as follows:

Central

1. Provide vaccines, supplies and equipments.
2. Preparation of prototypes of health education materials.
3. Training of senior health personnel.
4. Periodic evaluation.

State

1. Delivery of services.
2. Maintenance of cold chain.
3. Organisation of surveillance.
4. Training of junior level health personnel.
5. Monitoring of programme.

Policies and Issues

The National Health Policy for India has given high priority to health care of women and children and has included immunisation as one of the priority programmes requiring special attention in the immediate context for enhancement of child survival. Moreover, according to the policy statement, primary health care, including immunisation as one of its essential components, has been accepted as the strategy for achieving the policy goals.

Legitimisation for according such high priority was based on the morbidity, mortality and complications following vaccine preventable diseases among children. In the absence of national epidemiological surveys conducted in the country on VPDs, the main source of information was reported data from various health institutions all over the country. In the memorandum of understanding of the Government of India with UNICEF, the prevalent situation on VPDs was described as follows:

About two million children die or become disabled due to six VPDs annually. About 500 children are paralysed daily by poliomyelitis, 2,50,000 new borns die annually of neonatal tetanus (NNT), 2,00,000 children die of measles, some 4,00,000 children die of tuberculosis and 1,50,000 die due to whooping cough. The aftermath of measles results in severe malnutrition, and bronchopneumonia. Tetanus also takes a heavy toll of lives in older children.

Prevention of the occurrence of vaccine preventable disease will not only reduce morbidity and mortality, but also prevent handicaps arising due to poliomyelitis. It has been reported that about 2/3 lameness amongst children is due to poliomyelitis.

The true picture of the magnitude of the problem due to 2 major VPDs, NNT and poliomyelitis was made available in India in 1981-82. Sample surveys conducted in 1981 and 1982 in 11 States revealed the neonatal tetanus mortality rate to be 13.3/1000 live births in rural areas and 3.2 in urban areas. The incidence rate of paralytic poliomyelitis was estimated to be 1.6 and 1.7 per thousand children in the 0-4 year age group in urban and rural areas respectively. It is projected that in the absence of

the Immunisation Programme, around 40 million cases with 1.5 million deaths occur due to VPDs annually.

Against the goals specified for immunisation coverage in the National Health Policy, EPI which was in operation since 1978 showed very slow progress, which clearly indicated the need for accelerating the pace for improving coverage with quality services. Recognition of the potential of immunisation as a cost effective technology for child survival had resulted in the extension of EPI with the aim of providing universal immunisation by 1990 under UIP. Members of the Task Force constituted by Government of India under the chairmanship of Shri R.P.Kapoor, to prepare a plan of action to achieve the objectives of UIP, felt that successful implementation of the project will:

1. greatly reduce the morbidity and mortality among children and will enhance the child survival rate;
2. establish an active interaction between mothers and primary health care functionaries;
3. constitute an important step in the journey towards health for all by 2000 A D; and
4. be the leading edge of primary health care and could be the entry point for a continuous system of delivery of a package of MCH services.

Policy planners believed that immunisation, prophylactic treatment against nutritional deficiencies and oral rehydration therapy against childhood diarrhoea, are the most simple, cost effective package of health services which will enhance child survival and prevent avoidable disability long before significant improvement in the level of economic development could be achieved. The high priority accorded to the Immunisation Programme by the Government of India is reflected in the fact that it has been included under one of the seven National Technology Missions.

According to the Government of India, the package of MCH services combined with simultaneous efforts in other related areas like services for aseptic and safe delivery through trained birth attendants, improvement in nutritional standards, provision of safe drinking water, etc. should make it possible to achieve reduction in infant and child mortality.

Convinced about the benefits of universal immunisation, the National Health Policy has set the following targets to be achieved by 1990.

Though measles vaccine was not mentioned in the National Health Policy, the Planning Commission's steering group on health and family welfare has recommended the inclusion of measles vaccination.

As a policy, the programme will be implemented as a part of primary health care through a network of female MPWs, supported by male MPWs and assisted by VHGs and AWWs. The universal coverage of immunisation of infants and pregnant

women will be executed over a five-year period in a phased manner. Thus, about 18 million infants and 24 million mothers will be immunised every year.

Table 2

Expected Immunisation Status by 1990

		Immunisation Status: 1990 (% population)
DPT	Infants	85
Polio	Infants	85
BCG	Infants	85
Measles	Infants	85
T.T.	Pregnant women	100
T.T.	(for school children)	
	10 years	100
	16 years	100
D.T.	(New school entrants)	
	5-6 years	85
Typhoid	5-6 years	85

In the final analysis, the objectives of the mission for the Universal Immunisation Programme are to:

1. Reduce morbidity and mortality due to diphtheria, pertussis, tetanus, poliomyelitis, tuberculosis, and measles among infants.
   a. Reduce the incidence of residual polio paralysis to less than 0.5 per 1,00,000 population;
   b. Reduce the neonatal tetanus mortality rate to less than 1 per 1000 live births.
2. Reduce mortality due to tetanus amongst pregnant women.
3. Achieve self-sufficiency in vaccine production.

Policy planners may display a great deal of confidence and make believe that the package is an `opportunistic marvel'. Yet there are many issues raised by critics of the programme who question the wisdom in launching such a costly mega venture. They fear that the fanfare with which the programme has been launched may ultimately misfire. They feel that UIP like the Family Planning Programme is hijacking the space from various other programmes needing greater attention and high order of prioritisation.

It has been argued by some that the premise on which the programme had been built is totally untenable. There is no epidemiological evidence to support the contention that control of six vaccine preventable diseases will make any dent in infant mortality. Six VPDs form a very small proportion of diseases which cause death and illness in children below five years of age. According to surveys of causes of death in infants by the Registrar General of India, prematurity, respiratory infections, and diarrhoea predominate and none of them are vaccine preventable.

According to them, 60-90% of deaths of children under five years are due to diarrhoea and respiratory diseases and only 10-12% account for six vaccine preventable diseases and, thus, lack epidemiological justification for launching an Immunisation Programme at the national level. To quote Dr. Debabar Banerjee "There are gaping holes in the knowledge of epidemiology of six vaccine preventable diseases to be attacked. This sounds incredible. This is like mobilising a huge army without even knowing who the enemy is; what are its strengths and weaknesses?" Thus, according to him, it is by far the most staggering flaw in the policy.

Forgetting for a moment that the six VPDs pale into insignificance when looked at against the backdrop of total health problems viz. poverty, malnutrition, tuberculosis, leprosy, diarrhoea, dysentery, cholera, worm infestation, acute respiratory infections, anaemia, etc., the question has also been raised as to how and why immunisation is chosen as the most effective method in controlling the six VPDs. Knowing fully well that causation of disease is multifactorial, relying totally on one single tool to control the disease has not been accepted as a sound policy. For example, tuberculosis is best controlled by interrupting transmission in adults; yet, the government, instead of revamping the national tuberculosis control programme, is relying on B.C.G. vaccination which gives very little protection.

Similarly, the spread of measles is not only greater among the malnourished population, but complications and mortality are also high in this group. Therefore, doubts have been expressed regarding the usefulness of measles vaccination alone without tackling the problem of malnutrition among children.

Various questions have been raised regarding the immunisation schedules recommended for India also. There is a feeling that a large number of issues related to the schedule of immunisation, doses, and type of vaccine should have been resolved before launching such a massive programme. Similarly, the number of doses of polio vaccine has also been under debate - whether it is enough to give three doses or whether it should be five doses, or it should be started at birth, etc. There has been doubt expressed regarding the rationale of fixing of the age group for completion of primary immunisation under one year. The question raised is whether it is based on epidemiological observations or is it the acceptance of inability to cover all the preschool children and, therefore, the target group has been scaled down to one year.

Another issue raised about the Immunisation Programme is regarding the fixation of target of coverage at 85% level. It is not understood as to how and on what basis it has been assumed that 85% coverage of infants would provide adequate herd immunity and help in interrupting disease transmission. It is also said that the phenomenon of herd immunity would only be effective when all potential suspects are protected. The potential suspects for these six VPDs are children from the 0-5 years

age group whereas under UIP, only infants are being protected, though there is a provision for providing services to older children on demand.

Besides, several studies have shown that even with more than 85% coverage and vaccine efficacy of more than 95%, cases of poliomyelitis have still been occurring in those areas. Many are, therefore, recommending that there is a need to revise the policy regarding expected coverage level and suggesting that it should be extended to 100%.

Even in the areas showing an overall optimum coverage, the number of serious outbreaks of measles have been reported in pockets with poor coverage scattered within such areas due to lack of uniform coverage.

It is also pointed out that the natural process of immunity is altered in a population which is dependent on immunisation. Therefore, mass campaigns of immunisation, if not continuously maintained, can result in severe outbreaks. With growing stress on immunisation coverage, it is feared that the tendency to organise special camps would gradually increase, without proper attention to sustained efforts to protect the new susceptibles.

It has been repeatedly stated by the authorities that the Immunisation Programme is an integral component of the MCH programme which, in turn, is one essential element of Primary Health Care. As per the existing set-up, this is to be run by the existing infrastructure and the services under the programme are to be delivered to the community in an integrated manner by the field health functionaries. However, the extra emphasis laid on target achievements under UIP as in the case of the Family Planning Programme, makes one fear that all other components of MCH or primary health care services are likely to be pushed aside by the functionaries. Similarly, the present organisational set-up of the programme itself leads one to suspect a strong element of verticality in the programme. At the Centre, State and district levels, additional staff exclusively looking after different components of the Immunisation Programme are being appointed, e.g. seven additional officers with nine support staff at Central level; two additional officers with nine support staff at State level; four additional staff at district level. Out of the four, one will be the district programme officer.

Even at the Centre, though the mission on immunisation is within the Department of Family Welfare, there are doubts regarding the extent of integration of the programme with other components of family welfare. Creation of an exclusive organisational set-up, separate budget provision as well as independent handling of the same and the formulation of a mission give credence to the argument that once again a vertical programme has been thrust by the authorities.

Another issue raised by many regarding the programme is that, apart from being a vertical programme, the total overall programme details including strategies, operational details, norms of resource allocation, etc. follow a uniform pattern

throughout the country. No consideration has been given to epidemiological and ecological profiles, organisational and managerial capabilities and preparedness or limitations in terms of the general economic development status of different States. It is a well established fact that socio-economic variations between the States or even within the same State influence the implementation of the programme and achievement of results. The poor performance in many States in the Hindi belt lends support to such assumption. A universal Central pattern and the dependency on Central assistance have failed to enthuse State Governments. According to the critics, most of them have received it passively and branded it as a `Centre's programme'. Such an attitude interferes with the absorption of the programme in the total health services of the State and raises questions regarding the sustainability of the programme once the 100% assistance from the Centre is withdrawn.

To reach the target of immunisation coverage of 85% of infants and 100% of pregnant women before 1990 is a very challenging and stupendous task. It is also pointed out that the programme is not a one-time venture, but year after year, even after 1990, around 18.5 million infants and 22 million pregnant women have to be protected. Many experts believe that to achieve such goals is nearly impossible and requires a huge army of workers, massive input of resources and intensive efforts. Current levels of achievement lend support to their criticism and seek an answer to the question as to how it is expected that those districts included in the year 1989-90 will achieve such a high level of target when even the districts included in 1985-86 are still lagging behind.

Either by design or oversight, the rapidly increasing urban population has not been included seriously under UIP. No specific policies have been adopted as to how this group is to be protected. It may be argued that urban areas already have some built-in facilities for providing immunisation services through their medical care facilities, yet, it cannot be denied that they are not large enough to meet the challenges of the evergrowing urban population, with mushrooming of slums; nor are they prepared to assume areawide responsibilities in a coordinated manner. Therefore, the immediate questions that arise are;

1. Ignoring such a large part of the population how do we hope to achieve the targets set for 1990 for protection of infants and pregnant women? This would in itself jeopardise the phenomenon of herd immunity.
2. Do the existing facilities in urban area have the will or wherewithal to meet the needs of the socially handicapped urban population?

Pushing the States to achieve targets will mean upsetting the rhythm of general health services. Having failed to achieve targets through routine services, the States will be compelled to organise mass drives/campaigns. States with `weak' health services are more likely to default and consequently be singled out to launch special

drives resulting in diverting of their meagre resources. Loading the fragile health infrastructure in many States with target oriented programmes will only hasten the process of crippling the structure.

A number of national programmes like control of communicable and non-communicable diseases are transferred to the State Governments for implementation by dangling the carrot of 100% Central Government support. The States, in their own wisdom, accept such programmes, utilise the assistance for creation of posts and development of infrastructure - mostly to work in a vertical fashion. In this process, the States are constantly playing a balancing game of according priority and giving more attention to one at the cost of the others. Once the assistance begins to dry up, the programmes are allowed to languish and problems allowed to perpetuate.

Another apprehension about the programme is regarding the manner in which the health staff will perceive their role in this programme. Introduction of any new programme is likely to generate a feeling amongst peripheral workers that they are being burdened with additional responsibility and, thus, create anger and disinterest among them.

The Immunisation Programme is the single largest programme in terms of financial allocation in the current Five-Year Plan. The Ministry of Health and Family Welfare has allocated Rs.240 crores and the Department of Biotechnology Rs.100 crores. It is also suspected that besides the budget of Rs.340 crores, the programme may use large chunk from the MCH programme budget also.

Integration of the Immunisation Programme in the general health services has been ominous, and is proving to be worse than the vertical programme. Being target-oriented and time-bound, it has hijacked space from other health activities. Many feel that the prohibitive costs and manner in which these programmes are run make one believe that they are being nurtured at the cost of the provision of primary health care along the lines envisaged by the Bhore Committee and that these programmes have not only diverted material resources but have resulted in paralysing the primary health care and rural administrative services.

Even international agencies like WHO and UNICEF have come under a cloud of suspicion and are being accused of becoming conduits for the resurrection of the utterly wasteful, discredited technocentric campaigns against selective diseases.

Contrary to the assertion of policy planners that UIP will be the leading edge of Primary Health Care and constitute an important step in the journey toward health for all by 2000 A.D., the policy of UIP is believed by some, to be an antithesis of the statement of the national health policy. In their view, it is a technocentric programme thrust upon the people, making them totally dependent, without promoting community self-reliance. It is an exercise of motivational manipulation by instilling a psychosis of fear for six diseases and expounding the virtues of immunisation.

Critics ask, "Why a Mission on Immunisation"? How can the creation of Mission, without removing planning flaws, could help in achieving the goals set? It is also asked how loading the Mission with generalist administrators without adequate technical support is going to help the programme. Besides, they cannot be held accountable for their decisions because of their frequent transfers, a classical instance of authority without responsibility.

The objective of the Mission is to reduce mortality and morbidity due to the 6 VPDs. However critics feel that the programme's performance is monitored not by measuring the impact on mortality or morbidity but by assessing the achievement of the targets. Consequently, the programme has degenerated into a numbers game, bereft of its epidemiological and human dimensions.

Critics also question the wisdom of totally marginalising the DGHS from the activities of the Mission. Moreover, it is an irony of fate that whereas other components of the MCH programme are being looked after by the Department of Family Welfare, immunisation of infants has been singled out to be looked after by the Mission. It is also not clear, what role the Mission has in providing booster doses and immunisation of older children and who acts in the event of outbreaks of vaccine preventable diseases.

Though it is loudly claimed that all services should be integrated, it appears that the total family welfare services have been severely fragmented and segmented. Different components of activities are being looked after by different agencies, some by the Department of Family Welfare, some by the Technology Mission and others by DGHS, and IEC by various other agencies.

It is feared that such an expensive time-bound and target- oriented programme without any epidemiological justification thrust upon the over-burdened infrastructure in the States, will ultimately prove to be yet another misadventure without making the tiniest dent in the total health problems of children.

The issues raised above draw a dismal picture of the entire programme. However, it may not be entirely true. Therefore, it would be more appropriate to review all the issues more objectively and pragmatically and put the matter in the right perspective.

There is no disagreement on the fact that enough baseline data are not available to justify the high prioritisation of the Immunisation Programme. There is also no denying that major health problems influencing child survival are due to poverty, poor sanitation and lack of adequate health facilities requiring greater efforts on the socio-economic fronts through employment, better living conditions, nutrition, improvement of sanitation, etc. Nevertheless, critics do admit that 10-12% of child mortality is due to vaccine preventable diseases. Many of these diseases also cause severe morbidity and, sometimes, permanent disability. Around 2.5% of measles

cases die during the acute stage of the disease. Besides, it causes severe malnutrition and affects the immune system, thus, making children vulnerable to other infections. Measles is also known for its seriousness when associated with its common complications like respiratory infections and diarrhoea. According to experts in the field of child health, neonatal tetanus and measles are the prime killers among VPDs, hence, immunisation against these diseases should have been given in the first instance. Whooping cough, an acute respiratory infection, besides causing death, sets in encephalopathy and, in some children, severe brain damage. It is also well known that pneumonia can be one of the serious complications associated with whooping cough. It has been agreed upon by many that the leading causes of mortality and morbidity among pre-school children are diarrhoeal diseases and respiratory infections. The causal relationship of acute respiratory infections with diseases like measles and whooping cough also needs to be taken into account. Poliomyelitis, it is well known, leaves its tell-tale stories. It is estimated that nearly 2,00,000 children become lame due to poliomyelitis annually in India.

Therefore, it is untenable to allow these diseases to multiply and take a heavy toll of life, (even though it may not be as high as due to other causes) particularly, when technology is available to contain them, and which is stated to be a cost effective one. It is true that vaccination may not be the only solution, but it is immediately available. The success story of the eradication of smallpox by protecting potential suspects with a potent vaccine also needs to be remembered. Also, this strategy has already been tried out and not only has it been found effective but has been acceptable to the community too. With increasing awareness, people have started appreciating the value of immunisation, though at a slow pace. Moreover, one cannot afford to wait for socio-economic and environmental development, which will take long time to come about. One has to remember that for enhancement of child survival, one would have to depend upon a mix of technology and development. It cannot be either one or the other. It has to be both.

One may dispute the manner in which the programme has been launched, or the cost input, but the validity of the programme is unassailable for the simple reason that its impact, howsoever little, is going to influence child survival.

However, the caution sounded by experts that areas of low coverage or where the natural process of immunity is altered are potentially prone to outbreaks of diseases, is logical and merits respectful consideration.

Taking a cue from demographers, who are constantly predicting the number of births prevented as a result of family planning procedures, experts in UIP have also begun to predict the number of vaccine preventable disease cases prevented due to the Immunisation Programme. The occurrence of disease is a biological phenomenon which does not follow the rules of birth but is governed by a number of variables

related to causative organisms, environmental factors favouring transmission, level of immunity in the community, etc. Therefore, such predictions should be judged on the anvils of epidemiological truth and accepted with caution.

It is, therefore, suggested that in disease control programmes, it is not sufficient to know "what has been achieved"; it is important to know "what remains to be achieved". Instead of judging performance by target achievement, it is important to know how many eligibles remain to be protected. Peripheral workers may be trained to monitor their own progress through regular assessment of eligibles to be protected in her/his area of coverage.

Our country is committed to accept the primary health care strategy of which immunisation is one component. The Government of India has intensified efforts simultaneously to accelerate other components of primary health care, viz. expansion of infrastructure, maternity and perinatal care, diarrhoeal disease control, family planning programme, prophylaxis programmes against nutritional deficiencies, information education and communication for health and family welfare, provision of safe drinking water and improvement of environmental sanitation, etc. It will suffice to say that the Minimum Needs Programme, Integrated Rural Development Programme, schemes for rural unemployed, massive allocation of funds for water supply and improvement of sanitation in the current environmental sanitation decade are directed towards total development of the common man. Therefore, it would be incorrect to state that the Immunisation Programme is siphoning off precious resources from other programmes. It is also true that the need for development of expensive specific technical resources like the cold chain equipment is an essential requirement for the implementation of this programme which may not be true with some other components of primary health care mentioned above. Further, the way the programme is run today in a relatively vertical manner, forces the authorities to deviate from the desired path of strengthening the total health care system with a comprehensive MCH package which, in the long run, could have given better results in terms of improved health status of women and children. Therefore, if at all a Mission was to be formed, it should have been for MCH, rather than for immunisation alone.

The Immunisation Programme run as a time-bound, target-oriented programme, is jettisoned with the existing health care system and is allowed to swim or sail with it. Yet it would require certain essential inputs, so as to immunise children with good quality and safe vaccines, given under aseptic condition by a trained worker. Therefore, a good organised programme would require:

1. Good quality of vaccine
2. Scaling up of production of vaccine and supply
3. Maintaining quality of vaccine through a well organised cold chain system from the production site to the remotest outreach.

4. A well organised distribution system.
5. Supply of equipment and material for sterilisation of syringes and needles, so as to ensure services under aseptic conditions.
6. Retraining of the health workers to ensure better quality of services.

Though the Immunisation Programme has been going on in our country for a long time, the efforts to develop the above facets of the programme have been rather slow. It is only with the acceleration of the programme, under UIP, that serious efforts have been made to ensure a well organised cold chain system, enhanced production of vaccine and arrangement of an efficient distribution system. Therefore, the major portion of the budget had to be spent initially on establishing and developing various essentials required for a good programme. Such expenditure was inevitable and should not be considered a wasteful investment, in whatever manner the programme had been launched. Of the total allocation of Rs.2400 million, Rs.717.67 million is spent on walk-in-coolers, deep freezers, ILRs, vaccine carriers, transport vans, loan for mopeds, etc. Another Rs.826.20 million goes to meet the cost of vaccine, Rs.328.5 million towards the cost of syringes and needles. Only a minimum of 5% of the total budget has been allocated for expenditure on salaries.

It can be said without any hesitation that programme managers have meticulously gone into details and streamlined the distribution system of hardware, its monitoring and its maintenance (and for vaccine too). By and large, short supply of vaccines and other equipment does not remain a major cause of anxiety today.

It can be said that the above inputs have gone to a great extent to strengthen the primary health care system and boosted the credibility of the institution and workers. For example, increase in POL and allocation of Rs.2000 per PHC to meet contingent expenditure like maintenance of the cold chain equipment, will go a long way in meeting the shortage generally with which these institutions suffer.

It really goes to the credit of planners to have strengthened the system well within the appointed time. However, it will be pertinent to remind the planners to make provision for the maintenance of equipment and its replacement when required. Therefore, the recurring cost though enormous, is essential to maintain high standards of immunisation.

Health is a State subject and as per the Constitution, it is the responsibility of the States to provide health care and launch preventive and promotive health programmes. The national health policy has been accepted in 1983, and following this, the States are expected to develop their own specific State Health Policies within this broad framework and, at the same time, identifying their priority needs. Similarly, regarding any decision to take up new programmes/schemes at the national level, there is a mechanism of coordination among the States through the meetings of Central Councils of Health and Family Welfare. This forum is to be fully

utilised by each State to accept or reject programmes proposed to be taken by all the States.

During the past four decades, not many States have shown leadership and dynamism in launching preventive and promotive programmes based on local needs. Scarce resources had always been given as the reason for not doing so. Consequently, since the inception of Five Year Plans, they have depended on Centrally assisted health programmes related to control of diseases and on other promotional programmes. Initially, because of the magnitude and national significance of the problems and also due to the absence of a well organised basic health infrastructure in the States, most of the national health programmes were launched as vertical programmes. The understanding was that with the achievement of a certain degree of control of the problem and development of infrastructure, the programmes will be gradually absorbed/integrated into the States' health system and will be run by States themselves. By and large, the States have continued to depend upon the Centre for financial assistance for most of the health programmes. On the other hand, most States spent most of their own resources for providing facilities for secondary and tertiary care. With regard to the Immunisation Programme, the States have accepted the programme giving it considerable priority attention, although with a reservation in using Central resources by many, particularly for appointing manpower exclusively sanctioned under UIP, under the apprehension that it may become a liability to them once the Central assistance is withdrawn.

Immunisation is not a new entrant. It was one of the important activities required to be performed by peripheral health workers. With the introduction of the MPW scheme, the female MPW is still required to perform the same activities that she was performing as an ANM. Nothing new has been added. Therefore, expecting her to immunise children cannot be considered as overburdening her. During the review of immunisation, it was revealed that in more than 80% of subcentres, immunisation services were being provided as an integrated component of MCH. The ANM showed a greater sense of confidence and believed that some tangible services are now being offered and she is getting more opportunities to establish good rapport with the mothers. On the other hand, a well planned operational strategy for organising sessions in her institution or area should be considered a help to her to improve her functioning and image in the community.

Observations of immunisations conducted by these workers, either at the subcentre or outreach, bear testimony of the good quality of services provided. In nearly 70% of the sessions observed, separate syringes and needles were used for each immunisation. Likewise, during the sessions, the ANMs were communicating with the parents of child beneficiaries about various aspects of immunisation. Also, the vaccine and diluent were kept in ice in more than 80% of the sessions observed.

Rather than considering the programme an additional burden on the health system on the whole, and undoing the total benefits accrued thus far, our effort should be to expand the coverage well beyond what has been already achieved and to utilise the already established infrastructure and the systematic operational strategies worked out, for incorporating more effectively other components of the MCH package to reach the community.

A system of logistics and supplies, maintenance of the cold chain, sterilisation procedures for equipment, scheduling of activities, systematic and regular reporting mechanism, etc. have been established under the programme and the health personnel are increasingly getting oriented to this system through training and experience. Even though it appears to be oriented to a single programme at this stage, this experience can be extended to take care of other programmes also in a gradual manner.

No doubt, as and when other components of MCH are included in the package, simultaneous efforts to provide adequate and appropriate resources should also be made. According to Dr. Ghosh, the view that UIP has interfered with health delivery may be an exaggeration since very little was being done and the utilisation of primary health care services according to many reports, is rather poor.

Setting specific targets under any programme should be considered an effective management tool for achieving better and timely results. The Immunisation Programme has been launched as a target-oriented and specific time-bound programme. Unfortunately, the use of targets has been wrongly applied and resulted in over playing it, resorting to strategies of special drives in many situations at the cost of other programmes rather than a stable and regular service for achieving the targets. The fault lies not in making the programme target oriented, but in the wrong methods used in either target setting (without rational basis and/or involvement of functionaries) or its allocation, or its use in monitoring progress in the achievement of the programme.

Clouds of misconception over international agencies like WHO and UNICEF are misplaced and uncalled for given the circumstance prevalent immediately after independence, when communicable diseases like smallpox, malaria, cholera and many other diseases were taking a heavy toll of lives. With hardly any resources in terms of trained manpower, infrastructure, materials and finances, the only alternative available was to launch mass campaigns against some diseases coupled with simultaneous development of resources. With the increasing numbers of health manpower and vastly expanded health infrastructure, there is no longer any need for continuing or launching new vertical programmes. Yet the results of the mass campaigns launched then with the support of international agencies are clearly perceptible. Smallpox is no longer killing or maiming our children. Malaria is still

a problem, but the magnitude has been greatly reduced. The physician of yore will vividly remember the vast number of children, the young and old, suffering from malaria. Children are no longer found with enlarged spleens. Yaws is a forgotten entity. Therefore, it will be uncharitable to ignore or minimise the gains made.

For our failure to reap the fruits of various programmes, instead of searching for scapegoats, we should ask ourselves, "Why have we failed?" Unfortunately, tinted vision dims the perception, obliterates the obvious, takes away the courage to look at our own faults. Instead of searching for alibis for our failures, let us begin to remedy our flaws.

One of the most important issues is to revamp the health infrastructure. Most of the failures can be ascribed to poor implementation due to the gradually increasing culture of no work. However, it would not suffice to blame the workers, and raise our hands in despair. We have not faced this challenge squarely and boldly. It would be suicidal to postpone tackling of the situation any further, because the success of any programme, not of UIP alone, depends upon the interest, involvement and commitment of workers at all levels. Mere application of tiers of supervision is not going to achieve results. Instead of humiliating and demeaning the workers, we should try to build them up, instill in them a sense of pride and involvement and empower them to take decisions and enable them to discharge their duties with a full sense of responsibility.

Resources

HEALTH INFRASTRUCTURE

It had been planned that immunisation services will be delivered as an integral component of primary health care. The gradually expanding rural network of CHC, PHC and subcentres as well as urban family welfare centres, postpartum centres and medical colleges do play a key role in the delivery of the immunisation services to the beneficiaries.

To meet the national goals of health for all, the infrastructure of health services is being expanded. Under the minimum needs programme, it has been planned to provide one subcentre for every 5,000 population and for 3,000 population in hilly and tribal areas, manned by a trained male and female worker; a primary health centre headed by a qualified medical officer for 30,000 population and 20,000 population in tribal and hilly areas; and a community health centre/upgraded PHC which will work as a referral centre for a population of 1,00,000.

A review of the existing facilities published in the Bulletin on Rural Health Services in India for the quarter ending September, 1988, reveals that there are 16,535 PHCs in existence serving, on an average, a population of 28,941. These PHCs have a back-up of 1,10,275 subcentres serving, on an average, a population of 5,518. Approximately 5,000 PHCs and 20,000 subcentres are yet to be established in the current year, so as to reach the targets set by the end of the Seventh Five-Year Plan.

A review of the existing subcentres vs expected number in different districts revealed that in 15 districts out of 43, the number of subcentres was in accordance with the expected number. In four districts, the number of existing subcentres exceeded the expected number. However, in 13 districts, the number of existing subcentres was less than expected. The deficiency ranged between 10% and a little over 40%. In Dibrugarh district, in Assam, and Ganjam in Orissa, the deficiency was more than 40%, whereas in the districts of Anantnag, Badgam, Kasargode and Hissar, the gap ranged between 20-30%. In Warangal, Singhbhum, Hissar and Bijapur districts the proportion of subcentres falling short of expectation ranged between 10-20%, and in district Patiala, the gap was less than 10%. The results are

Cost Analysis of UIP

Keeping in view the requirements of the Central Government and donor agencies, a study was undertaken with the aim of financial analysis of the programme providing estimates of total cost of the programme for an administrative area of implementation and the cost of sustaining the programme to the local and State Governments.

The specific objectives of the study were:

1. to identify the cost composition of UIP at district level and below,
2. to estimate total cost of the programme and the cost composition at district level and below,
3. to estimate unit cost of services provided under UIP, and
4. to estimate cost of sustaining the programme for future years.

The study was conducted in two districts namely, Nanded in Maharashtra and West Nimar in Madhya Pradesh. A random sample from each category of institution within each district was drawn to study the cost of running UIP at the institutional level.

The study required data on three different aspects of Immunisation Programme viz.

i. the data about various kinds of inputs available and utilized,
ii. quantum of programme output in terms of services provided by various health institutions in rural and urban areas, and
iii. data on completed immunisations.

For this purpose various methods of data collection were adopted.

i. *Interviews and discussions* with the officials at State, district and institutional level.
ii. *Study of secondary records* for details about central budget and State budget as well as expenditure for the UIP from State HQs.
iii. *Delphi technique and interviews* with the functionaries at various levels were conducted to estimate staff time allocation to the activities related to immunisation.

In addition to the above three approaches the detailed information collected by the State team constituted for coverage evaluation and review was also utilized and analysed.

In the present study costs have been simply defined as the value of resources used and the programme cost has been estimated as a sum of the monetary value of each resource category utilized for the programme.

For each resource, monetary value was estimated and allocated to the UIP depending on whether it is direct cost component or indirect cost component.

The full cost of the programme has been estimated in two components as capital cost and recurring cost. The capital cost has been estimated by annualising the value of the capital input.

The recurring cost of the programme has been estimated by adding up the monetary value of all inputs consumed for the provision of services and undertaking other activities related to UIP.

For information on budget provided for UIP and expenditure incurred, the details in these regard were collected from the two districts under study for the year 1988-89.

COST OF UIP AT DISTRICT LEVEL

In order to estimate the cost of Universal Immunisation Programme at district level for one year period (1988-89) and to project the cost for future years, it was thought essential to identify the cost components i.e direct/incremental cost and indirect/obligatory cost with subdivision into capital and recurring costs and cost composition at district level as well as at institutional level.

The total cost of UIP at district level and cost composition in two districts (1988-89) are shown below:

Table 47

Total Cost of UIP at District Level and Cost Composition in Two Districts (1988-89)

Item of Expenditure	West Nimar			Nanded		
	Obligatory/ Indirect cost	Incremental/ Direct cost	Total cost	Obligatory/ Indirect cost	Incremental/ Direct cost	Total cost
Capital*	62,337 (1.4%)	86,016 (8.7%)	1,48,353 (2.7%)	2,07,525 (1.8%)	1,65,848 (14.3%)	3,73,373 (2.9%)
Recurring	43,86,048 (98.6%)	9,03,847 (91.3%)	52,89,895 (97.3%)	113,06,168 (98.2%)	9,94,528 (85.7%)	123,00,696 (97.1%)
Total	44,48,385 (81.8%)	9,89,863 (18.2%)	54,38,248 (100.0%)	115,13,693 (90.8%)	11,60,326 (9.2%)	126,74,069

* : Capital cost includes only the annualised cost per year for the investment made and not the actual investment for equipments, vehicles, etc.

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It showed that the total cost of operating UIP at district level was Rs. 126.74 lakhs for district Nanded and Rs. 54.38 lakhs for district West Nimar. It is seen that the total cost for West Nimar was less than half compared to district Nanded. This can be explained that UIP was implemented one year prior in district Nanded and more number of health infrastructure facilities and health functionaries available within the district were involved in immunisation activities. This resulted in utilisation of more resources of various types leading to higher cost.

The composition of the total cost in capital and recurring cost was approximately in the ratio 1:33 for both Nanded and West Nimar. Thus, the recurring cost was the major component contributing to 97.0 per cent of the total cost in both the districts.

COST COMPOSITION OF UIP AT DISTRICT LEVEL

Matrix of cost components into direct and indirect cost for both the districts shows that the major element of indirect cost was the salary of health personnel working in various institutions involved in immunisation activities and it accounted for nearly 98 per cent of total indirect cost. The remaining indirect cost was incurred on vehicles, their running cost and maintenance cost.

In regard to the direct cost of the programme, the percentage contribution was different and it was observed that 8.7 per cent of total direct cost was incurred on capital items in West Nimar whereas it was 14.3 per cent in Nanded. Among the direct recurring expenditure items, major share was for vaccines and immunisation supplies such as needles, syringes and immunisation cards. These elements accounted for 81.9 per cent of direct recurring expenditure in West Nimar district and 62.5 per cent in Nanded district. The salary expenditure as percentage of direct recurring cost was only 6.5 per cent and 19.8 per cent in West Nimar and Nanded respectively. The production and supply of health education material such as pamphlets and posters accounted for 4 to 5 per cent of total direct recurring expenditure whereas operating cost for vehicles was about 3 to 4 per cent of total direct cost.

UNIT COST OF SERVICES FOR IMMUNISATION AT DISTRICT LEVEL

This was estimated for both the districts by dividing the total cost of the programme by the output of services for the same period 1988-89.

The estimates derived for the unit cost of output of services in UIP indicated that the average cost per dose of immunisation to child or pregnant woman was about Rs. 10 to 11 in West Nimar and Rs. 26 to 27 in Nanded. The average incremental cost per immunisation was Rs. 1.99 in West Nimar and Rs. 2.42 in Nanded.

The cost per fully immunised child for six VPDs was estimated by using the denominator in terms of number of fully immunised children. For this, the norm

provided by WHO, i.e. 90 per cent of children immunised for measles to be considered as fully immunised was utilised. From the estimates thus derived it was observed that the average cost per fully immunised child was Rs.96.97 in West Nimar and Rs. 270.25 in Nanded of which 20 per cent and 9.2 per cent respectively were the incremental costs in the two districts.

COST OF UIP AT INSTITUTIONAL LEVEL

To assess the management of these resources and their utilisation for immunisation services at various levels in the district health organisation and to identify the levels at which the cost incurred on immunisation is high, the operating cost of these services was estimated for each category of health unit for the year 1988-89. In addition, the variation in health units of the same category were also explored for cost profile and unit costs for immunisation services for two districts under study.

TOTAL COST

It was found that in urban area the average expenditure for immunisation services was Rs.2,08,370 for the three hospitals and ICDS facilities available in Nanded district and it was much higher than the average expenditure of Rs. 47,017 for two hospitals in West Nimar. The factors contributing to the variation were availability and utilisation of infrastructural, equipment and manpower facilities at institutional level as well as the output of services provided.

In rural areas, the average cost incurred for provision of immunisation services at CHC and PHC level was about Rs. 1,64,168 in West Nimar and Rs. 1,96,172 in Nanded. The Mini-PHCs and civil dispensaries fucntioning in West Nimar spent approximately same amount of Rs. 28,189 and Rs. 26,595 respectively for immunisation activities. But in district Nanded the average expenditure incurred by civil dispensary (Rs. 74,515) was nearly three times that in West Nimar. At the lowest peripheral unit, namely subcentre, the average expenditure on immunisation was Rs. 10,375 in West Nimar and Rs. 23,872 in Nanded. It is to point out that the range of total expenditure was narrower for all categories of health units studied in West Nimar district compared to those studied in Nanded district.

It was also seen that the percentage of incremental cost to the total cost of the programme was comparatively more in higher level health institutions in West Nimar.

UNIT COST

To explore the variation in efficiency with the level of health units, the unit cost estimates were compared among different categories of health units within two districts as well as between the two districts. The average cost per immunisation

provided by hospitals, CHC and PHC was observed to be around Rs.5 in West Nimar district and it increased to more than Rs.10 for lower level health units with wide variations between health units of the same category in that district. On the other hand in Nanded district, the average unit cost of immunisation services did not show any consistency but unit costs varied with more or less same range in all categories of health units except civil dispensaries where the variation was comparatively less. The similar situation was observed for average cost per fully immunised child but higher range of variation because of poor performance in measles immunisation in some units.

Inspite of the variation in average cost per immunisation within and between various categories of health units in two districts, the degree of variation in average incremental cost per unit of service provided by these health units was much less.

COST COMPOSITION

In general, recurring cost, mainly the manpower salary and other benefits component, made up a larger percentage of greater spending in all categories of health institutions in both the districts. Its average contribution in urban units varied from 63 to 80 per cent and 76 to 96 per cent in West Nimar and Nanded respectively. In rural areas this component accounted for nearly same percentage of total cost upto CHC and PHC level but it increased to more than 85 per cent in lower health units. Conversely, vaccine and immunisation supplies for lower level health units represented a smaller proportion of about 8 per cent of total cost compared to urban health units and CHCs, PHCs where it was more than 20 per cent.

COST OF SUSTAINING UIP AT DISTRICT LEVEL

The annual estimates of cost for sustaining the programme at district level with the proposed norms of government of India for input facilities, services and activities at various levels within the districts under study were worked out.

TOTAL COST

Utilising the norms and assuming that the pattern of utilisation of the resources remain same for future years as was observed during 1988-89, the total incremental cost has been estimated for the two districts under study. Thus, it was found that the total incremental cost per year for UIP in district West Nimar of M.P. would be Rs. 12,68,600 and in district Nanded of Maharashtra it would be Rs. 13,76,700. While estimating the cost, fixed amount sanctioned to district by Govtemment of India for specific activity of the programme was assumed to have been fully utilized for the programme. e.g. contingency money of Rs.2000 per PHC per year or POL of Rs.9500 per year per diesel run jeep or van provided under the programme, etc.

COST COMPOSITION

As expected, the vaccines, immunisation supplies and annualised capital cost of cold chain and immunisation equipments account for more than 65 per cent of the incremental cost of which more than 50 per cent is for vaccines. The annualised cost of vehicles and their operation and maintenance account for nearly 5 per cent of the total direct cost of the district in both States. Though the Government of India has provided funds for other activities such as surveys, meetings and training of new entrants in a year it constitutes hardly 2.2 per cent of direct cost.

The major component of vaccine cost was estimated on the basis of quantum of different vaccines required to immunize the expected number of infants and pregnant women in a year and then this quantity was expanded to account for the quantities lost during transportation or due to cold chain failure etc., using the rate 25 per cent for DPT/TT/ OPV and 50 per cent for BCG/Measles. Thus, the major cost for sustaining the programme needs to be incurred on vaccines, immunisation supplies and salaries of the staff appointed under UIP, which are principal variable costs of importance for overall lower unit costs and higher manpower productivity.

UNIT COST

For district West Nimar in M.P. the incremental cost per immunisation that government has to incur will be Rs.2.25 whereas it will be Rs.3.01 for district Nanded in Maharashtra. This cost of immunisation was nearly 50 per cent more for a child compared to a pregnant woman. The incremental cost per fully immunized child is estimated to be Rs.22.00 in West Nimar and Rs.28.81 in Nanded.

The incremental cost estimated with proposed health facilities, equipment and staff when compared with the incremental cost incurred during 1988-89 by two districts under study showed that there is an estimated increase of about 28.2 per cent in West Nimar and 18.6 per cent in Nanded. This indicates that there is a need to provide additional inputs if these disricts are to sustain the programme and achieve the objectives of 85 per cent immunisation coverage for children and 100 per cent coverage for pregnant women.

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Saving children's lives by vaccination

Much achieved but much more could be done

Three quarters of the world's population lives in the developing countries of the South. A decade ago, $40 billion flowed every year from the North to the South: Now $20 billion flow annually in the opposite direction. In the North at least four fifths of all born are likely to enter retirement at the age of 65. In the South there are still many communities where three quarters will die before the age of 65—and half of these deaths will be in childhood. Ten years ago the median figure for health expenditure per person in the North was $220, whereas in the South it was just $4 each year. Over the past 10 years Unicef has shown that in the poorest 36 countries this spending on health has halved and that in some countries infant mortality is rising.[1] Yet spending on armaments has continued. Can we hope that the changes in Eastern Europe will lead to a worldwide decline in military expenditure? Just a fifteenth of the world's military spending would provide all basic health care needs for developing countries.[2]

Not all is gloom, however, for health care in developing countries. A quiet public health revolution has been taking place, instigated by a resolution of the World Health Assembly in 1974 to provide immunisation for all children of the world by 1990. At that time less than 5% were immunised. The expanded programme of immunisation now prevents around 2 million deaths from measles, pertussis, and neonatal tetanus and almost a quarter of a million cases of paralytic poliomyelitis each year.[3] There are still, however, nearly three million children who die, 200 000 who are paralysed, and 150 000 who are blinded by diseases that can be prevented through immunisation.

Population growth

Preventing these child deaths has wider implications. No country has reduced its population growth without first reducing child deaths. In Africa, the current average family size is 6·7 children, and the World Bank has calculated that this must be cut to 3·4 to keep in step with growth in agriculture.[4] Demographers have shown that halving the child mortality in the next 10 years would substantially reduce the final stable world population.[5] Population growth in relation to resources available remains the greatest ecological threat for the future.

The eradication of smallpox fired the imagination of the international community. Out of this arose the enthusiasm for the programme of worldwide immunisation against six diseases: diphtheria, pertussis, tetanus, poliomyelitis, measles, and tuberculosis. With able guidance from the World Health Organisation an effective cold chain and training and management programmes were set up in every country. Unicef played its part in funding and social mobilisation, gaining political commitment through heads of states and popular publications such as the yearly *The State of the World's Children*. Many other organisations such as the United Nations Development Programme, the Save the Children Fund, and the Rotarians played their parts, but success depended heavily on individual governments. In the early years few believed the 1974 resolution could be more than a pipe dream. Improvement has been rapid, however, and the current projection is that by 1990 four fifths of children in the most populous countries—India, China, Nigeria, Bangladesh, and Indonesia—will have received their third dose of oral polio virus and diphtheria, pertussis, and tetanus vaccines.[1] This year there will be fewer than 30 cases of paralysis from wild poliomyelitis in all the Americas, and possibly both they and Europe will achieve eradication by the end of 1990.

Deaths from measles

Measles continues to kill at least 1·6 million children a year, and new research suggests that this is an underestimate. After severe measles mortality is increased for many months from other causes, particularly diarrhoea and respiratory infections. The increased mortality is related to the size of the infecting dose rather than malnutrition in the children.[6] Vaccination gives substantial protection, reducing child mortality from the age of vaccination by at least 30%.[7] A big difficulty in many countries is that up to the present measles immunisation cannot be given to children aged under 9 months. The World Health Organisation recommends, however, that in 1990 a high titre of the more immunogenic Edmonston-Zagreb vaccine should be made available. This concentrated vaccine will overcome residual maternal antibodies and may be used at the age of 6 months.[8] Unicef hopes to have supplies available for sub-Saharan Africa by the middle of 1990.

What about other new vaccines? All the vaccines available were already in use as long ago as 1974. There are many exciting potentials for the improvement of existing vaccines and new vaccines against major killer diseases, but resources for the development of new vaccines are limited. Many countries allot half of their research resources to the military. Can we hope that a proportion of this could be deflected to research on saving children's lives? Even then, particularly at this time of year, we need to consider the saying, "The difference between children and adults is the size and complexity of the toys they play with." World wide there is an unholy alliance between the developers of adult toys and their manufacturers and the medical profession, and it is this that absorbs so much research money. In Britain we suffer from vociferous pressure groups wanting investment in a £10 million cyclotron, though there are grave doubts over its medical value and a cost benefit analysis that would be absurd.[9] Such monetary resources could save the lives of thousands of children.

DAVID MORLEY

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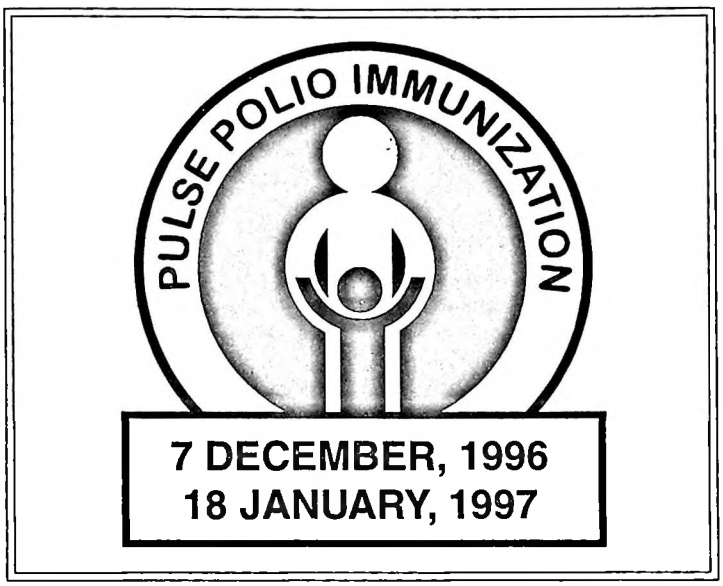
(FROM BMJ VOL. 299 23 - 30 DEC 1989, 1544-1545)

CH 7.23

Pulse Polio Immunization (PPI) in India
Process EValuation
7 December 1996



Name of interviewer : _____

Designation : _____

Date of Visit : _____ Time of Visit : _____ State : _____

District : _____ City/Town/Village : _____

name of Post : _____ Post Coordinator : _____

Type of Post : Urban/Rural/Urban-slum/Re-settlement colony/Tribal transit points.

Contests :

Form I : Interview of PPI Post Coordinator (person in-charge of post)

Form II : Observation Check List (by independent obsrver)

Form III : Exit Interview of People Leaving the Post (4 forms)

DEPARTMENT OF FAMILY WELFARE,
MINISTRY OF HEALTH & FAMILY WELFARE
GOVERNMENT OF INDIA, NEW DELHI

248
9/12/96

INSTRUCTIONS FOR FILLING UP THESE FORMS

As you are an experienced observer, the information you provide us with this evaluation is extremely useful for the programme. Plese take time to fill out the attached forms according to the instructions given below which may kindly be noted before filling out the forms. We value your comments anf suggestions.

1. Please fill up a complete set of forms including, one Form I, one Form II and four Four III (one each for four children) for each PPI post visited by you.

2. Please fill out one set of forms per post. If you visit more than one post, please copy this set as needed.

3. This is a qualitative survey. Please try to record the responses as they ar emade by the respondents without changes. If mor ethan one response is made, record all.

4. Please try to spend some time observing the working at the PPI post before filling up Form 2. The post should have been open for at least two hours before the observations are made.

5. Please tick the relevant answer.

6. Whenever "other" is selected as a response to a question, pleaser try to specify what exactly is meant by "other," using whenever posible the words of the respondent or your own description.

7. An incorrect response (for instance a date other than 18/1/1997 for the next PPI or any other vaccine) should be recorded as "doesn't know" indicating the respondent does not know the correct answer.

8. please try not to prompt the respondent. This is especially important for questions like No. 5 and 6 of Form III where the responses should be recorded as said by the repondent.

9. Please be free to record your own observations in the spaces provided on Form II. Your valuable observations will enable us to improve the second round on 18/1/1997.

10. Kindly post these forms back latest by Monday, December 9, ~~1997~~ 1996 so that they can be analyzed in time to improve the second round of PPI on 18/1/1997, using the enclosed self addressed envelope.

THANK YOU.

PLEASE POST ALL FORMS BY 9 DECEMBER TO :

Dr. Kaushik Banerjee
Assistant Commissioner (I)
Ministry of Health and Family Welfare
Post Box No. 5419
Nirman Bhavan
New Delhi - 110 011.

INTERVIEW OF THE PPI POST COORDINATOR

1. What is the total number of workers at this post ?

Health workers	_____	**Anganwadi workers**	_____
Teachers	_____	**Students**	_____
NGOs	_____	**Community vonteers**	_____
Armed Forces	_____	**Others (specify)**	_____

_____

2. What is the number of children 0-59 months (less than 5 years) of age expected ? _____
3. How many OPV vaccine vials were received ? _____
4. Did vaccines arrive : **on time / delayed**
5. What cold chain equipment are available at this post ?

   Vaccine carriers _____ **Day carriers** _____ **Others (specify)** _____
6. What communication materials have been received?

   Banner / Flag / Stickers / Posters / Others (specify) _____
7. A) Are there some localities within your catchment area from where children may not come? Yes / No

   B) If yes to part A, please describe these areas :

   _____

   _____

   _____

   (C) If yes to part A, what is your plan to reach these areas:

   _____

   _____

   _____
8. Are any children being returned without vaccination? Yes/No If yes, give reasons:

   _____

   _____

   _____
9. What suggestions do you have for change or improvements?

   _____

   _____

   _____

OBSERVATION CHECKLIST

1. Where FROZEN ice packs or ice present ? **Yes / No**

2. a) Did you find the Vaccine Vial Monitor (VVM) sticker on the vaccine vial? **Yes / No**

   b) If yes, the colour of the square changed to ———— than the circle. **Lighter/Same /Darker**

3. Is the age of the child being checked ? **Yes / No**

4. Record maintained by: **Tally sheets / Enumeration lists / Names being recorded /**

   Others (specify) ————————————————————

   ————————————————————

5. Observe 4 children being given polio vaccine: Record the number of drops given to:

   Child No. 1 ———— **Child No. 2** ————

   Child No. 3 ———— **Child No. 4** ————

6. Is the PPI site easily identifiable ? **Yes / No**

7. What are your additional comments or observations about the functioning of this PPI Post (examples : description of physical facility, vaccination skills of person giving vaccine, adequacy of materials, novel ways to identify post, etc.) ?

   ————————————————————

   ————————————————————

   ————————————————————

   ————————————————————

   ————————————————————

   ————————————————————

Form III

EXIT INTERVIEWS WITH PEOPLE LEAVING THE PPI POST (Fill out 4 forms)

Child No. 1

1. How old is your child ? ———— **Years** ———— **Months**

2. What vaccine did your child receive today ? **Polio / None /Doesn't know**

3. How did you know where and when to come for the vaccine ? (do not prompt)

   Check all the aapply :

Health staff	———	**Anganwadi worker**	———
Teacher	———	**Scho0l students**	———
Relative, friend or neighbour	———	**Other volunteers**	———
Radio	———	**TV**	———
Posters, leaflets	———	**Loudspeaker/microphone**	———

   Others ———————————————————————

4. When is the next Pulse Polio Immunization Day ?

   ———— **18 January 1997** ———— **Doesn't know**

5. How will the programme today help your child ?

   Prevent polio or eardicate polio / Others (specify) : ———————————

   ———————————————————————

6. What suggestions do you have for change or improvement of this programme ?

   ———————————————————————

   ———————————————————————

   ———————————————————————

   ———————————————————————

   ———————————————————————

   ———————————————————————

Thank respondent for participation and remind them about NEXT PPI on 18 January 1997.

Child No. 2

1. How old is your child ? ———— **Years** ———— **Months**

2. What vaccine did your child receive today? **Polio / None /Doesn't know**

3. How did you know where and when to come for the vaccine ? (do not prompt)

   Check all that apply :

Health staff	————	**Anganwadi worker**	————
Teacher	————	**School students**	————
Relative, friend or neighbour	————	**Other valunteers**	————
Radio	————	**TV**	————
Posters, leaflets	————	**Loudspeaker/microphone**	————

   Others ————————————————————

4. When is the next Pulse Polio Immunization Day ?

   ———— **18 January 1997** ———— **Doesn't know**

5. How will the programme today help your child ?

   Prevent polio or eradicate polio / Others (specify) : ————————————

   ————————————————————

6. What suggestions do you have for change or improvement of this programme ?

   ————————————————————

   ————————————————————

   ————————————————————

   ————————————————————

   ————————————————————

   ————————————————————

Thank respondent for participationand remind them about NEXT PPI on 18 January 1997.

Child No. 3

1. How old is your child ? ——— **Years** ——— **Months**

2. What vaccine did your child receive today? **Polio / None /Doesn't know**

3. How did you know where and when to come for the vaccine ? (do not prompt)

   Check all that apply :

Health staff	———	**Anganwadi worker**	———
Teacher	———	**School students**	———
Relative, friend or neighbour	———	**Other valunteers**	———
Radio	———	**TV**	———
Posters, leaflets	———	**Loudspeaker/microphone**	———

   Others ———————————————————————————

4. When is the next Pulse Polio Immunization Day ?

   ——— **18 January 1997** ——— **Doesn't know**

5. How will the programme today help your child ?

   Prevent polio or eradicate polio / Others (specify) : ———————————

   ———————————————————————————————

6. What suggestions do you have for change or improvement of this programme ?

   ———————————————————————————————

   ———————————————————————————————

   ———————————————————————————————

   ———————————————————————————————

   ———————————————————————————————

   ———————————————————————————————

Thank respondent for participationand remind them about NEXT PPI on 18 January 1997.

Child No. 4

1. How old is your child ? ———— **Years** ———— **Months**

2. What vaccine did your child receive today? **Polio / None /Doesn't know**

3. How did you know where and when to come for the vaccine ? (do not prompt)

Check all that apply :

Health staff	————	**Anganwadi worker**	————
Teacher	————	**School students**	————
Relative, friend or neighbour	————	**Other valunteers**	————
Radio	————	**TV**	————
Posters, leaflets	————	**Loudspeaker/microphone**	————

Others ————————————————————

4. When is the next Pulse Polio Immunization Day ?

———— **18 January 1997** ———— **Doesn't know**

5. How will the programme today help your child ?

Prevent polio or eradicate polio / Others (specify) : ————————————

————————————————————

6. What suggestions do you have for change or improvement of this programme ?

————————————————————

————————————————————

————————————————————

————————————————————

————————————————————

————————————————————

Thank respondent for participationand remind them about NEXT PPI on 18 January 1997.

SUMERIA

Dispelling Vaccination Myths

A Documented Report

© by *Alan Phillips*

An introduction to the contradictions between medical science and immunization policy.

Revised periodically. This Printing Revised July 14, 1996

INTRODUCTION

When my son began his routine vaccination series at age 2 months, I did not know there were any risks associated with immunizations. But the clinic's literature contained a contradiction: the chances of an adverse reaction to the DPT vaccine were 1 in 1750, while his chances of dying from pertussis each year were one in several million. When I pointed this out to the physician, he angrily disagreed, and stormed out of the room mumbling, "I guess I should read that sometime..." Soon thereafter I learned of a child who had been permanently disabled by a vaccine, so I decided to investigate for myself. My findings have so alarmed me that I feel compelled to share them; hence, this report.

Health authorities credit vaccines for disease declines, and assure us of their safety and effectiveness. Yet these seemingly rock-solid assumptions are directly contradicted by health statistics, medical studies, Food and Drug Administration (FDA) and Centers for Disease Control (CDC) reports, and reputable research scientists from around the world. In fact, infectious diseases steadily declined for decades prior to vaccinations, U.S. doctors report thousands of vaccine reactions each year including hundreds of deaths and permanent disabilities, many fully vaccinated populations have experienced epidemics, and researchers attribute dozens of chronic immunological and neurological conditions to mass immunization programs.

Hundreds of published medical studies document vaccine failure and adverse effects; several dozen books have been written expounding on these and related information condemning vaccines. Yet, amazingly, most pediatricians and parents are completely unaware of these findings. There is, however, a fast growing international movement of doctors and parents who are questioning the use of widespread, mandatory vaccinations.

My point is not to tell anyone whether or not to vaccinate, but rather, with the utmost urgency, to point out some very good reasons why everyone should investigate the issue before submitting to the procedure. As a new parent, I was shocked to discover the absence of a legal mandate or professional ethic requiring pediatricians to be fully informed, and to see firsthand the prevalence of physicians who are applying practices based on incomplete - and in some cases, outright mis-information.

Though only a brief introduction, this report contains sufficient evidence to warrant further investigation by all concerned, which I highly recommend. You will find that this is the only way to get an objective view, as the controversy is a highly emotional one.

A note of caution: Be careful trying to discuss this subject with a pediatrician. Most have staked their identities and reputations on the presumed safety and effectiveness of vaccines, and thus have difficulty acknowledging evidence to the contrary, regardless of the sources. The first pediatrician I attempted to share my findings with yelled angrily at me when I calmly brought up the subject. The misconceptions have very deep roots.

VACCINATION MYTH #1: "Vaccines are completely safe..."

... or are they?

The FDA's VAERS (Vaccine Adverse Effects Reporting System) receives about 11,000 reports of adverse vaccine reactions annually, some 1% (112+) of which are deaths from vaccine reactions.[1] The majority of these reports are made by doctors, and the majority of deaths are attributed to the pertussis (whooping cough) vaccine, the "P" in DPT. This figure alone is alarming, yet it is only the "tip of the iceberg." The FDA estimates that only about 10% of adverse reactions are reported,[2] a figure supported by two National Vaccine Information Center (NVIC) investigations.[3] In fact, the NVIC reported that "In New York, only one out of 40 doctor's offices [2.5%] confirmed that they report a death or injury following vaccination," - 97.5% of vaccine related deaths and disabilities go unreported there. Implications about the integrity of medical professionals aside (doctors are legally required to report all adverse events), these findings suggest that vaccine deaths actually occurring each year may be well over 1,000.

With pertussis, the number of vaccine-related deaths dwarfs the number of disease deaths, which have been about 10 annually for recent years according to the CDC, and only 8 in 1993, the last peak-incidence year (pertussis runs in 3-4 year cycles, though vaccination doesn't). Simply put, the vaccine is 100 times more deadly than the disease. If it were not for the many instances in which highly vaccinated populations have contracted disease (see Myth #2), and the fact that the vast majority of disease decline this century occurred before compulsory vaccinations (pertussis deaths declined 79% prior to vaccines; see Myth #3), this might be understandable, but given the complete story, it can hardly be considered a necessary sacrifice for the benefit of a disease-free society.

Unfortunately, the vaccine-related-deaths story doesn't end here. Both national and international studies have shown vaccination to be a cause of SIDS [4,5] (SIDS is "Sudden Infant Death Syndrome," a "catch-all" diagnosis for cases when the specific cause of death is supposedly unknown; estimates range from 5 - 10,000 cases each year in the U.S.). One study found the peak incidence of SIDS occurred at the ages of 2 and 4 months in the U.S., precisely when the first two routine immunizations are given.[4]

There are also studies that claimed to find no SIDS-vaccine relationship. However, many of these were invalidated by yet another study which found that "confounding" had skewed

their results in favor of the vaccine.[6]

Shouldn't we err on the side of caution? Shouldn't any credible correlation between vaccines and infant deaths be just cause for meticulous, widespread monitoring of the vaccination status of all SIDS cases? In the mid 70's Japan raised their vaccination age from 2 months to 2 years; their incidence of SIDS dropped dramatically.

In spite of this, the U.S. medical community has chosen a posture of denial. Coroners refuse to check the vaccination status of SIDS victims, and unsuspecting families continue to pay the price, unaware of the dangers and deprived of the right to make a choice.

Low adverse event reporting also suggests that the total number of adverse reactions actually occurring each year may be more than 100,000. Due to doctors' failure to report, no one knows how many of these are permanent disabilities, but statistics suggest that it is several times the number of deaths (see "petitions" below). This concern is reinforced by a study which revealed that one in 175 children who completed the full DPT series suffered "severe reactions,"[7] and a Dr.'s report for attorneys which found that 1 in 300 DPT immunizations resulted in seizures.[8]

England actually saw a drop in pertussis deaths when vaccination rates dropped from 80% to 30% in the mid 70's. Swedish epidemiologist B. Trollfors' study of pertussis vaccine efficacy and toxicity around the world found that "pertussis-associated mortality is currently very low in industrialised countries and no difference can be discerned when countries with high, low, and zero immunisation rates were compared." He also found that England, Wales, and West Germany had more pertussis fatalities in 1970 when the immunization rate was high than during the last half of 1980, when rates had fallen.[9]

Vaccinations cost us much more than just the lives and health of our children. The U.S. Federal Government's National Vaccine Injury Compensation Program (NVICP) has paid out over $650.6 million to parents of vaccine injured and killed children, a rate of close to $90 million per year in taxpayer dollars. The NVICP has received over 5,000 petitions since 1988, including over 700 for vaccine-related deaths, and there are still some two thousand total death and injury cases pending that may take years to resolve.[10]

Meanwhile, pharmaceutical companies have a captive market: vaccines are legally mandated in all 50 U.S. states (though legally avoidable in most; see Myth #9), yet these same companies are "immune" from accountability for the consequences of their products. Furthermore, they have been allowed to use "gag orders" as a leverage tool in vaccine damage legal settlements to prevent disclosure of information to the public about vaccination dangers. Such arrangements are clearly unethical; they force a nonconsenting American public to pay for vaccine manufacturer's liabilities, while attempting to ensure that this same public will remain ignorant of the dangers of their products.

It is also interesting to note that insurance companies (who do the best liability studies) refuse to cover vaccine adverse reactions. Profits appear to dictate both the pharmaceutical and insurance companies' positions.

VACCINATION TRUTH #1: "Vaccination causes significant death and disability at an

astounding personal and financial cost to families and taxpayers."

VACCINATION MYTH #2: "Vaccines are very effective..."

... aren't they?

The medical literature has a surprising number of studies documenting vaccine failure. Measles, mumps, small pox, polio and Hib outbreaks have all occurred in vaccinated populations.[11,12,13,14,15] In 1989 the CDC reported: "Among school-aged children, [measles] outbreaks have occurred in schools with vaccination levels of greater than 98 percent.[16] [They] have occurred in all parts of the country, including areas that had not reported measles for years."[17] The CDC even reported a measles outbreak in a documented 100 percent vaccinated population.[18] A study examining this phenomenon concluded, "The apparent paradox is that as measles immunization rates rise to high levels in a population, measles becomes a disease of immunized persons."[19] A more recent study found that measles "produces immune suppression which contributes to an increased susceptibility to other infections."[19a] These studies suggests that the goal of complete immunization is actually counterproductive, a notion underscored by instances in which epidemics followed complete immunization of entire countries. Japan experienced yearly increases in small pox following the introduction of compulsory vaccines in 1872. By 1892, there were 29,979 deaths, and all had been vaccinated.[20] Early in this century, the Philippines experienced their worst smallpox epidemic ever after 8 million people received 24.5 million vaccine doses; the death rate quadrupled as a result.[21] In 1989, the country of Oman experienced a widespread polio outbreak six months after achieving complete vaccination (98%).[22] In the U.S. in 1986, 90% of 1,300 pertussis cases in Kansas were "adequately vaccinated."[23] 72% of pertussis cases in the 1993 Chicago outbreak were fully up to date with their vaccinations.[24]

VACCINATION TRUTH #2: "Evidence suggests that vaccination is an unreliable means of preventing disease."

VACCINATION MYTH #3: "Vaccines are the main reason for low disease rates in the U.S. today..."

... or are they?

According to the British Association for the Advancement of Science, childhood diseases decreased 90% between 1850 and 1940, paralleling improved sanitation and hygienic practices, well before mandatory vaccination programs. Infectious disease deaths in the U.S. and England declined steadily by an average of about 80% during this century (measles mortality declined over 97%) prior to vaccinations.[25] In Great Britain, the polio epidemics peaked in 1950, and had declined 82% by the time the vaccine was introduced there in 1956. Thus, at best, vaccinations can be credited with only a small percentage of the overall decline in disease related deaths this century. Yet even this small portion is questionable, as the rate of decline remained virtually the same after vaccines were introduced. Furthermore, European countries that refused immunization for small pox and

polio saw the epidemics end along with those countries that mandated it. (In fact, both small pox and polio immunization campaigns were followed initially by significant disease increases; during smallpox campaigns, other infectious diseases continued their declines in the absence of vaccines. In England and Wales, smallpox disease and vaccination rates eventually declined simultaneously over a period of several decades.) [26] It is thus impossible to say whether or not vaccinations contributed to the continuing decline, or if the same forces which brought about the initial declines - improved sanitation, hygiene, improvements in diet, natural disease cycles - were simply unaffected by the vaccination programs. Underscoring this conclusion was a recent World Health Organization report which found that the disease and mortality rates in third world countries have no direct correlation with immunization procedures or medical treatment, but are closely related to the standard of hygiene and diet.[27] Credit given to vaccinations for our current disease incidence has simply been grossly exaggerated, if not outright misplaced.

Vaccine advocates point to incidence statistics rather than mortality as proof of vaccine effectiveness. However, statisticians tell us that mortality statistics can be a better measure of incidence than the incidence figures themselves, for the simple reason that the quality of reporting and record-keeping is much higher on fatalities.[28]

For instance, a recent survey in New York City revealed that only 3.2% of pediatricians were actually reporting measles cases to the health department. In 1974, the CDC determined that there were 36 cases of measles in Georgia, while the Georgia State Surveillance System reported 660 cases.[29] In 1982, Maryland state health officials blamed a pertussis epidemic on a television program, "D.P.T. - Vaccine Roulette," which warned of the dangers of DPT; however, when former top virologist for the U.S. Division of Biological Standards, Dr. J. Anthony Morris, analyzed the 41 cases, only 5 were confirmed, and all had been vaccinated. [30] Such instances as these demonstrate the fallacy of incidence figures, yet vaccine advocates tend to rely on them indiscriminately.

VACCINATION TRUTH #3 "It is unclear what impact vaccines had on infectious disease declines which occurred throughout this century."

VACCINATION MYTH #4: "Vaccination is based on sound immunization theory and practice..."

... isn't it?

The clinical evidence for vaccinations is their ability to stimulate antibody production in the recipient, a fact which is not disputed. What is not clear, however, is whether or not such antibody production constitutes immunity. Agamma globulin-anemic children are incapable of producing antibodies, yet they recover from infectious diseases almost as quickly as other children.[31] Furthermore, a study published by the British Medical Council in 1950 during a diphtheria epidemic concluded that there was no relationship between antibody count and disease incidence; researchers found resistant people with extremely low antibody counts and sick people with high counts.[32] Natural immunization is a complex phenomenon involving many organs and systems; it cannot be fully replicated by the artificial stimulation of antibody production.

Research also indicates that vaccination commits immune cells to the specific antigens involved in the vaccine, rendering them incapable of reacting to other infections. Our immunological reserve may thus actually be reduced, causing a generally lowered resistance.[33]

Another component of immunization theory is "herd immunity," which states that when enough people in a community are immunized, all are protected. As Myths #2 revealed, there are many documented instances showing just the opposite - fully vaccinated populations have contracted diseases. With measles, this actually seems to be the direct result of high vaccination rates.[19] A Minnesota state epidemiologist concluded that the Hib vaccine increases the risk of illness when a study revealed that vaccinated children were five times more likely to contract the disease than unvaccinated children.

Carefully selected epidemiological studies are yet another justification for vaccination programs. However, many of these may not be legitimate sources from which to draw conclusions about vaccine effectiveness: If 100 people are vaccinated and 5 contract the disease, the vaccine is declared to be 95% effective. But if only 10 of the 100 were actually exposed to the disease, then the vaccine was really only 50% effective. Since no one is willing to directly expose an entire population to disease - even a fully vaccinated one - vaccine effectiveness rates cannot be taken at face value.

Yet another concern about immunization practice is its assumption that all children, regardless of age, are virtually the same. An 8 pound 2 month old receives the same dosage as a 40 pound five year old. Infants with immature, undeveloped immune systems may receive five or more times the dosage (relative to body weight) as older children. Furthermore, the number of "units" within doses has been found upon random testing to range from 1/2 to 3 times what the label indicates; manufacturing quality controls appear to tolerate a rather large margin of error. "Hot Lots" (vaccine lots with disproportionately high death and disability rates) have been identified repeatedly by the NVIC, but the FDA refuses to intervene to prevent unnecessary injury and loss of life. In fact, they have never recalled a vaccine lot due to adverse reactions. Some would call this infanticide.

Finally, vaccination practice assumes that all recipients, regardless of race, culture, diet, or any other circumstances, will respond the same. This was perhaps never more dramatically disproved than an instance a few years ago in Australia's Northern Territory, where stepped-up immunization campaigns resulted in an incredible 50% infant mortality rate in the native aborigines.[34] Researcher A. Kalokerinos, M.D. discovered that the aborigine's vitamin C deficient "junk food" diet was a critical factor (vaccination depletes vitamin C reserves; children in shock or collapse often recovered in a matter of minutes when given vitamin C injections). He considered it amazing that as many survived as did. One must wonder about the lives of the survivors, though, for if half died, surely the other half did not escape unaffected.

Almost as troubling was a very recent study in the New England Journal of Medicine which revealed that a substantial number of Romanian children were contracting polio from the vaccine, a less common phenomena in most developed countries. Correlations with

injections of antibiotics were found: a single injection within one month of vaccination raised the risk of polio eight times, two to nine injections raised the risk 27-fold, and 10 or more injections raised the risk 182 times [Washington Post, February 22, 1995].

What other factors not accounted for in vaccination theory will surface unexpectedly to reveal unforeseen or previously overlooked consequences? We will not begin to fully comprehend the scope of this danger until researchers begin looking and reporting in earnest. In the meantime, entire countries' populations are unwitting gamblers in a game that many might very well choose not to play if they were given all the "rules" in advance.

VACCINATION TRUTH #4: "Many of the assumptions upon which immunization theory and practice are based have been proven false in their application."

VACCINATION MYTH #5: "Childhood diseases are extremely dangerous..."

... or are they, really?

Most childhood infectious diseases have few serious consequences in today's modern world. Even conservative CDC statistics for pertussis during 1992-94 indicate a 99.8% recovery rate. In fact, when hundreds of pertussis cases occurred in Ohio and Chicago in the fall 1993 outbreak, an infectious disease expert from Cincinnati Children's Hospital said, "The disease was very mild, no one died, and no one went to the intensive care unit." The vast majority of the time, childhood infectious diseases are benign and self-limiting. They also impart lifelong immunity, whereas vaccine-induced immunity is only temporary. In fact, the temporary nature of vaccine immunity can create a more dangerous situation in a child's future. For example, the new chicken pox vaccine has an effectiveness estimated at 6-10 years. If effective,it will postpone the child's vulnerability until adulthood, when death from the disease is 20 times more likely. (About half of measles cases in the late 1980's resurgence were in adolescents and adults, most of whom were vaccinated as children,[35] and the recommended booster shots may provide protection for less than 6 months.) [36] Furthermore, some healthcare professionals are concerned that the virus from the chicken pox vaccine may "reactivate later in life in the form of herpes zoster (shingles) or other immune system disorders."[37] Dr. A. Lavin of the Dept. of Pediatrics, St. Luke's Medical Center in Cleveland, Ohio, strongly opposed licensing the new vaccine, "Until we actually know...the risks involved in injecting mutated DNA [herpes virus] into the host genome [children]."[38] The truth is, no one knows, but the vaccine is now licensed and recommended by health authorities.

Not only are most infectious diseases rarely dangerous, but they can actually play a vital role in the development of a strong, healthy immune system. Persons who have not had measles have a higher incidence of certain skin diseases, degenerative diseases of bone and cartilage, and certain tumors, while absence of mumps has been linked to higher risks of ovarian cancer.

VACCINATION TRUTH #5: "Dangers of childhood diseases are greatly exaggerated in order to scare parents into compliance with a questionable but profitable procedure."

VACCINATION MYTH #6: "Polio was one of the clearly great vaccination success stories..."

... or was it?

Six New England states reported increases in polio one year after the Salk vaccine was introduced, ranging from more than doubling in Vermont to Massachusetts' astounding increase of 642%. In 1959, 77.5% of Massachusetts' paralytic cases had received 3 doses of IPV (injected polio vaccine). During 1962 U.S. Congressional hearings, Dr. Bernard Greenberg, head of the Dept. of Biostatistics for the University of North Carolina School of Public Health, testified that not only did the cases of polio increase substantially after mandatory vaccinations (50% increase from 1957 to 1958, 80% increase from 1958 to 1959), but that the statistics were manipulated by the Public Health Service to give the opposite impression.[39] According to researcher-author Dr. Viera Scheibner, 90% of polio cases were eliminated from statistics by health authorities' redefinition of the disease which occurred when the vaccine was introduced, while in fact the Salk vaccine was continuing to cause paralytic polio in several countries at a time when there were no epidemics caused by the wild virus (thousands of cases of viral and aseptic meningitis are diagnosed each year in the U.S.; prior to the polio vaccine, these were diagnosed as polio). In 1985, the CDC reported that 87% of the cases of polio in the U.S. between 1973 and 1983 were caused by the vaccine, and later declared that all but a few imported cases since were caused by the vaccine (and most of the imported cases occurred in fully immunized individuals). Jonas Salk, inventor of the IPV, testified before a Senate subcommittee that nearly all polio outbreaks since 1961 were caused by the oral polio vaccine. At a workshop on polio vaccines sponsored by the Institute of Medicine and the Centers for Disease Control and Prevention, Dr. Samuel Katz of Duke University cited the estimated 8-10 annual U.S. cases of vaccine-associated paralytic polio (VAPP) in people who have taken the oral polio vaccine, and the [four year] absence of wild polio from the western hemisphere. Jessica Scheer of the National Rehabilitation Hospital Research Center in Washington, D.C., pointed out that most parents are unaware that polio vaccination in this country entails "a small number of human sacrifices each year." Compounding this contradiction are low adverse event reporting and the NVIC's experiences with confirming and correcting misdiagnoses of vaccine reactions, which suggest that the actual number of VAPP "sacrifices" may be much higher than the number cited by the CDC.

VACCINATION TRUTH #6: "Vaccines caused substantial increases in polio after years of steady declines, and they are the sole cause of polio in the U.S. today."

VACCINATION MYTH #7: "My child had no short-term reaction to vaccination, so there is nothing to worry about..."

... or is there?

The documented long term adverse effects of vaccines include chronic immunological and neurological disorders such as autism, hyperactivity, attention deficit disorders, dyslexia, allergies, cancer, and other conditions, many of which barely existed 30 years ago before mass vaccination programs. Vaccine components include known carcinogens such as

thimersol, aluminum phosphate, and formaldehyde (the Poisons Information Centre in Australia claims there is no acceptable safe amount of formaldehyde which can be injected into a living human body). Medical historian, researcher and author Harris Coulter, Ph.D. explained that his extensive research revealed childhood immunization to be "...causing a low-grade encephalitis in infants on a much wider scale than public health authorities were willing to admit, about 15-20% of all children." He points out that the sequelae [conditions known to result from a disease] of encephalitis [inflammation of the brain, a known side-effect of vaccination]: autism, learning disabilities, minimal and not-so-minimal brain damage, seizures, epilepsy, sleeping and eating disorders, sexual disorders, asthma, crib death, diabetes, obesity, and impulsive violence are precisely the disorders which afflict contemporary society. Many of these conditions were formerly relatively rare, but they have become more common as childhood vaccination programs have expanded. Coulter also points out that "...pertussis toxoid is used to create encephalitis in lab animals."

A German study found correlations between vaccinations and 22 neurological conditions including attention deficit and epilepsy. The dilemma is that viral elements in vaccines may persist and mutate in the human body for years, with unknown consequences. Millions of children are partaking in an enormous, crude experiment; and no sincere, organized effort is being made by the medical community to track the negative side-effects or to determine the long term consequences.

VACCINATION TRUTH #7: "The long term adverse effects of vaccinations have been virtually ignored, in spite of strong correlations with many chronic conditions."

VACCINATION MYTH #8: "Vaccines are the only disease prevention option available..."

... or are they?

Most parents feel compelled to take some disease-preventing action for their children. While there is no 100% guarantee anywhere, there are viable alternatives. Historically, homeopathy has been more effective than "allopathic mainstream" medicine in treating and preventing disease. In a U.S. cholera outbreak in 1849, allopathic medicine saw a 48-60% death rate, while homeopathic hospitals had a documented death rate of 3%.[40] Roughly similar statistics still hold true for cholera today.[41] Recent epidemiological studies show homeopathic remedies as equaling or surpassing standard vaccinations in preventing disease. There are reports in which populations that were treated homeopathically after exposure had a 100% success rate - none of the treated caught the disease.[42]

There are homeopathic kits available for disease prevention.[43] Homeopathic remedies can also be taken only during times of increased risk (outbreaks, traveling, etc.), and have proven highly effective in such instances. And since these remedies have no toxic components, they have no side effects. In addition, homeopathy has been effective in reversing some of the disability caused by vaccine reactions, as well as many other chronic conditions with which allopathic medicine has had little success.

VACCINATION TRUTH #8: "Documented safe and effective alternatives to vaccination have been available for decades but suppressed by the medical establishment."

VACCINATION MYTH #9: "Vaccinations are legally mandated, and thus unavoidable..."

... aren't they?

There are three exemption possibilities in most U.S. states:

1. Medical Exemption: All 50 states in the U.S. allow for a medical exemption. A few states allow licensed naturopathic or chiropractic doctors to issue medical exemptions in addition to medical doctors. However, few pediatricians check for indications of increased risk before administering vaccines, so it is advisable for parents to research this matter for themselves. Epilepsy, severe allergies, and siblings' previous adverse reactions are but a few of the many conditions in child or family history which may increase the chances of an adverse reaction, and thus qualify for a medical exemption;

2. Religious Exemption: Nearly all states allow for a religious exemption. This may or may not require membership in an established religious organization, as individual state laws vary; and

3. Philosophical Exemption: An increasing number of states allow philosophical exemptions, in recognition of the controversy and/or violation of freedom that mandated vaccination laws impose.

Generally, exempted children may not be banned from attending public schools and colleges except during local outbreaks. It is best to contact local school officials in advance to determine their particular procedure for handling exemptions.

The best source for a copy of your state's vaccination laws is state health officials. A phone call to the state Department of Epidemiology may be all that it takes to get a copy mailed to you.

VACCINATION TRUTH #9: "Legal exemptions from vaccinations are obtainable for most - but not all - U.S. citizens."

VACCINATION MYTH #10: "Public health officials always place health above all other concerns..."

... or do they?

Vaccination history is riddled with documented instances of deceit designed to portray vaccines as mighty disease conquerors, when in fact many times they have actually delayed and even reversed disease declines. The United Kingdom's Department of Health admitted that vaccination status determined the diagnosis of subsequent diseases:

Those found in vaccinated patients received alternate diagnoses; hospital records and death certificates were falsified. Today, many doctors are still reluctant to diagnose diseases in vaccinated children, and so the "Myth" about vaccine success continues.

However, individual doctors may not be wholly to blame. As medical students, few have reason to question the information taught (which does not address the concerns presented in this report). Ironically, medicine is a field which demands conformity; there is little tolerance for opinions opposing the status quo. Doctors cannot warn you about what they themselves do not know, and with little time for further education once they begin practice, they are, in a sense, held captive by a system which discourages them from acquiring information independently and forming their own opinions. Those few that dare to question the status quo are frequently ostracized, and in any case, they are still legally bound to adhere to the system's legal mandates.

SUMMARY

In the December 1994 Medical Post, Canadian author of the best-seller Medical Mafia, Guylaine Lanctot, M.D. stated, "The medical authorities keep lying. Vaccination has been a disaster on the immune system. It actually causes a lot of illnesses. We are actually changing our genetic code through vaccination...10 years from now we will know that the biggest crime against humanity was vaccines." After an extensive study of the medical literature on vaccination, Dr. Viera Scheibner concluded that "there is no evidence whatsoever of the ability of vaccines to prevent any diseases. To the contrary, there is a great wealth of evidence that they cause serious side effects." These would seem to be radical positions, but they are not unfounded. The continued denial of the evidence against vaccines only perpetuates the "Myths" and their negative consequences on our children and society. Aggressive and comprehensive scientific investigation is clearly warranted, yet immunization programs continue to expand in the absence of such research. Manufacturer profits are guaranteed, while accountability for the negative effects is conspicuously absent. This is especially sad given the readily available safe and effective alternatives.

Meanwhile, the race is on. According to the NVIC, there are over 250 new vaccines being developed for everything from earaches to birth control to diarrhea, with about 100 of these already in clinical trials. Researchers are working on vaccine delivery through nasal sprays, mosquitoes (yes, mosquitoes), and the fruits of "transgenic" plants in which vaccine viruses are grown. With every child (and adult, for that matter) on the planet a potential required recipient of multiple doses, and every healthcare system and government a potential buyer, it is little wonder that countless millions of dollars are spent nurturing the growing multi-billion dollar vaccine industry. Without public outcry, we will see more and more new vaccines required of us and our children. And while profits are readily calculable, the real human costs are being ignored.

Whatever your personal vaccination decision, make it an informed one; you have that right and responsibility. It is a difficult issue, but there is more than enough at stake to justify whatever time and energy it takes.

Do not use this report alone to make your vaccination decision:

FIND OUT FOR YOURSELF!

*This report is periodically revised. For the latest version, point your World Wide Web

browser to Sumeria's Home Page at: http://www.livelinks.com/sumeria/health/myth2.html, send email to intercom@nando.net, or write to the address below. For permission to reprint, distribute or electronically post this report, write to the address below or send email.

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ABOUT THE AUTHOR...

Alan Phillips is an independent investigator and writer on vaccine risks and alternatives. This report appeared in the April 1996 edition of "Wildfire Magazine," as well as numerous newsletters in the U.S. and around the world. It is being used by the Sheffield School of Homeopathy, UK. Alan has written to the Australian Minister for Human Services and Health for the Immunisation Investigation Group and the Campaign Against Fraudulent Medical Research in NSW Australia.

Alan is also the founder of Human Development Services, Inc., an international nonprofit conducting training and research in psychorientology; the designer of a national children's literacy program and materials; and a singer-songwriter and composer with albums of original songs and music in over two dozen countries on six continents. His academic achievements include a B.A. Magna Cum Laude, and election to the Phi Kappa Phi National Honor Society and The National Dean's List.

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[Health][Sumeria]

An Update On Measles Immunization

Introduction

National Mission on Immunization is a societal mission and it is committed to the goal of immunizing –

(a) at least 85% of all infants born, with one dose of BCG, three doses of DPT and OPV and one dose of measles vaccinations. This prevents infants and young children from contracting six common, vaccine-preventable diseases, namely, measles, neo-natal tetanus, acute paralytic poliomyelitis, pertussis, childhood tuberculosis and diphtheria.

(b) 100% of all pregnant women with tetanus-toxoid.

These objectives are to be achieved by the year 1990 and sustained year after year thereon.

Measles immunization situation

The immunization coverage has been steadily increasing, but the coverage levels remain far less than desired (see figures 1 & 2).

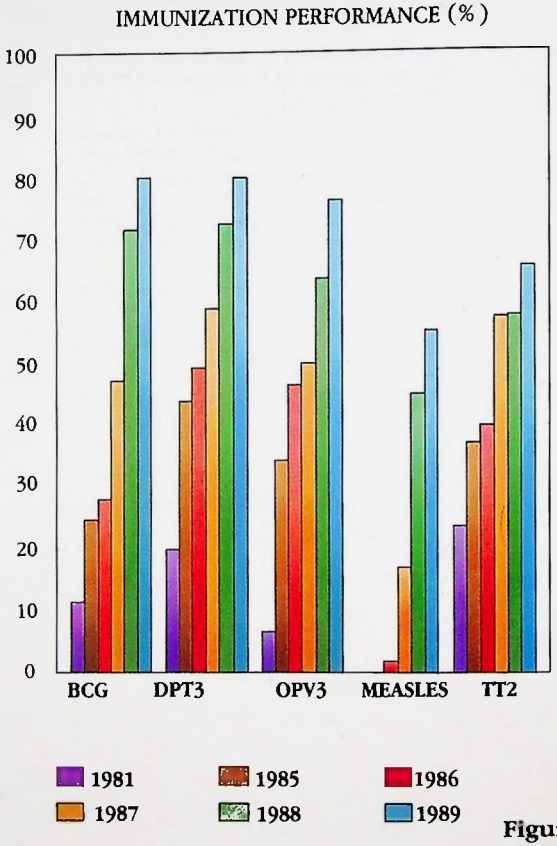
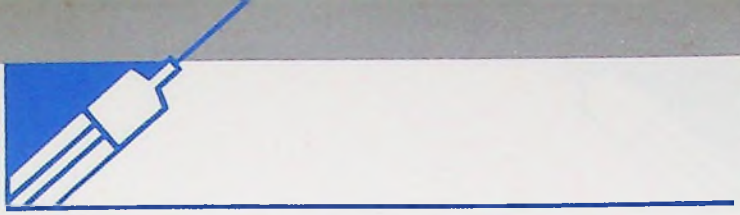


Figure 1



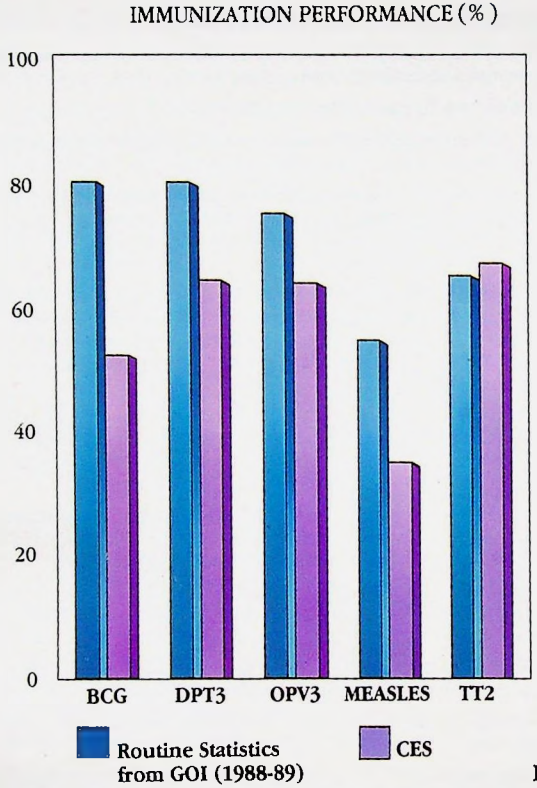


Figure 2

Nation-wide coverage evaluation surveys done in May '89 with a population of 72 million indicate that measles coverage ranges between 2.4% and 59.7%, as against 20% to 93% and 19% to 91% of DPT3 and OPV3. The fully immunized coverage status fell down to the range of 2.4% to 54.6% because of poor measles immunization coverage.

Facts about measles disease and immunization

Measles is such a common communicable disease in India that many communities have accepted it as a normal milestone of growing up.

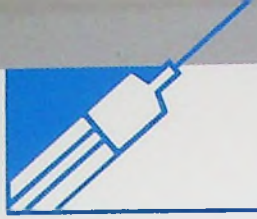
Measles is highly infectious. Rarely will an un-immunized child escape.

Measles is nearly always symptomatic. Diagnosis of measles is easy. The main characteristic features would be:

- A cold, cough and running nose.
- Fever, 38 degrees C (100.4 degrees F) or more.
- Eyes are pink (even red), watery and sensitive to light.
- Within 3 to 7 days a characteristic blotchy rash appears, beginning on the face and then spreading all over the body.
- The rash lasts for 4-7 days, and often ends with desquamation (peeling of skin).
- The pigmentation due to the rash remains for 2 weeks or even longer.
- Koplik's spots (greyish-white spots with red borders) often appear on the inside of the cheek at about the same time the rash begins. These spots are diagnostic, since they occur only in measles.

Risk factors

- Measles virus is transmitted through the air by respiratory droplets from infected children even before the rash is seen. Therefore isolation of a case has no relevance in the control of the disease.
- Measles is more rapidly transmitted in large families, crowded homes and urban slums.
- With high population density, measles is apt to occur year-round, sometimes with seasonal peaks.
- Without immunization, nearly every child gets measles.
- Measles can occur at any age. In India, due to crowding and increased contact among young children, effects are mostly seen before the third birthday of the child.
- Secondary cases in homes tend to be more severe.
- Measles is severe among infants and malnourished children. Post-measles complications are also more common in these children.



Post-measles complications

Immediate complications

Pneumonia
About 4% of the cases develop pneumonia.

Diarrhoea
The incidence of diarrhoea in children affected with measles will be twi as much as in normal children.

Otitis media
About 2% of children develop otitis media following measles.

Encephalitis
One in 2000 cases has encephalitis. This is frequently associated with brain damage and mental retardation.

Vitamin A deficiency
Many children develop acute deficiency of vitamin A, which may lead to keratomalacia and blindness. In Tanzania 50% of blind children had become so from corneal scarring following measles.

Deaths
Death strikes the malnourished, especially where multiple cases crowd the home. In a country like India 2% to 3% of children die generally following measles, but in a measles epidemic, case fatality as high as 30% to 50% is reported.

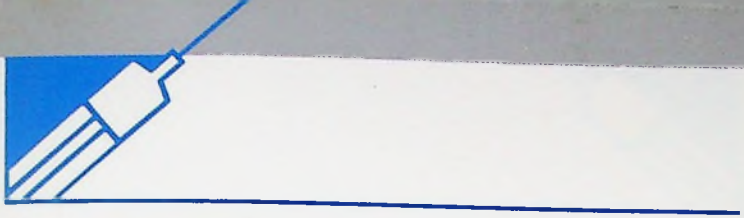
Delayed complications

Measles has been shown to have an effect on mortality and morbidity not only in the period immediately after the acute infection, but also for a considerable period thereafter.

Mortality
An African study indicated that having measles increased the chance of death over the next 9 months by fifteen times.

A Bangladesh study indicated that measles vaccination reduced mortality by 35% over the next 12 months.

Morbidity
Several studies have examined delayed morbidity after measles infection. Bhaskaran,et al. (J. Trop. Med. Hyg. 1984-87 : 21.5) have reported that measles cases had 10 times more days of illness than controls.



Magnitude of the problem in India

Many cases of measles are not reported to the health institutions. As a result, the complications that arise due to measles are often not associated with measles itself. Therefore no reliable data on the incidence of measles and its complications is available in India.

It is estimated that, in India, every year there are some 20 million cases of measles.

Inspite of a case fatality rate of 1% to 2%, a minimum of 2 lakh (and more likely 5 lakh) measles-associated deaths occur each year in India.

Innumerable number of children suffer other infections like diarrhoea, acute respiratory infections, malnutrition and vitamin A deficiency, as a result of measles.

Measles immunization

Being a viral disease, measles cannot be cured by antibiotics and therefore prevention is more important. Because measles has such a profound influence on childhood mortality and morbidity, measles prevention deserves to take the first place in UIP.

It may be possible to prevent many measles-associated deaths and diseases by good medical care (ORT, antibiotics, vitamin A, supplementary feeding), but the cost of taking proper care of all children ill with measles alone is at least four times that of a complete UIP.

Preventing measles by immunization will have the multiple benefit of preventing other diseases, particularly diarrhoea, dysentery, malnutrition, blindness, pneumonia and acute respiratory infections.

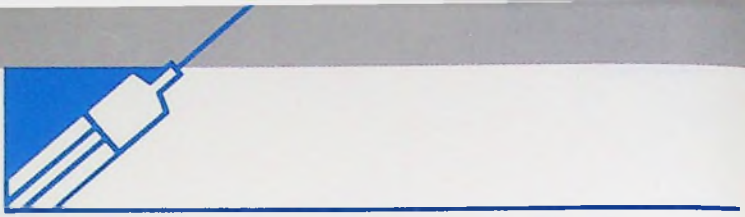
Measles morbidity is influenced over the long term only by immunization and is, therefore, a much better indicator of programme impact.

Monitoring measles immunization and disease surveillance

By monitoring measles immunization and measles disease surveillance we can double-check and evaluate the following:

Quality of immunization services

Strict compliance of not using reconstituted vaccine vials after 4 hours is advised as any such use is likely to lead to vaccine-associated reactions. All deaths following measles immunization reported in the newspapers are attributable to incorrect handling of the vaccine and compromise on aseptic precautions.



Cold-chain

Since cold-chain requirements are nearly as rigorous as of any other EPI vaccines, efficacy of the measles vaccine is directly related to effective maintenance of the cold-chain.

Fully immunized infant population

Measles is usually the last vaccine given. Tracking every infant till measles vaccine is given will ensure improvement in full immunization coverages.

Measles surveillance

Because of the relative simplicity, surveillance of measles cases and demonstration of its reduction is the best single indicator of the effectiveness of the immunization programme.

Immunization schedule

Vaccination against measles was inducted in the national immunization schedule in 1985. Our national immunization schedule advocates measles vaccination at 9-12 months of age. This is early enough to prevent most cases and late enough to avoid most interference from maternal antibodies.

THE IDEAL IMMUNIZATION SCHEDULE	
FOR THE PREGNANT WOMAN :	
Early in pregnancy	T.T.-1 (injection)
One month after T.T.-1	T.T.-2 or T.T. Booster (injection)
FOR THE INFANT :	
At 1 1/2 months	B.C.G. (injection)*
	D.P.T.-1 (injection) and O.P.V.-1 (dose)
At 2 1/2 months	D.P.T.-2 (injection) and O.P.V.-2 (dose)
At 3 1/2 months	D.P.T.-3 (injection) and O.P.V.-3 (dose)
At 9 months	Measles (injection)
At 16 to 24 months	D.P.T. Booster (injection) and O.P.V. Booster (dose)

*If the infant has been delivered in a hospital/clinic, she should be given the B.C.G. injection at birth.

Some doctors feel that the measles vaccination should be given between 7-9 months since some measles cases occur before the age of 9 months. In India we do not have the data on the proportion of cases occuring before the age of 9 months.

A study conducted in Kenya (1974-81) to show the impact of measles vaccination at various ages (see figure 3) between 4 to 10 months showed that at 9 months the percentage protected was the greatest because only 10% had had measles and only 7% still had maternal antibodies, which make vaccination ineffective.

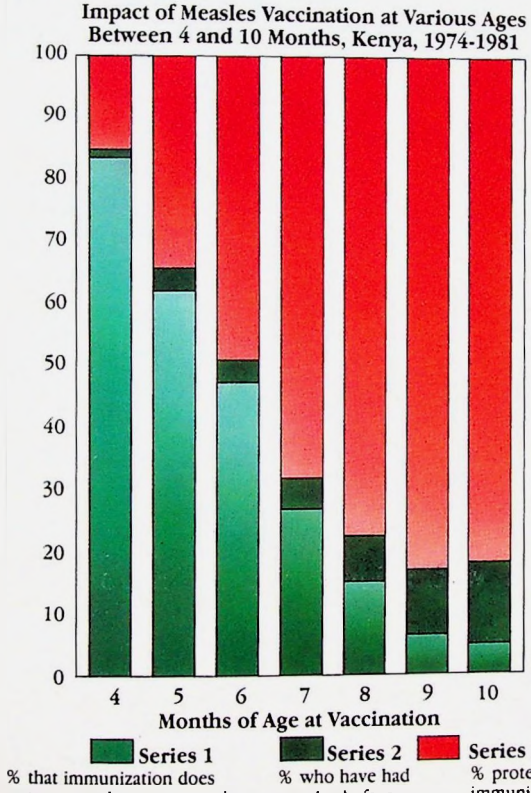


Figure 3

* Source : WER 1982; 12 : 89-91

Implementation of measles immunization at 9 months of age has been successful in many areas in reducing measles morbidity and mortality.

In some areas, however, measles morbidity and mortality among infants less than 9 months of age may be substantial. There are four ways suggested in which the failure to adequately protect these young infants with the current vaccine might be overcome:

(a) Achieving a high enough vaccine coverage (85% and above) so that herd-immunity of the older children will protect the younger ones.

(b) Using seroconversion studies to determine the youngest possible age at which the vaccine can be administered in a given population.

(c) A two-dose strategy, at 6 months and 15-18 months.

(d) Overcoming the problem of maternal antibodies by a different route of administration or by the use of a different vaccine (Edmonston-Zagreb, Strain).

Countries like India have to depend heavily on the first alternative at present. The other ways are under trial and as yet are of no relevance for field purposes.

Safety of measles vaccine

Measles vaccine is very safe if reconstituted vaccine is used within 4 hours, and one sterilized syringe and sterilized needle is used per injection.

However, about 30% of those vaccinated develop malaise, mild fever and/or a rash 4-10 days after the vaccination. The parents need to be informed about this possibility.

Severe complications like convulsions have occurred in 0.02 to 190 per 1 lakh vaccinated individuals, compared with 500 to 1000 per 1 lakh measles cases. Similarly encephalitis has been observed in 1 per 10 lakh vaccinated individuals, against 500 to 4000 per 10 lakh measles cases.

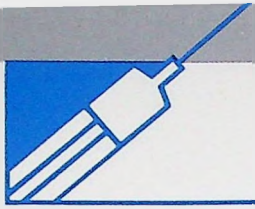
Measles vaccination during epidemics

Measles vaccine can protect children who have been exposed to measles, and prevent the disease from occurring. But this is only possible if the children receive the vaccine within the first 72 hours after exposure. The vaccine given beyond 3 days after exposure will do absolutely no harm, but may not protect the children.

Thus mass measles vaccinations during epidemics are useful only if vaccination can be completed within 3 days of the first case.

Measures to improve measles vaccination coverage

- Orient colleagues in the medical profession with requisite technical update to stress the magnitude of the measles problem and the need for measles immunization.
- Let doctors know that in the present situation, the country can derive best results by administering measles immunization immediately after 9 months (270 days) of age.
- Promote measles immunization for all children in the age group of 9-12 months, even if they are malnourished.
- Promote community awareness through mass media, interpersonal communication and action, to identify each child and to get her fully immunized.
- Ensure that immunization card (home-based) is issued to parents of every child and counterfoil is kept with medical institution or health worker.
- Ensure review of the card for immunization status (actively or passively) until measles immunization is given. This will help in achieving high coverages of full immunization.
- Ensure provision of measles vaccination services in all immunization sessions.
- Let the institutions/sub-centres open a vial of measles vaccine even if there is a single eligible child on the fixed day of the session. Also immunize children above the age of 12 months if they have not already been protected.
- If required, promote intensive measles immunization once every three months to supplement routine services.



How to give measles vaccination

- Measles vaccine is freeze dried.
- You must reconstitute it, using pyrogen-free double-distilled water (supplied as diluent with the vaccine) before you can use it. Cool the diluent before using.
- Wait until at least one child of eligible age has arrived.
- Take a sterile 5 ml syringe and a sterile mixing needle (20 G).
- Open a cool ampoule of diluent.
- Draw 5 ml of distilled water for 10 dose vial.
- Check the label, for expiry date, and open the vial.
- Empty the diluent into the vaccine vial.
- Gently roll the vial between the palms of your hands for mixing. There is no need to shake the vial.
- Do not leave the needle in the vial.
- Position the child.
- Load a 2 ml sterilized syringe with 0.5 ml of reconstituted vaccine. Use 23 G sterilized needle only.
- Pinch the skin on the outer part of the child's upper arm (left or right) with your fingers.
- Push the needle into the pinched skin – not straight in but sloping.
- Do not push the needle in too far.
- To control the needle, support the adaptor end of the syringe with your thumb and finger while you push the needle in.
- Withdraw the plunger to check for blood.
- After ensuring that the needle is not in any vein, press the plunger with your thumb and inject the vaccine.
- Withdraw the needle and keep syringe and needle in a separate tray for sterilization.
- Ensure use of reconstituted vaccine within four hours.

NATIONAL IMMUNIZATION PROGRAMME

Government of India

VACCINATION COVERAGE EVALUATION SURVEYS: INDIA, 1987

VACCINATION COVERAGE EVALUATION SURVEYS: INDIA, 1987

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ABSTRACT

Vaccination coverage evaluation surveys are increasingly being used as a management tool for monitoring and evaluating immunization programme progress. Over 257 such surveys have been conducted in India since 1979. The results of 93 surveys conducted in 1987 document increases in coverage, especially in selected areas where serial survey data are available, and the feasibility that high levels of immunization coverage can be achieved and sustained in the Indian context. Immunization programme managers are encouraged to continue to expand the use immunization coverage surveys in their areas.

KEYWORDS

Evaluation; Coverage surveys; Immunization Programme

INTRODUCTION

The Universal Immunization Programme (UIP) was launched in India in 1985 as a comprehensive immunization programme designed to achieve immunization coverage of 100 percent of pregnant women with 2 doses or a booster dose of tetanus toxoid (TT) and at least 85 percent coverage of infants with 3 doses each of DPT and OPV and one dose each of BCG and measles vaccines. UIP was started in selected districts in 1985-86 and is undergoing a carefully planned systematic expansion to all the districts in the country by 1989-90 (1).

The accurate measurement of immunization coverage in eligible population groups is essential in the monitoring and evaluation of programme implementation. Vaccination coverage evaluation surveys are an important management tool in assessing programme achievement, determining reasons for immunization failure and obtaining a better understanding of the sources of immunization in the community. To date, 257 such surveys are known to have been conducted since 1979 to determine immunization coverage levels of children and the mothers of young children. The results of 93 surveys carried out in 1987 are presented in this paper.

METHODOLOGY

The survey methodology used in India is the standard WHO 30 cluster sampling technique, adapted to suit the programme needs of the country (2). The adaptation of this methodology and its advantages and limitations have been discussed separately (3). Briefly, 30 clusters (villages or urban wards) were randomly selected by population in the geographic area to be covered by the survey. House to house visits were made in each of these clusters until seven children 12 to 23 months of age and their mothers, or seven mothers of children under one year of age, were found. The selection of the first house was done randomly and subsequent houses were selected by going to the next nearest house.

The immunization status of children, source of immunization and reasons for failure to initiate or complete immunization were ascertained. Where possible, the dates of immunization were determined by immunization cards or registers. For those who had no such documentation, the month and year of vaccination were recorded only if convincing verbal history was given. In addition to questions on immunization status, mothers were asked about antenatal care, place of delivery and persons conducting the delivery. Questions were also asked to ascertain knowledge regarding the names of the vaccine preventable diseases, number of doses of DPT recommended and the source of information about immunization.

RESULTS OF SURVEYS CONDUCTED IN 1987

Number of surveys

The results of 257 surveys conducted since 1979 are available. The surveys have been variably distributed among the states (Table 1).

Prior to the launching of UIP the annual number of surveys averaged 18 per year with a range of 9 to 28. The number of surveys has now increased and at least forty two and ninty three surveys were conducted in 1986 and 1987, respectively.

Population size of the areas surveyed

Since the initiation of UIP, a generally increasing trend of surveying larger areas is evident. The population of the areas surveyed in 1987 ranged from 38,000 to 4,807,000 with a median population of 1,362,000 as compared to the population of the areas sampled in 1983 which ranged from 20,000 to 1,575,000 with a median population of 113,000.

Over two-thirds of the surveys (62/88) covered entire districts. Thirteen surveys were conducted in cities or selected urban wards and 13 in rural blocks. Although the total population covered in 5 surveys is not known, it appears that 4 covered entire districts and 1 was conducted in a rural block (Table 2).

Immunization coverage levels

Over a fifth of the surveyed areas (20/93) recorded coverage levels of 75 percent and above for the third dose of DPT and OPV. In 55 percent (51/93) of the other surveyed areas, coverage levels between 50 and 74 percent for these vaccines were noted. Only in 19 areas were these coverage levels less than 50 percent, including two areas with coverage levels below 25 percent. Coverage with BCG and measles vaccines were less than with DPT and OPV in many areas (Table 2, Fig.1).

Coverage levels of above 75 percent with 2 doses or a booster dose of TT during pregnancy were reported in 41 percent (32/78) of the surveyed areas reporting TT coverage. Over three-fourths (61/78) of the areas recorded coverage levels of 50% or more. However, there remain areas in the country (5/78) with less than 25% coverage of pregnant women with TT. In 15 of the surveys coverage with TT vaccine was not reported (Table 2, Fig.1).

Immunization status of children

High coverage with individual vaccines correlates with a higher percentage of fully vaccinated (FV) children receiving

three doses each of DPT and OPV and one dose of BCG. Bharuch district had the highest percentage of fully vaccinated children (84%). Three areas in Delhi and an urban and two rural blocks in Rohtak district also recorded fully vaccinated levels of above 80 percent. In more than a third of the surveyed areas (27/76) 50 percent or more of the children were found to be fully vaccinated (Table 2, Fig.1).

BCG scar rate

The BCG scar rate was recorded in 35 of the 93 surveys conducted. In 80 percent (28/35) of these areas scar rates of 85 percent or above were documented (Table 2).

Serial surveys

Comparison of results with previous surveys in the same geographic area convincingly documents improvement in immunization coverage for all vaccines in some areas. Dropout rates were nearly halved during the period between these surveys (Table 3).

Dropout rates

The median dropout from first to third dose for DPT and OPV was 20 and 21 percent, respectively in 1987. More than a third of the surveyed areas (31/90) recorded dropout rates of 15 percent or less for DPT. There are, however, still many places in the country which continue to have high dropout rates as reflected by the results in 20 percent (18/90) areas surveyed showing dropout rates exceeding 30 percent for DPT (Table 2, Fig.2).

Reasons for immunization failure

The reasons for failure to initiate or complete immunization have been received for 37 percent (34/93) of the surveys conducted in 1987. The specific areas and the reasons for immunization failure, by percentage of the total number of partially immunized (PI) or not immunized (NI) children, are shown in Table 4. Percentage of fully vaccinated children (FV), who had received 3 doses of DPT and OPV and 1 dose of BCG, as well as coverage by third dose of DPT are also shown in Table 4.

Lack of adequate information, unavailability of vaccines and absence of health workers were most frequently recorded as reasons for immunization failure. Postponement of immunization and the mother being busy were also noted as important reasons. Contraindications to vaccination, minor illnesses, fear of reactions and no faith in immunization were cited as major reasons only in certain areas. Among the miscellaneous reasons, the most common were illness of the mother or long periods of absence of the family from their place of residence. Rumours against immunization were not of

significance in any of the areas surveyed.

Source of immunization

Primary health centres (PHCs) and their subcentres remain a major source of immunization (Table 5). Analysis of the data available from 23 surveys on the source of DPT3 showed that in 43 percent (10/23) of the areas the greatest percentage of the children had been vaccinated at such health centres. Outreach services also serve as the major source of immunization in 39 percent (9/23) of the areas. Hospital and private sector rarely serve as the major source of immunization, although the surveys show that in certain areas they may be significant providers of immunization services.

DISCUSSION

Although many states have conducted a number of surveys, the larger populated states of Andhra Pradesh, Bihar, Orissa and Uttar Pradesh have conducted only a very few. The 7 surveys in Delhi, as well as some of the other surveys in urban wards and rural blocks, were carried out as part of the UIP training programme.

The results of the surveys indicate a wide variation in immunization coverage levels in the country. A positive and encouraging result is the documentation in selected areas of the feasibility of achieving and maintaining high coverage levels and the increase in immunization coverage levels from those of previous years. Because measles vaccine was introduced in selected districts only starting in 1985-86, coverage with this vaccine is currently much lower than the other vaccines.

In general, areas with high coverage of DPT and OPV also achieved high levels of BCG coverage. However, in several areas with only moderate DPT and OPV coverage, BCG vaccination performance was significantly lower. BCG vaccination services were previously provided as part of the National Tuberculosis Control Programme by teams of BCG technicians. BCG vaccine was integrated with the other vaccines provided under the immunization programme in 1981-82. Many districts have since conducted training of the multi-purpose workers (MPWs) in BCG vaccine administration which has resulted in improvements in BCG vaccination coverage and increases in the percentage of fully vaccinated children. The survey results, however, indicate a continuous need to improve delivery of BCG services, especially in areas where low or only moderate levels of coverage with DPT and OPV have been achieved.

Almost all children should have a vaccination scar after proper immunization with potent BCG vaccine. The BCG scar rate can serve as one of the indicators of the quality of immunization services. Since many of the health workers have only been recently trained in BCG vaccine administration, it is important that BCG scar rates are monitored in all future vaccination coverage evaluation surveys to ensure that corrective measures are taken where necessary.

Comparison of results of surveys in different years in the same geographic areas clearly demonstrates the important relationship of dropout rates to immunization coverage. In selected areas where serial survey data are available, dropout rates have been more than halved in the period between the two surveys. Reduction in dropout rates and increases in the percentage of fully vaccinated children reflect a consolidation of programme activities and improvement in planning and management of immunization services.

The reasons for the failure to initiate or complete immunization of children suggests that lack of adequate information, unavailability of vaccines and absence of the health workers at the time of immunization sessions may be important factors in many areas. Minor illnesses still seem to be taken as a contraindication to vaccination in some areas and children are either not brought for immunization or are turned away by the health workers. The fact that fear of injections or side reactions and no faith in immunization appear to be localized as major causes in only a few areas may reflect the quality of the immunization services and general credibility of the health services in these areas.

Experience gained over the years and feedback on the reasons for immunization failure should provide a solid foundation for further improving services. Results of the serial surveys clearly demonstrate that dropout rates can be reduced and immunization coverage levels improved substantially over a relatively short period of time.

CONCLUSIONS

The following conclusions can be drawn from the coverage surveys conducted in India in 1987:

- Immunization coverage surveys are being increasingly used as a management tool to monitor and evaluate programme progress.

- Marked increases in coverage are documented in selected areas where serial survey data are available.

- It is feasible to achieve and maintain high levels of immunization coverage in the Indian context.

- Reasons for failure to immunize can be elicited which are important for planning of immunization strategies to reduce dropout rates and to extend services to those who are not yet being reached by the programme.

Immunization programme managers are encouraged to continue to make increasing use of immunization coverage surveys as a management tool to assess programme progress in their areas. Results of surveys should be reported to the Ministry of Health and Family Welfare in a timely manner so that periodic updates on the use and results of coverage surveys can be disseminated. When possible, training programmes on immunization should include practical experience in the organization and implementation of a coverage survey so that an increasing number of persons knowledgeable of the techniques are available to actually conduct them.

ACKNOWLEDGEMENTS

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Table 1
VACCINATION COVERAGE EVALUATION SURVEYS, INDIA

State	'79	'80	'81	'82	'83	'84	'85	'86	'87	Total
A.P		1								1
Assam					1		1		1	3
Bihar			1	2						3
Gujarat	1	7	3	2	1	4	1	3	3	25
Haryana	1			1	1			2	6	11
H.P.			2		5	3	3	3	4	20
J&K	1		1			3	2	5	1	13
Karnataka	1		2	2			2	5	15	27
Kerala			1						7	8
M.P.	2	1	3	1	1	1	1	2	7	19
Maharashtra		4		1	4	1	1	3	5	19
Manipur				1	1				3	5
Meghalaya					1					1
Nagaland										0
Orissa			1			2	1			4
Punjab		1		1				4	6	12
Rajasthan					4		2	1	1	8
Sikkim					1				1	2
T.N.		1	1		2			6	24	34
Tripura					1					1
U.P.		1	1	1						3
W.B.	1	2	1	1	2			2		9
Arun. Pr			1					1	1	3
A&N Islands										0
Delhi	1	2	1	1	1	2	1	2	7	18
Goa	1	1			1			2		5
Chandigarh								1		1
D&N Haveli										0
Lakshadweep										0
Mizoram					1				1	2
Pondicherry										0
India	9	21	19	14	28	16	15	42	93	257

Table 2
VACCINATION COVERAGE EVALUTAION SURVEYS, INDIA 1987

	AREA	POPULATION	TT(PW)	BCG	SCAR RATE	DPT3	OPV3	MEA	FV	DROPOUT DPT	DROPOUT OPV
	ASSAM										
01	Guahati City	600000	73	44	89	58	55	25	20	20	22
	GUJARAT										
02	Ahmedabad Dist.	4435000	53	53	...	31	35	0	20	49	44
03	Bharuch Dist.	1400000	82	88	83	91	91	54	84	6	5
04	Panchmahal Dist.	2596000	29	30	...	26	25	21	9	58	50
	HARYANA										
05	Gurgaon Dist.	976300	55	44	...	54	53	5	35	21	21
06	Hissar Dist.	1717000	61	49	...	61	61	8	39	18	20
07	Bahadurgarh Bl.,Rohtak ‡	166564	...	76	...	66	67	39	34	24	24
08	Beri-Kathura Bl.,Rohtak ‡	232949	...	98	...	95	96	89	87	2	2
09	Non-ICDS Ward Rohtak(Urban)‡	115563	...	98	...	97	97	96	92	2	2
10	ICDS Ward, Rohtak (Urban) ‡	87349	...	91	...	89	89	72	68	8	8
	HIMACHAL PRADESH										
11	Chamba Dist.	358400	47	33	97	46	43	18	28	33	29
12	Kullu Dist.	262500	39	46	...	61	58	5	33	23	15
13	Mandi Dist.	748546	55	47	97	66	61	30	23	22	17
14	Solan Dist.	337000	63	66	...	76	73	23	57	17	17
	JAMMU & KASHMIR										
15	Udhampur	...	...	62	...	59	55		51	24	29
	KARNATAKA										
16	Hassan Dist. ‡	1487115	63	76	84	78	78	45	40	14	13
17	Kolar Dist.	1905492	72	73	...	67	67	32	56	25	25
18	Chickmaglur Dist.	912000	79	52	100	62	62	0	44	28	28
19	Tumkur Dist.	1975907	41	39	74	31	32	0	21	41	42
20	Chickmaglur Town	68372	84	64	90	78	78	19	55	10	9
21	Karwar Town	48000	89	42	86	74	76	4	40	11	8
22	Ullal PHC,Dakshina Kannada	168614	84	72	98	71	71	31	54	1	2
23	Hubli Tehsil,Dharwad Dist.	103391	65	30	95	46	46	4	25	20	22
24	Raichur Tehsil,Raichur Dist.	166084	47	20	72	31	32	0	18	37	34
25	Chelur PHC,Tumkur Dist.	63170	54	32	...	54	53	0	30	22	22
26	Shivally PHC,Mandya Dist.	46380	64	67	92	67	67	0	55	11	10
27	Turvekere PHC(ICDS)	148301	70	52	93	60	50	4	39	13	12
28	Kunigal PHC(ICDS),Tumkur	94380	67	63	100	79	71	20	53	12	10
29	Anekal PHC,Bangalore Dist.	95530	65	74	100	71	71	22	60	22	22
30	Nelamangla PHC,Bangalore	98350	58	72	94	62	57	20	50	21	27
	KERALA										
31	Cannanore Dist.	1930000	89	47	...	68	68	32	29	16	13
32	PHC Pannoor, Cannanore	...		21	...	68	67	0		15	17
33	Kasargod Distr.(Chengala & Chennad panchayats) ‡	70207	88	41	69	68	68	12	10	11	12
34	Idukki Distr.	...	86	75	...	78	78	6	...	14	4
35	Kottayam Distr.	1807000	...	60	...	74	74	19	...	...	...
36	Trichur Distr.	.	...	41	...	68	68	12	...	11	12
37	Quilon Distr.,Kerala	2193000	94	87	97	72	76	45	39	20	15
	MADHYA PRADESH										
38	Sagar Dist.	1472100	44	45	72	50	51	8	38	25	25
39	Barwani Dist.	1630000	43	40	94	61	64	...	32	24	23
40	Bastar Dist.	1840000	20	32	87	35	29	...	20	43	43
41	Surguja Dist.	1631000	8	20	88	22	19	...	9	46	52
42	Bhind Distr.	1088000	30	30	...	35	32	4	21	35	38
43	Gwalior Distr.	1280000	41	66	...	62	62	30	53	24	23
44	Shivpuri Distr.	993000	33	38	...	48	49	16	36	32	31

	AREA	POPULATION	TT(PW)	BCG	SCAR RATE	DPT3	OPV3	MSL	FV	DROPOUT DPT	DROPOUT OPV
	MAHARASHTRA										
45	Akola Dist.	2009800	66	46	...	66	58	...	35	20	24
46	Aurangabad Dist.	1751000	...	58	...	68	74	26	17	...	...
47	Thane Dist.	3952700	80	73	92	78	78	44	62	10	12
48	Nagpur Dist.	3010000	79	73	...	83	74	19	12	11	...
49	Pune Dist	4807000	69	54	...	75	71	6	16	14	...
	MANIPUR										
50	Imphal Munc.* #	126124	...	51	98	57	65	16	44	17	0
51	Imphal West(R)	53523	23	41	89	52	51	10	38	20	21
52	Thoubal Dist.	...	16	13	...	16	15	1	5	39	36
	PUNJAB										
53	Faridkot Dist.,(Rural)	1610000	55	19	...	38	36	15	13	31	32
54	Ferozepur Dist.,(Rural)	1469000	71	30	...	65	64	9	22	17	14
55	Hoshiarpur Dist.,(Rural)	1362000	85	56	...	82	81	21	53	10	10
56	Ludhiana Dist.,(Rural)	2064000	79	61	...	68	68	24	54	13	13
57	Ludhiana City,(Urban)	600000	84	87	...	84	83	58	55	10	11
58	Patiala Dist.,(Rural)	1817000	85	64	...	69	69	5	36	11	12
	RAJASTHAN										
59	Kota Dist.	1802300	49	31	94	47	49	22	23	20	17
	SIKKIM										
60	Sikkim East	157815	17	51	79	42	42	36	33	35	31
	TAMIL NADU										
61	Chidambaranar	1451200	46	...	...	51	43	...	...	...	...
62	Chingleput	4292370	...	9	...	70	65	9	...	15	20
63	Cuddalore	1628940	85	25	...	77	77	13	...	19	19
64	Tirunelveli	2388749	67	...	...	65	56	...	...	19	24
65	Dindigul(Anna)	1716049	79	55	...	84	83	31	23	13	14
66	Kallakurichi	1459983	67	2	...	49	50	12	...	36	34
67	Kamarajar	1483274	66	...	...	66	59		59	20	25
68	Kancheepuram	1986642	...	11	...	61	58	8	2	22	24
69	Kanyakumari	1572800	87	68	...	62	66	29	21	18	19
70	Madurai	1946261	73	37	...	61	58	27	11	23	26
71	Namakkal	880330	77	23	...	66	64	20	7	26	25
72	Nilgiris	741000	88	31	...	91	90	49	...	6	6
73	Palayamkottai	2388749	67	...	...	65	56	...	...	19	24
74	Periyakulam	1313112	79	64	...	78	77	48	38	15	15
75	Periyar	2268108	66	26	...	69	69	40	...	22	21
76	PMR Lingam	1065719	77	93	...	61	59	29	56	27	27
77	Ramanathapuram	1140581	79	...	...	62	53	...	49	26	29
78	Saidapet	2305728	...	7	...	79	72	10	...	9	16
79	Salem	1481775	...	41	...	45	44	31	15	41	40
80	South Arcot	4635221	77	17	...	60	60	13	...	30	28
81	Thanjavur	2094029	83	28	...	67	66	29	...	24	24
82	Thiruvarur	2344741	85	22	...	62	61	24	...	25	25
83	Tiruchengode	1429452	78	22	...	49	43	15	6	33	32
84	Villupuram	1546298	77	23	...	55	54	13	...	33	34
	ARUNACHAL PRADESH										
85	Lower Subansiri Dist.	135000	...	39	...	42	28	...	11	41	51
	DELHI										
86	Delhi Trilokpuri ICDS	110873	58	75	88	59	60		51	29	29
87	Delhi,Palam PHC	38000	65	60	99	69	69	...	51	20	20
88	Delhi,Nizamuddin ICDS	87253	71	76	97	75	74		70	15	16
89	Delhi Khanpur, Madangir	118000	76	86	96	89	88	36	81	10	11
90	Delhi Kalkaji, Malviya Ng	84000	84	83	94	87	87	36	82	8	8
91	Delhi Mongolpuri	110000	75	95	95	86	86	36	83	13	13
92	Delhi Paharganj ICDS	104000	78	84	93	76	78	32	73	17	13
	MIZORAM										
93	Lunglei, Mizoram	88823	50	51	...	63	33	0	17	20	11

* - 28 clusters only
\# - FV includes children who received measles vaccine also
... - information not received

Table 3

Comparison of Results of Surveys at Different Times in the same Geographic Areas

Vaccine	Gauhati City		Bharuch		Kota		Sagar		Thane	
	1987	1985	1987	1985	1987	1983	1987	1985	1987	1986
DPT3	58	35	91	51	47	22	50	23	78	69
OPV3	55	28	91	50	49	21	51	22	78	69
BCG	44	10	88	66	31	9	45	8	73	69
MSL	25	...	54	...	22	...	8	...	44	50
FV	20	...	84	33	23	4	38	7	62	46
DROPOUT										
DPT	20	46	6	33	20	42	25	52	10	20
OPV	22	27	5	32	17	41	25	53	12	19
TT2/B	74	...	82	53	49	17	44	25	80	69

FV - Fully vaccinated

Table 4
REASONS FOR IMMUNIZATION FAILURE

Percentage of Unimmunized or Partially Immunized Children

AREA	Coverage			... Information ...					... Implementation ...				... Motivation ...				Misc.
	% Cov. DPT3	FV	No. PI/NI	Unaware of Need	Sch.	Place	Child ill	Contra -indic	MPW Abs.	No Vacc.	Fear Inj.	No Faith	Mother Busy	Post- poned	Time Inconv	Place Far	Other Reasons
1 Faridkot (R)	38	13	222	49	5	5	5	9	13	5	16	14	11	23	1	8	33
2 Surguja Dist., M.P.	22	9	192	32	5	2	3		34	8	7		3				2
3 Lunglei Dist.,Mizoram	63	17	176	7						35	7		5				4
4 Bhind Distr.,M.P.	35	21	171	9	3	3	3		17	20	17	4	4				20
5 Bastar Dist., M.P.	35	20	169	21	7	11	4	1	28	19	1	1	3	1	1		3
6 Mandi Dist., H.P.	66	23	165	38	16	5	3	1	1	17	6	3	4		1	5	1
7 Kota Dist.,Rajasthan	47	23	161	40	3	12	3		6	6	3	2	3				21
8 Chamba Dist.,H.P.	46	28	154	27	13	3	1	1	14	24	1	1	3		2	8	3
9 Cannanore Dist.,Kerala	68	29	149	16	2	5	15	2	2	7	11	4	3	17	3	1	7
10 Sikkim East, Sikkim	42	33	145	32	8	10	8	5		2	3	6	6	2	6	9	3
11 Patiala(R)	69	36	145	21	2	9	17	3	1	3	8	8	11	22	2	11	26
12 Barwani Dist., M.P.	61	32	143	15	8	2	4	10	18	13		33	13		1	1	9
13 Kulu Dist.,H.P.	61	33	143	31	20	3	1	2	13	16	0	0	2			6	6
14 Gurgaon Dist.,Haryana	54	35	138	27	4	7	4	1	14	2	7	3	2	8			15
15 Shivpuri Distr.,M.P.	48	36	137	17	4	12	2		18	7	11	4	7	2			15
16 Rohtak (R)	...	...	136	32			13			32	14		6			2	31
17 Sagar Dist., M.P.	50	38	131	33	3	3	5		24	8	20	5	18				6
18 Hissar Dist.,Haryana	61	39	131	24	15	3	2	5	8		18	4	7	6		3	5
19 Quilon Dist.,Kerala	72	39	129	13	3	3	20	6		6	6	6	4	15		1	10
20 Hassan Dist.,Karnataka	78	40	126	26	3	3	3	3	6	10	2	3	15	18	21	4	3
21 Ferozepur(R)	65	53	113	49	4	34	7	8		42	6	12	12	27	7	20	35
22 Guahati city, Assam	58	20	112	13	5	9	32	5	2	5	3				4	6	2
23 Ludhiana(U)	84	55	109	17	0	1	6	5		3	2	1	6	6	2		15
24 Hoshiarpur(R)	82	53	105	37	13	15	9	7	3	8	11	13	20	30	9	15	34
25 Delhi Trilokpuri ICDS	59	51	103	27	13	6	6	11	1	2	5	3	10	4		1	12
26 Gwalior Distr.,M.P.	62	53	101	11	6	6	2		19	5	6	12	11	4			19
27 Ludhiana(R)	68	54	99	31	12	15	14	11	8	4	17	17	36	34	3	6	16
28 Kolar Dist.,Karnataka	67	56	91	23	1		11	4	11	10	10	2	11	2	2	4	5
29 Solan Dist.,H.P.	76	57	90	24	6	8		2		18	9	2	7		1	2	1
30 Thane Dist.,Maharashtra	78	62	80	30	5	1	15	10		4	1	5	5	8	3		10
31 Rohtak (U)	...	...	78	23			23			36	12		4			1	32
32 Delhi,Nizamuddin ICDS	75	70	63	11	19	3	16	6	5	6	3	3	5	8	6		5
33 Delhi Paharganj ICDS	76	73	53	11	15		13	25	4	4	9		4	2	6	2	6
34 Bharuch Dist.,Gujarat	91	84	34		38		3	6	6	12			29		6		

FV - Fully vaccinated
* - Fully vaccinated includes children who received measles vaccine also

Note:
Due to multiple reponses totals may be more than 100% in some areas
Number of children surveyed in Punjab ranged from 220 to 255

Table 5
SOURCES OF DPT3 IMMUNIZATION

	AREA	SOURCE				
		HOSPITAL	HEALTH CENTRE	OUTREACH	PRIVATE	NOT KNOWN
91	1 Bharuch Dist.,Gujarat	9	47	31	13	
57	2 Gurgaon Dist.,Haryana	22	34	37	7	
61	3 Hissar Dist.,Haryana	23	48	16	13	
66	4 Mandi Dist., H.P.		80			20
78	5 Hassan Dist.,Karnataka	9	18	63	10	
67	6 Kolar Dist.,Karnataka	14	25	58	6	
68	7 Cannanore Dist.,Kerala	16	25	10	49	0
72	8 Quilon Dist.,Kerala	18	49	0	33	0
78	9 Thane Dist.,Maharashtra	21	13	27	39	
52	10 Imphal West(R),Manipur	29	14	50	5	2
61	11 Barwani Dist., M.P.	26	16	55	2	1
35	12 Bastar Dist., M.P.	3	12	81	1	3
50	13 Sagar Dist., M.P.	17	17	56	10	
22	14 Surguja Dist., M.P.	19	0	74	6	1
38	15 Faridkot (R), Punjab	12	49	0	35	4
65	16 Ferozepur(R), Punjab	24	38	13	24	1
82	17 Hoshiarpur(R), Punjab	30	49	6	16	
68	18 Ludhiana(R), Punjab	7	31	28	27	7
84	19 Ludhiana(U), Punjab	13	43	0	44	
69	20 Patiala(R), Punjab	19	60	0		21
97	21 Kota Dist.,Rajasthan	27	34	26	13	
42	22 Sikkim East, Sikkim	7	42	50	1	
59	23 Delhi Trilokpuri ICDS	0	98	0	2	

H:	Co
31	81
6	74
27	0
10	50
63	56
0	26
0	

FIGURE 1

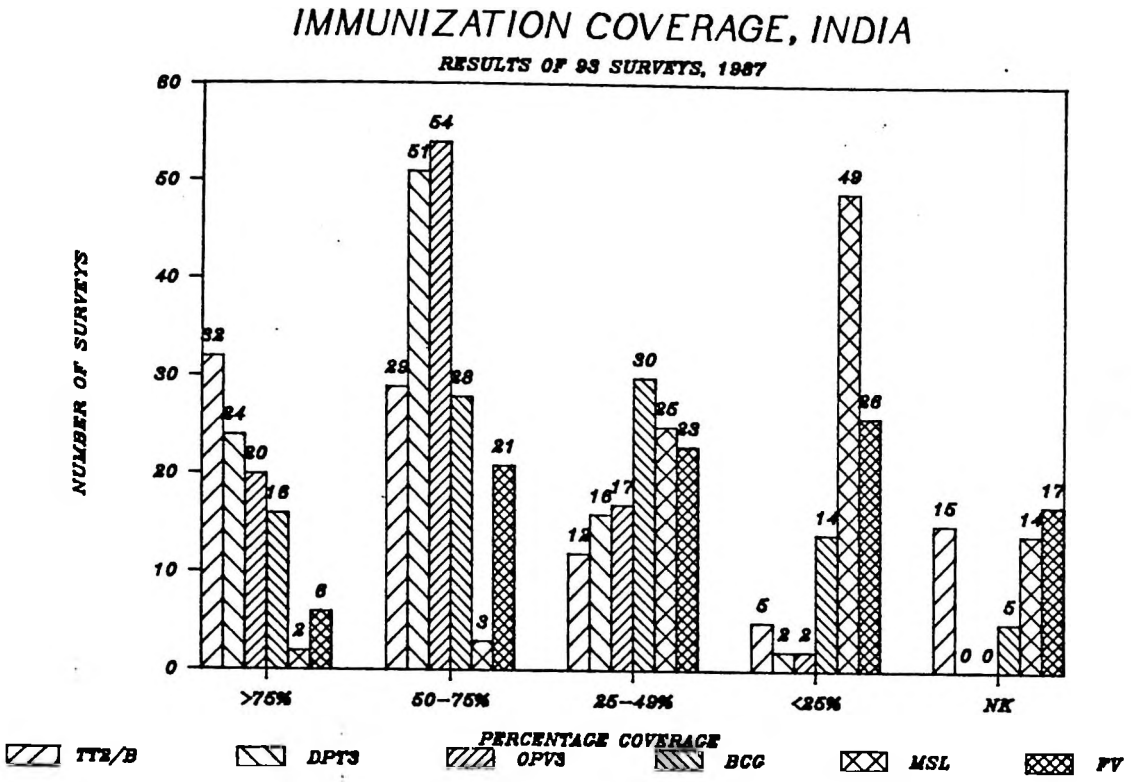
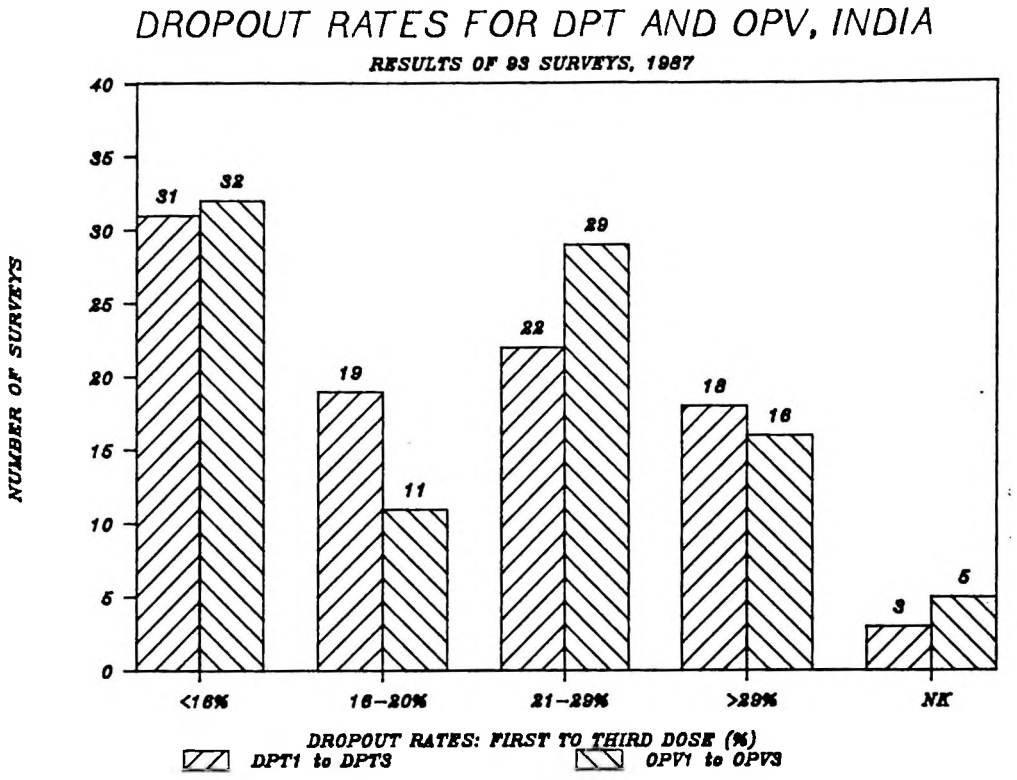

IMMUNIZATION COVERAGE, INDIA
RESULTS OF 93 SURVEYS, 1987
NUMBER OF SURVEYS
60
50
40
30
20
10
0
32
24
20
16
2
6
29
51
54
28
3
21
12
16
17
30
25
23
5
2
2
14
49
26
15
0
0
5
14
17
>75%
50–75%
25–49%
<25%
NK
PERCENTAGE COVERAGE
TT2/B
DPT3
OPV3
BCG
MSL
FV

FIGURE 2


DROPOUT RATES FOR DPT AND OPV, INDIA
RESULTS OF 93 SURVEYS, 1987
NUMBER OF SURVEYS
40
35
30
25
20
15
10
5
0
31
32
19
11
22
29
18
16
3
5
<16%
16-20%
21-29%
>29%
NK
DROPOUT RATES: FIRST TO THIRD DOSE (%)
DPT1 to DPT3
OPV1 to OPV3

THE CASE AGAINST IMMUNIZATIONS
Richard Moskowitz M.D.

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THE CASE AGAINST IMMUNIZATIONS

By Richard Moskowitz, M.D.

For the past ten years or so, I have felt a deep and growing compunction against giving routine immunizations to children. It began with the fundamental belief that people have the right to make that choice for themselves. Soon I discovered that I could no longer bring myself to give the injections even when the parents wished me to.

At bottom, I have always felt that the attempt to eradicate entire microbial species from the biosphere must inevitably upset the balance of nature in fundamental ways that we can as yet scarcely imagine. Such concerns loom ever larger as new vaccines continue to be developed, seemingly for no better reason than that we have the technical capacity to make them, and thereby to demonstrate our power, as a civilization, to manipulate the evolutionary process itself.

Purely from the viewpoint of our own species, even if we could be sure that the vaccines were harmless, the fact remains that they are *compulsory*, that all children are required to undergo them, without any sensitive regard for basic differences in individual susceptibility, to say nothing of the wishes of the parents or the children themselves.

Most people can readily accept the fact that, from time to time, certain laws may be necessary for the public good that some of us strongly disagree with. But the issue in this case involves nothing less than the introduction of foreign proteins or even live viruses into the bloodstream of entire populations.

For that reason alone, the public is surely entitled to convincing proof, beyond any reasonable doubt, that artificial immunization is in fact a safe and effective procedure, in no way injurious to health, and that the threat of the corresponding natural diseases remains sufficiently clear and urgent to warrant mass inoculation of everyone, even against their will if necessary.

Unfortunately, such proof has never been given; and, even if it could be, continuing to employ vaccines against diseases that are no longer prevalent or no longer dangerous hardly qualifies as an emergency.

Finally, even if such an emergency did exist, and artificial immunization could be shown to be an appropriate response to it, the decision would remain essentially a *political* one, involving issues of public health and safety that are far too important to be settled by any purely scientific or technical criteria, or indeed by any criteria less authoritative than the clearly articulated sense of the community about to be subjected to it.

For all of these reasons, I want to present the case against routine immunization as clearly and forcefully as I can. What I have to say is not quite a formal theory capable of rigorous proof or disproof. It is simply an attempt to explain my own experience, a nexus of interrelated facts, observations, reflections, and hypotheses which, taken together, are more or less coherent and plausible and make intuitive sense to me.

I offer them to the public in part because the growing refusal of parents to vaccinate their children is so seldom articulated or taken seriously. The fact is that we have been taught to accept vaccination as a sort of involuntary communion, a sacrament of our own participation in the unrestricted growth of scientific and industrial technology, utterly heedless of the long-term consequences to the health of our own species, let alone to the balance of nature as a whole. For that reason alone, the other side of the case urgently needs to be heard.

1. ARE THE VACCINES EFFECTIVE?

There is widespread agreement that the time period since the common vaccines were introduced has seen a remarkable decline in the incidence and severity of the corresponding natural infections. But the customary assumption that the decline is *attributable* to the vaccines remains unproven, and continues to be seriously questioned by eminent authorities in the field. The incidence and severity of whooping cough, for example, had already begun to decline precipitously long before the pertussis vaccine was introduced (1), a fact which led the epidemiologist C. C. Dauer to remark, as far back as 1943:

> If mortality [from pertussis] continues to decline at the same rate during the next 15 years, it will be extremely difficult to show statistically that [pertussis immunization] had any effect in reducing mortality from whooping cough (2).

Much the same is true not only of diphtheria and tetanus, but also of TB, cholera, typhoid, and other common scourges of a bygone era, which began to disappear toward the end of the nineteenth century, perhaps partly in response to improvements in public health and sanitation, but in any case long before antibiotics, vaccines, or any specific medical measures designed to eradicate them (3).

Reflections such as these led the great microbiologist René Dubos to observe that microbial diseases have their own natural history, independent of drugs and vaccines, in which asymptomatic infection and symbiosis are far more common than overt disease:

> It is barely recognized, but nevertheless true, that animals and plants, as well as men, can live peacefully with their most notorious microbial enemies. The world is obsessed by the fact that poliomyelitis can kill and maim several thousand unfortunate victims every year. But more extraordinary is the fact that millions upon millions of young people become infected by polio viruses, yet suffer no harm from the infection. The dramatic episodes of conflict between men and microbes are what strike the mind. What is less readily apprehended is the more common fact that infection can occur without producing disease (4).

The principal evidence that the vaccines are effective actually dates from the more recent period, during which time the dreaded polio epidemics of the 1940's and 1950's have never reappeared in the developed countries, and measles, mumps, and rubella, which even a generation ago were among the commonest diseases of childhood, have become far less prevalent, at least in their classic acute forms, since the triple MMR vaccine was introduced into common use.

Yet how the vaccines actually accomplish these changes is not nearly as well understood as most people like to think it is. The disturbing possibility that they act in some other way than by producing a genuine immunity is suggested by the fact that the diseases in question have continued to break out even in highly immunized populations, and that in such cases the observed differences in incidence and severity between immunized and unimmunized persons have tended to be far less dramatic than expected, and in some cases not measurably significant at all.

In a recent British outbreak of whooping cough, for example, even fully immunized children contracted the disease in fairly large numbers, and the rates of serious complications and death were reduced only slightly (5). In another recent outbreak of pertussis, 46 of the 85 fully immunized children studied eventually contracted the disease (6).

In 1977, 34 new cases of measles were reported on the campus of UCLA, in a population that was supposedly 91 percent immune, according to careful serological testing (7). Another 20 cases of measles were reported in the Pecos, New Mexico area within a period of a few months in 1981, and 75 percent of them had been fully immunized, some of them quite recently (8). A survey of sixth-graders in a well-immunized urban community revealed that about 15 percent of this age group are still susceptible to rubella, a figure essentially identical with that of the pre-vaccine era (9).

Finally, although the overall incidence of typical acute measles in the U.S. has dropped sharply from about 400,000 cases annually in the early 1960's to about 30,000 cases by 1974-76, the death rate remained exactly the same (10); and, with the peak incidence now occurring in adolescents and young adults, the risk of pneumonia and demonstrable liver abnormalities has actually increased substantially, according to one recent study, to well over 3 percent and 2 percent, respectively (11).

The simplest way to explain these discrepancies would be to postulate that the vaccines confer only partial or temporary immunity, which sounds reasonable enough, given the fact that they are either live viruses rendered less virulent by serial passage in tissue culture, or bacteria or bacterial proteins that have been killed or denatured by heat, such that they can still elicit an antibody response but no longer initiate the full-blown disease.

Because the vaccine is a "trick," in the sense that it *simulates* the true or natural immune response developed in the course of recovering from the actual disease, it is certainly realistic to expect that such artificial immunity will in fact "wear off" quite easily, and even require additional "booster" doses at regular intervals throughout life to maintain peak effectiveness.

Such an explanation would be disturbing enough for most people. Indeed, the basic fallacy inherent in it is painfully evident in the fact that there is no way to know how long this partial or temporary immunity will last in any given individual, or how often it will need to be restimulated, because the answers to these questions clearly depend on precisely the same individual variables that would have determined

whether or how severely the same person, unvaccinated, would have contracted the disease in the first place.

In any case, a number of other observations suggest equally strongly that this simple explanation cannot be the correct one. In the first place, a number of investigators have shown that when a person vaccinated against the measles, for example, again becomes susceptible to it, even repeated booster doses will have little or no effect (12).

In the second place, the vaccines do not act merely by producing pale or mild copies of the original disease; all of them also commonly produce a variety of symptoms of their own. Moreover, in some cases, these illnesses may be considerably more serious than the original disease, involving deeper structures, more vital organs, and less of a tendency to resolve spontaneously. Even more worrisome is the fact that they are almost always more difficult to recognize.

Thus, in a recent outbreak of mumps in supposedly immune school children, several developed atypical symptoms, such as anorexia, vomiting, and erythematous rashes, without any parotid involvement, and the diagnosis required extensive serological testing to rule out other concurrent diseases (13). The syndrome of "atypical measles" can be equally difficult to diagnose, even when it is thought of (14), which suggests that it is often overlooked entirely. In some cases, atypical measles can be much more severe than the regular kind, with pneumonia, petechiae, edema, and severe pain (15), and likewise often goes unsuspected.

In any case, it seems virtually certain that other vaccine-related syndromes will be described and identified, if only we take the trouble to look for them, and that the ones we are aware of so far represent only a very small part of the problem. But even these few make it less and less plausible to assume that the vaccines produce a normal, healthy immunity that lasts for some time but then *wears off*, leaving the patient miraculously unharmed and unaffected by the experience.

2. SOME PERSONAL EXPERIENCES WITH VACCINE-RELATED ILLNESS.

I would like now to present a few of my own vaccine cases, both to give a sense of their variety and chronicity, and to show how difficult it can be to trace them, and also to begin to address the crucial question that is too seldom even asked, namely, how the vaccines actually *work*, i.e, what effects they do in fact produce in the human body.

> My first case was that of an 8-month-old girl with recurrent fevers of unknown origin. I first saw here in January of 1977, a few weeks after her third such episode. These were brief, lasting 48 hours at most, but very intense, with the fever typically reaching 105° F. During the second episode, she was hospitalized for diagnostic evaluation, but her pediatrician found nothing out of the ordinary. Apart from these episodes, the child felt quite well, and appeared to be growing and developing normally.
>
> I could get no further information from the mother, except for the fact that the episodes had occurred almost exactly one month apart; and, upon consulting her calendar, we learned that the first episode had come exactly one month after the last of her DPT injections, which had also been given at monthly intervals. At this point, the mother remembered that the child had had similar febrile episodes immediately after each injection, but that she had been instructed to ignore them, inasmuch as they are "common reactions" to the vaccine. I therefore gave the child a single *oral* dose of dilute homoeopathic DPT vaccine; and I am happy to report that the child has remained well since, with no further episodes of any kind.

This case illustrates how homoeopathic remedies prepared from vaccines can be used for *diagnosis* as well as treatment of vaccine-related illnesses, which, no matter how strongly they are suspected, might otherwise be almost impossible to substantiate.

Secondly, because fever is the commonest known complication of the pertussis vaccine, and inasmuch as the child seemed quite well between the attacks, her response to the vaccine appeared to be a relatively strong and healthy one, disturbing because of its recurrence and periodicity, but in any case relatively simple to cure, as indeed it proved to be. But one cannot help wondering what happens to the vaccine in those tens of millions of children who show no obvious response to it at all.

Since that time, I have seen at least half a dozen cases of children with recurrent fevers of unknown origin, associated with a variety of other chronic complaints, chiefly irritability, temper tantrums, and increased susceptibility to colds, tonsillitis, and ear infections, which were similarly traceable to the pertussis vaccine, and which responded successfully to treatment with the homoeopathic DPT nosode. Indeed, I would have to say, on the basis of that experience, that the pertussis vaccine is probably one of the major causes of recurrent fevers of unknown origin in small children today.

> My second case was that of a 9½-month old girl, who presented acutely with a fever of 105° F., and very few other symptoms. Like the first, this child had had two similar episodes previously, but at irregular intervals; and the parents, who felt ambivalent about vaccinations in general, had given her only one dose of the DPT vaccine so far, although the first episode occurred a few weeks afterwards.
>
> I first saw the child in June of 1978. The fever remained high and unremitting for 48 hours, despite the usual acute remedies and supportive measures. A CBC revealed a white count of 32,100 per cu. mm., with 43 percent lymphocytes, 11 percent monocytes, 25 percent neutrophils (many with toxic granulations), 20 percent bands (also with toxic granulations), and 1 percent metamyelocytes and other immature forms. When I asked a pediatrician about these findings, "pertussis" was his immediate reply. After a single oral dose of homoeopathic DPT vaccine, the fever came down abruptly within a few hours, and the child has remained well since.

This case was disturbing mainly because of the hematological abnormalities, which were in the leukemoid range, together with the absence of any cough or distinctive respiratory symptoms, which suggested that introducing the vaccine directly into the blood may actually promote deeper or more systemic pathology than

allowing the pertussis organism to set up typical symptoms of local inflammation at the normal portal of entry.

> The third case was a 5-year old boy with chronic lymphocytic leukemia, whom I happened to see in August of 1978, while visiting an old friend and teacher, a family physician with over 40 years' experience. Well out of earshot of either the boy or his parents, he told me that the leukemia had first appeared following a DPT vaccination, and that, although he had treated the child successfully with natural remedies on two previous occasions, with shrinking of the liver and spleen to approximately normal size, and dramatic improvement in the blood picture, full relapse had occurred soon after each successive DPT booster.

The idea that vaccinations might also be implicated in some cases of childhood leukemia was shocking enough in itself, but it also completed the line of reasoning opened up by the previous case. For leukemia is a cancerous process of the blood and the blood-forming organs, the living, the spleen, the lymph nodes, and the bone marrow, which are also the basic anatomical units of the immune system. Insofar as the vaccines are capable of producing serious complications at all, the blood and the immune organs would certainly be the logical place to begin looking for them.

But perhaps even more shocking to me is the fact that the boy's own physician dared not communicate his suspicion of vaccine-related illness to the parents, let alone to the general public. It was this case that convinced me, once and for all, of the need for serious, public discussion of our collected experiences with vaccine-related illness, precisely because rigorous experimental proof will require years of investigation and a firm public commitment that has not even been made yet.

I will now present two cases from my limited experience with MMR vaccine.

> In December of 1980 I saw a 3-year old boy with a 4 week history of loss of appetite, stomach aches, indigestion, and swollen glands. The stomach pains were quite severe, and often accompanied by belching, flatulence, and explosive diarrhea. The nose was also congested, and the lower eyelids were quite red. The mother also reported some unusual behavior changes, such as extreme untidiness, "wild" and "noisy" playing, and waking at 2 a.m. to get into bed with the parents.
>
> The physical examination was unremarkable except for some large, tender left posterior auricular and suboccipital nodes, and marked enlargement of the tonsils. I then learned that the child had received the MMR vaccine in October, about 2 weeks before the onset of symptoms, with no apparent reaction to it at the time. I gave the child a single dose of the homeopathic rubella vaccine, and the symptoms promptly disappeared within 48 hours.
>
> In April 1981, the parents brought him back for a slight fever, and another 3-week history of intermittent pain in and behind the right ear, stuffy nose, etc. On examination, the whole right side of the face appeared to be swollen, especially the cheek and the angle of the jaw. The right eye was red and injected. He responded well to acute homeopathic remedies, and has remained well since.

This boy was typical of my rubella vaccine cases. At an interval of a few weeks after the MMR vaccine, which is about the same as the normal incubation period of

rubella, a rather nondescript illness develops, which becomes subacute and rather more severe than rubella in the same age group, with, e.g., abdominal or joint pains and marked adenopathy, but no rash. Usually the diagnosis is suspected because of the characteristic posterior auricular and suboccipital nodes, and confirmed by a favorable response to the homoeopathic rubella nosode.

As I read over this case, I am struck by the possibility that his second illness, and especially the parotid enlargement, may have represented continuing activity of the mumps component of the vaccine, inasmuch as I did not have the triple MMR nosode, but only those derived from the individual components. We must therefore also consider the probability that a variety of "mixed" or composite syndromes may occur, representing the patient's responses to two or all three of the vaccine components, either simultaneously or over time.

> In April of 1981 I first saw a 4-year-old boy for bilateral chronic enlargement of the posterior auricular nodes, which were also occasionally tender. The mother had noticed the swelling for about one year, during which time he had become more susceptible to various upper respiratory infections, none of them especially severe. The mother had also noticed recurrent parotid swelling at irregular intervals over the same time period, which began shortly after the MMR vaccine was given at the age of 3.
>
> At the time of the first visit, the child was not ill; and, because the mother was about 2 months pregnant at the time, I elected to observe the child and do nothing if possible until the pregnancy was over. He did develop a mild laryngitis in the last trimester, which responded well to bed rest and simple homoeopathic remedies.
>
> In April of 1982, he came down with acute bronchitis. I noticed that the posterior auricular nodes were once again swollen and tender, and I decided to give him the homoeopathic rubella nosode at that point. The cough promptly subsided, and the nodes regressed in size and were no longer tender. Two weeks later, however, he returned with a noticeably hard, tender swelling on the outside of the right cheek, near the angle of the jaw, and some pain on chewing or opening the mouth. A single dose of the homoeopathic mumps nosode was given, and the child has been well since.

In this case also, we see the subacute pattern of the disease, with a strong tendency to chronicity and increased susceptibility to weaker, low-grade responses, in contrast to the vigorous, acute responses typically associated with diseases like the measles and the mumps when acquired naturally.

3. HOW DO THE VACCINES WORK?

It is dangerously misleading, and, indeed, the exact opposite of the truth to claim that a vaccine makes us "immune" or *protects* us against an acute disease, if in fact it only drives the disease deeper into the interior and causes us to harbor it *chronically*, with the result that our responses to it become progressively weaker, and show less and less tendency to heal or resolve themselves spontaneously.

What I propose, then, is simply to investigate as thoroughly and objectively as we can how the vaccines actually *work* inside the human body, and to begin by paying attention to the implications of what we already know. In particular, I would like to consider in detail the process of falling ill with and recovering from a typical acute disease, such as the measles, in contrast with what we can observe following the administration of the measles vaccine.

We all know that measles is primarily a virus of the respiratory tract, both because it is inhaled by susceptible persons upon contact with infected droplets in the air, and because these droplets are produced by the coughing and sneezing of a person with the disease.

Once inhaled by a susceptible person, the measles virus then undergoes a long period of silent multiplication, first in the tonsils, adenoids, and accessory lymphoid tissues of the nasopharynx; later in the regional lymph nodes of the head and neck; and eventually, several days later, it passes into the blood and enters the spleen, the liver, the thymus, and the bone marrow, the "visceral" organs of the immune system (16). Throughout this "incubation" period, which lasts from 10 to 14 days, the patient usually feels quite well, and experiences few or no symptoms (17).

By the time that the first symptoms of measles appear, circulating antibodies are already detectable in the blood, and the height of the symptomatology coincides with the peak of the antibody response (18). In other words, the "illness" is simply the definitive effort of the immune system to clear the virus from the blood. Equally noteworthy is the fact that the virus is eliminated by sneezing and coughing, i.e., via the same route through which it entered in the first place.

It is evident that the process of *mounting* an acute illness like the measles, no less than recovering from it, involves a general mobilization of the entire immune system, including inflammation of the previously sensitized tissues at the portal of entry, activation of leukocytes and macrophages, liberation of the serum complement system, and a host of other mechanisms, of which the production of circulating antibody is only one, and by no means the most important.

Such a splendid outpouring leaves little doubt that such illnesses are in fact the decisive experiences in the normal physiologic maturation of the immune system as a whole in the life of a healthy child. For not only will the child who recovers from the measles never again be susceptible to it (19); such an experience also cannot fail to prepare the individual to respond even more promptly and effectively to any infections he may acquire in the future. The ability to mount a vigorous acute response to organisms of this type must therefore be reckoned among the most fundamental requirements of general health and well-being.

In contrast, when an artificially attenuated virus such as measles is injected directly into the blood, by-passing the normal portal of entry, at most a brief inflammatory reaction may be noted at the injection site, or in the regional lymph nodes; but there is no "incubation period" of local contact at the normal portal of entry, and consequently very little possibility of eliminating the virus via the same route.

Even more important is the fact that the virus has been artificially "attenuated," so that it will no longer initiate a generalized inflammatory response, or indeed any

of the nonspecific defense mechanisms that help us to respond to infection generally. By "tricking" the body in this fashion, we have accomplished what the entire immune system seems to have evolved in order to prevent: we have placed the virus directly into the blood, and given it free and immediate access to the major immune organs and tissues, without any obvious way of getting rid of it.

The result is, indeed, the production of circulating antibodies against the virus, which can be measured in the blood; but the antibody response now occurs as an isolated technical feat, without any generalized inflammatory response, or any noticeable improvement in the general health of the organism. Exactly the opposite, in fact: the price that we have to pay for those antibodies is the persistence of virus elements in the blood for prolonged periods of time, perhaps permanently, which in turn presupposes a systematic weakening of our ability to mount an effective response not only to measles, but also to other acute infections as well.

Far from producing a genuine immunity, then, the vaccines may act by actually interfering with or *suppressing* the immune response as a whole, in much the same way that radiation, chemotherapy, and corticosteroids and other anti-inflammatory drugs do. Artificial immunization focuses on *antibody production*, a single aspect of the immune process, and disarticulates it and allows it to stand for the whole, in much the same way as chemical suppression of an elevated blood pressure is accepted as a valid substitute for a genuine *cure* of the patient whose blood pressure has risen. Worst of all, by making it difficult or impossible to mount a vigorous, acute response to infection, artificial immunization substitutes for it a much weaker, *chronic* response, with little or no tendency to heal itself spontaneously.

Moreover, adequate models already exist for predicting and explaining what sorts of chronic disease are likely to result from the chronic, long term persistence of viruses and other foreign proteins within the cells of the immune system. It has long been known that live viruses, for example, are capable of surviving or remaining latent within the host cells for years, without continually provoking acute disease. They do so simply by attaching their own genetic material as an extra particle or "episome" to the genome of the host cell, and replicating along with it, which allows the host cell to continue its own normal functions for the most part, but imposes on it additional instructions for the synthesis of viral proteins (20).

Latent viruses of this type have already been implicated in three distinct types of chronic disease, namely, 1) *recurrent or episodic acute diseases*, such as herpes, shingles, warts, etc. (21); 2) "*slow-virus*" *diseases*, i.e., subacute or chronic, progressive, often fatal conditions, such as kuru, Creuzfeldt-Jakob disease, subacute sclerosing panencephalitis (SSPE), and possibly Guillain-Barre syndrome (22); and 3) *tumors*, both benign and malignant (23).

In any case, the latent virus survives as a clearly "foreign" element within the cell, which means that the immune system must continue to try to make antibodies against it, insofar as it can still respond to it at all. Because the virus is now permanently incorporated within the genetic material of the cell, these antibodies will now have to be directed against the cell itself.

The persistence of live viruses or other foreign antigens within the cells of the host therefore cannot fail to provoke *auto-immune* phenomena, because destroying the

infected cells is now the only possible way that this constant antigenic challenge can be removed from the body. Since routine vaccination introduces live viruses and other highly antigenic material into the blood of virtually every living person, it is difficult to escape the conclusion that a significant harvest of auto-immune diseases most automatically result.

Sir Macfarlane Burnet has observed that the components of the immune system all function as if they were collectively designed to help the organism to discriminate "self" from "non-self," i.e., to help us to recognize and tolerate our own cells, and to identify and eliminate foreign or extraneous substances as completely as possible (24). This concept is exemplified not only by the acute response to infection, but also by the rejection of transplanted tissues, or "homografts," both of which result in the complete and permanent removal of the offending substance from the body.

If Burnet is correct, then latent viruses, auto-immune phenomena, and cancer would seem to represent different aspects of the same basic dilemma, which the immune system can neither escape nor resolve. For all of them presuppose a certain degree of *chronic immune failure*, a state in which it becomes difficult or impossible for the body either to recognize its own cells as unambiguously its own, or to eliminate its parasites as unequivocally foreign.

In the case of the attenuated measles virus, it is not difficult to imagine that introducing it directly into the blood would continue to provoke an antibody response for a considerable period of time, which is doubtless the whole point of giving the vaccine; but that eventually, as the virus succeeded in attaining a state of latency within the cell, the antibody response would wane, both because circulating antibodies cannot normally cross the cell membrane, and because they are also powerful immunosuppressive agents in their own right (25).

The effect of circulating antibody will thereafter be mainly to keep the virus *within* the cell, i.e., to continue to prevent any acute inflammatory response, until eventually, perhaps under circumstances of accumulated stress or emergency, this precarious balance breaks down, antibodies begin to be produced in large quantities against the cells themselves, and frank auto-immune phenomena of necrosis and tissue destruction supervene. Latent viruses, in this sense, are like biological "time bombs," set to explode at an indeterminate time in the future (26).

Auto-immune diseases have always seemed obscure, aberrant, and bizarre, because it is not intuitively obvious why the body should suddenly begin to attack and destroy its own tissues. They make a lot more sense, and, indeed, must be reckoned as "healthy," if destroying the chronically infected cells is the only possible way of eliminating an even more serious threat to life, namely, the persistence of the foreign antigenic challenge within the cells of the host.

Tumor formation could then be understood as simply a more advanced stage of chronic immune failure, according to the same model. For, as long as the host is subjected to enormous and unremitting pressure to make antibodies against itself, that response will automatically tend to become less and less effective.

Eventually, under stress of this magnitude, the auto-immune mechanism could easily break down to the point that the chronically infected and genetically transformed cells, no longer clearly "self" or "non-self," begin to free themselves from the

normal restraints of "histocompatibility" within the architecture of the surrounding cells, and begin to multiply autonomously at their expense.

A tumor could then be described as "benign" insofar as the breakdown of histocompatibility remains strictly localized to the tissue of origin, and "malignant," insofar as it begins to spread to other cell types, tissues, and organs, even in more remote areas. Malignancy might simply represent the reactivation of the virus from its latent phase into a more acute mode, albeit with less inflammation and more tissue destruction than the original wild-type infection.

If what I am saying turns out to be true, then what we have done by artificial immunization is essentially to trade off our acute, epidemic diseases of the past century for the weaker and far less curable chronic diseases of the present, with their amortizable suffering and disability. In doing so, we have also opened up limitless evolutionary possibilities for the future of ongoing *in vivo* genetic recombination within the cells of the race.

4. THE INDIVIDUAL VACCINES RECONSIDERED.

I want next to consider each of the vaccines on an individual basis, in relation to the infectious diseases from which they are derived.

The MMR is composed of attenuated live measles, mumps, and rubella viruses, administered in a single intramuscular injection at about 15 months of age. Subsequent re-immunization is no longer recommended, except for young women of childbearing age, in whom the risk of congenital rubella syndrome (CRS) is thought to warrant it, even though the effectiveness of re-immunization is questionable at best.

Prior to the vaccine era, measles, mumps, and rubella were reckoned among the "routine childhood diseases," which most school-children contracted before the age of puberty, and from which nearly all recovered, with permanent, lifelong immunity, and no complications or sequelae.

But they were not always so harmless. Measles, in particular, can be a devastating disease when a population encounters it for the first time. Its importation from Spain, for instance, undoubtedly contributed to Cortez' conquest of the great Aztec Empire; whole villages were carried off by epidemics of measles and smallpox, leaving only a small remnant of cowed, superstitious warriors to face the bearded *conquistadors* from across the sea (27). In more recent outbreaks among isolated, primitive peoples, the case fatality rate from measles averaged 20 to 30 percent (28).

In both these so-called "virgin-soil" epidemics, not only measles but also polio and many other similar diseases take their highest toll of death and serious complications among adolescents and young adults, healthy and vigorous people in the prime of life, and leave relatively unharmed the group of school-age children before the age of puberty (29).

This means that the evolution of a disease such as measles from a dreaded killer to an ordinary disease of childhood presupposes the development of nonspecific or "herd" immunity in young children, such that, when they are finally exposed to the disease, it activates defense mechanisms already prepared and in place, resulting in the long incubation period and the usually benign, self-limited course described above.

Under these circumstances, the rationale for wanting to vaccinate young children against measles is limited to the fact that a very small number of deaths and serious complications have continued to occur, chiefly pneumonia, encephalitis, and the rare but dreaded subacute sclerosing panencephalitis (SSPE), a slow-virus disease with a reported incidence of 1 per 100,000 cases (30). Pneumonia, by far the commonest complication, is usually benign and self-limited, even without treatment (31); and, even in those rare cases in which bacterial pneumonia supervenes, adequate treatment is currently available.

By all accounts, then, the death rate from wild-type measles is very low, the incidence of serious sequelae is insignificant, and the general benefit to the child who recovers from the disease, and to his contacts and descendants, is very great. Consequently, even if the measles vaccine could be shown to reduce the risk of death or serious complications from the disease, it still could not justify the high probability of auto-immune diseases, cancer, and whatever else may result from the propagation of latent measles virus in human tissue culture for life.

Ironically, what the measles vaccine certainly has done is to reverse the historical or evolutionary process to the extent that measles is once again a disease of adolescents and young adults (32), with a correspondingly higher incidence of pneumonia and other complications, and a general tendency to be a more serious and disabling disease than it usually is in younger children.

As for the claim that the vaccine has helped to eliminate measles encephalitis, I myself, in my own relatively small general practice, have already seen two children with major seizure disorders which the parents clearly ascribed to the measles vaccine, although they would never have been able to prove the connection in a court of law, and never even considered the possibility of compensation.

Such cases therefore never make the official statistics, and are accordingly omitted from conventional surveys of the problem. Merely injecting the virus into the blood would naturally favor a higher incidence of deep or visceral complications affecting the lungs, liver, and brain, for which the measles virus has a known affinity.

The case for immunizing against mumps and rubella seems *a fortiori* even more tenuous, for exactly the same reasons. Mumps is also essentially a benign, self-limited disease in children before the age of puberty, and recovery from a single attack confers lifelong immunity. The principal complication is meningoencephalitis, mild or subclinical forms of which are relatively common, although the death rate is extremely low (33), and sequelae are rare.

The mumps vaccine is prepared and administered in much the same way as the measles, usually in the same injection; and the dangers associated with it are likewise comparable. Again like the measles, mumps too is fast becoming a disease of adolescents and young adults (34), age groups which tolerate the disease much less well. The chief complication is acute epididymo-orchitis, which occurs in 30 to 40 percent of the males affected past the age of puberty, and usually results in atrophy of the testicle on the affected side (35); but it also shows a strong tendency to attack the ovary and the pancreas.

For all of these reasons, the greatest favor we could do for our children would be to expose them all to the measles and mumps when they are young, which would

not only protect them against contracting more serious forms of these diseases when they grow older, but would also greatly assist in their immunological maturation with minimal risk. I need hardly add that this is very close to the actual evolution of these diseases before the MMR vaccine was introduced.

The same discrepancy is evident in the case of rubella, or "German measles," which in young children is a disease so mild that it frequently escapes detection (36), but in older children and adults not infrequently produces arthritis, purpura, and other severe, systemic signs (37). The main impetus for the development of the vaccine was certainly the recognition of the "congenital rubella syndrome (CRS)," resulting from damage to the developing embryo *in utero* during the first trimester of pregnancy (38), and the relatively high incidence of CRS traceable to the rubella outbreak of 1964.

But here again, we have an almost entirely benign, self-limited disease transformed by the vaccine into a considerably less benign disease of adolescents and young adults of reproductive age, which is, ironically, the group that most needs to be protected against it. Moreover, as with measles and mumps, the simplest and most effective way to prevent CRS would be to expose everybody to rubella in elementary school; re-infection does sometimes occur after recovery from rubella, but much less commonly than after vaccination (39).

The equation looks somewhat different for the diphtheria and tetanus vaccines. First of all, both diphtheria and tetanus are serious, sometimes fatal diseases, even under the best of treatment; this is especially true of tetanus, which still carries a mortality of close to 50 percent.

Furthermore, these vaccines are not made from living diphtheria and tetanus organisms, but only from certain "toxins" elaborated by them; these poisonous substances are still highly antigenic, even after being inactivated by heat. Diphtheria and tetanus "toxoids" therefore do not protect against infection *per se*, but only against the systemic action of the original poisons, in the absence of which both infections are of minor importance clinically.

Consequently, it is easy to understand why parents might want their children protected against diphtheria and tetanus, if safe and effective protection were available. Moreover, both vaccines have been in use for a long time, and the reported incidence of serious problems has remained very low, so that there has never been much public outcry against them.

On the other hand, both diseases are quite readily controlled by simple sanitary measures and careful attention to wound hygiene; and, in any case, both have been steadily disappearing from the developing countries, since long before the vaccines were introduced.

Diphtheria now occurs sporadically in the United States, often in areas with significant reservoirs of unvaccinated children. But the claim that the vaccine is "protective" is once again belied by the fact that, when the disease does break out, the supposedly "susceptible" children are in fact no more likely to develop clinical diphtheria than their fully immunized contacts. In a 1969 outbreak in Chicago, for example, the Board of Health reported that 25 percent of the cases had been fully immunized, and that another 12 percent had received one or more doses of the

vaccine and showed serological evidence of full immunity; another 18 percent had been partly immunized, according to the same criteria (40).

So, once again, we are faced with the probability that what the diphtheria toxoid has produced is not a genuine immunity to diphtheria at all, but rather some sort of chronic immune *tolerance* to it, by harboring highly antigenic residues somewhere within the cells of the immune system, presumably with long-term suppressive effects on the immune mechanism generally.

This suspicion is further aggravated by the fact that all of the DPT vaccines are alum-precipitated and preserved with Thiomersal, an organomercury derivative, to prevent them from being metabolized too rapidly, so that the antigenic challenge will continue for as long as possible. The fact is that we do not know and have never even attempted to discover what actually becomes of these foreign substances, once they are inside the human body.

Exactly the same problems complicate the record of the tetanus vaccine, which almost certainly has had at least some impact in reducing the incidence of tetanus in its classic acute form, yet presumably also survives for years or even decades as a potent foreign antigen within the body, with long-term effects on the immune system and elsewhere that are literally incalculable.

"Whooping cough," much like diphtheria and tetanus, began to decline as a serious epidemiological threat long before the vaccine was introduced. Moreover, the vaccine has not been particularly effective, even according to its proponents; and the incidence of known side-effects is disturbingly high.

The power of the pertussis vaccine to damage the central nervous system, for example, has received growing attention since Stewart and his colleagues reported an alarmingly high incidence of encephalopathy and severe convulsive disorders in British children that were traceable to the vaccine (41). My own cases, a few of which were reported above, suggest that hematological disturbances may be even more prevalent, and that, in any case, the *known* complications almost certainly represent a small fraction of the total.

In any case, the pertussis vaccine has become controversial even in the United States, where medical opinion has remained almost unanimous in favor of immunizations generally; and several countries, such as West Germany, have discontinued routine pertussis vaccination entirely (42).

Pertussis is also extremely variable clinically, ranging in severity from asymptomatic, mild, or inapparent infections, which are quite common actually, to very rare cases in young infants less than 5 months of age, in whom the mortality is said to reach 40 percent (43). Indeed, the disease is rarely fatal or even that serious in children over a year old, and antibiotics have very little to do with the outcome (44).

A good deal of the pressure to immunize at the present time thus seems to be attributable to the higher death rate in very young infants, which has led to the terrifying practice of giving this most clearly dangerous of the vaccines to infants at 2 months of age, when their mothers' milk would normally have protected them from all infections about as well as it can ever be done (45), and the effect on the still developing blood and nervous system could be catastrophic.

For all of these reasons, the practice of routine pertussis immunization should be discontinued as quickly as possible, and more studies done to assess and compensate the damage that it has already done.

Poliomyelitis and the polio vaccines present an entirely different situation. The standard Sabin vaccine is trivalent, consisting of attenuated, live polioviruses of each of the three strains associated with poliomyelitis; but it is administered orally, in much the same way as the infection is acquired in nature. The oral or non-injectable route, which leaves the recipient free to develop a natural immunity at the normal portal of entry, i.e., the GI tract, would therefore appear to represent a considerable safety factor.

On the other hand, the wild-type poliovirus produces no symptoms whatsoever in other 90 percent of the people who contact it, even under epidemic conditions (46); and, of those people who do come down with recognizable clinical disease, perhaps only 1 or 2 percent ever progress to the full-blown neurological picture of "poliomyelitis," with its characteristic lesions in the anterior horn cells of the spinal cord or medulla oblongata (47).

Poliomyelitis thus presupposes peculiar conditions of susceptibility in the host, even a specific *anatomical* susceptibility, since, even under epidemic conditions, the virulence of the poliovirus is so low, and the number of cases resulting in death or permanent disability was always remarkably small (48).

Given the fact that the poliovirus was ubiquitous before the vaccine was introduced, and could be found routinely in samples of city sewage wherever it was looked for (49), it is evident that effective, natural immunity to poliovirus was already as close to being universal as it can ever be, and *a fortiori* no artificial substitute could ever equal or even approximate that result. Indeed, because the virulence of the poliovirus was so low to begin with, it is difficult to see what further attenuation of it could possibly accomplish, other than to abate as well the full vigor of the natural immune response to it.

For the fact remains that even the attenuated virus is still alive, and the people who were anatomically susceptible to it before are still susceptible to it now. This means, of course, that at least *some* of these same people will develop paralytic polio from the vaccine (50), and that the others may still be harboring the virus in latent form, perhaps within those same cells.

The only obvious advantage of giving the vaccine, then, would be to introduce the population to the virus when they are still infants, and the virulence is normally lowest anyway (51); and even this benefit could be more than offset by the danger of weakening the immune response, as we have seen. In any case, the whole matter is clearly one of enormous complexity, and illustrates only too well the hidden dangers and miscalculations that are inherent in the virtually irresistible attempt to beat nature at her own game, to eliminate a problem that cannot be eliminated, i.e., the susceptibility to disease itself.

So even in the case of the polio vaccine, which appears to be about as safe as any vaccine ever *can* be, the same fundamental dilemma remains. Perhaps the day will come when we can face the consequences of deliberately feeding live polioviruses to every living infant, and admit that we should have left well enough alone, and

addressed ourselves to the art of healing the sick when we have to, rather than to the technology of eradicating the *possibility* of sickness, when we don't have to, and can't possibly succeed in any case.

5. VACCINATION AND THE PATH OF MEDICAL TECHNOLOGY.

In conclusion, I want to go back to the beginning, to the essentially political aspects of vaccination, that oblige us all to reason and deliberate together about matters of common concern, and to reach a clear decision about how we choose to live. I have stated my own views regarding the safety and effectiveness of the vaccines, and I hope that others of differing views will do the same.

That is why I am deeply troubled by the atmosphere of fanaticism with which the vaccines are imposed on the public, and serious discussion of them is ignored or stifled by the medical authorities, as if the question had already been settled definitively and for all time. In the words of Sir Macfarlane Burnet,

> It is our pride that in a civilized country the only infectious diseases which anyone is likely to suffer are either trivial or easily cured by available drugs. The diseases that killed in the past have in one way or another been rendered impotent, and, in the process, general principles of control have been developed which should be applicable to any unexpected outbreak in the future (52).

Quite apart from the truth of these claims, they exemplify the smugness and self-righteousness of a profession and a society that worships its own ability to manipulate and control the processes of nature itself. That is why, as Robert Mendelsohn has said, "we are quick to pull the trigger, but slow to examine the consequences of our actions (53)."

Indeed, one would have to say, *methodically* slow. In 1978, for example, the American Academy of Pediatrics, which had been charged by Congress with responsibility to formulate guidelines for Federal compensation of "vaccination-related injuries," issued the following eligibility restrictions:

> 1. Compensation should be made available to any child or young person under the age of 18 years, or a contact of such person of any age, who suffers a major reaction to a vaccine mandated for school entry or continuation in school in his or her state of residence.
> 2. *Such a reaction should have been previously recognized as a possible consequence of the vaccine given.*
> 3. *Such a reaction should have occurred no more than 30 days following the immunization* (54).

These restrictions would automatically exclude all of the chronic diseases, or indeed anything other than the very few adverse reactions that have so far been identified, which clearly represent only a tiny fraction of the problem.

Still less can either the government or the medical establishment be considered ignorant of the possibility that lurks in every parent's mind and heart, namely, that the vaccines cause cancer and other chronic diseases. Precisely that possibility was raised by Prof. Robert Simpson of Rutgers in a 1976 seminar for science writers, sponsored by the American Cancer Society:

> Immunization programs against flu, measles, mumps, polio, and so forth, may actually be seeding humans with RNA to form latent proviruses in cells throughout the body. These latent proviruses could be molecules in search of diseases; when activated, under proper conditions, they could cause a variety of diseases, including rheumatoid arthritis, multiple sclerosis, systemic lupus erythematosus, Parkinson's disease, and perhaps cancer (55).

Unfortunately, this is the sort of warning that very few people are willing or able to hear at this point, least of all the American Cancer Society or the American Academy of Pediatrics. The fact is, as Dubos points out, that all of us still want to believe in the "miracle," regardless of the evidence.

> The faith in the magical power of drugs often blunts the critical senses, and comes close at times to a mass hysteria, involving scientists and laymen alike. Men want miracles as much today as in the past. If they do not join one of the newer cults, they satisfy this need by worshiping at the altar of modern science. This faith in the magical power of drugs is not new. It helped to give medicine the authority of a priesthood, and to recreate the glamor of ancient mysteries (56).

The idea of eradicating measles or polio has come to seem attractive to us, simply because the power of medical science makes it seem technically *possible*: we worship every victory of technology over nature, just as the bullfight celebrates the triumph of human intelligence over the brute beast.

That is why we do not begrudge the drug companies their enormous profits, and gladly volunteer our own bodies and those of our children for their latest experiments. Vaccination is essentially a religious sacrament of our own participation in the miracle, a veritable *auto-da-fé* in the name of modern civilization itself.

Nobody in his right mind would seriously entertain the idea that, if we could somehow eliminate, one by one, measles and polio and all the known diseases of mankind, we would be any the healthier for it, or that other even more serious diseases would not quickly take their place.

Still less would a rational being suppose that the illnesses from which he suffered were "entities" somehow separable from the patients who suffer them, and that, with the appropriate chemical or surgical sacrament, this separation can literally be carried out.

Yet these are precisely the "miracles" we are taught to believe in, and the idolatries to which we aspire. We prefer to forget the older and simpler truths, that the propensity or susceptibility to illness is deeply rooted in our biological nature, and that the phenomena of disease are the expression of our own life energy, trying to overcome whatever it is trying to overcome, trying, in short, to *heal* itself.

The myth that we can find technical solutions for all human ailments seems attractive at first, precisely because it by passes the problem of healing, which is a genuine miracle in the sense that it can always *fail* to occur. We are all genuinely at risk of illness and death at every moment; no amount of technology can change that. Yet the mission of technical medicine is precisely to try to change that: to stand at all times in the front lines against disease, and to attack and destroy it whenever and wherever it shows itself.

That is why, with all due respect, I cannot have faith in the miracles or accept the sacraments of Merck, Sharp, and Dohme and the Center for Disease Control. I prefer to stay with the miracle of life itself, which has given us illness and disease, but also the arts of medicine and healing, through which we can acknowledge and experience our pain and our vulnerability, and sometimes, with the grace of God and the help of our fellow men, an awareness of health and well-being that transcends all boundaries. That is my religion; and, while I would willingly share it, I would not *force* it on anyone.

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TOWARDS A NEW IMMUNIZATION STRATEGY

[In the seventh Annual Meet of the MFC at RUHSA, we spent 1½ days in discussing critical issues in the care of under-fives– nutrition, inmunization, diarrhea – as faced at the level of community work. We had planned to publish the proceedings of this discussion on all these three topics in the Bulletin. But we have now decided to publish only the report on immunization strategy – a discussion in which Dr. Jacob John of the Christian Medical College, Vellore, presented his path-breaking idea of a really scientific strategy for mass-immunization of the under-fives Editor.]

THE PROBLEM

Should immunization be performed on a mass scale at a community level? What strategy should be adopted to get 100% coverage? What vaccines should be used? How to improve compliance of people with an immunisation programme? How to simplify the procedure? Should immunisation be voluntary or compulsory? These questions were raised in the minds of many.

To immunise or not to immunise on a mass scale was the basic question. Various views were expressed. The extremists on one side adopted a nihilistic view : the entire immunisation programme is futile. Their reasons :

1. Within the present social structure and with the available Government health structure, no significant immunisation coverage is possible. Immunisation is therfore no longer an epidemiological tool to reduce disease, but a means of personal prophyhaxis for those with access to the health system.
2. The necessity for and efficacy under field conditions of available vaccines, have never been tested on the basis of hard epidemiological data in India.
3. Especially with vaccines which cause some reaction e. g. DPT–people's compliance in completing the course of vaccination is poor.
4. Lack of a proper " cold chain " i. e. a system to keep vaccines which are sensitive to heat in a cold environment from the point of production to the point of delivery.

The result is that existing immunisation programmes have little impact on the morbidity and mortality rates in a community. They are a collosal waste of human and material resources which can be diverted to basic purposes.

The moderates wanted to stick to the present strategy but improve coverage through a massive health education programme and motivation of the people for immunisation – a typical moderate remedy for all ills relating to the social, political or health care systems.

DECIDING PRIORITIES SCIENTIFICALLY

Dr. Jacob John, a virologist at the Christian Medical College, Vellore, provided what was perhaps a happy mean. According to him, cne of the main problems with the present Immunisation schedule and system was that it was unscientific. Western schedules had been taken over and tacked on to the Indian health care delivery system. If properly followed, according to the present schedule, an Indian child by the age of five years, was expected to have 28 separate injections all to be provided by the ANM at the doorstep.

According to Dr. John, in order to overcome these difficulties, it is necessary to –

1. Select vaccines according to need, efficacy and safety.
2. Simplify immunisation schedules.
3. Concentrate on mothers for improving compliance.

A vaccine can be assigned approximate " notional " scores according to its need, efficacy and safety. Need is determined by the prevalence of the disease; morbidity and mortality due to that disease in the community. Efficacy is decided by the degree of protection obtained after immunisation. Safety depends on the incidence and severity of adverse reactions due to the vaccines.

Even though accurate data regarding prevalence, morbidity etc. are unavailable, rough scores can be assigned on the basis of available data and common experience. We went through this exercise at our session. The scores we assigned, through consensus, were as follows : (The scores were assigned on a scale of 0-4 ')

Vaccine Against	Need	Efficacy	Safety	Product of the three
Diphtheria	1	4	4	16
Whooping cough	3	2	2	12
Tetanus	3	4	4	48
Polio	4	2 or 4 (depending on 'cold chain ')	4	64 or 32
T.B.	4	1 or 2	3	24 or 12
Small Pox	0	4	2	0
Measles	4	4	4	64
Typhoid	2	2	3	12
Cholera	1	1	3	3

Dr. John's experience was that the ranking of the the vaccines, on the basis of the product scores, tended to agree, no matter who went through the scoring exercise. According to this ranking system, the priority vaccines were against–

1) Measles, 2) Polio, 3) Tetanus, 4) TB 5) Diphtheria, 6) Whooping Cough.

THE " CLUSTER – APPROACH "

The most important innovation described by Dr. Jacob John was his concept of " cluster " immunisation. We hope soon to carry an article by Dr. John describing the epidemiological basis and practical details. So this is only a short account.

The idea is to reorder the immunisation schedule and programme completely. Instead of ANMs immunising individual children in their homes right through the year, health teams immunise all the children in a community together, according to a simplified schedule based on the ranked priorities, at a time and place fixed beforehand. The visit of the health team is preceded by one week " propaganda blitz " which aims at providing information about immunization, as well as about the specific time and place as planned. The propoganda is directed mainly at the mothers of the target children.

The epidemiologic basis of the " cluster " schedule is that if a large proportion of the vulnerable population (children under five) are protected together, the **transmission** of infection becomes much more difficult, so that even **unprotected** children have less chance of getting the disease. (Similar strategy was used to to eradicate small-pox). The **programmatic** basis is that the cluster schedule uses available manpower more efficiently, in order to achieve wider coverage as well as greater epidemiological impact. By this means **logistic** problems (e.g. " cold chain " for oral polio vaccine) are also minimised.

Dr. Jacob John and his colleagues have tried this new strategy in a village near Vellore.

To avoid adverse reaction of the vaccines and high dropout rate at present, the strategy was modified to give two safe vaccines like measles and polio. Following rules were followed to achieve 100 % coverage :

1. Keep immunisation centre separate from primary health centre because sick children are brought to primary health centre and their mothers equate coming to P.H.C. to sickness.
2. 3–4 days before the immunisation day, ANM should go from house to house distributing immunisation cards and hand bills giving information about disease and benefit of its prevention by immunisation. Idea being, though mothers may not be able to read the information it can be transmitted to them by some literate person in the surroundings. ANM should talk to mother and motivate her for immunisation. In this strategy ANM has to go from house to house only once.
3. Give exact time at which mother should bring her child to the immunisation centre.
4. Give all children below one year three doses of oral polio vaccine at an interval of 4 weeks and give single dose of measles vaccine to the children above one year.
5. Collect immunisation cards that were given to the mothers by ANM so that it becomes easier to keep a record of the number of people who attended the centre.

Advantages of this strategy are :

1. Schedule is simpler
2. It is necessary to go to particular village on three days at an interval of one month in a year. Because of this storage and transport problems are minimised. Vaccine can be stored at district place throughout the year and can be brought to the village only thrice.

REDIRECTING CONTRACEPTIVE RESEARCH

By Judy Norsigian

Research Priorities

First, as you may know, contraceptive research at present focuses heavily on hormones, drugs and invasive devices, such as hormone-releasing IUDs, prostaglandins, injectable progestogens, silastic hormonal skin implants and antipregnancy vaccines. At the same time, there is relatively little research on safer and cheaper mechanical and barrier methods, on contraceptives which act locally rather than systemically, or on methods which require no mechanical intervention whatsoever. Examples of such safer methods include the cervical cap, diaphragm, contraceptive sponge, ovulation method and thermal sperm control.

The safer contraceptive methods also tend not to require physician's intervention, thus providing low cost, easily accessible birth control for more people. Particularly good examples are the contraceptive sponge, which requires no fitting,and the ovulation method, which requires no mechanical intervention.

Those of us active in the women's health movement are concerned that present funding is too heavily weighted toward drug and device research. Too often such research has exposed human subjects, mostly women, to serious adverse consequences. In cases where insufficient research has resulted in premature approval of contraceptive methods, much larger female populations have been exposed unnecessarily to dangers. The sequential Pill and Dalkon Shield are two well publicized examples of this, although all Pills and IUDs might well be classified as unjustifiably hazardous in light of the extensive and increasing documentation of Pill and IUD risks. Iu addition, adverse consequences of contraceptive drugs and devices account for a surprisingly large number of hospital admissions, which are both expensive and traumatic for the women involved.

It is alarming to note that in 1976 out of $70 million spent worldwide on contraceptive research outside of the drug industry, only 50,000 dollars was spent on barrier method research. Safe birth control methods do not receive priority by those who control the research dollars, while potentially dangerous methods do attract the majority of funds. We urge a major reordering of priorities, so that research on the safer birth control methods mentioned above receive the greatest emphasis. New priorities would also include research on better ways to communicate information about birth control methods.

Male Researchers and policy makers :

It is interesting to note that most contraceptive investigators are male and hence have little direct understanding of the practical impact of their research on women. According to the inventory of population research projects in the U.S. over 80 % of federally funded investigators in the areas of contraceptive development and contraceptive evaluation during 1976 were males. It is of no small significance that these male investigators will never have to use the methods that they develop. Moreover, we believe that their focus on the biological model and their fascination and involvement in the research process sometimes over-

FROM THE EDITORS DESK–

There is no question that world population is growing at a rate not commensurate with availability of material resources. The population growth rate in developing countries is generally higher than in the developed onse. There is therefore a need to evolve methods to control this growth. The policies for and the methods of population control, however, need to be critically and continuously evaluated. In two of the early issues of the Bulletin (Nos. 9 and 10), the population control policy vis a vis the socio-economic conditions were discussed.

In this issue, we present a more technical aspect, namely, contraceptive research and the hazards of the " pill. ". Mahtab Bamji, in her article, discusses the associated risks of steroidal coontraceptives and concludes that the benefits outweigh the risks. The other viewpoint is from the Boston Women's Group. Much contraceptive research is directed towards women. The woman ultimately has to bear the burden of either pregnancy or contraception. The Group feels that since all contraceptive research is dominated by men, the drug compaines are controlled by men and the policy makers are men, there is no proper understanding of women's problems. MFC is not directly involved with feminist mavements. The question which I, however, wish to raise is–when scientific research is also dominated by men, to what extent are women scintists and doctors influenced and perhaps, " brain–washed " by male thinking ?

Kamala Jayarao

shadows their concern for the well-being of research subjects.

In our opinion, there needs to be more research conducted by Community-based women's health centers which have worked directly with those who are intended to benefit from this research. Furthermore, subjects should play a major role in designing and/or approving the research design. We believe that such an approach would result in stricter adherence to research protocol.

Our third area of concern is policy-making. Private organizations like the Population Council, Ford Foundation, the Rockefeller Foundation, Planned Parenthood, and drug companies, as well as the federal government, sponsor practically all current contraceptive research, setting priorities for this research as well. Policy-makers for these organizations are also primarily males, who make decisions with little or no input by the many users of contraceptives, who supposedly benefit from the research.

An example of policy recommendations that almost totally ignore the areas of safer research we are advocating may be found on page 40 of the *Inventory and Analysis of Federal Population Research.*

1. Development of male contraceptive methods and techniques, including studies of combinations of known drugs and new delivery systems.

2. Synthesis of new chemical agents for the regulation of female and male fertility.

3. Expanded screening capabilities as well as accelerated assessment of new and old chemical entities.

4. Critical biological assessment of biodegradable drug delivery systems.

5. Investigation of new methods for reversible and permanent sterilization of both males and females.

6. Development of a long acting female contraceptive method.

7. Increased research on intrauterine devices.

8. Support of clinical studies required by FDA to to expedite the availability of new methods.

9. Assessment of the mode of action of post-ovulatory contraceptives.

10. Development of technology for the detection of ovulation and utilization of such technology for family–planning purposes.

These recommendations were submitted by the ICPR Committee., composed of 17 men and one woman We doubt if a committee composed primarily of women –consumers as well as researchers and government administrators–would have presented a similar list of recommendations.

It is our position that women should be creating policy on behalf of women, at the very least, and that all users of contraceptives should have a significant voice in determining what kind of research is funded. To the extent that birth control is still primarily the responsibility of women, and that women are the ones who bear the major consequences childbirth, as well as the risks and serious complications of birth control, women should have a major voice in determining which contraceptive research priorities will best meet their needs.

Currently, the National Women's Health Network (NWHN) is conducting a nation-wide survey of over 100 women's health centers and women's health education groups to establish what women's health organizations see as their contraceptive research priorities. When complete, this study will be a first-of-its-kind, revealing what kind of research women want and expect the government to fund.

The Network is particularly concerned that the whole issue of contraceptive research be viewed in the context of the rising incidence of sterilization abuse. The widespread absence of safe and effective birth-control methods and the promotion of newer, more hazardous contraceptives, coupled with the withdrawal of abortion services, especially for poorer women, has forced more and more people, both men and women, to submit to sterilization as the solution to fertility control. At this time, we urge a moratorium on all funding for new experiments with new sterilization methods and recommend further investigation into the consequences of current methods of sterilization.

The medical establishment, including government and private organizations, universities, and industrial supply corporations, presently promote research which emphasizes patents, profits and the development of new technologies. The NWHN recommends a shifting of priorities so that safer contraceptives, for both men and women, can be developed and marketed in a timely manner.

Extracted from Science For The People.

COMPLEMENTING PLANS AND RESOURCES FOR UNIVERSAL IMMUNIZATION

Operational guidelines to be followed by UNICEF programme staff when discussing and drawing up a joint Plan of Action for an immunization programme.

General

Primary health care is defined in the Declaration of Alma Ata as essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally acceptable to individuals and families in the community through their full participation and at a cost that the community and country can afford. The eight essential elements of primary health care are: education concerning prevailing health problems and the methods of preventing and controlling them; promotion of food supply and proper nutrition; an adequate supply of safe water and basic sanitation; maternal and child health care, including family planning; prevention and control of locally endemic diseases; appropriate treatment of common diseases and injuries; provision of essential drugs; and immunization against the major infectious diseases.

These guidelines should be read in light of the Primary Health Care approach, in conjunction with the booklet "Immunizing More Children" in which there is a comprehensive statement on supporting and complementing the immunization programmes of the Government of India, state governments and others. Over many years, UNICEF has cooperated extensively with the Ministry and Departments of Health. Firm commitments have been made to continue and augment that co-operation in actions which will raise levels of social awareness and participation, assure the availability and quality of vaccines, bolster administrative support and explore programme design and management. These will be elements of our programme of assistance in the coming years.

It is evident that this involvement will not be sufficient to meet the burgeoning demands created in India by the message of the Child Survival and Development Revolution and by the upsurge of political interest and will, national and international. These call for urgent extension and acceleration of immunization programmes. While we continue to build up our own knowledge and resources, the claims upon them increase almost daily. UNICEF is a strong advocate of universal immunization and is prepared to join with our major partners in governments, WHO, in the medical profession and with others too. Only if the resources of many arms of government, of non-governmental and voluntary organizations and of communities are fully mobilized can universalization of immunization become a reality in 1990. Wherever and whenever immunization is discussed, UNICEF will evince an interest, share information and experience and strongly advocate planned action.

This is in accordance with the proclaimed policy of our Executive Board and in

harmony with the current upsurge of international interest and commitment to universal immunization against the diseases of childhood. However, in considering joint actions with any of our partners, we must be assured that the programmes envisaged are comprehensive, immunologically effective, operationally sustainable and socially acceptable.

At the present time UNICEF's concern is with the primary vaccinations: BCG, DPT, polio, measles and with TT for women of child bearing age, all of which are included in the GOI schedule. UNICEF will cooperate in programmes designed to immunize children against the six major childhood diseases. Resources and time cannot be diverted to incomplete programmes which will offer protection against only one or a few of the six.

Coverage

In order that the limited resources may not be dissipated and unnecessarily diluted, UNICEF will direct its involvement to programmes which cover at least one administrative block or ward. And in all cases, a minimum target coverage will be 85 per cent of eligible children, under two years old. In coming years, coverage will be of the age group under one year.

Project Areas

The following are priority areas for UNICEF collaboration, identified in order to ensure a measure of cost-effectiveness and to fully utilize existing infrastructures:

—where ICDS is established and functioning;
—in GOI/state government intensive immunization districts;
—at district rehabilitation centres;
—where there are UCD/SMTD projects;
—where there are DWCRA projects;
—where there are SIAD projects;
—in the "catchment" areas of medical colleges.

[Areas which are identified as being specially served by bilateral immunization programm should be avoided.]

Planning

The average immunization programme will take at least six months to prepare. Unless there is adequate lead-time, no project should be embarked upon.

"Immunizing More Children" describes three case studies in which the strategies and processes are carefully analyzed. Obviously, negotiations, responsibilities and procedures will vary in different situations but many of them are common and in no case is it likely that all planning and preparation will be completed in less than six months. In brief, there will be negotiations with appropriate individuals and organizations; there will be a check-list of resources and materials to go through systematically; a plan of action wi be prepared in consultation between all involved parties and appropriate sections of ROSCA and based on the check-list and initial surveys; vaccine availability will have to be confirmed; so will other committed inputs; evidence will be presented that the immunization will not be a one-time affair. All of these will be time-consuming and arduous—but essential prerequisites to UNICEF participation.

Infrastructures

Programmes in which UNICEF will collaborate will be effected through existing infrastructures and resources in almost all cases. First and foremost that will mean the Health system, its extensions, and the facilities of other arms of government machinery. There will also be State/ District/Municipal Administration/Development Ministries and Departments of Social Welfare (ICDS, SIAD, etc.), Education (pre and primary schools, female literacy centres, etc.), and other non-governmental organizations like the Family Planning Association of India, Indian Council of Child Welfare, Indian Red Cross Society and other similar voluntary organizations which run MCH and Family Welfare Centres. They may be actively involved and supplies of vaccines and drugs may be made to them (by GOI) on the condition that they are administered properly to the beneficiaries and proper accounting done in accordance with government instructions. (Ministry of Health & Family Welfare memorandum D.O. No. M.12014/1/83-MCH of 13 April 1983.)

There are, in addition, the controlled communities such as ESI, planters' associations, industrial and commercial enterprises, the coal and other mining industries, railways, etc. with whom UNICEF may cooperate in training, exchange of information, provision of promotional materials, and so on.

UNICEF Commitments

UNICEF has already made significant commitments to the GOI as mentioned in "Immunizing More Children". Amongst those commitments is one to make good shortfalls in vaccines which may occur while India's own production is stepped up to meet national needs (as distinct from national targets). In all cases, therefore, the GOI is responsible for supply of vaccines in the amounts specified in plans of action.

Other UNICEF commitments to specific plans of action may be any of the following, as occasions demand:

a) Direct Inputs
   - —Syringes and needles [not disposable].
   - —Reimbursement cost of HER.
   - —Autoclaves and sterilizers.
   - —Additional refrigerators, voltage stabilizers and cold chain equipment for PHCs, where necessary.
   - —Thermocole boxes and carriers.
   - —Paper and printing, survey and recorded forms, ledgers and cards.
   - —2-wheeled vehicles for supervision.

b) Capacity Building
   - —Training for all cadres:
     1) Mid-level management for DMOs and managers (10 days);
     2) Orientation of non-medical supervisers, PHNs, PMAs, media officers and officials, state functionaries, etc. (3-5 days);
     3) Orientation of PHC staff (2-3 days);
     4) Orientation of survey staff;
     5) Technical aspects of Logistics and Cold Chain Management for managers and key personnel handling vaccines (3-4 days);
     6) Refrigerators repair technicians' course (10 days);
     7) Users' course on preventive maintenance of refrigerators, cold boxes, vaccine carriers, etc.;

8) Orientation of communication and community participation for extension educators, community workers and volunteers, etc.;
9) Support for inclusion in curricula of medical colleges and nursing schools.

–Exchange between officials of participating projects–but only after actual involvement.
–Consultants and contractors for training/monitoring/planning.
–Support for Health Education Bureaux, state radio stations, regional TV, etc. for training courses and production of advocacy materials.
–Manuals, training materials and aids for implementing individuals and teams

c) Advocacy

The major objectives in advocacy will be to create political and administrative commitment at all levels; to motivate community leaders; to build up awareness and demand amongst the people. In a recent investigation of the knowledge, attitudes and practices related to immunization amongst mothers in two areas of New Delhi, the variables studied were: (a) awareness of the diseases of childhood, (b) the symptoms, (c) the number of doses required for immunization against each of the diseases, (d) understanding that death can possibly result if the child is not immunized. This last "message"–that death can be the possible outcome of not immunizing the child–appeared to be the most relevant of all to the motivation of parents towards having their children immunized.

Channels of communication may include the schools, mahila mandals, religious associations, NGOs of all kinds as well as the mass media (radio and TV spots–which, by themselves, cannot be effective). Motivational material will be germane to local conditions and will require pretesting and modification. Traditional and community based advocacy may be supported, e.g. "prabhat pheri" (morning procession), puppet shows, street theatre, local fairs, exhibitions, etc.

d) Planning, Monitoring and Evaluation

–Survey, baseline data collection, inventory, questionnaires, etc.;
–Record keeping and data processing;
–Coverage surveys by independent evaluations;
–Consultants and contractors;
–Research of problems, constraints, cultural/social/economic factors;
–Analyses of reductions in prevalence, IMR, CMR, morbidity and disability.

e) Discretionary Funds

e.g. for conveyance costs, POL for vehicles used in the project, ice, kerosene, cotton, gauze, alcohol, analgesics, sweets, loud-hailers, prizes, etc.

Overall cost to UNICEF

In no case should the *per capita* cost to UNICEF exceed US$ 1.50. This is a generous complement to existing resources which need not necessarily be fully utilized. The cost will be substantially lower in densely populated urban areas.

UNICEF, ROSCA, New Delhi : 14 May 1984
'SBK'

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CRASH OF THE IMMUNIZATION PROGRAMME

Consequences of a Totalitarian Approach

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RETREAT FROM ALMA - ATA

The Alma Ata Declaration, (WHO 1978), signed by virtually all the countries of the world, marks an important watershed in the history of public health. It called for a new approach to providing integrated health services to all sections of the population all over the world. Its distinction lies in its advocating formation of systems of health services that are built around the people, rather than around predetermined packages of technology. People's response to their health problems forms the sheet anchor of the health services; they are to promote community self-reliance; they should be under social control; and, they should form a component of a wider intersectoral action in health.

Expectedly, the reaction of affluent countries to this daring declaration of self-reliance by the poor countries was sharp and swift. Reverting to their old patronising, technocentric, dependence producing approach, they came forward with what they called "Selective Primary Health Care" (Walsh and Warren 1979) - a contradiction in terms. Even though this idea clearly lacked a scientific basis (Banerji 1984; Grodos et deBethune 1988; Institute of Tropical Medicine 1985), it received immediate support from UNICEF, which went on to launch what it called "Child Survival Development Revolution" (Grant 1983), selectively focussing on Growth Monitoring, Oral Rehydration, Breast Feeding and Immunization - GOBI, later to be linked with Feeding Programmes, Family Limitation and Female Literacy, making it GOBI - FFF (Vittachi 1985).

Many eminent scholars from different parts of the world have expressed deep concern over this obvious attempt to retreat from the commitments made at Alma Ata. A group of scholars in

public health from different parts of the world, meeting at Antwerp (Institute of Tropical Medicine 1985), had declared in 1985:

> .....in developing countries, in spite of the lessons of history and of past experience, major national and international donor agencies are diverting scarce resources into a short term approach known as "selective primary health care". This approach concentrates exclusively on certain interventions claimed to be the most efficient and aimed only at sections of the population.
>
> This self-contradictory term should be banned, since at their best, such programmes can only be considered as "selective health status interventions". This approach is in total contradiction with the fundamental principles underlying Primary Health Care.

Based on deliberations at Antwerp and works by other scholars, Social Science in Medicine brought out a Special Number (No.9, Vol. 26, 1988) on Selective Primary Health Care, which raised serious doubts about the soundness of a "selective" approach. However, undaunted, WHO joined UNICEF in becoming even more "selective" in its approach by converting its earlier Expanded Programme of Immunization into a global, time bound (1990) programme which was aimed to ensure that the six immunizable diseases - diphtheria, whooping cough, tetanus, childhood tuberculosis, poliomyelitis and measles-cease to be public health problems, if not totally eradicated from the globe (Grant 1985; WHO 1989). Indeed, the World Health Assembly adopted a resolution commiting to a programme of global eradication of poliomyelities (WHO, 1987).

The Economic and Political Weekly (Editorial Comment 1986) was among the first to draw attention to the implications of launching the global programme. It brought ..... into focus the largeer issue of the role of public health technologies and emphasised that health improvements brought about by immunization, use of Oral Rehydration Therapy (ORT), growth charts or nutrition supplements can only be sustained by availability of food, water and shelter and the political and economic power of the people to obtain them. It had also rightly emphasised that these technologies are being used by the ruling class in third world countries to achieve visible and dramatic improvements in health to divert attention away from the lack of basic survival needs. These observations opened up the wider questions of motivations behind these efforts to impose technocentric approaches to deal with the problems of child health in the third world, when it is well known that these problems are rooted in the ecological conditions prevailing in these countries.

Subsequently, a number of articles have appeared in EPW (e.g. Banerji 1986) which also dealt with the narrower programmatic aspects. These have revealed many serious flaws in the programme itself. The most outstanding among them was that a massive, expensive and a very complicated programme had been recommended for launching without even finding out what the problem was, leave alone the other important epidemiological considerations, such as incidence rates under different ecological conditions and time trends of the chosen diseases. In addition, there were other critical areas such as efficacy of different strains of vaccines under different epidemiological and ecological conditions, vaccine dosage, mode of vaccine administration, maintenance of the cold chain, fixation of the level of the "herd immunity" needed for the programme, ensuring

action to get the needed coverage, impact of the time bound, target oriented programme on other health services, including those pertaining to mothers and children, monitoring the quality of the vaccine and the vaccination procedures and implications of persistence of unfavourable ecological conditions for the health of vaccine protected children.

Recognizing the importance of the issues raised in these publications, the Journal of the Indian Medical Association (JIMA) came out with an Editorial (1986) under the caption, "Hidden Menace Behind the Universal Child Immunization Programme", drawing heavily from one of the EPW articles (Banerji 1986) In turn, the JIMA Editorial was reprinted in the IFDA Dossier (Sept - Oct 1987) (International Foundation for Development Alternatives) and in the International Journal of Health Services (Vol.18), pp.293-99, 1988.

IMPOSING THE PROGRAMME ON THE PEOPLE

It is remarkable that such a strong and persistent criticism based on scientific analysis, failed to make any impression on the decision makers. Some respected physicians (not necessarily scientifically competent, at least in epidemiology and health administration) lent their support to the proposed global venture and on the recommendations of technical "experts" and consultants in the secretariates of WHO and UNICEF, the respective general bodies of WHO and UNICEF (Grant 1985; Mandl 1984) also endorsed it. UNICEF launched a massive publicity drive to "market" the "social" product of child survival (Manoff 1984). Social Marketing became a hallmark of this programme (Duquue et al 1984). Top pop singers of the world were involved in a marathon transatlantic TV pop extravaganza - the World Aid of Bob Gildoff - to involve the

affluent people in western countries in this task of helping the needy children in poor countries. Marathon races were held in all the major cities of the world with a similar purpose.

Containing the largest number of needy children in the world, India reacted enthusiastically to the proposal. A Task Force (GOI 1985), headed by a generalist administrator, drew up the details of an Universal Immunization Programme (UIP) which was meant to become a " living memorial to our late Prime Minister Indira Gandhi" (p.ii). Following the trend set at the international level, the Task Force also made unsubstantiated claims about the cost-effectiveness of UIP. It also received prompt support from the Planning Commission. The Prime Minister's Science Advisory Committee set up a special Technology Mission on Immunization (GOI 1988).

India went a step further in the field of "vaccinology" by setting up the Indo-US Vaccine Action Project (GOI 1987a). In their zeal to stress the importance of vaccines, some bio-technologists, who had little knowledge and information concerning epidemiological situation in India, unwittingly or otherwise, went about literally to "manufacture" or concoct public health importance of certain diseases to create market for the vaccines developed in industrialised countries. Without any data base, they started to claim primacy for such problems as Infective Hepatitis, of Measles, Mumps and Rubella (MMR) ! It is a matter of deep national concern that things could be manipulated to this extent. It is a grave danger signal.

The UIP envisaged an expenditure of 250 crores of rupees (GOI 1985), over and above the mobilisation of the needed manpower and other resources at the primary health centre and sub-centre levels in rural areas (and corresponding levels in urban areas), to vaccinate the children. This sum was principally meant to cover the cost of vaccines, equipment, transport and some additional personnel needed specifically for UIP.

It was gigantic task. Within the five years starting from April, 1985, more than 90 million pregnant mothers and 83 million infants, living in more than 575,000 villages, towns and cities of the vast country, were to be immunized (Sokhey 1988:9). It required 3000,000 vaccine carriers, 15.2 million syringes, 60 million needles and over 1000 million does of vaccines and many other equipment and supplies (Sokhey 1988:25). There were, in addition, the stupendous problems concerning vaccine production, import of vaccines and equipment, ensuring timely supplies, maintenance of the cold chain, promoting community participation through programmes of Information, Education and Communication (IEC), training and monitoring, valuation and surveillance.

It is astonishing that despite such obvious indications to the contrary, the Government of India should have claimed that "Vaccination is one of the most cost effective health interventions known to man" (GOI 1985:i). Making of such wild claims by responsible officers has been a recurrent feature in the literature (see, for instance, GOI 1985; GOI 1988; GOI 1989; Sokhey 1988) brought out by the Government of India. Such literature provide documentary evidence of ignorance of the decision makers about basic epidemiological and administrative aspects of the immunization programme. It is not only unscientific to make such irresponsible claims; it is downright unethical and immoral.

The detailed activities for implementing the UIP were chalked out in the form of two Mini Missions (GOI 1988) - Mini Mission - I for storage and distribution of vaccines and Mini Mission - II for administration of vaccines, monitoring and evaluation. The dominant approach was to adopt a "central pattern" and implement it uniformly in different parts of the country to obtain the required coverage. Those with even a

nodding acquaintnace with health administration in different parts of the country could have immediately pointed out that this was an obviously impossible task in many major states - e.g. Uttar Pradesh, Bihar, Rajasthan, Madhya Pradesh, Orissa, Assam and West Bengal. What is worse, imposition of the time bound, target oriented programme on such states created very serious problems of "absorption" within the health service systems of these very states: precisely because such states had weak organizational structures, particularly the network of services at the periphery, and an even weaker management system, the damage done by the UIP to the organisation and management of other activities (e.g. National Tuberculosis Programme) in the process of absorption of the programme was much more extensive. Obviously, then, if the overriding purpose was that the UIP had to be pushed through in India, regardless of the consequences, these critical issues of health administration had to be ignored; those raising such issues had to be kept out of the team and actively shunned.

MANIPULATION AND CONTROL OF INFORMATION

Then, it should also become understandable why there should have been so many vital flaws in the process of implementation of the "Monitoring", Evaluation and Surveillance components of the Technology Mission on Immunization. Because the baseline epidemiological data on the six deseases were virtually non-existent, the question of directly measuring the epidemiological impact of UIP was not even raised. Incidentally, had they had adequate competence in epidemiology, they could have at least partially retrieved the situation by using epidemetric models. Instead, recourse was taken to conduct what is termed as "Sentinal Surveillance" in some selected medical centres in the country (Sokhey 1988). Obviously, in the best of the circumstances, information obtained from such centres is of

very limited value. However, even this limited information could not be collected systematically, as a large number of the centres did not have a reliable information system.

Independent evaluation has shown (Banerji 1989) that there were serious lapses in carrying out systematic concurrent internal evaluation; in monitoring the functioning of the cold chain and in making vaccination assessment surveys. The Union Ministry of Health and Family Welfare has presented limited data on 93 assessment surveys in (unspecified) selected areas in 1987 (Sokhey 1988:29). On such fragile ground it has claimed "impressive progress in the (not specified) surveyed areas" (p.29), because "in more than a fifth (20/93) of the surveyed areas in 1987 recorded coverage levels of 75 per cent or more with three doses of DPT and OPV and more than half the areas (51/93) documented coverage levels between 50 to 74 per cent" (p. 29). How can they claim impressive progress with data on selected areas and when they themselves have set a figure of 85 per cent (GOI 1988) to have "herd immunity" in the community?

Attempts at "cover-up" routine performance information was even more pathetic. For instance, the Annual Report of the Union Ministry of Health and Family Welfare for 1988-89 (GOI 1989:208-10) gives the year-wise performance and target figures for the entire country for TT (Tetanus Toxoid), DPT, Polio, BCG and measles, without caring to give the break-up in terms the number of doses of DPT and Polio and in terms of states or districts. Till he became a member of the (Independent) National Review Committee on Immunisation (July 1989), this author faced a blank wall whenever he made

efforts to get the detailed break-up or the findings of the internal National Review of 1987, conducted by the Union Ministry of Health and Family Welfare which covered the districts of Bharuch (Gujarat) (Sokhey 1987a), Sagar (Madhya Pradesh) (Sokhey 1987b), Kota (Rajasthan) Sokhey 1987c) and Thane (Maharasthra) (Sokhey 1987d).

POOR LEVELS OF PERFORMANCE

Ironically, a much broadbased and systematic surveys organised by an Independent National Review Committee, on the basis of study of 25 districts, in twelave major states(and Goa) revealed that the routine performance data submitted by the state governments were often highly exaggerated, presumably to please the authorities in the Union Ministry. Actually, this ought not to come as a surprise. Performance figures had been similarly concocted earlier when the Union Government had, with or without pressure from abroad, imposed ill-conceived and ill-designed, technocentric, target oriented and time bound programmes on the people through unenthusiastic and poorly performing state health departments (e.g. family planning (GOI 1987b; Bose 1988: 135) and the earlier attempts at smallpox eradication (Basu et al 1979).

The Indian Council of Medical Research (1989), which was asked to conduct external evaluation of UIP, limited itself only to evaluation of availability of supplies and equipment in 196 primary health centres which were favourably positioned near the district headquarters. A summary brought out by ICMR revealed serious flaws in the UIP. Apparently, so concerned were the authorities to cover-up such data, which call into question their loud claims concerning "impressive progress", that the full report of the ICMR study has not been

made available to an outsider like the present author, inspite of repeated requests.

However, the authorities did set up an Independent National Review Committee on UIP under the sponsorship of the National Institute of Health and Family Welfare, nine months before the programme was due to come to an end (July, 1989). The Independent National Review Committee has brought out convincing data to confirm the worst of the forebodings of several scholars made way back in 1984, 1985 and 1986 (Banerji 1984; Grodos/et de Bethune 1985; Banerji 1986). In states accounting for more than half of the population of the country, less than a fifth of the eligible children were fully protected against the five deseases : the coverage hit almost the rock bottom when measles was also included as the sixth desease (Banerji 1989). Even in the best perfofming states, which accounted for a tiny fraction of the total population, the coverage did not reach the prescribed 85 per cent - it wavered between 70 - 83 per cent. Again, these very states(e.g. Kerala, Himachal Pradesh and Goa) already had low mortality and morbidity rates and therefore the impact of the coverage will naturally be very limited. The coverage was abyssmally low in the very states which are expected to have high incidences. These high desease incidence states, again, have very low figures for female literacy, per capita income, allocation for health services and in their levels of management. The Technology Mission had made a serious blunder in overlooking the glaring differences in the organisation and management of the state health services and imposing a "central pattern" on all of them. Probably, they got dazzled by the high pressure salesmanship of the international agencies, individual affluent countries and by

international voluntary organisations like the Rotary International and the Rockfellar Foundation.

India's experience with the UIP should provide enough data to get a picture of the level of implementation of this ill-conceived and unimaginative global venture in by far the large majority of other poor countries of the world (e.g. Bangladesh, Nepal, Afghanistan, Sudan, Somalia, Chad, Haiti, Dominican Republic) which have even weaker political clout and weaker infrastructure of the health services. It is shuddering to find that even in the eighth decade of the current century, an unholdy alliance of national and international power brokers could impose their will on hundreds of millions of human beings living in the poor countries of world - and make them forget all that ahppened at Alma Ata in 1978. For the poor the struggle for health is a long and a grinding one.

POLITICS OF TECHNOLOGICAL TOTALITARIANISM

One can thus discern a deeply disturbing - indeed frightening chain of disinformation, distortion and cheap propaganda in a bid to sell the immunization programme, both globally and in India; making a case for cost - effectiveness of selective primary health care on the basis of highly questionable data; making exaggerated assessment of load of mortality and morbidity due to the six diseases; making exaggerated claims on efficacy of the vaccines; ignoring vital Epidemiological, biological and administrative issues in programme's formulation and implementation; poor monitoring and surveillance, restricting or actively preventing access to the available information; and indulging in false propaganda claiming success for the programme. These precisely form many of the key elements of a totalitarian system. This account of "selling"

of the immunization programme in India provides an awe - inspiring instance of formation of a syndicate medical scientists, bureaucrats and political leaders and their mentors from abroad, who invoked the emotional cause of the plight of the children in poor countries to build a closed, monolithic, "totalitarian" programme. There appears to be a deterministic streak in the rise and fall of the UIP. It almost faithfully conformed to the forecast made in 1986 (Banerji 1986) ; "Global and national power structures ordain that the oppressed people of the world will have to pay yet another heavy instalment to their tormentors. The tormentors have once again to be proved wrong before they are forced to abandon their ill-conceived programmes."

It may be stressed that protection of children is a very desirable health action and it should form an important element of primary health care activities. This is quite different from invoking the cause of children by vested market and political interests joining some well meaning though simplistic persons in affluent countries to impose a technocentric, high priority target oriented, time bound immunization programme on a country. This is not the first time that a third world country like India has been a victim of such a "totalitarian" onslaught. There are several examples of such manipulative interventions in the past ; the family planning programme (Damerath 1976) and the malaria programme (Cleaver 1976) offer two glaring instances. The World Health Assembly has already given the mandate to WHO to launch a global programme of eradication of poliomyelitis. There is already a move about promotion of similar poorly conceived and designed global programmes against Acute Respiratory Infections (WHO 1987) and Diarrhoeal Diseases (WHO & UNICEF 1985).

In the existing immoral and unethical North-South Divide, based on unequal terms of exchange, by imposing such programme on the South, the North seems to come back to the South with a tiny fraction of what it has plundered from them and, adding insult to injury, it seems to be telling them, condescendingly : " Here we come with our technological magics. We have a magical wand to remove your health problems. What does it matter if you are forced to live under degrading conditions of poverty, illiteracy, exploitation and social injustice? After all, you and your children are alive ! Look, how we have raised your life expectancy !"

The people in the South must learn to see through the machinations of the market and manipulative forces and take suitable corrective steps. Efforts will be made to dazzle them with the glamour of high technology. The question is not of rejecting all technology; the question is to see through the dangers of the market forces in both the North and the South and ensure that concerted efforts are made to promote self-reliance and to subordinate technology to the needs of the people, as contained in the Alma Ata Declaration.

SUMMARY

The reaction of the affluent countries to the daring Alma Ata Declaration of self-reliance in health fields by the poor countries was sharp and swift. They came forward, without producing a scientific basis, with an alternative approach of Selective Primary Health Care - a clear contradiction in terms. Despite this, it received support from UNICEF and WHO and soon they got together to plead for a global programme of immunization in third world countries against six communication diseases. Scholars from all over the world pointed out that such a technocentric, time bound, target oriented programme, that is thrust on the people, was contrary to the basic postulates of the Alma Ata Declaration. It was also pointed out, again and again, that the suggested programme was launched without even getting basic epidemilogical information about the six diseases, and over and above, there were serious unanswered questions concerning the vaccines, their dosage and mode of administration and logistics and administrative and ecological aspects of programme implementation. All these warnings were ignored by the authorities concerned.

India also followed the path laid by the international agencies by launching a 250-crore rupees five year Universal Immunization Programme against the six diseases in 1985. It also joined them in launching a massive propaganda drive and in making patently un-substantiated claims in favour of UIP. Not only did the administrators fail in setting up sound and reliable internal information system to monitor the performance, but they took the next expected step of imposing an embargo on whatever information that they had with them. However,

towards to end, they had to submit UIP to an Independent National Review, which seriously called into question many of the claims made earlier. Apart from pointing out serious flaws at the levels of policy, strategy, programme formulation and implementation and evaluation, it was stated that there were serious shortfalls even in vaccination coverage and that there was a coverage of less than one fifth in as much as half of the eligible population, where the incidence rates are expected to be much higher. The situation in the vast majority of other third world countries is expected to be much worse than what is found in India.

The UIP presents an awe-inspiring instance of the power of a syndicate of vested market and political interests, which coopted certain well meaning but simplistic persons, to impose their will on the peoples of the poor countries of the world. Using disinformation, distortion and cheap propaganda, they had succeeded in setting up a closed, monolithic, totalitarian system to carry out their pre-conceived mission. In the existing immoral and unethical North-South Divide, North seems to come back to the South with a tiny fraction of what it had plundered from it, here too it insists on laying down its own terms and conditions which are blatantly unscientific, unimaginative, ill-fated and counter-productive.

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D70c

Vaccine shots ca

Vaccines have been sold as catch-all lifesavers. But the hardsell is not all true, says Alan Phillips

When my two-month-old son began his routine vaccination series, I did not know there were any risks associated with immunisations. But the clinic's literature contained a contradiction: the chances of an adverse reaction to the DPT vaccine were 1 in 1,750, while his chances of dying from pertussis each year were one in several million.

Health authorities credit vaccines for disease declines, yet their assumptions are contradicted by health statistics, medical studies, the Food and Drug Administration and Centers for Disease Control reports, and research scientists from around the world. In fact, infectious diseases steadily declined for decades prior to vaccinations.

American doctors report thousands of vaccine reactions each year, including hundreds of deaths and disabilities. Many fully vaccinated populations have experienced epidemics.

Myth 1 Vaccines are completely safe
Truth *Vaccination causes significant death and disability*

The FDA's Vaccine Adverse Effects Reporting System receives 11,000 reports (mostly from doctors) of adverse vaccine reactions a year, one per cent of which include deaths (the majority after the pertussis or whooping cough vaccine, the P in DPT). With pertussis, the number of vaccine-related deaths dwarfs the number of disease deaths: the vaccine is 100 times more deadly than the disease. In many instances, highly vaccinated populations have contracted disease. Besides, pertussis deaths declined 79 per cent prior to vaccines.

Studies have shown vaccination to be a cause of the Sudden Infant Death Syndrome, a catch-all diagnosis for cases when the specific cause ofdeath is supposedly unknown. One study found the peak incidence of the syndrome occurred at the ages of two and four months in the United States, precisely when the first two routine immunisations are given.

Britain actually saw a mid-Seventies drop in pertussis deaths when vaccination rates dropped from 80 per cent to 30 per cent.

Myth 2 Vaccines are very effective
Truth *Vaccination is an unreliable means to prevent disease*

Measles, mumps, smallpox and polio outbreaks occurred in vaccinated populations. In 1989, the CDC reported: "Among school-aged children, (measles) outbreaks occurred in schools with vaccination levels of 98 per cent. There was even a measles outbreak in a 100 per cent vaccinated population." A recent study concluded that measles "produces immune suppression which contributes to an increased susceptibility to other infections."

Myth 3 Vaccines are the main reason for low disease rates in the United States today
Truth *The impact of vaccines on infectious disease decline is unclear*

According to the British Association for the Advancement of Science, childhood diseases decreased 90 per cent between 1850 and 1940, paralleling improved sanitation and hygienic practices, well before mandatory vaccination programmes. Infectious disease deaths in the United States and England declined steadily by about 80 per cent during this century (measles mortality declined 97 per cent) prior to vaccinations.

In Britain, polio epidemics peaked in 1950, and declined 82 by the time the vaccine was introduced there in 1956. Thus, at best, vaccinations can be credited with only a small percentage of the overall decline in disease related deaths this century. Yet even this small portion is questionable as the rate of decline remained virtually the same after vaccines were introduced.

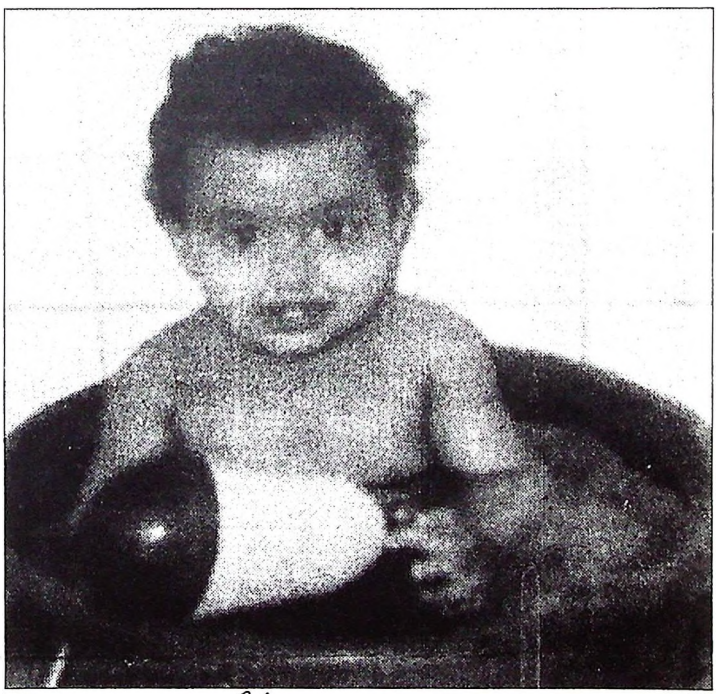
Furthermore, European countries that refused immunisation for smallpox and polio saw the epidemics end — along with those countries that mandated it. In fact, both smallpox and polio immunisation campaigns were followed initially by significant disease increases; during smallpox campaigns, other infectious diseases continued their decline in the absence of vaccines.

A recent World Health Organisation report found that disease and mortality rates in Third World countries have no direct correlation with immunisation procedures or medical treatment but are closely related to hygiene and diet.

were actually exposed to the disease, then the vaccine was really only 50 per cent effective.

It is assumed that all children, regardless of age, are virtually the same. An 8lb two-month-old receives the same dosage as a 40lb five-year-old. Infants with immature, undeveloped immune systems may receive five or more times the dosage (relative to body weight) as older children.

Finally, vaccination practice assumes that all recipients, regardless of race, culture, diet, or any other circumstances will respond identically. But this was dramatically disproved a few years ago in Australia's Northern Territory, where stepped-up immunisation campaigns resulted in an incredibly high infant mortality rate in the native aborigines. Researcher A Kalokerinos, MD, discovered



Myth 4 Vaccination is based on sound immunnisation theory and practice
Truth *Many of the assumptions upon which immunisation theory and practice are based have been proven false in their application*

The clinical evidence for vaccination is its ability to stimulate antibody production in the recipient, which is not disputed. What is not clear, however, is whether such antibody production constitutes immunity. Furthermore, a study published by the British Medical Council in 1950 during a diphtheria epidemic concluded that there was no relationship between antibody count and disease incidence; researchers found resistant people with extremely low antibody counts and sick people with high counts.

Another component of immunisation theory is "herd immunity," which states that when enough people in a community are immunised, all are protected. As Myth 2 revealed, fully vaccinated populations have contracted diseases.

There is a flaw in statistics given: If 100 people are vaccinated and five contract the disease, the vaccine is declared to be 95 per cent effective. But if only 10 of the 100

that the aborigine's vitamin C-deficient "junk food" diet was a critical factor (vaccination depletes vitamin C reserves. Children in shock or collapse often recover within minutes when given vitamin C injections).

Myth 5 Childhood diseases are extremely dangerous
Truth *Dangers of childhood diseases are greatly exaggerated in order to scare parents into compliance with a questionable but profitable procedure*

Mostly, childhood infectious diseases are benign and self-limiting, and they impart lifelong immunity, whereas vaccine-induced immunity is only temporary. For example, the chickenpox vaccine has an effectiveness estimated at 6-10 years. If effective, it will postpone the child's vulnerability until adulthood, when death from the disease is 20 times more likely.

Some healthcare professionals are concerned that the virus from the chicken pox vaccine may "reactivate later in life in the form of herpes tester (shingles) or other immune system disorders."

Myth 6 Polio was one of the clearly

an kill

great vaccination success stories

TRUTH *Vaccines caused substantial increases in polio after years of steady declines and they are the sole cause of polio in the United States today*

Six New England states reported increases in polio one year after the Salk vaccine was introduced.

It was reported that not only did the cases of polio increase substantially after mandatory vaccinations (50 per cent from 1957 to 1958, 80 per cent from 1958 to 1959), but statistics were manipulated by the Public Health Service to give the opposite impression. Researcher-author Dr Viera Scheibner says 90 per cent of polio cases were eliminated from the statistics by the health authorities' redefinition of the disease when the vaccine was introduced, while in fact the Salk vaccine was continuing to cause paralytic polio in several countries at a time when there were no epidemics caused by the wild virus.

In 1985, the CDC reported that 87 per cent of the cases of polio in the United States between 1973 and 1983 were caused by the vaccine, and later declared that all but a few imported cases since were caused by the vaccine. Jonas Salk, inventor of the IPV, testified before a Senate subcommittee that nearly all polio outbreaks since 1961 were caused by the oral polio vaccine. Jessica Scheer of the National Rehabilitation Hospital Research Center in Washington, DC, pointed out that most parents are unaware that polio vaccination in this country entails "a small number of human sacrifices each year."

MYTH 7 **My child had no short-term reaction to vaccination, so there is nothing to worry about**

TRUTH *The longterm adverse effects of vaccination have been virtually ignored, in spite of stronng correlations with many chronic conditions*

The documented longterm adverse effects of vaccines include chronic immunological and neurological disorders such as autism, hyperactivity, attention deficit disorders, dyslexia, allergies, cancer, and other conditions, many ofwhich barely existed 30 years ago before mass vaccination programmes. Vaccine components include known carcinogens such as thimersol, aluminum phosphate, and formaldehyde (the Poisons Information Centre in Australia claims there is no acceptable safe amount of formaldehyde which can be injected into a living human body). Medical historian, researcher and author Harris Coulter, PhD explained his expensive research revealed childhood immunisation to be "causing a low-grade encephalitis in infants on a much wider scale than public health authorities were willing to admit."

MYTH 8 **Vaccines are the only disease prevention option available**

TRUTH *Documented safe and effective alternatives to vaccination have been available for decades but suppressed by the medical establishment*

Most parents feel compelled to take some disease-preventing action for their children. While there is no guarantee anywhere, there are viable alternatives. Historically, homoeopathy has been more effective than allopathic mainstream medicine.

And since these remedies have no toxic components, they have no side effects. In addition, homeopathy has been effective in reversing some ofthe disability caused by vaccine reactions, as well as many other chronic conditions with which allopathic medicine has had little success.

From the Internet at:
http://www.livelinks.com/sumeria/health/myth2.html

भारत में प्रतिरक्षण कार्यक्रम की राष्ट्रीय समीक्षा

NATIONAL REVIEW OF IMMUNIZATION PROGRAMME IN INDIA

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Introduction

The Government of India through its National Health Policy has expressed its major concern for improving health of women and children.The National Immunisation Programme being implemented in this country is one such endeavour which has been accepted as priority programme in the policy in this direction. Dedicated to the memory of late Prime Minister Smt. Indira Gandhi, the Universal Immunisation Programme was launched in 1985 with accelerated efforts for universal coverage of immunisation for young children as well as to improve the quality of services. This programme has been included in one of the seven technology missions.

It is imperative that programmes of this nature which are implemented with clear objectives and specific time-bound goals and targets need be systematically reviewed to examine if the programme has been effective in achieving the set goals.

It is in this context that the Ministry of Health and Family Welfare decided to undertake a National Review of Immunisation Programme at the end of about a decade of its implementation. The National Institute of Health and Family Welfare was identified as the nodal institution and it was entrusted with the responsibility of undertaking this massive effort.

Objectives

1. To review the polices, strategies and plans of action for EPI/UIP at different levels of health administration i.e. Central, State and District levels.
2. To measure the progress in implementation of the EPI/UIP in relation to targets for acceleration of the programme, accessibility, coverage, mortality and morbidity reduction.
3. To identify the bottlenecks and constraints for the progress of the immunisation programme at different levels of programme implementation.
4. To make recommendations for overcoming the constraints and problems and thereby improving the implementation of the programme qualitatively and quantitatively including assessment of additional resources required for this

purpose.

The State was considered as a study unit in this review and all the 25 States were covered. In addition, for obtaining information on similar aspects related to the programme in urban areas, four major urban metropolitan areas viz. Madras, Bombay, Calcutta and Delhi were also included in the review. Thus, the total number of units studied was 29 i.e. 18 major States, seven small North Eastern States and four urban metropolitan areas.

The programme was viewed in its totality covering its different aspects in terms of programme inputs like policies, strategies and resources, the details of processes of programme implementation including operational strategies, management of different resources, etc., programme performance in terms of extent of coverage of beneficiary population and impact of the programme in terms of disease occurrence with reference to paralytic poliomyelitis and neonatal tetanus.

Methods of Data Collection

Various methods used for data collection were as follows:

i. Interview/discussions with programme officials and staff at Central, State, District, Primary Health Centre (PHC), subcentre and village levels.
ii. Study of records, reports, guidelines, instructions and other relevant documents.
iii. Observation of Immunisation activities, service premises, cold chain maintenance etc.
iv. Vaccination coverage survey using the 30 cluster sampling method among children aged 12-23 months and for pregnant women.
v. Conducting disease survey for lameness and neonatal tetanus.
vi. Interview with community members, leaders and representatives of non-governmental agencies.

Sampling Procedure

i. *For 18 Major States*

From each major State, Immunisation Programme operations and procedures were studied at the State headquarters and in two selected districts from each State. Immunisation coverage and disease surveys (lameness and neonatal tetanus) were conducted in these two districts.

Selection of Study Districts:For purpose of selection, in each State, the total districts covered under UIP were grouped into two categories viz.:

i. Those which were included under UIP during 1985-87, and
ii. Those covered during 1987-88.

From each group, one district each was chosen using the Probability Proportional to Population size Sampling (PPS).

ii. *For Seven Small North-Eastern States*

Operational details of Immunisation Programme were studied separately from each State headquarters and at least in one district and sub units viz. PHCs, subcentres, urban institutions etc. within this district in each State. For immunisation coverage and disease survey, all seven States were combined together as one unit, in which the districts covered under UIP in 1985-87 and 1987-88 were grouped separately and from each group, 30 clusters each were selected and studied.

iii. *For Urban Metropolitan Areas*

Two units of 30 clusters in each of metropolitan town were included in coverage evaluation and disease surveys.

From each district/study unit, apart from immunisation coverage evaluation and disease survey, operational details of the programme were studied from selected PHCs, subcentres, urban health facilities, sentinel centres, etc. through interviews with health functionaries and record study.

Manpower Involved in the Review

In order to collect information about various facets of the programme from 29 units (as indicated above), 29 expert teams were identified whose members included faculty from medical colleges and public health experts from various organisations. Each team consisted of a team convenor, three supervisors and team members whose number varied between 15 and 20.

About 20-30 paramedical personnel of the rank of Health Supervisors were deputed for each district for carrying out lameness and neonatal tetanus survey under the supervision of district team members. In order to ensure independent appraisal of the programme, officers and paramedical staff were selected from neighbouring States/districts.

Major Observations

Policy Aspects

Sense of urgency and commitment of national government is reflected from the fact that Immunisation Programme had been included in the 20 point programme and a technology mission for immunisation has been created to look after the various aspects of programme. Likewise, States have accepted to carry out the programme and formed technology missions to look after the same.

The policy decision has been to integrate immunisation programme with primary health care and immunisation services are to be provided through PHC and its subcentres. Support manpower and like health guides and anganwadi workers are expected to assist the heath workers in successful operation of the programme.

For enhancement of the performance under the programme and to enable the States to meet special requirements of the immunisation programme, Government of India provided 100% financial support to States for creation of posts of Cold Chain Officers and Technical Assistant at State level and District Immunisation Officer, Refrigerator Mechanic, Statistical Assistant, Stenographers and Drivers etc. at district level. In addition, the Central Government has also committed to provide vaccines, cold chain equipments, and other related supplies for effective implementation of the programme.

As a matter of policy, it has been already decided that all districts in the country would be included under UIP by 1990 in a phased manner.

Clear cut policies for implementing Immunisation Programme in urban areas were found to be almost non-existent.

Organisational and Operational Aspects

From the organisational and operational point of view, it was found that the programme was being implemented in an integrated manner involving almost all types of health facilities/institutions. However, at the district level, the District Immunisation Officer (DIO) who is expected to be responsible for the management of the programme had faced some problems like lack of adequate administrative authority, ambiguity regarding relationship with other district health officials etc.

Resource Availability

In the area of availability of various types of resources and their management for the programme, the main items considered in the review were infrastructure facilities, financial resources, material supplies like vaccines and equipments and health manpower.

1. Infrastructure Facilities

Being a programme which has been integrated functionally at the peripheral level, infrastructure facilities within the district could be a major influencing factor for the success of Immunisation Programme.

Relevant data in this regard about 42 districts covered during review are presented below:

1. Availability of subcentres

- No. of districts with subcentres as per expected norms	15 (35.7%)
- No. of districts with more no. of subcentres as per expected norms	4 (9.52%)
- No. of districts with less no. of subcentres as per expected norms	13 (30.95%)
- Information not available	10 (23.8%)
- (The percentage deficiency in subcentres in the study districts ranged between 10-40%)	

2. Availability of Female Worker at Subcentre

- % of subcentres with female staff residing either within area or in subcentre building	75.7%
- % of subcentres with female staff residing outside area	24.3%

3. Population Density in Study Districts

<100/sq.km.	7
(range 10-100)	
100-200	12
201-300	9
301 +	14
Total number of districts	42

4. Approachability

With the exception of Aizwal district, distance between farthest PHC and district headquarters required travel time upto eight hours.

In nine districts few PHCs/subcentres were cut off from the rest for few days to three months either during winter or rainy season.

5. Availability of Vehicle

All except four districts (Tura, Tripura, Bhiwani and West Nimar) had at least one vehicle exclusively for UIP at headquarters.

All Block PHCs within study districts had vehicles though generally in one district 1-4 vehicles of PHCs were off the road for want of repairs.

2. Manpower Resources

The Government of India provided 100% financial support for creation of certain posts like DIOs, Cold Chain Officers, Technical Assistants, etc. How-

ever, in many States either many of these posts were still vacant or the available personnel were not adequately trained.

All States had designated one official at State Directorate level to look after Immunisation Programme either exclusively or alongwith some other programme. Cold Chain Officers were in position in all States and urban cities except in Delhi and Assam.

With regard to staff position at district level in 42 study districts the number and percentage of districts where vacancies existed among the various categories of staff is as follows:

Category of Staff	Number and Percentage of Districts with Vacancy
DIO	9 (21.4%)
Refrigerator Mechanic	21 (50.0%)
Statistical Assistants	14 (35.7%)
Drivers	12 (28.5%)

Other staff categories like MOs, Health Assistants (F) and Health Worker (F) though were not exclusively posted for UIP were expected to play crucial role in Immunisation Programme. Their postion in study districts was as follows:

Table 1

Number of Districts with Percentage of Vacancies in Different Staff Categories

% Vacancy	Category of staff		
	MO	HA(F)	HW(F)
Nil	7	12	13
<10	7	7	9
10-20	9	6	8
21-30	5	3	3
31-40	3	1	2
41 +	5	7	1
No Information	6	6	6
Total no. of districts	42	42	42

Thus, to summarise:

i. MOs post vacancy was over 20% in 13/42 (30.9%) districts
ii. HA(F) post vacancy was over 20% in 11/42 (26.1%) districts
iii. HW(F) post vacancy was over 20% in 6/42 (14.2%) districts

3. Vaccines and Cold Chain System

With reference to vaccines, with the exception of polio vaccine, the country, could be considered to have achieved self-sufficiency in production of other vaccines. From the beginning of the current financial year 'Serum Institute of Pune' has gone into production of measle vaccine, hence there will be no need for its imports in future. Steps are being taken for expanding the production of BCG. OPV is still being imported. To meet requirement of vaccines UNICEF has given its full support in importing vaccines.

Cold chain system which is one of the mo t crucial elements of the programme for ensuring potency of vaccines has been strengthened considerably at all levels, though the situation regarding availability of such equipment and their maintenance in different States varied considerably.

Likewise, provision has been made for maintenance of cold chain equipments. Rate contract with suppliers in each State has been entered into. Task Force at each State has been set up to regularly review position of cold chain. Regular monitoring of cold chain equipment is expected to be done from different levels and every effort is made to ensure to remedy the fault immediately.

A contingent amount of Rs.2,000 has been sanctioned for each PHC for maintenance of cold chain equipment. It also covers the expenses for purchase of ice, kerosene oil, etc.

To ensure good quality of vaccine, officials at all levels are required to pick up samples of OPV and send them to different laboratories for potency testing. Number of laboratories have been identified and are equipped to carry out the potency tests.

Observations regarding various aspects of logistics and cold chain maintenance system at district headquarters and PHCs are shown below:

	District %	PHC %
1. The refrigerators and freezers in working order	97.6	81.5
2. There is a thermometer in all the refrigerators	88.0	73.0
3. The daily temperature record peroperly maintained in all the refrigerators	78.57	67.2
4. Irregular temperature recorded	71.0	16.4
5. There is thermometer in the ILR	97.6	74.1
6. Vaccine after expiry date found stock		3.7

7.	DPT or TT vaccine found frozen	2.4	4.8
8.	Open vaccine vials found in the stock		6.3
9.	Returned unopend vials are marked	76.1	49.2
10.	'First-in first out' principle is observed	86.1	68.8
11.	More than three months supply of vaccine present	11.9	15.3
12.	Less than one month supply of vaccine present	7.2	52.1
13.	Food or drinking water seen alongwith vaccines in the refrigerator	2.6	6.9
14.	Frozen ice packs available in the freezer compartment	96.0	61.9
15.	Vaccine stock register are maintained	97.6	85.2
16.	i. Stock book entries are made properly	90.0	79.4
	ii. Stock book entries are made regularly	90.0	80.4
	iii. Stock entries correspond to actual stock in hand	90.0	77.2

The area which needed special attention with regard to supplies of all kinds e.g. vaccines, cold chain equipments, syringes, needles, etc. was the distribution system ensuring their availability at peripheral/institutional levels like PHCs and subcentres.

Training of Health Personnel

Training of heath personnel of different categories in immunisation programme has become an ongoing programme in every State. Middle level managers are being trained at national level. Medical officers and paraprofessionals are being trained at district and Primary Health Centres respectively. Central Government is providing financial support to State Governments for training programmes. However, backlog in training, poor quality of training processes and inadequacy of training aids etc. were not uncommon.

Operational and Managerial Processes

During the review, operational and managerial processes regarding the programme like programme planning, supervision, monitoring and evaluation of the programme, information system involved and quality of services etc. were also covered.

i. *Planning Activities*

Detailed Action Plans worked out systematically were being used in most States, at different levels, though there was much scope for improvement in order to make them really operational.

Particulars about planning activities in different districts are shown below:

	No. of Districts
Action plans available	33 (78.5%)
District officilas involved actively in Action Plan Preparation	23 (54.7%)
Allocation of targets using specific population criteria	29 (69.04%)
Correct information used for estimating vaccine required	33 (78.5%)

ii. *Adhering to Scheduled Immunisation Sessions*

Out of 383 workers at subcentres, 54.2% stated to have experienced disruptions in immunisation sessions.

The proportion of workers stating different reasons for disruption is indicated below:

Table 2

Proportion of Heath Workers Expressing Various Reasons of Disruption of Vaccination Sessions

Reasons for Disruption	% Respondents
1. Shortage of vaccine/diluent	50.6
2. Called for other duties	37.3
3. Absence of workers	28.8
4. Lack of transport	23.2
5. Shortage of syringes	7.4
6. Shortage of needles	6.8

iii. Special Strategies

In 20 (46.5%) districts special strategies were being adopted to achieve immunisation coverage in inaccessible areas or in special population groups.

iv. Micro-planning in Immunisation

Further, it was encouraging to note that States have begun strategy of micro planning in a few districts to ensure more realistic planning with active involvement of health functionaries at all levels.

v. Monitoring

Similarly, monitoring of the programme at all levels has been strengthened through review of the various reports on performances as well as on situation regarding various resources i.e. availability, consumption etc. Even here in some States over-emphasis was found to be laid on programme performance alone without adequate attention to the quality of performance or other aspects of the programme.

vi. *Supervision*

Supervision, by and large, was found to be one of the weak areas in the programme management. Though supervisory visits were being conducted by officials in many States, they were more routine in nature with inadequate attention to documentation and follow-up of the observations made during such visits. Further, all aspects of the programme like resource availability and their consumption or use, quality of performance, disease surveillance, etc. were not adequately attended to in many States and districts while making supervisory visits. Regular meetings in all States held at different levels also helped in monitoring and supervision.

Further details about supervisory practices in the district are shown below:

	No. of Districts
Supervisory visits by offcials as per scheduled dates	17 (40.4%)
Checking cold chain, vaccine stocks and performance records during visits	20 (47.6%)
Checking disease surveillance also during visit	14 (33.3%)
Visit observations recorded	11 (26.19%
Monthly meeting records maintained	32 (76.19%)
Reports on complications and adverse reactions at district	38 (90.4%)
District officials satisfied with health workers performance	24 (57.1%)

Use of supervisory check-list practically did not exist in any districts

The average number of supervisory visits per month by district officials to peripheral institutions was four which ranged between 1-10.

Immunisation Coverage

One of the major observations made during the review was related to the immunisation performance and the coverage of beneficiary population.

a. Fully Immunised Children

The distribution of study districts/units (43) and their names by immunisation status of children i.e. completely protected is presented in Table 3, 4 and 5.

Without measles, only 20 districts achieved more than 50% coverage.

With measles this number was brought down to only Two. No district had achieved 85% coverage of immunisation.

Table 3

Distribution of Districts/Units According to Percentaage of Fully Immunised Children

Percentage	Without Measles	With Measles
< 25	9	16 (2 urban)
26-50	14 (2 urban)	25 (5 urban)
51-75	16 (4 urban)	2 (1 urban)
76-85	4 (2 urban)	-
86 +	-	-
Total	43*	43

* 35 districts + 8 urban units = 43

Table 4

Distribution of Districts /Units According to Percentage of Fully Immunised Children (with measles)

% Coverage	Number	Name of Districts
< 25	16	Cuddapah, Warangal, Nowgaon, Katihar, Singhbhum, Bijapur, Nanded, Ganjam, Bharatpur, Jhalawar, South Arcot, Kanpur Dehat, Burdwan, Murshidabad, Calcutta (District I), Calcutta (District II)
26-50	25	Dibrugarh, Panchmahal, Rajkot, Bhiwani, Hissar, Bilaspur, Shimla, Anantnag, Quilon, Kasargode, Badgam, Tumkur, West Nimar, Mandla, Pune, Sambalpur, Sangrur, Coimbatore, Patiala, Meerut, Bombay (District A), Bombay (District B), Delhi-B, Madras (North), Madras (South)
51-75	2	North Goa, Delhi-A
76-85	Nil	
86 +	Nil	

Table 5

Distribution of Districts /Units According to Percentage of Fully Immunised Children (without measles)

% Coverage	Number	Name of Districts/units
< 25	9	Cuddaph, Katihar, Bijapur, Warangal, Bharatpur, Nowgaon, Singhbhum, Kanpur Dehat, Murshidabad
26-50	14	Dibrugarh, West Nimar, Nanded, Ganjam, Patiala, Meerut, Burdwan, Hissar, Mandla, Sambalpur, Jhalawar, South Arcot, Calcultta I and Calcutta II
51-75	16	Panchmahal, Rajkot, Bhiwani, Shimla, Bilaspur, Anantnag, Coimbatore, Badgam, Kasargode, Tumkur, Pune, Sangrur, Bombay (A)
76-85	4	North Goa, Quilon, Bombay (B), Delhi (Urban), Delhi (Rural)
86 +	Nil	

b) Immunisation Coverage for Different Groups of Vaccines

Distribution of districts/units according to immunisation coverage for

individual groups of vaccines is shown in Table 6.

Table 6

Districts/Units Showing Coverage of Four Different Groups of Vaccines

	No. of Districts			
% Coverage	DPTs	OPVs	BCG	Measles
< 25	2	2	4	11
26-50	5	6	10	21
51-75	25 (3 urban)	24	21 (2 urban)	11
76-85	6 (3 urban)	6	5 (4 urban)	-
86 +	5 (2 urban)	5	3 (2 urban)	-
Total	43	43	43	43

Out of 43 districts/units 36 (83.72%) achieved over 50% coverage for DPT3.
Out of 43 districts/units 35 (81.3%) achieved over 50% coverage for OPV3.
Out of 43 districts/units 29 (67.4%) achieved over 50% coverage for BCG.
Out of 43 districts/units 11 (25.5%) achieved over 50% coverage for measles.

c. Dropout Rates for DPT (1-3) and OPV (1-3)

Distribution of districts and urban units according to dropout rates for DPT (1-3) and OPV (1-3) is shown in Table 7. Out of 43 districts/units, 14 (32.5%) had reported dropout rate of over 20% for DPT (1-3). Out of 35 districts, 18 (51.42%) had reported dropout rate of over 20% for OPV (1-3).

Table 7

Dropout Rates for DPT (1-3) and OPV (1-3) in Districts and Urban Units

% Dropout	Number of Districts	
	DPT	OPV
<10	13	7
11-20	16	10
21-30	8	11
30+	4	6
Data not available	2	1
Total	43	35*

* Excludes urban units.

Table 4

Distribution of Districts /Units According to Percentage of Fully Immunised Children (with measles)

% Coverage	Number	Name of Districts
< 25	16	Cuddapah, Warangal, Nowgaon, Katihar, Singhbhum, Bijapur, Nanded, Ganjam, Bharatpur, Jhalawar, South Arcot, Kanpur Dehat, Burdwan, Murshidabad, Calcutta (District I), Calcutta (District II)
26-50	25	Dibrugarh, Panchmahal, Rajkot, Bhiwani, Hissar, Bilaspur, Shimla, Anantnag, Quilon, Kasargode, Badgam, Tumkur, West Nimar, Mandla, Pune, Sambalpur, Sangrur, Coimbatore, Patiala, Meerut, Bombay (District A), Bombay (District B), Delhi-B, Madras (North), Madras (South)
51-75	2	North Goa, Delhi-A
76-85	Nil	
86 +	Nil	

Table 5

Distribution of Districts /Units According to Percentage of Fully Immunised Children (without measles)

% Coverage	Number	Name of Districts/units
< 25	9	Cuddaph, Katihar, Bijapur, Warangal, Bharatpur, Nowgaon, Singhbhum, Kanpur Dehat, Murshidabad
26-50	14	Dibrugarh, West Nimar, Nanded, Ganjam, Patiala, Meerut, Burdwan, Hissar, Mandla, Sambalpur, Jhalawar, South Arcot, Calcultta I and Calcutta II
51-75	16	Panchmahal, Rajkot, Bhiwani, Shimla, Bilaspur, Anantnag, Coimbatore, Badgam, Kasargode, Tumkur, Pune, Sangrur, Bombay (A)
76-85	4	North Goa, Quilon, Bombay (B), Delhi (Urban), Delhi (Rural)
86 +	Nil	

b) Immunisation Coverage for Different Groups of Vaccines

Distribution of districts/units according to immunisation coverage for individual groups of vaccines is shown in Table 6.

Table 6

Districts/Units Showing Coverage of Four Different Groups of Vaccines

	No. of Districts			
% Coverage	DPTs	OPVs	BCG	Measles
< 25	2	2	4	11
26-50	5	6	10	21
51-75	25 (3 urban)	24	21 (2 urban)	11
76-85	6 (3 urban)	6	5 (4 urban)	-
86 +	5 (2 urban)	5	3 (2 urban)	-
Total	43	43	43	43

Out of 43 districts/units 36 (83.72%) achieved over 50% coverage for DPT3.
Out of 43 districts/units 35 (81.3%) achieved over 50% coverage for OPV3.
Out of 43 districts/units 29 (67.4%) achieved over 50% coverage for BCG.
Out of 43 districts/units 11 (25.5%) achieved over 50% coverage for measles.

c. Dropout Rates for DPT (1-3) and OPV (1-3)

Distribution of districts and urban units according to dropout rates for DPT (1-3) and OPV (1-3) is shown in Table 7. Out of 43 districts/units, 14 (32.5%) had reported dropout rate of over 20% for DPT (1-3). Out of 35 districts, 18 (51.42%) had reported dropout rate of over 20% for OPV (1-3).

Table 7

Dropout Rates for DPT (1-3) and OPV (1-3) in Districts and Urban Units

% Dropout	Number of Districts	
	DPT	OPV
<10	13	7
11-20	16	10
21-30	8	11
30+	4	6
Data not available	2	1
Total	43	35*

* Excludes urban units.

Names of districts and urban units according to dropout rates for Polio (1-3) is shown in Table 8.

Table 8

Dropout Rates for Polio 1-3 in Districts/Urban Units

%Coverage	Number	Name of Districts/Units
< 10	7	North Goa, Panchmahal, Bhiwani, Quilon, Pune, Sangrur, Madras (South)
11-20	18	Dibrugarh, Rajkot, Hissar, Bilaspur, Badgam, Kasargode, Tumkur, Mandla, Ganjam, Sambalpur, Coimbatore, Calcutta (District-I), Calcutta (District-II), Bombay (District A), Bombay (District-B), Delhi-B, Madras (North), Madras (South).
21-30	11	Cuddapah, Warangal, Shimla, Anantnag, Patiala, Jhalawar, South Arcot, Meerut, Burdwan, Murshidabad, Delhi-A
31+	6	Nowgaon, Katihar, Singhbhum, Nanded, Kanpur Dehat, Bharatpur
Data not available	1	West Nimar

Name of districts and urban units according to dropout rates for DPT (1-3) is shown in Table 9.

Table 9

Drop out Rates for DPT (1-3) and /Urban Units in Districts

Dropout rates	Number	Name of Districts/Units
< 10	13	North Goa, Panchmahal, Bhiwani, Bilaspur, Quilon, Pune, Sambalpur, Sangrur, Calcutta-I, Bombay A, Bombay B, Madras (North), Madras (South)
11-20	16	Cuddapah, Dibrugarh, Nowgaon, Rajkot, Hissar, Shimla, Badgam, Kasargode, Bijapur, Tumkur, Mandla, Ganjam, Coimbatore, Calcutta-II, Delhi (urban), Delhi (rural)
21-30	8	Warangal, Anantnag, Nanded, Patiala, Jhalawar, South Arcot, Meerut, Burdwan.
30 +	4	Kanpur Dehat, Bharatpur, Katihar, Singhbhum
Data not available	2	Murshidabad, West Nimar

d. TT Coverage for Pregnant Women

Distribution of districts/urban units according to TT immunisation status of pregnant women is shown in Table 10. Out of 43 districts/units, 35 (81.4%) achieved over 50% coverage for TT. Of these 11 had achieved more than 85% coverage.

Table 10

Distribution of Districts/Units by % Coverage of Tetanus Toxoid Two doses/Booster to Pregnant Women

% Coverage	No. of Units
< 25	1
26-50	7
51-75	17
76-85	7
86 +	11
Total	43

e. Vaccination Coverage in North-Eastern States

Status of immunisation coverage among infants and pregnant women in North-Eastern States is shown in Table 11.

Table 11

Vaccination Coverage in North-Eastern States

Immunisation Status	Proportion of eligibles protected in districts by year of initiation of UIP	
	1985-87	1987-88
Fully Immunised	30.9%	21.02%
DPT	56.8%	44.3%
OPV	49.7%	44.8%
BCG	51.1%	29.9%
Measles	36.6%	20.0%
TT II Pregnant women	59.9%	49.5%

Percentage of coverage for all groups of vaccines was higher in the group of districts where UIP was initiated in 1985-87 as compared to the group of districts taken up in 1987-88.

f. Reasons for Failure of Immunisation

Reasons for failure of immunisation as reported by mothers in study districts/units are shown in Table 12.

Table 12

Distribution of Districts/Urban Units by Different Reasons for Failure of Immunisation.

(a) Lack of Information

Causes	Number of units reporting with % range	Number of units reporting more than 25 per cent
Unaware of need	40 (18.99-52.66)	32
		Number of units reporting more than 15 percent
Unaware of need to return	32 (0.5-27.1)	4
Place and time unknown	34 (0.92-26.5)	2
Fear of side reactions	33 (0.6-30)	3
Wrong ideas about contra-indications	18 (0.95-8.8)	Nil

(b) Obstacles

Causes	Number of units reporting with % range	Number of units reporting more than15 per cent
Place too far to go	26 (0.5-48.9)	3
Time of immunisation inconvenient	23 (0.8-13.33)	Nil
Vaccinator absent	27 (0.8-23.33)	6
Vaccine not available	31 (0.5-23.2)	4
Mothers too busy	32 (2.6-19.2)	4
Child ill not brought	32 (1.8-32.0)	6

(c) Lack of Motivation

Causes	Number of units reporting with % range	Number of units reporting more than 15 per cent
Postponed till another time	31 (10-24.1)	6
No faith in immunisation	33 (0.5-28.5)	3
Rumours	18 (0.5-12.6)	Nil

Results of Observation of Immunisation Sessions

Immunisation sessions held at subcentres and outreach were observed for selected quality aspects and findings are presented in Table 13.

Table 13

Results of Observation of Immunisation Sessions

Specified Conditions Satisfied	Proportion of sessions	
	Subcentre	Outreach
1. Immunisation services integrated with other MCH activities	84.6	76.6
2. Immunisation cards filled correctly	80.5	70.2
3. Immunisation cards given to the mothers	81.3	60.4
4. Age screening done correctly	88.6	82.0
5. Following immunisations are being given		
DPT	97.2	97.0
OPV	94.4	94.0
BCG	77.6	83.8
TT	94.3	90.
Measles	84.1	83.8
6. Vaccines within expiry date	78.8	-
7. Vaccine kept on ice at the time of immunisation	83.9	80.0
8. Diluent also kept in the vaccine carrier	86.0	85.0
9. The dosage correct	98.2	94.0
10. Immunisation site correct	94.6	92.2
11. Immunisation technique correct	92.9	88.0
12. Number of syringes and needles adequate, in proportion to the required number of vaccinations to be given.	70.5	70.0
13. Separate syringe and needle used for each immunisation	73.0	75.6
14. Adequate number of frozen ice packs in vaccine carriers	79.1	72.7
15. Partially used vials discarded at the end of the session	87.0	83.1
16. Mothers properly informed about:		
-Purpose of immunisation	87.0	77.1
-Number of doses	94.0	88.8
-Right age for immunisation	86.2	80.8
-Possibility of side effects	88.6	78.5
-When to come back for next dose	93.1	90.4
-Safe keeping of immunisation card	82.8	74.4

Disease Surveillance

Disease surveillance was another component of the programme examined during the review. By and large, the surveillance system was found to be poor in most States even through the sentinel centres. Problems related to poor training of staff involved, inadequate attention to record maintenance, insufficient attention to investigation of reported diseases or outbreaks were common in many States.

Special disease surveys for poliomyelitis and neonatal tetanus were conducted under the national review. In a total of 4,23,201 children below five years surveyed for lameness, 1,149 were found to be lame due to paralytic polio and after applying the correction factors for paralysis of upper limbs, migration and death the prevalence rate came to 4.5 per 1000 children below five years. Wide variation was seen in prevalence of lameness due to polio in different study districts ranging between 0.372 per 1000 in Dibrugarh in Assam and 1[illegible]per 1000 children under five years in Kanpur Dehat in U.P. (Table 14 and 15). One important observation was that about 20-30% of children suffering from poliomyelitis were reported to be immunised against polio.

Table 14

Distribution of Districts/Urban Units According to Prevalence Rate of Paralytic Poliomyelitis

Prevalence/1000 children under five years	No. of Districts
<1	6
2	6
3	8
4	2
5	5
5+	15
Data not available	1
Total districts/units	43

Table 15

Distribution of Districts/Urban Units According to Prevalence Rate of Paralytic Poliomyelitis

Prevalence rate of Polio	Number	Name of Districts
<1	6	Dibrugarh, North Goa, Shimla, Pune, Bombay A, Madras (South)
2	6	Nowgaon, Quilon, Kasargode, Bijapur, Nanded, Calcutta-II
3	8	Singhbhum, Rajkot, Bhiwani, Sambalpur, Murshidabad, Calcutta-II, Delhi (urban), Coimbatore
4	2	Mandla, Madras (North)
5	5	Cuddapah, Panchmahal, Patiala, Bombay-B, Delhi (rural)
5+	15	Tumkur, West Nimar, Sangrur, Katihar, Hissar, Badgam, Warangal, Anantnag, Bijapur, Ganjam, Bharatpur, Jhalwar, South Arcot, Meerut, Kanpur Dehat
Data not available	1	Burdwan

As regards neonatal tetanus mortality, in as many as 16 units studied the mortality rate was less than one per1000 live births and infact in eight units no case of neonatal tetanus was reported. The highest rate of 23.72 per 1000 live births was reported from Kanpur Dehat (Table 16 and 17).

Table 16

Distribution of Districts/Urban Units According to NNT Mortality Rates

NNT Mortality rate 1000 Live Births	No. of Districts/Units
0	8
<1	10
1-2	5
2-3	3
3-5	5
5-10	8
10+	2
Data not available	2
Total	43

Table 17

Distribution of Districts/Urban Units According to NNT Morality Rates

NNT Mortality Rate per 1000 Live Births	Number	Name of Districts
0	8	North Goa, Quilon, Kasargode, Punc, Coimbatore, Calcuttta-II, Madras North, Madras (South)
<1	10	Warangal, Rajkot, Bijapur, Shimla, Tumkur, Mandla, Patiala, Sangrur, Calcutta-I, Bombay-B
1-2	5	Cuddapah, Nowgaon, Bijapur, Delhi (urban), Delhi (rural)
2-3	3	Ganjam, Sambhalpur, South Arcot
3-5	5	Murshidabad, Bombay-A, Dibrugarh, Bhiwani, Hissar
5-10	8	Katihar, Singhbhum, Panchmahal, Anantnag, Badgam, West Nimar, Bharatpur, Meerut
10+	2	Jhalawar, Kanpur Dehat
Data not available	2	Burdwan, Nanded

Another important observation made during the review was the existing level of involvement of non-governmental agencies in the programme. While in some States they were participating actively in the programme, the need for expanding efforts for utilising this potential support in future was clearly brought out. Among the Govermental agencies also, need for expanding the role and involvement of the medical colleges, ICDS and Central Government agencies with better coordination for success of the programme was highlighted during the review.

In the light of various observations made during the review and considering the urgency of achieving the targets set for the programme, a number of recommendations have been made. While alongwith individual State Review Report, State specific recommendations have been given, in the national report recommendations of more general nature indicating action at national level are included. Details are shown in succeeding pages.

PROBLEMS

Policies

Inspite of the fact that National Government is fully committed to the goal of providing immunisation to all the target population, within stipulated timeframe, it appears that the urgency of the programme is not understood at all levels of the health system. Consequently sense of commitment is lacking.

It would be pertinent to seek answer as to how the districts covered under UIP in various years in phased manner could reach the same coverage level by 1990 because districts included in the earlier period can be assumed to have the obvious advantage over those included later in terms of various resource inputs.

A major deficiency in terms of lack of clearcut policies regarding implementation of immunisation in urban areas was observed.

RECOMMENDATIONS

Policies

It may be considered worth while to request Prime Minister to address a communique to all Chief Ministers of States reiterating goals of UIP and seeking their full and wholehearted support. They may be further requested to assume responsibility to ensure that all pregnant women and eligible children in their States are protected.

It is recommended to reconsider the dates of achievements of the set goals.

Role of Panchayat vis-a-vis health programme should be redefined. More meaningful involvement of Panchayats will not only boost the programme but ensure universal coverage.

It is recommended that there should be clear policies related to implementation of immunisation programme in urban areas in terms of joint planning, resource allocation, demarcation of area/population responsibility between State health administration, urban local self-Government etc.

Instead of generalised approach to cover total urban area, it would be appropriate to identify priority areas based on load of disease, chances of transmission of diseases, poor living condition, poor sanitation and socio-economically handicapped areas for special efforts for complete coverage.

Sustainability

The Immunisation Programme will have to be continued to maintain the coverage level of 22 million pregnant women and 18.5 million year after year. The States generally accept the programme so long as the 100% financial support from Central Government is available. As soon as this support is withdrawn the States find it difficult to bear the burden of the programme.

UIP as a Component of MCH Services

UIP is viewed in isolation from other components of MCH services.

Programme Planning

Though plans of action are prepared, generally they are target oriented, and percolate from top to bottom, hence these fail to generate enthusiastic responses from peripheral levels.

Sustainability

Central Government, before suspending the 100% support, should ensure that the State Government are fully prepared to assume responsibility to run the programme on their own. In the absence of such preparedness it may not be a surprise to find that programme has been pushed to back seat.

UIP as a Component of MCH Services

UIP needs to be developed as a part of larger MCH programme. The service for infants (contacts with health functionaries as well as support system) need to include measures for control of D-Diarrhoeal disease (DD), Acute respiratory infections (ARI), parasitic infections, anaemia and Vitamin A deficiency, etc. Similarly, for mothers, services should include measures for birth spacing, safe motherhood and control of anaemia. For this to be operationalised the technical MCH wings at national and State levels need to be considerably augmented.

Programme Planning

It is recommended that micro-planning process should be initiated at subcentre and PHC levels in each district. This would help in mobilising resources, identifying and enumerating eligibles, organising ses-

Strategy

While formulating operational strategies for immunisation, not much consideration is given to difficult areas or areas adversely affected by floods, landslide or adverse climatic factors and difficult terrain. Similarly, not much attention is given to the specific groups of population like tribals or migrants.

Generally, same operational strategy is followed for good performing and poorly performing districts.

sion and followup of dropouts. Involvement of grassroot level workers will make them responsible and accountable to achieve what they have planned. Sense of participation will also boost the morale of workers.

Advance scheduling of immunisation sessions on a fixed day which is publicly known to staff and community is important.

Strategy

Alternative approaches to cover remote areas, difficult areas and special groups of population should be searched - these could include mobile teams, intensified, campaigns etc. Area specific operational strategies should be determined in consultation with officials. Additional facilities for mobility during limited periods in which teams will be working should be provided. For flood affected or water-logged areas boat squads may be provided for running immunisation sessions. States should be given flexibility to decide on strategies suited to local situations.

Provision should be made for meeting the extra expenditure to be incurred for organising special campaigns, intensified drives, and special squads, so that the health budget of States is not affected.

Districts or regions performing poorly should be identified and intensified programme should be carried out in such districts with appropriate measures to overcome the bottlenecks and hurdles.

While allocating the area of work to the health personnel only population is taken into consideration which has its own drawbacks because of the low density of population and difficult terrain etc. in some States.

It is recommended that while allocating the area to workers, population should not be the only criterion but socio-geographical and communication factors should also be taken into consideration, so that the workers are able to reach the beneficiaries.

During coverage evaluation it was observed that in couple of districts children even below the age of three months had been affected with paralytic poliomyelitis.

It is recommended that in the event of such situation, immunisation for poliomyelitis should be taken immediately after the birth and completed before completion of three months of age. This will of course necessitate more contacts because poliomyelitis vaccination will have to be given separately and not alongwith the DPT. Government has therefore, taken policy decision to change immunisation schedule to initiate the same as early as possible ie. OPV at birth, DPT and OPV at 6, 10 and 14 week. BCG is to be combined with any of these.

It was reported that in some States immunisation sessions were not held on scheduled days or were cancelled often without prior intimation to the community. Credibility of functionaries get adversely affected in such situations.

Immunisation session at all levels should be held on fixed day. It will help people to remember the due day for subsequent dose and reduce dropouts. Except for reasons beyond control, sessions should not be cancelled.

Stencils as in malaria indicating schedule of sessions at PHC should be an annual feature. This should be monitored in terms of number of sessions held (as percentage) against the scheduled.

Villages at a distance from subcentre are visited less frequently.

Reasons for not holding sessions should be enquired into, so that action can be initiated (Panchayat should be made responsible for doing this).

In villages at a distance from subcentre, MPW(M) should be assigned the responsibility to give vaccination on fixed day at fixed place, as far as possible, e.g. Anganwadi or place identified by HG for holding the sessions.

Organisation and Infrastructure

The role relationship between the Mission on immunisation and DGHS at the central level in total immunisation programme is unclear particularly since all districts have been brought under UIP since beginning of 1989-90. Problems are likely to arise in relation to the following:

i. Coverage and monitoring of booster doses for DPT and Polio vaccines.
ii. Coverage with complete immunisation for those children who could not be protected under one year of age.
iii. Immunisation of older group of children for DT, TT etc.

Health facilities have expanded but not become fully operational in many States for want of staff, equipment etc.

Organisation and Infrastructure

At the central level there is need to specify the roles and inter-relationship of the EPI Wing of the DGHS and the Immunisation Mission in the Ministry of Health and Family Welfare mainly concerned with UIP. This is particularly important since the immunisation programme is a continued programme which is to be sustained for many more years.

Being technical programme, technical support at centre should be strengthened.

Norms for supply should be revised for institutions including new PHCs and urban institutions. State government should ensure adequate staff, transport facilities and equipments including cold chain equipments and other supplies for immunisation. Areas of newly created PHC should be demarcated and subcentre should be attached to these health centres. In this regard, measures initiated at Central Government level need to be specially implemented.

Posts of Cold Chain Officer, DIO, Refrigerator Mechanics, Statistical Assistants and Drivers were found to be vacant in many States. In couple of States these positions had not yet been created.

Posts of Cold Chain Officer, DIO, Refrigerator Mechanics and Drivers should be filled up without delay. Wherever posts have not been sanctioned the steps should be taken to create and fill these up.

It is also recommended that job responsibilities of these categories of staff be defined so that they function effectively.

Similarly, large number of posts of Medical Officers, Health assistant (F), MPW (F) are lying vacant. In some States the vacancies are more than 30%.

DIOs should not be part-time officials and adequate administrative authority should be given to them.

Vacant posts of medical officers, HA(F) and MPW(F) should be immediately filled as they are the key functionaries, not only for immunsation but also for providing health care with special focus on mothers and children.

At PHC even when accommodation is available and all other facilities exist, MOs and other staff stay outside the area and commute everyday from their residence to place of work. Such practices are totally unjustified.

Such situation should be seriously viewed. Effort to study reasons for such practices be made and prompt action be taken to prevent such situations.

Lack of motivation with no sense of commitment and gradually increasing culture of no work among health manpower was reported from

Minor but easily soluble personnel management issues like delay in payment of salary, TA/DA, sanctioning of leave etc. should be immedi-

every Sta... district under review.

Thougi... of DIO have been created and ... have been posted, yet most of ... do not have adequate administrative or financial powers. For ... thing they have to depend upo... DIO. Therefore, they find themse... be ineffective or not able to g... ired results. More over in the a... of administrative authority the ... felt uneasy about their relation... with MOs of PHCs.

In some ... medical officers who are work... as clinical paediatricians in ho... signed respo... als have been assequently with... y of DIOs. Con they are not a... of clinical work, immunisation ... do any justice to the programme.

Frequent ... sfers and large staff-poses ano... icularly of trained to successful i... serious problem ... mentation of the programme.

ately looked into and sorted out. Awards, appreciation and recognition of good work should go a long way in boosting the morale of workers/staff. As a long-term measure, serious efforts should be made for human resource development through a well defined national manpower development policy including opportunities for career development and continuing education.

Any responsibility without authority makes a bad manager. Therefore to make them more effective, their specific roles, administrative authorities, and financial relationship with other officials need to be clearly spelt out.

The tendency of officers holding additional charges of immunisation should be discouraged as far as possible.

Posting of medical officers working as clinical paediatricians in hospitals as DIO should be discontinued. Wherever such arrangements exist, they should be remedied by posting full time DIO.

Only under very exceptional circumstances the staff should be transferred. Moreover the trained staff should be allowed to continue to work for a reasonable time, so as to reap the benefits of their training. However, it is important to orient everyone as far as possible through massive training.

In some States, the areas/zones in the districts have been allocated to district officials on geographical basis for supervision of all health programmes. Even with such arrangements officers continue to be identified as individual programme officer, and many tend to lay more stress on their own programme and pay less stress on others during supervision and monitoring. Creation of the post of DIOs, however brings in the concept of verticality and make his role ambiguous under such circumstances.

The HG and AWW were to play key role as agent for change and assist in providing services. In pursuance to Government of India's decision that only females may be employed as HG, the institution of HG has become more or less non-operative in many States.

Supplies

System of supply of vaccines by push system without taking into consideration the actual quantity of vaccine consumed and the stock available at State or district headquarters has resulted in excess stock of vaccines in a few places.

It is accepted generally that the most effective organisational set up at the district would be where the implementation of different programmes can be undertaken in an integrated manner based on area wide responsibilities rather than on vertical programme basis. Therefore instead of labelling officers as specific programme officer. they should be identified as area officers and held responsible to look after all activities in their allocated area. Working in a small area will not only ensure better supervision but will also reduce the burden of medical officer of PHC to be answerable to several programme officers.

The State may be clearly informed about the decision regarding continuance of the HG scheme and if it is to be continued it should be seen that it is carried out both in letter and spirit. It will also be necessary to reconsider the amount of honorarium paid to HG.

Supplies

Vaccine should be supplied only on monthly basis instead of quarterly. This is important because if for any reason one batch of vaccine is found unsatisfactory, only small quantity of vaccine would be required to be destroyed. Utilisation of vaccine should also be taken into account while deciding quantities to be supplied. Supplies should be made by indenting system instead of

Cold chain equipment and other supplies related to immunisation programme were found in short supply in many places either due to delay in despatch or failure in distribution by the State to districts and from district to other peripheral institutions.

The workers were found to use thermocole boxes to carry vaccines in the field. They prefer to use them because they are lighter in weight and easy to carry. However, they are not adequate because ice melts very soon in such boxes, hence, it is difficult to maintain appropriate temperature.

In some districts electric supply is very erratic. Some times power is not available for number of days. In some areas there is no electric supply.

In areas like Leh, Kargil, Lahaul and Spiti where temperature goes below 0°C. 'T' group of vaccines gets frozen.

Cold Chain Maintenance

During transit, many a time either due to delay/cancellation of flights or delay in receipt of information about despatch of vaccine, number of days elapse between date of despatch and actual receipt of vaccine by consignee. Many airports at holding or consignees end have no cold storage facility. Consequently optimal temperature for keeping vaccine

push system.

Apart from ensuring availability of adequate quantum of supplies at district level, special care needs to be taken to arrange for proper and timely distribution of the same to the peripheral institutions upto the subcentre level.

Thermocole boxes used by MPW should be withdrawn. They should be compelled to use either vaccine carrier or day carrier with required number of frozen ice packs. This is necessary to ensure safe transit of vaccines from PHC to subcentre and outreach villages.

Feasibility of supplying solar refrigerator or kerosene/battery operated refrigerator be explored for areas where there is no power, or electric supply is very erratic.

In areas like Leh, Kargil, Lahaul and Spiti where temperature goes much below 0°C, equipment to protect 'T' group of vaccines from extreme cold should be provided.

Cold Chain Maintenance

At all airports particularly at Calcutta and in North-Eastern sector cold chain facilities should be immediately provided so that in event of delay, vaccine can be stored under optimal temperature. Specific strategy for supply of vaccine to North-Eastern States should be evolved, so that vaccine reaches in time and safely.

safe is not maintained.

Gradually number of private practitioners involved in giving immunisation to their clients is multiplying. Large number of them purchase vaccines from chemists and druggists shop.

Monitoring of Vaccine Quality

Number of samples lifted from most of the States were grossly inadequate. In the absence of laboratory facilities within the State, it was found too cumbersome to send vaccines through couriers from every district to the allocated laboratory. There was significant time lag between despatch of sample and receipt of results.

After collection of sample, the remaining vaccine is generally being consumed without waiting for results. There is no mechanism to reach those children who have already been immunised with the batch of vaccine which was later found to be unsatisfactory.

It should be ensured that shop keepers who sell vaccines keep them in optimal conditions. Drug inspectors should periodically inspect the facilities available for keeping vaccines and should regularly get samples of vaccine tested for potency.

An orientation programme for private practitioners and chemists and druggists may be organised to familiarise them regarding requirements for maintenance of cold chain.

Monitoring of Vaccine Quality

To ensure the quality of vaccine clear cut instructions should be issued for lifting the minimum number of samples at different levels in each State. Facilities should be provided in each State for testing the OPV so as to avoid problem in sending them and preventing time lag. Number of laboratories should also be increased in phased manner.

Coloured monitors should be standardised for checking quality of vaccine. This will reduce the requirement of vaccine samples being sent for potency test.

Nearly 30-40% of OPV samples have been found unsatisfactory. Therefore utilisation of vaccine should be cycled in such a way that no incoming vaccine is utilised before its potency has been tested. It should be arranged that results are available within a fortnight. If

Officials from national level to district level during their visits have found vaccine being kept at temperatures detrimental to quality of vaccine. Sometimes vaccine has been found to be kept in unsatisfactory conditions for number of days. Yet, generally excepting censuring the defaulting officials no one issues instructions not to use such vaccine or see that it is destroyed in their presence. Such a compromising attitude raises questions about validity of maintenance of temperature.

Many a times it has been observed that opened/used vials are reused both in government institutions and by private practitioners.

Training

There is a backlog in training of personnel at all levels.

samples of vaccine are found unsatisfactory, whole lot should be destroyed. This will obviate the chances of vaccinating children with unsatisfactory vaccine.

Whenever a vaccine is found to be kept improperly or not under optimal temperatures, visiting officials should immediately disallow the use of vaccine, and get it destroyed. Alternatively samples from such lot should be got examined before allowing use of such vaccine. Defaulting officials should be held responsible for such neglect.

Fact of such observations and actions should be widely circulated so as to keep others alert. Such matters may be released to press, it will increase the credibility of programme and sincerity of efforts for giving good quality of vaccines.

It is recommended that manufacturers should be persuaded to manufacture small dose vials preferably single dose. If it is not feasible no vial should be of more than five doses. Manufacturing single dose vials may be expensive, but in long run it will be cost effective for two reasons:

1. It will prevent wastage.
2. It will ensure that no child is vaccinated from open or used vials.

Training

Training programme should be accelerated to meet requirement of

Assessment of knowledge and skills among workers indicated inadequacies which may be due to inadequacy of training or lack of updating of knowledge.

In training provided to different categories of workers, component related to IEC for demand generation is missing.

Middle level managers and PHC doctors have to play role of trainers. Training imparted to them at national level does not prepare them as trainers.

Training requires a team of trainers. This concept has not been appreciated and no provision exists to train team of trainers.

DIO and MO (PHC) have to attend various administrative, responsibilities, and field supervision. Besides, MO (PHCs) are also involved in clinical work. It is therefore difficult for them to find adequate time for organising or imparting training to heath personnel.

training to update the backlog as well as to train personnel in the new districts taken up for UIP. All MOs (and not only the MO I/C) at PHCs are to be trained as per the new policy.

Refresher training courses of short duration may be organised to update knowledge and skills of the workers. Monthly meeting provides opportunity for this.

The component of IEC should be incorporated in the training schedule of different category of health personnel with special emphasis on communication skills.

At national level instead of training of middle level managers it would be appropriate to train a team of trainers drawn from each State. A team may consist of teachers from medical colleges, HFWTCs, nursing colleges and health administrators etc. The State level team will be responsible for training of middle level managers and medical officers of PHCs in the State.

Till such decisions on team training is taken, there is need to incorporate 'Training Component' in the existing DIO's training curriculum.

It is recommended that a district training team may be formed comprising of a senior medical officer, block extension educator and senior paramedical assistant drawn from various programmes. Member of district training team can also be trained by the State level team.

District training team will be re-

Doctors working in district hospitals, post partum centres and various health organisations in urban areas are not being trained.

Supervision

Supervision at all levels is one of the most neglected management functions. Supervisory visits are generally unplanned and unscheduled, without making any reports of the visit or informing the PHC/ subcentre area where improvement is needed. No effort is made to ensure

sponsible for training of all paraprofessionals for both orientation training to new entrants and refresher courses.

Teaching aids including audio-visuals in local languages may be provided to State and district training teams.

It will be appropriate to develop curriculum for trainers at national level. Curriculum should incorporate the requirement of training of different levels of functionaries. State and district teams should have the freedom to modify them according to their needs. Funds may be provided to get them locally printed and distributed.

Training inputs under Nursing schools, paramedical training institutions and ANM schools be strengthened.

Crash courses for medical officers working in district hospitals, post partum centres in Central Government institutions, private sector and public sector organisations and private practitioners should also be organised.

Supervision

Schedules for supervision should be developed well in advance and adhered to.

Observation made during supervisory visits should be recorded and problem identified should be solved either locally or recommended to higher authorities. Feedback should be obtained for action taken or suggestions made during visits.

A checklist for supervision should be used.

Immunisation sessions held at different levels should invariably be supervised during supervisory visits.

Non-availability of transport is not a valid, excuse for cancellation of visits. Alternate means of transport should be used and TA claimed.

It should be ensured that TA/DA is regularly paid so that it may not be used as an excuse for cancellation of visits.

Complaints or difficulties brought out by the staff during visit should not be brushed aside. Honest efforts should be made to find reasonable solution. This will prevent frustration and demoralisation of the workers.

The first level supervisory staff (HA) should also be supervised and guided.

that lacunae or deficiencies observed on earlier visit, have been corrected.

Supervisory checklists are not routinely used.

First level supervisory staff (HA) are not being routinely supervised.

Transport facilities are not available for enabling mobility of supervisory staff.

Delay in payment of TA/DA is reported to be a major deterrant in carrying out supervisory visits.

Monitoring

Monitoring is generally limited to reviewing monthly reports and comparing achievement against targets. Generally no effort is made to find out the utilisation of vaccine vis-a-vis number of immunisations per-

Monitoring

In meeting held at State, district and PHC level, monitoring should not be related to find out target achievement only but all related issues should be discussed. For example number of immunisations

formed. Even at district level in review committee chaired by district collectors, emphasis is mostly on target achievement only. Generally no enquiry is made about occurrence of VPD or any untoward reaction after vaccination.

given against number of beneficiaries enlisted, utilisation of doses of vaccine against number of immunisations given, percentage of children below one year of age protected against vaccine preventable diseases, adverse reactions and occurrence of vaccine preventable disease and regularity of scheduled immunisation sessions etc.

System of allocating targets and measuring performance by target achievements should be totally stopped.

Unit of assessment for progress should be village in rural areas and ward in urban areas. List of eligibles village-wise should be obtained and coverage be checked. This will help to assess the extent of variation of performance in different areas and help to remodify the approach.

Monitoring checklist be prepared and used.

At national level Director of Immunisation Mission conducts periodic meetings of State EPI Officers which are found to be very useful. However, these State EPI Officers are not final decision makers. Therefore, it is suggested that during such meetings, Directors of health services may also be invited at least once or twice in a year.

Records and Reports

Maintenance of records is one of the most neglected areas. Though

Records and Reports

Registers and reports should be scrutinised for the completeness, correctness and updatedness.

Immunisation card is to be used as a home-based record.

registers are maintained, they are generally incomplete and not updated. Likewise reports are incomplete and it is generally found difficult to rely upon them. There is a tendency to over-report performance and under- report untoward reactions.

Registers and reports are generally not thoroughly scrutinised and discussed during supervisory visits or review meetings. Consequently workers get away with the impression that this exercise is of no significance.

Since Health Workers are involved in various health activities, they have to prepare number of reports which takes away significant portion of their time. It is further observed that the formats of reports are also changed frequently.

Scrutiny should be made for registration and enumeration of beneficiaries and should be tallied with estimates and number protected and action taken for reduction of dropout should be verified. If wide gaps are observed, cause should be looked for and worker explained. Need for completeness should be repeatedly emphasised.

Standardised registers, report forms and sufficient stationery should be provided at all levels. Formats of registers and reports should not be frequently changed. Minimum number of reports which are to be really used should be asked for. A comprehensive report for all activities will facilitate the grassroot worker. Only monthly reports should be obtained from subcentres, PHC and district.

System of quarterly or annual reports should be suspended at these levels. On the contrary all reports should be collated and analysed by higher authorities and the reporting agencies should be fed back with results of the analysis so as to enable them to improve their performance.

Programme Evaluation

From time to time coverage evaluation is being conducted by independent agencies. However, it is found that it is not generally repeated in the same district and therefore the change in performance is not assessed.

Disease Surveillance

It was found to be one of the weakest links in the programme and the following constraints were noticed:

- Sentinel centres have been identified, but many have not become operational.
- Staff at sentinel centres have not been adequately trained.
- Records about VPD are not maintained by age, sex, residence and immunisation status etc.
- Sentinel centres are generally not involved in investigation of outbreak of cases.
- Records of untoward reactions following immunisation except death are not maintained properly.

Programme Evaluation

To assess the improvement or otherwise in performance, coverage evaluation should be repeated in at least 25% of districts after a defined period of time. District authorities should on their own, conduct evaluation to find out the extent of coverage in their district at least once a year.

It is further recommended that such evaluation surveys should also incorporate operational/managerial aspects of the programme. These surveys will be useful only if sincere efforts are made to take remedial actions.

Disease Surveillance

All sub divisional, district and teaching hospitals identified as sentinel centres should be charged with the responsibility of recording and reporting all VPD cases. Different categories of staff like child specialist, epidemiologist and medical record technician/officer should be trained to diagnose VPD at the earliest and maintain all the records according to age, sex, residential address and immunisation status. All VPD cases should be reported by sentinel centres to district administration and State authorities for appropriate action.

Monthly meeting between sentinel centres and administration should be held to review the VPD

- Special survey for finding out disease load or active surveillance are not adequately carried out.
- There is no periodic review of VPD cases and such cases are generally not investigated.

cases and to take appropriate action.

In addition to coverage evaluation surveys, UNICEF and Government of India may consider assisting medical colleges in carrying out annual disease surveys using neonatal tetanus and polio as indicators, particularly in areas with very high percentage of coverage.

Pictures of VPD cases with major signs and symptoms may be displayed at prominent places and people requested to report to the nearest health facility if they have come across such cases. All such reported cases be investigated.

Similarly, all neonatal deaths should be investigated by the officer incharge of health facility.

To strengthen disease surveillance systerm it is imperative that the disease situation uncoverd through surveys should result in some action.

Practitioners of ISM, or dispensaries of ISM, and registered medical practitioners treat fairly large segment of population including children. Their involvement in reporting vaccine preventable disease should be seriously considered. They may be provided with prepaid postcards to be mailed giving details of VPD cases whenever they may come across in their clinic. Reports provided by them should not only be acknowledged, but they

About 20-30% of children suffering from paralytic poliomyelitis were reported to be fully immunised.

Cases of provocative paralytic poliomyelitis have been reported after receiving some injections or even DPT during fever.

sults of investigation and action taken.

It is important that all adverse reactions and deaths be thoroughly investigated, public educated about them and suitably compensated.

All such incidence should be thoroughly investigated and results reported. Public should be taken into confidence and without fear the results should be communicated.

Low grade pyrexia is an important clinical symptom in pre-paralytic poliomyelitis. Therefore, to avoid risk of inducing provocative poliomyelitis, low grade fever should be considered as a contraindication for giving DPT immunisation.

Information, Education and Communication

IEC cells/media divisions have been created at each State HQ/district HQ under family welfare programme. However, following bottlenecks were observed:

Inadequate number of positions of IEC personnel at all levels.

Lack of trained manpower at different levels.

Lack of transport facilities.

Lack of funds resulting in inability to produce or procure IEC material in adequate quantity so that it may reach every nook and corner of State.

IEC staff is not fully conversant with UIP, hence, they find themselves inadequate to produce material suited for the programme.

Lack of coordination between State Health Education Bureau (SHEB) and media divisions has led to the two to be working independently of each other.

IEC cells should be strengthened by increasing number of positions and posting trained persons. IEC is a very specialised job involving team work and requiring experts for media, for preparation of publicity and educational material and communication. Hence, providing a single functionary without sufficient back up will not be sufficient to create any effect.

Emphasis has been in the past more on health education. Now it should be given with more stress on demand generation.

Inadequate supply of hardware and education material related to IEC was noticed. In many States 16 mm projectors and public address systems are not working and have been condemned. Replacement has not been made.

Even though awareness regarding the programme is gradually building up, people are not strongly motivated to come forward for services on their own.

Personnel in IEC should be trained in programmes related to child survival including UIP.

Adequate funds should be provided for procuring and producing educational materials according to needs of State.

State Health Education Bureau and Media Divisions should coordinate their activities. This will avoid duplication of efforts and maximise the utilisation of resources.

Efforts to develop communication skills among health personnel at all levels is most essential and therefore, be incorporated in all training activities.

IEC material should be synchronised with training material.

Direct communication between Directorate and PHC to be established (intra-organisational) particularly regarding change in policy etc.

They should also be provided with easy to carry education material. Linkages should be established with literacy mission. Dissemination of knowledge on health related subjects including immunisation should be included in adult education programme. Community Need Assessment (CNA) surveys should be carried out particularly in special groups of population, so that programmes for education for these groups may be more realistic.

16 mm projector and other audiovisual equipments which have been condemned should be replaced and more supply should be ensured according to the needs of State.

Since person to person communication has been found to be more effective, every opportunity for inter-personal communication should be utilised for dissemination of knowledge and to motivate people to use service.

Linkage

Though within the health sector, different agencies are involved in the Immunisation Programme, effective functional linkage among them was not established to the desired extent.

Linkage

It is recommended that linkages within the health sector among different components need to be strengthened. Within health sector, different agencies/bodies need to be involved with proper coordination in terms of joint planning and sharing of targets, area responsibilities and resources e.g. State and Central Government health agencies, ESI Corporation, Railways, Armed Forces etc. Effective linkages need to be developed with different public sector undertakings and voluntary organisations also.

Medical Colleges

Even though from the initiation of UIP, medical colleges were expected to play a very significant role in the programme, in many States there seemed to be certain degree of ambiguity in terms of area responsibilities, distribution of targets and resources and coordination and supervision between State/district administration and medical colleges. Funds to medical colleges had not been released by State Governments.

Medical Colleges

Since medical colleges in many States do not come under health administration, linkages are not established between health department and medical colleges. It is, therefore, recommended that clear cut policy should be laid down and money and material should be provided directly to the medical colleges and they should be accountable for the performance in the areas under their coverage.

Medical colleges should also demonstrate well organised Immunisation Programme by way of better surveillance, coverage evaluation survey and training etc. in their field practice areas.

Private Practitioners

The opportunities for involvement of private practitioners have not been fully exploited.

It was found that administration was hesitant to supply vaccines and other supplies to them.

Private Practitioners

It is, therefore, suggested that private practitioner's support in UIP should be maximised by quarterly meetings to discuss various aspects of the programme and Government's approach for child survival including immunisation. During these meetings VPD cases reported in the quarter may also be discussed.

Private practitioners should be supplied with vaccine irrespective of the fact that they charge fee for service. It should not be forgotten that the cost of vaccine is not more than 1/10th the cost of total time and effort put in by private practitioners. This will spare Government functionary's time for involvement in UIP for better contribution in other areas.

Printed forms and cards may be supplied for maintaining records and reports.

Professional Bouies

Professional bodies have not assumed responsibility in the Immunisation Programme to the desired level.

Others

Generally, at time of outbreaks of measles cases, health authorities resort to mass immunisation in and around the areas from where outbreaks are reported. Measles is infectious during incubation period, therefore, long before sgins and symptoms appear and health department swings into action, large number of children have been infected and may be in later stage of incubation period.

Professional Bodies

Support from professional bodies like State branches of IMA, Association of Paediatricians, Association of Obstetricians and Gynaecologists and Tuberculosis Association etc. should be taken in mobilising their members to accept the responsibility in a national programme of such vital importance.

Distribution of vaccine to private practitioners can be channelised through these bodies under the guidance of State UIP Officers.

Their help can be sought in organising special drives, or in spreading the message through popular talks in educational institutions.

Others

Keeping in view of the epidemiological features of disease, the validity of resorting to mass immunisation during measles outbreaks should be thoroughly examined and clear cut instructions issued with regard to action to be taken during such situations.

REPORT

Cost Analysis of UIP

Keeping in view the requirements of the Central Government and donor agencies, a study was undertaken with the aim of financial analysis of the programme providing estimates of total cost of the programme for an administrative area of implementation and the cost of sustaining the programme to the local and State Governments.

The specific objectives of the study were:

1. to identify the cost composition of UIP at district level and below,
2. to estimate total cost of the programme and the cost composition at district level and below,
3. to estimate unit cost of services provided under UIP, and
4. to estimate cost of sustaining the programme for future years.

The study was conducted in two districts namely, Nanded in Maharashtra and West Nimar in Madhya Pradesh. A random sample from each category of institution within each district was drawn to study the cost of running UIP at the institutional level.

The study required data on three different aspects of Immunisation Programme viz.

i. the data about various kinds of inputs available and utilized,
ii. quantum of programme output in terms of services provided by various health institutions in rural and urban areas, and
iii. data on completed immunisations.

For this purpose various methods of data collection were adopted.

i. *Interviews and discussions* with the officials at State, district and institutional level.
ii. *Study of secondary records* for details about central budget and State budget as well as expenditure for the UIP from State HQs.
iii. *Delphi technique and interviews* with the functionaries at various levels were conducted to estimate staff time allocation to the activities related to immunisation.

In addition to the above three approaches the detailed information collected by the State team constituted for coverage evaluation and review was also utilized and analysed.

In the present study costs have been simply defined as the value of resources used and the programme cost has been estimated as a sum of the monetary value of each resource category utilized for the programme.

For each resource, monetary value was estimated and allocated to the UIP depending on whether it is direct cost component or indirect cost component.

The full cost of the programme has been estimated in two components as capital cost and recurring cost. The capital cost has been estimated by annualising the value of the capital input.

The recurring cost of the programme has been estimated by adding up the monetary value of all inputs consumed for the provision of services and undertaking other activities related to UIP.

For information on budget provided for UIP and expenditure incurred, the details in these regard were collected from the two districts under study for the year 1988-89.

COST OF UIP AT DISTRICT LEVEL

In order to estimate the cost of Universal Immunisation Programme at district level for one year period (1988-89) and to project the cost for future years, it was thought essential to identify the cost components i.e direct/incremental cost and indirect/obligatory cost with subdivision into capital and recurring costs and cost composition at district level as well as at institutional level.

The total cost of UIP at district level and cost composition in two districts (1988-89) are shown below:

Table 47

Total Cost of UIP at District Level and Cost Composition in Two Districts (1988-89)

Item of Expenditure	West Nimar			Nanded		
	Obligatory/ Indirect cost	Incremental/ Direct cost	Total cost	Obligatory/ Indirect cost	Incremental/ Direct cost	Total cost
Capital*	62,337 (1.4%)	86,016 (8.7%)	1,48,353 (2.7%)	2,07,525 (1.8%)	1,65,848 (14.3%)	3,73,373 (2.9%)
Recurring	43,86,048 (98.6%)	9,03,847 (91.3%)	52,89,895 (97.3%)	113,06,168 (98.2%)	9,94,528 (85.7%)	123,00,696 (97.1%)
Total	44,48,385 (81.8%)	9,89,863 (18.2%)	54,38,248 (100.0%)	115,13,693 (90.8%)	11,60,326 (9.2%)	126,74,069

* : Capital cost includes only the annualised cost per year for the investment made and not the actual investment for equipments, vehicles, etc.

It showed that the total cost of operating UIP at district level was Rs. 126.74 lakhs for district Nanded and Rs. 54.38 lakhs for district West Nimar. It is seen that the total cost for West Nimar was less than half compared to district Nanded. This can be explained that UIP was implemented one year prior in district Nanded and more number of health infrastructure facilities and health functionaries available within the district were involved in immunisation activities. This resulted in utilisation of more resources of various types leading to higher cost.

The composition of the total cost in capital and recurring cost was approximately in the ratio 1:33 for both Nanded and West Nimar. Thus, the recurring cost was the major component contributing to 97.0 per cent of the total cost in both the districts.

COST COMPOSITION OF UIP AT DISTRICT LEVEL

Matrix of cost components into direct and indirect cost for both the districts shows that the major element of indirect cost was the salary of health personnel working in various institutions involved in immunisation activities and it accounted for nearly 98 per cent of total indirect cost. The remaining indirect cost was incurred on vehicles, their running cost and maintenance cost.

In regard to the direct cost of the programme, the percentage contribution was different and it was observed that 8.7 per cent of total direct cost was incurred on capital items in West Nimar whereas it was 14.3 per cent in Nanded. Among the direct recurring expenditure items, major share was for vaccines and immunisation supplies such as needles, syringes and immunisation cards. These elements accounted for 81.9 per cent of direct recurring expenditure in West Nimar district and 62.5 per cent in Nanded district. The salary expenditure as percentage of direct recurring cost was only 6.5 per cent and 19.8 per cent in West Nimar and Nanded respectively. The production and supply of health education material such as pamphlets and posters accounted for 4 to 5 per cent of total direct recurring expenditure whereas operating cost for vehicles was about 3 to 4 per cent of total direct cost.

UNIT COST OF SERVICES FOR IMMUNISATION AT DISTRICT LEVEL

This was estimated for both the districts by dividing the total cost of the programme by the output of services for the same period 1988-89.

The estimates derived for the unit cost of output of services in UIP indicated that the average cost per dose of immunisation to child or pregnant woman was about Rs. 10 to 11 in West Nimar and Rs. 26 to 27 in Nanded. The average incremental cost per immunisation was Rs. 1.99 in West Nimar and Rs. 2.42 in Nanded.

The cost per fully immunised child for six VPDs was estimated by using the denominator in terms of number of fully immunised children. For this, the norm

provided by WHO, i.e. 90 per cent of children immunised for measles to be considered as fully immunised was utilised. From the estimates thus derived it was observed that the average cost per fully immunised child was Rs.96.97 in West Nimar and Rs. 270.25 in Nanded of which 20 per cent and 9.2 per cent respectively were the incremental costs in the two districts.

COST OF UIP AT INSTITUTIONAL LEVEL

To assess the management of these resources and their utilisation for immunisation services at various levels in the district health organisation and to identify the levels at which the cost incurred on immunisation is high, the operating cost of these services was estimated for each category of health unit for the year 1988-89. In addition, the variation in health units of the same category were also explored for cost profile and unit costs for immunisation services for two districts under study.

TOTAL COST

It was found that in urban area the average expenditure for immunisation services was Rs.2,08,370 for the three hospitals and ICDS facilities available in Nanded district and it was much higher than the average expenditure of Rs. 47,017 for two hospitals in West Nimar. The factors contributing to the variation were availability and utilisation of infrastructural, equipment and manpower facilities at institutional level as well as the output of services provided.

In rural areas, the average cost incurred for provision of immunisation services at CHC and PHC level was about Rs. 1,64,168 in West Nimar and Rs. 1,96,172 in Nanded. The Mini-PHCs and civil dispensaries fucntioning in West Nimar spent approximately same amount of Rs. 28,189 and Rs. 26,595 respectively for immunisation activities. But in district Nanded the average expenditure incurred by civil dispensary (Rs. 74,515) was nearly three times that in West Nimar. At the lowest peripheral unit, namely subcentre, the average expenditure on immunisation was Rs. 10,375 in West Nimar and Rs. 23,872 in Nanded. It is to point out that the range of total expenditure was narrower for all categories of health units studied in West Nimar district compared to those studied in Nanded district.

It was also seen that the percentage of incremental cost to the total cost of the programme was comparatively more in higher level health institutions in West Nimar.

UNIT COST

To explore the variation in efficiency with the level of health units, the unit cost estimates were compared among different categories of health units within two districts as well as between the two districts. The average cost per immunisation

provided by hospitals, CHC and PHC was observed to be around Rs.5 in West Nimar district and it increased to more than Rs.10 for lower level health units with wide variations between health units of the same category in that district. On the other hand in Nanded district, the average unit cost of immunisation services did not show any consistency but unit costs varied with more or less same range in all categories of health units except civil dispensaries where the variation was comparatively less. The similar situation was observed for average cost per fully immunised child but higher range of variation because of poor performance in measles immunisation in some units.

Inspite of the variation in average cost per immunisation within and between various categories of health units in two districts, the degree of variation in average incremental cost per unit of service provided by these health units was much less.

COST COMPOSITION

In general, recurring cost, mainly the manpower salary and other benefits component, made up a larger percentage of greater spending in all categories of health institutions in both the districts. Its average contribution in urban units varied from 63 to 80 per cent and 76 to 96 per cent in West Nimar and Nanded respectively. In rural areas this component accounted for nearly same percentage of total cost upto CHC and PHC level but it increased to more than 85 per cent in lower health units. Conversely, vaccine and immunisation supplies for lower level health units represented a smaller proportion of about 8 per cent of total cost compared to urban health units and CHCs, PHCs where it was more than 20 per cent.

COST OF SUSTAINING UIP AT DISTRICT LEVEL

The annual estimates of cost for sustaining the programme at district level with the proposed norms of government of India for input facilities, services and activities at various levels within the districts under study were worked out.

TOTAL COST

Utilising the norms and assuming that the pattern of utilisation of the resources remain same for future years as was observed during 1988-89, the total incremental cost has been estimated for the two districts under study. Thus, it was found that the total incremental cost per year for UIP in district West Nimar of M.P. would be Rs. 12,68,600 and in district Nanded of Maharashtra it would be Rs. 13,76,700. While estimating the cost, fixed amount sanctioned to district by Govtemment of India for specific activity of the programme was assumed to have been fully utilized for the programme. e.g. contingency money of Rs.2000 per PHC per year or POL of Rs.9500 per year per diesel run jeep or van provided under the programme, etc.

COST COMPOSITION

As expected, the vaccines, immunisation supplies and annualised capital cost of cold chain and immunisation equipments account for more than 65 per cent of the incremental cost of which more than 50 per cent is for vaccines. The annualised cost of vehicles and their operation and maintenance account for nearly 5 per cent of the total direct cost of the district in both States. Though the Government of India has provided funds for other activities such as surveys, meetings and training of new entrants in a year it constitutes hardly 2.2 per cent of direct cost.

The major component of vaccine cost was estimated on the basis of quantum of different vaccines required to immunize the expected number of infants and pregnant women in a year and then this quantity was expanded to account for the quantities lost during transportation or due to cold chain failure etc., using the rate 25 per cent for DPT/TT/ OPV and 50 per cent for BCG/Measles. Thus, the major cost for sustaining the programme needs to be incurred on vaccines, immunisation supplies and salaries of the staff appointed under UIP, which are principal variable costs of importance for overall lower unit costs and higher manpower productivity.

UNIT COST

For district West Nimar in M.P. the incremental cost per immunisation that government has to incur will be Rs.2.25 whereas it will be Rs.3.01 for district Nanded in Maharashtra. This cost of immunisation was nearly 50 per cent more for a child compared to a pregnant woman. The incremental cost per fully immunized child is estimated to be Rs.22.00 in West Nimar and Rs.28.81 in Nanded.

The incremental cost estimated with proposed health facilities, equipment and staff when compared with the incremental cost incurred during 1988-89 by two districts under study showed that there is an estimated increase of about 28.2 per cent in West Nimar and 18.6 per cent in Nanded. This indicates that there is a need to provide additional inputs if these districts are to sustain the programme and achieve the objectives of 85 per cent immunisation coverage for children and 100 per cent coverage for pregnant women.

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I M M U N I Z A T I O N

In our country diarrhoea is the first major cause of death in children. Communicable diseases like diphtheria, whooping cough, tetanus, polio, tuberculosis and measles form the second major cause of death. The tragedy is that the illness and death due to communicable diseases can be easily prevented. Immunization is a simple and an inexpensive way of doing this.

A child gets whooping cough only once. When a child gets whooping cough his body makes a substance called antibodies. These antibodies fight against the germs of whooping cough and kill the germs. After these germs die, the antibody remains in the body of the child for a long time. Later at any time, if the germs of whooping cough enter this child's body again, the antibodies that were produced earlier, fight against the new germs and kill them. This child does not fall ill with whooping cough again. In other words the child has developed immunity (resistance) for whooping cough. In the same way, our bodies can develop immunity (specific antibodies) for each of the communicable diseases listed above.

There are different ways by which our bodies develop immunity:

1. Passive Immunity: The antibodies for a particular disease are supplied ready made to the body. This can be done in two ways:

   (a) Natural passive immunity: The mother passes her antibodies to the baby in her womb. The antibodies are also supplied to the child through the breast milk of the mother. Eg: Antibodies for Tetanus, Measles.

   (b) Artificial passive immunity: The antibodies are taken from an immune person or immune animal and injected into the person who needs it urgently.

   Passive immunity is a quick way of transfering immunity from one person to another. The effect of this kind of immunity does not last for long in the person who receives the antibodies. This is because the antibodies are destroyed quickly and the body does not know how to produce its own.

2. Active Immunity: The body develops this immunity in two ways:

   (a) By getting the actual disease (infection): In the example of whooping cough given earlier, we saw that a child gets a disease and makes its own antibodies. A well nourished child will be able to make the antibodies faster than an under nourished child. This is why the severity of the disease is less in a well nourished child.

   (b) By Immunization : In this a small quantity of the germs of a disease are injected purposely into a person. The body of the person responds in the same way as it would to a disease i.e. by producing antibodies. After this the body has enough antibodies to fight against the actual infection.

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The germs we inject for immunizing are called vaccines. These germs can be killed (dead vaccine) or made weak (live vaccine). The method of injecting the vaccines is called vaccination or immunization.

Examples of live vaccines: (Germs that are made weak but are alive)

Polio
Measles
Tuberculosis

Examples of dead vaccines: (Germs that are killed)

Diphtheria
Whooping cough
Tetanus.

In active immunity the body takes a little longer to produce antibodies but the antibodies last longer as compared to passive immunity.

POINTS TO REMEMBER ABOUT IMMUNIZATION

a. Age: We must try and immunize children before the usual age when they have the disease. Eg: Maximum number of children get diphtheria between the age of two and five years. So children should be immunized against diphtheria before they reach the age of two. As a general rule we must immunize all the children before the age of one. Very young children below three months of age are not good at making antobodies and they already have ready-made antibodies from the mother. So one must not immunize children too early. There is a best age to give every vaccine and we must try and immunize our village children at the right age. (However, when we start an immunization programme we might find many older children who have not received the vaccines at the right age. We should still immunize them.)

b. The right number of doses: Each vaccine has to be given in the right number of doses as recommended. If we reduce the number of doses of the vaccine, its effect is lessened. Eg: BCG vaccine (for tuberculosis) needs to be given in two doses whereas DPT vaccine has to be given in four doses. With each dose of the vaccine the amount of antibodies produced increases and its effect lasts longer.

c. The right interval between doses (Time between doses): For each vaccine the right interval between doses is different. If the doses of a vaccine are given too soon then the child will not develop a strong immunity. The interval between the first and second dose is most important. If the gap between the first and the second dose is too long, then the first dose is ineffective. This child should be considered as a new case for immunization.

d. Storing the vaccine: This is very important. If the vaccine is not stored properly the vaccine will get spoilt. Spoilt vaccines are useless. A spoilt vaccine will not be able to stimulate the child's body to make antibodies.

ALL VACCINES MUST BE STORED AT THE RECOMMENDED TEMPERATURE

Live vaccines get spoilt faster than dead vaccines because the live germs in the live vaccine die quickly if the vaccine is not stored properly.

e. Expiry date: Each bottle of vaccine has an expiry date written on the label. This means that the vaccine should not be used after the expiry date. Before both buying and using the vaccine CHECK THE EXPIRY DATE.

f. Preferably do not immunize children during the rainy season.

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IMMUNIZATION IN CHILDHOOD

1. BCG VACCINE: This is to prevent the child from getting tuberculosis. There are different opinions about its effectiveness. As there is evidence that it is effective in children we still give it. It is a live vaccine.

When should it be given: The first dose of BCG should be preferably given at birth or soon after birth. The second dose is given at 5 years of age (school-going age).

Preparation: BCG vaccine comes in ampules as a freeze dried* vaccine in a powder form. The powder has to be dissolved in saline before it can be used as a vaccine. In our local PHC we have vaccinators specially trained for giving BCG vaccination. We must get the BCG vaccine and the help of the vaccinator from our PHC.

Points to remember about BCG vaccination:

- The powder and the solution must be kept in a refrigerator.
- The vaccination should not be given in bright sunlight and should be preferably given in a room or at least in shade.
- The ampules and filled syringes should be covered with black paper when not in use.
- The vaccine must be used the same day it is dissolved in the saline. At the end of the day, if any vaccine is left, this should be thrown away. It should not be used for the next day even if kept in a refrigerator.

What happens when BCG vaccine is given:

When the vaccine is given a small lump is formed at the site of the injection. This lump disappears after half an hour. About the 3rd week after the injection has been given, the site of injection becomes a little thickened and the place is painful to touch. This thickness slowly increases to the size of a pea. By the 6th week the thickness becomes soft and pus is formed. The pus then escapes leaving an ulcer. The ulcer slowly heals and forms a scar.

We must inform the mother about the changes that occur at the site of the injection and reassure her. Sometimes an abscess might form at the site of the injection. This usually heals on its own. If the abscess does not heal, remove pus with the help of a needle and syringe (aspiration).

BCG Vaccine should not be given to:

- children who are known to have tuberculosis
- children who already have a scar on the arm
- severely malnourished children
- children with severe skin disease
- acutely ill children

* Freeze dried means the live vaccine is frozen so that the germs stay alive. Then it is dried and powdered for use..

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2. COMBINED VACCINE FOR DIPHTHERIA, WHOOPING COUGH AND TETANUS (TRIPLE VACCINE OR DPT VACCINE)

This vaccine is given to all the children below five years of age. It contains killed germs and so can be kept for a longer period of time. The advantages of the combined vaccine are:

- more antibodies are produced
- the effect lasts longer
- the children are given less number of injections.

When should it be given:

Four doses are given. The best is if the doses are given as follows:

First dose : when the child is 3 months old
Second dose : 4 to 6 weeks after the first dose
Third dose : 4 to 6 weeks after the second dose
Fourth dose (Booster dose): when the child is 1½ to 2 years old.

(In rural areas it may not be possible to give all the four doses. In such areas the first and second dose must atleast be given. The interval between the first and second dose should be between 8 to 12 weeks. If possible the booster dose should be given 1½ years after the second dose.)+

Points to remember about DPT vaccine:

- DPT vaccine must be kept in the refrigerator between 4°C to 10°C. DO NOT FREEZE THEM SOLID (Don't keep in the freezer). Also DO NOT KEEP IN THE DOOR OF THE REFRIGERATOR. This destroys DPT.
- Shake the bottle before using and leave it for 3 minutes. If the liquid is clear, then the vaccine is useless. Send it back.
- At room temperature DPT loses its value in 4 days.
- Keep the vaccine away from heat and light.

What happens when DPT is given:

Normal reaction: In children there will be a slight to moderate pain at the site of the injection. Some children also might develop a mild fever. Mothers must be warned about this pain and fever. You can also give some antipyretic (acetaminophen) to the children with fever. (For dosage, see page 414 of 'Where There Is No Doctor')

Abnormal reaction: Some children might develop high fever and convulsions. This is due to some unknown factor in the whooping cough vaccine. These children should not be given the next doses of DPT.

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* DPT is - D for Diphtheria
P for Pertussis or Whooping cough
T for Tetanus

+ World Health Organization recommends that only 2 doses of DPT be given. The first dose 4 weeks after birth and the second dose 10 weeks after birth.

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DPT vaccine should not be given to a child:

- with a history of convulsions or other nervous system disorder.
- with fever or infectious disease
- with allergic disease
- with skin disease
- getting steroid drugs

3. COMBINED VACCINE FOR DIPHTHERIA AND TETANUS (DT VACCINE):

Whooping cough does not affect children after the age of 5 years. So children above the age of 5 years should receive only DT vaccine. This comes in bottles containing 10-20 doses. Only one dose of DT is given at the age of 5-6 years.

Same precautions to be taken as for DPT vaccine.

4. POLIO VACCINE:

This vaccine is given orally (by mouth). It is a live vaccine and therefore gets spoilt easily.

When should it be given:

Three doses are given. The best is if the doses are given as follows:

First dose : when the child is 3 months old
Second dose : 4 to 6 weeks after the first dose
Third dose : 4 to 6 weeks after the second dose

Children above the age of eight years normally do not require polio vaccine.

(The latest dosage recommended by CMC Vellore is to give 5 doses of polio vaccine at the interval of 4-6 weeks between each dose.)

Points to remember about Polio vaccine:

This is a live vaccine and has to be stored with extra care.

- The vaccine must be kept at a temperature of -20°C. That means, when the vaccine is transported from the institute where it is manufactured, it should be kept on dry ice or a freezing mixture. When it is in a centre, it should be kept in the freezing compartment of the refrigerator and when it is taken to the village it should be kept in a flask containing a lot of ice.

- The vaccine should not be frozen and thawed repeatedly. That means that the vaccine must be taken to the village only when we are sure that we will get enough children to finish all the doses in the bottle.

- The vaccine must not be kept near the stove etc.

- Polio vaccine must be preferably given in a room or in the shade of a tree. (Do not give it in a hot humid, crowded room).

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- The vaccine can be given by a dropper or a spoon. The dropper or spoon is sterilized by boiling in water for 20 minutes. It is then cooled by keeping in ice cold water. The dropper or spoon should also be carried with the vaccine in the flask to the village.

- DO NOT USE CHEMICAL DISINFECTANTS like lysol, dettol, savalon etc. FOR STERILISING THE SPOON OR THE DROPPER.

- The vaccine must not be diluted with water, milk or honey before giving it to the child.

- We must advise the mother not to breastfeed the child atleast for 4 hours before and after the child has been given polio vaccine.

  The child can be given water and other food instead of breast milk during this time.

- The child MUST NOT BE GIVEN HOT MILK, HOT WATER, OR HOT COFFEE FOR ATLEAST HALF AN HOUR AFTER THE VACCINE HAS BEEN GIVEN.

What happens when polio vaccine is given:

It is an oral vaccine and it does not have any effects like fever, pain etc.

Polio vaccine should not be given to children with:

- high fever
- vomiting
- diarrhoea
- who are on steroids

5. MEASLES VACCINE:

It is a live vaccine like polio vaccine. Right now it is not widely available in India. But we hope that in a few years time it will become as common as DPT and Polio vaccine.

It comes in a powder form (just like BCG vaccine). This powder has to be kept in the freezing compartment of the refrigerator. The solution to dissolve the vaccine comes in an ampule and has to be kept inside the refrigerator but not in the freezing compartment.

To use the vaccine, take the cold solution and ... the powder of the measles vaccine to it. THIS LIQUID VACCINE MUST BE USED WITHIN ONE HOUR.

When should it be given:

Only one dose is given. This is given between the age of 9 months and one year. (Best time 9 months). It is given as subcutaneous injection. One dose contains 0-5 ml of vaccine.

Points to remember about Measles Vaccine:

The same points in terms of storage for polio vaccine must be followed.

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What happens when the vaccine is given:

- The child might develop fever within 8 to 9 days.
- The child might also get mild measles (rash).

Measles vaccine should not be given to children:

- who have already had measles.

CONCLUSION:

In this paper, so far we have discussed the different ways in which a child's body can fight against communicable diseases by producing antibodies. In order to effectively produce antibodies against infections, children need to be immunized at the right age, given the right number of doses of the vaccine and these must be given at the right intervals. Details of using each vaccine have also been given.

Communicable diseases spread easily from one person to another. This means that one child with a communicable disease can give the infection to many other children in the village. As our aim is to protect as many children as possible from communicable diseases, it is important that we immunize as many children as possible at the same time. In most places children are immunized as and when they come to the clinic. This practice does prevent the individual child who has been immunized, but does not protect the other children in the village. In such a village an *epidemic of a communicable disease could easily break out. TO PREVENT AN EPIDEMIC, WE MUST IMMUNIZE ATLEAST 90% OF ALL CHILDREN UNDER FIVE YEARS OF AGE IN THE VILLAGE.

We may find that there are many undernourished children in the village. When a child is undernourished it is more likely to get a communicable disease. These children also get a more severe attack of the disease. In fact the child's life can be in danger because the disease will create further undernutrition. Therefore undernourished children must be immunized.

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* Epidemic means that an unusually large number of persons get the same disease at the same period of time.

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I M M U N I Z A T I O N

CHILDREN fall an easy prey to many communicable diseases. Widespread in India among these diseases are poliomyelitis, tuberculosis, measles, diphtheria, whooping cough and tetanus. Besides the unfortunate children who die of these diseases, many are disabled for life with complications such as brain damage, paralysis, chronic lung ailments, deafness and blindness. All these diseases can be prevented by immunization. The expanded Programme on Immunization (EPI) was launched in January, 1978 with the objective of reducing the incidence of these childhood diseases. Effective vaccines are available against them.

Begin Immunization Early:

A child is at risk of getting a number of infectious diseases soon after birth. Tetanus among new-borns is common and is usually fatal. The disease begins so suddenly after birth that there is no time to immunize and protect the infant. But the infant can be saved from tetanus if the mother receives three doses of anti-tetanus vaccine during pregnancy. This is usually given at one-to-two month intervals. The protection which the mother thus develops is passed on to the infant and lasts during the first few weeks of life. However, this protection does not last very long. Hence it is important that the child gets immunization again.

A combined vaccine is available against three diseases, namely, diphtheria, whooping cough and tetanus. Three doses of this triple vaccine, otherwise known as DPT vaccine, should be given at 3 months of age at 4 to 8 weeks' interval followed by a booster dose 12 to 18 months later. A booster dose of diphtheria-tetanus vaccine (DT vaccine) should be given at the time of entry to school (5 to 6 years) and a booster dose of tetanus toxoid (TT) at 10 years and 16 years.

Polio is an acute viral disease which may cause paralysis to any part of the body. This can be prevented by giving 3 doses of oral polio vaccine at intervals of 4 to 8 weeks followed by a booster dose 12 to 18 months later. Polio vaccination can be started at 3 months of age DPT and polio vaccines can be given at the same time.

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Children can be protected against tuberculosis by giving one dose of BCG vaccine between 3 to 9 months of age.

Typhoid fever is a disease which leads to prolonged ill-health. The disease can be prevented by 2 doses of typhoid vaccine given at an interval of 4 to 8 weeks at school entry (5-6 years) followed by booster doses at 10 years and 16 years of age.

Children become very weak after an attack of measles which may lead to secondary infection of the lungs, ears and eyes. Measles vaccine is effective in controlling the disease in about 95 per cent of the vaccinated children. One dose of measles vaccine, where available, is recommended for children between 9 and 12 months of age.

Harmless:

All the vaccines are quite harmless. Some mild reactions such as low grade fever, local pain and swelling occur in a majority of the children. Such reactions subside within a day or two. After BCG vaccination a small ulcer will appear at the site of the injection after two weeks. It is not necessary to use any ointment or give any other treatment. The ulcer will disappear within a few weeks leaving a small scar.

Services:

Immunization services are available free of cost at the Maternal anc Child Welfare (MCW) centres, Dispensaries, hospitals and primary health centres. These centres or the health workers will provide any additional information on the immunization programme.

Follow the National Immunization Schedule and protect your children against many diseases.

Prenatal		*tetanus toxoid (injection) to the pregnant woman.
Child		
Age 3 to 9 months	(a)	start with *first dose of DPT(injection). *first dose of polio (oral drops). *BCG (injection)
	(b)	After an interval of 1-2 months, give. *Second dose of DPT (injection). *Second dose of Polio (oral drops). *Smallpox (vaccination).

...3

(c) After an interval of 1-2 months, give DPT(injection) and polio vaccination (oral drops)

9 to 12 months — *Measles vaccine (injection) one dose, where available.

18 to 24 months — *Booster DPT (injection).
*Booster Polio Vaccine (oral drops)

5 to 6 years (a) — *Booster D.T. (Diphtheria and tetanus) (Injection).
*first dose of typhoid monovalent or bivalent vaccine (injection).

(b) — *After an interval of 1-2 months, give second dose of typhoid vaccine (injection).

10 years — *Booster tetanus toxoid (injection).
*Booster typhoid monovalent or bivalent vaccine (injection).

OR

first dose of typhoid monovalent or bivalent (injection), if not given earlier, followed by second dose of typhoid vaccine (injection), after an interval of 1-2 months.

16 years — *Booster tetanus toxoid (injection).
*Booster typhoid monovalent or bivalent vaccine (injection).

OR

*first dose of typhoid monovalent or bivalent (injection), if not given earlier, followed by second dose of typhoid vaccine (injection) after an interval of 1-2 months.

Note (1) Pregnant woman: Since the history of a previous tetanus immunization is normally not available, it is preferable to give three doses of tetanus toxoid (tetanus vaccine), at monthly intervals starting as early in pregnancy as possible. This should be the aim. However, no pregnant woman should be denied even one dose of tetanus toxoid (tetanus vaccine) if she is seen late. This protects both the mother and the new-born against tetanus.

(2) Children(a): The ages shown for the various immunizations are considered the best times. However, if there is any delay in starting the first dose, the periods may be adjusted accordingly. It should be the aim that a child before reaching one year of age, should have received DPT, BCG, smallpox and polio vaccine and if available, measles vaccine.

....4

(b) Where two or three vaccines are shown together, e.g. BCG + DPT + Polio, these vaccines can be given at the same time.

(3) (a) When Different vaccines, unless received as a mixed vaccine should not be mixed together in the same syringe. It is preferable to give the different injectable vaccines at different sites.

(b) When typhoid vaccine is being given for the first time, two doses at an interval of 1-2 months should be administered.

(c) If a child is immunized against DPT and injures himself anti-tetanus serum should not be given. Instead one booster dose of tetanus toxoid may be given under the doctor's advice. This booster dose (of tetanus toxoid) gives protection for atleast five years.

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A Classic Reprint

The case against immunizations

Dr. Richard Moskowitz

Editor's note:
In today's world it is taboo to speak out against vaccinations. Yet a growing number of dissenting voices have dared to do so. Moskowitz's article published a decade back has not been properly appreciated and justifies a reprint. He argues that an artificially attenuated virus (used in immunization) evokes an isolated antibody response minus the generalised inflammatory response or any of the non-specific defence mechanisms which occur naturally in any infection. By 'tricking' the body in this way, we have pushed the disease into the body and made it something like a 'biological time bomb'. Moskowitz reasserts Simpson's fear that immunization programs may actually be seeding humans with RNA to form latent proviruses which when activated could cause a variety of diseases – viz. rheumatoid arthritis, multiple sclerosis, systemic lupus erythematosus, parkinson's disease and perhaps even cancer.

For the past ten years or so I have felt a deep and growing compunction against giving routine immunizations to children. It began with the fundamental belief that people have the right to make that choice for themselves. Soon I discovered that I could no longer bring myself to give the injections even when the parents wished me to.

At bottom, I have always felt that the attempt to eradicate entire microbial species from the biosphere must inevitably upset the balance of nature in fundamental ways that we can as yet scarcely imagine. Such concerns loom ever larger as new vaccines continue to be developed, seemingly for no better reason than that we have the technical capacity to make them, and thereby to demonstrate our power, as a civilization, to manipulate the evolutionary process itself.

Purely from the viewpoint of our own species, even if we could be sure that the vaccines were harmless, the fact remains that they are compulsory, that all children are required to undergo them, without any sensitive regard for basic differences in individual susceptibility, to say nothing of the wishes of the parents of the children themselves.

Most people can readily accept the fact that, from time to time, certain laws may be necessary for the public good that some of us

strongly disagree with. But the issue in this case involves nothing less than the introduction of foreign proteins or even live viruses into the bloodstream of entire populations.

For that reason alone, the public is surely entitled to convincing proof, beyond any reasonable doubt, that artificial immunization is in fact a safe and effective procedure, in no way injurious to health, and that the threat of the corresponding natural diseases remains sufficiently clear and urgent to warrant mass inoculation of everyone, even against their will if necessary.

Unfortunately, such proof has never been given; and, even if it could be, continuing to employ vaccines against diseases that are no longer prevalent or no longer dangerous hardly qualifies as an emergency.

Finally, even if such an emergency did exist, and artificial immunization could be shown to be an appropriate response to it, the decision would remain essentially a political one, involving issues of public health and safety that are far too important to be settled by any purely scientific or technical criteria, or indeed by any criteria less authoritative than the clearly articulated sense of the community about to be subjected to it.

For all of these reasons, I want to present the case against routine immunizations as clearly and forcefully as I can. What I have to say is not quite a formal theory capable of rigorous proof or disproof. It is simply an attempt to explain my own experience, a nexus of interrelated facts, observations, reflections and hypotheses which, taken together, are more or less coherent and plausible and make intuitive sense to me.

I offer them to the public in part because the growing refusal of parents to vaccinate their children is so seldom articulated or taken seriously. The fact is that we have been taught to accept vaccination as a sort of involuntary communion, a sacrament of our own participation in the unrestricted growth of scientific and industrial technology, utterly heedless of the long-term consequences to the health of our own species, let alone to the balance of nature as a whole. For that reason alone, the other side of the case urgently needs to be heard.

Are the vaccines effective?

There is widespread agreement that the time period since the common vaccines were introduced has seen a remarkable decline in the incidence and severity of the corresponding natural infections. But the customary assumption that the decline is *attributable* to the vaccines remains unproven, and continues to be seriously questioned by eminent authorities in the field. The incidence and severity of whooping cough, for example, had already begun to decline precipitously long before the pertussis vaccine was introduced (1), a fact which led the epidemiologist C. C. Dauer to remark, as far back as 1943:

> If mortality (from pertussis) continues to decline at the same rate during the next 15 years, it will be extremely difficult to show statistically that (pertussis immunization) had any effect in reducing mortality from whooping cough (2).

Much the same is true not only of diphtheria and tetanus, but also of TB, cholera, typhoid, and other common scourges of a bygone era, which began to disappear toward the end of the nineteenth century, perhaps partly in response to improvements in public health and sanitation, but in any

case long before antibiotics, vaccines, or any specific medical measures designed to eradicate them (3).

Reflections such as these led the great microbiologist Rene Dubos to observe that microbial diseases have their own natural history, independent of drugs and vaccines, in which asymptomatic infection and symbiosis are far more common than overt disease:

> It is barely recognized, but nevertheless true, that animals and plants, as well as men, can live peacefully with their most notorious microbial enemies. The world is obsessed by the fact that poliomyelitis can kill and maim several thousand unfortunate victims every year. But more extraordinary is the fact that millions upon millions of young people become infected by polio viruses, yet suffer no harm from the infection. The dramatic episodes of conflict between men and microbes are what strike the mind. What is less readily apprehended is the more common fact that infection can occur without producing disease (4).

The principal evidence that the vaccines are effective actually dates from the more recent period, during which time the dreaded polio epidemics of the 1940s and 1950s have never reappeared in the developed countries, and measles, mumps, and rubella, which even a generation ago were among the commonest diseases of childhood, have become far less prevalent, at least in their classic acute forms, since the triple MMR vaccine was introduced into common use.

Yet how the vaccines actually accomplish these changes is not nearly as well understood as most people like to think it is. The disturbing possibility that they act in some other way than by producing a genuine immunity is suggested by the fact that the diseases in question have continued to break out even in highly immunized populations, and that in such cases the observed differences in incidence and severity between immunized and unimmunized persons have tended to be far less dramatic than expected, and in some cases not measurably significant at all.

In a recent British outbreak of whooping cough, for example, even fully immunized children contracted the disease in fairly large numbers, and the rates of serious complications and death were reduced only slightly (5). In another recent outbreak of pertussis, 46 of the 85 fully immunized children studied eventually contracted the disease (6).

In 1977, 34 new cases of measles were reported on the campus of UCLA, in a population that was supposedly 91 percent immune, according to careful serological testing (7). Another 20 cases of measles were reported in the Pecos, New Mexico area within a period of a few months in 1981, and 75 percent of them had been fully immunized, some of them quite recently (8). A survey of sixth-graders in a well-immunized urban community revealed that about 15 percent of this age group are still susceptible to rubella, a figure essentially identical with that of the pre-vaccine era (9).

Finally, although the overall incidence of typical acute measles in the U.S. has dropped sharply from about 400,000 cases annually in the early 1960s to about 30,000 cases by 1974-76, the death rate remained exactly the same (10); and with the peak incidence now occurring in adolescents and young adults, the risk of pneumonia and demonstrable

liver abnormalities has actually increased substantially, according to one recent study, to well over 3 percent and 2 percent, respectively (11).

The simplest way to explain these discrepancies would be to postulate that the vaccines confer only partial or temporary immunity, which sounds reasonable enough, given the fact that they are either live viruses rendered less virulent by serial passage in tissue culture, or bacteria or bacterial proteins that have been killed or denatured by heat, such that they can still elicit an antibody response but no longer initiate the full-blown disease.

Because the vaccine is a 'trick,' in the sense that it simulates the true or natural immune response developed in the course of recovering from the actual disease, it is certainly realistic to expect that such artificial immunity will in fact 'wear off' quite easily, and even require additional 'booster' doses at regular intervals throughout life to maintain peak effectiveness.

Such an explanation would be disturbing enough for most people. Indeed, the basic fallacy inherent in it is painfully evident in the fact that there is no way to know how long this partial or temporary immunity will last in any given individual, or how often it will need to be restimulated, because the answers to these questions clearly depend on precisely the same individual variables that would have determined whether or how severely the same person, unvaccinated, would have contracted the disease in the first place.

In any case, a number of other observations suggest equally strongly that this simple explanation cannot be the correct one. In the first place, a number of investigators have shown that when a person vaccinated against measles for example, again becomes susceptible to it, even repeated booster doses will have little or no effect (12).

In the second place, the vaccines do not act merely by producing pale or mild copies of the original disease; all of them also commonly produce a variety of symptoms of their own. Moreover, in some cases, these illnesses may be considerably more serious than the original disease, involving deeper structures, more vital organs, and less of a tendency to resolve spontaneously. Even more worrisome is the fact that they are almost always more difficult to recognize.

Thus, in a recent outbreak of mumps in supposedly immune school-children, several developed atypical symptoms, such as anorexia, vomiting, and erythematous rashes, without any parotid involvement, and the diagnosis required extensive serological testing to rule out other concurrent diseases (13). The syndrome of 'atypical measles' can be equally difficult to diagnose, even when it is thought of (14), which suggests that it is often overlooked entirely. In some cases, atypical measles can be much more severe than the regular kind, with pneumonia, petechiae, edema, and severe pain (15), and likewise often goes unsuspected.

In any case, it seems virtually certain that other vaccine-related syndromes will be described and identified, if only we take the trouble to look for them, and that the ones we are aware of so far represent only a very small part of the problem. But even these few make it less and less plausible to assume that the vaccines produce a normal, healthy immunity that lasts for some time but then wears off, leaving the patient miraculously

unharmed and unaffected by the experience.

Some personal experiences with vaccine-related illness

I would like now to present a few of my own vaccine cases, both to give a sense of their variety and chronicity, and to show how difficult it can be to trace them, and also to begin to address the crucial question that is too seldom even asked, namely, how the vaccines actually work, i.e., what effects they do in fact produce in the human body.

My first case was that of an 8-month-old girl with recurrent fevers of unknown origin. I first saw her in January of 1977, a few weeks after her third such episode. These were brief, lasting 48 hours at most, but very intense, with the fever typically reaching 105° F. During the second episode, she was hospitalized for diagnostic evaluation, but her pediatrician found nothing out of the ordinary. Apart from these episodes, the child felt quite well, and appeared to be growing and developing normaliy.

I could get no further information from the mother, except for the fact that the episodes had occurred almost exactly one month apart; and, upon consulting her calendar, we learned that the first episode had come exactly one month after the last of her DPT injections, which had also been given at monthly intervals. At this point, the mother remembered that the child had similar febrile episodes immediately after each injection, but that she had been instructed to ignore them, in as much as they are "common reactions" to the vaccine. I therefore gave the child a single oral dose of dilute homoeopathic DPT vaccine; and I am happy to report that the child has remained well since, with no further episodes of any kind.

This case illustrates how homoeopathic remedies prepared from vaccines can be used for diagnosis as well as treatment of vaccine-related illnesses, which, no matter how strongly they are suspected, might otherwise be almost impossible to substantiate.

Secondly, because fever is the commonest known complication of the pertussis vaccine, and in as much as the child seemed quite well between the attacks, her response to the vaccine appeared to be a relatively strong and healthy one, disturbing because of its recurrence and periodicity, but in any case relatively simple to cure, as indeed it proved to be. But one cannot help wondering what happens to the vaccine in those tens of millions of children who show no obvious response to it at all.

Since that time, I have seen at least half a dozen cases of children with recurrent fevers of unknown origin, associated with a variety of other chronic complaints, chiefly irritability, temper tantrums, and increased susceptibility to colds, tonsillitis, and ear infections, which were similarly traceable to the pertussis vaccine, and which responded successfully to treatment with the homoeopathic DPT nosode. Indeed, I would have to say, on the basis of that experience, that the pertussis vaccine is probably one of the major causes of recurrent fevers of unknown origin in small children today.

My second case was that of a 9½-month-old girl, who presented acutely with a fever of 105° F., and very few other symptoms. Like the first, this child had two similar episodes previously, but at irregular intervals; and the parents, who

felt ambivalent about vaccinations in general, had given her only one dose of the DPT vaccine so far, although the first episode occurred a few weeks afterwards.

I first saw the child in June of 1978. The fever remained high and unremitting for 48 hours, despite the usual acute remedies and supportive measures. A CBC revealed a white count of 32,100 per cu. mm., with 43 percent lymphocytes, 11 percent monocytes, 25 percent neutrophils (many with toxic granulations), 20 percent bands (also with toxic granulations), and 1 percent metamyelocytes and other immature forms. When I asked a pediatrician about these findings, "pertussis" was his immediate reply. After a single oral dose of homoeopathic DPT vaccine, the fever came down abruptly within a few hours, and the child has remained well since.

This case was disturbing mainly because of the hematological abnormalities, which were in the leukemoid range, together with the absence of cough or distinctive respiratory symptoms, which suggested that introducing the vaccine directly into the blood may actually promote deeper or more systemic pathology than allowing the pertussis organism to set up typical symptoms of local inflammation at the normal portal of entry.

The third case was a 5-year-old boy with chronic lymphocytic leukemia, whom I happened to see in August of 1978, while visiting an old friend and teacher, a family physician with over 40 years' experience. Well out of earshot of either the boy or his parents, he told me that the leukemia had first appeared following a DPT vaccination, and that, although he had treated the child successfully with natural remedies on two previous occasions, with shrinking of the liver and spleen to approximately normal size, and dramatic improvement in the blood picture, full relapse had occurred soon after each successive DPT booster.

The idea that vaccinations might also be implicated in some cases of childhood leukemia was shocking enough in itself, but it also completed the line of reasoning opened up by the previous case. For leukemia is a cancerous process of the blood and the blood-forming organs, the liver, the spleen, the lymph nodes, and the bone marrow, which are also the basic anatomical units of the immune system. Insofar as the vaccines are capable of producing serious complications at all, the blood and the immune organs would certainly be the logical place to begin looking for them.

But perhaps even more shocking to me is the fact that the boy's own physician dared not communicate his suspicion of vaccine-related illness to the parents, let alone to the general public. It was this case that convinced me, once and for all, of the need for serious, public discussion of our collected experiences with vaccine-related illness, precisely because rigorous experimental proof will require years of investigation and a firm public commitment that has not even been made yet.

I will now present two cases from my limited experience with MMR vaccine.

In December of 1980 I saw a 3-year-old boy with a 4-week history of loss of appetite, stomachaches, indigestion, and swollen glands. The stomach pains were quite severe, and often accompanied by belching, flatulence, and explosive diarrhea. The nose was also congested, and

the lower eyelids were quite red. The mother also reported some unusual behavior changes, such as extreme untidiness, 'wild' and 'noisy' playing, and waking at 2 a.m. to get into bed with the parents.

The physical examination was unremarkable except for some large, tender left posterior auricular and suboccipital nodes, and marked enlargement of the tonsils. I then learned that the child had received the MMR vaccine in October, about 2 weeks before the onset of symptoms, with no apparent reaction to it at the time. I gave the child a single dose of the homoeopathic rubella vaccine, and the symptoms promptly disappeared within 48 hours.

In April 1981, the parents brought him back for a slight fever, and another 3-week history of intermittent pain in and behind the right ear, stuffy nose, etc. On examination, the whole right side of the face appeared to be swollen, especially the cheek and the angle of the jaw. The right eye was red and injected. He responded well to acute homoeopathic remedies, and has remained well since.

This boy was typical of my rubella vaccine cases. At an interval of a few weeks after the MMR vaccine, which is about the same as the normal incubation period of rubella, a rather nondescript illness develops, which becomes subacute and rather more severe than rubella in the same age group, with, e.g., abdominal or joint pains and marked adenopathy, but no rash. Usually the diagnosis is suspected because of the characteristic posterior auricular and suboccipital nodes, and confirmed by a favorable response to the homoeopathic rubella nosode.

As I read over this case, I am struck by the possibility that his second illness, and especially the parotid enlargement, may have represented continuing activity of the mumps component of the vaccine, inasmuch as I did not have the triple MMR nosode, but only those derived from the individual components. We must therefore also consider the probability that a variety of "mixed" or composite syndromes may occur, representing the patient's responses to two or all three of the vaccine components, either simultaneously or over time.

In April of 1981 I first saw a 4-year-old boy for bilateral chronic enlargement of the posterior auricular nodes, which were also occasionally tender. The mother had noticed the swelling for about one year, during which time he had become more susceptible to various upper respiratory infections, none of them especially severe. The mother had also noticed a recurrent parotid swelling at irregular intervals over the same time period, which began shortly after the MMR vaccine was given at the age of three.

At the time of the first visit, the child was not ill; and, because the mother was about two months pregnant at the time, I elected to observe the child and do nothing if possible until the pregnancy was over. He did develop a mild laryngitis in the last trimester, which responded well to bed rest and simple homoeopathic remedies.

In April of 1982, he came down with acute bronchitis. I noticed that the posterior auricular nodes were once again swollen and tender, and I decided to give him the homoeopathic rubella nosode at that point. The cough promptly subsided, and the nodes regressed in size and were no longer tender. Two weeks later, however,

he returned with a noticeably hard, tender swelling on the outside of the right cheek, near the angle of the jaw, and some pain on chewing or opening the mouth. A single dose of the homoeopathic mumps nosode was given, and the child has been well since.

In this case also, we see the subacute pattern of the disease, with a strong tendency to chronicity and increased susceptibility to weaker, low-grade responses, in contrast to the vigorous, acute responses typically associated with diseases like measles and mumps when acquired naturally.

How do the vaccines work?

It is dangerously misleading, and, indeed, the exact opposite of the truth to claim that a vaccine makes us "immune" or protects us against an acute disease, in fact it only drives the disease deeper into the interior and causes us to harbor it chronically, with the result that our responses to it become progressively weaker, and show less and less tendency to heal or resolve themselves spontaneously.

What I propose, then, is simply to investigate as thoroughly and objectively as we can how the vaccines actually work inside the human body, and to begin by paying attention to the implications of what we already know. In particular, I would like to consider in detail the process of falling ill with and recovering from a typical acute disease such as the measles, in contrast with what we can observe following the administration of the measles vaccine.

We all know that measles is primarily a virus of the respiratory tract, both because it is inhaled by susceptible persons upon contact with infected droplets in the air, and because these droplets are produced by the coughing and sneezing of a person with the disease.

Once inhaled by a susceptible person, the measles virus then undergoes a long period of silent multiplication, first in the tonsils, adenoids, and accessory lymphoid tissues of the nasopharynx; later in the regional lymph nodes of the head and neck; and eventually, several days later, it passes into the blood and enters the spleen, the liver, the thymus, and the bone marrow, the 'visceral' organs of the immune system (16). Throughout this 'incubation' period, which lasts from 10 to 14 days, the patient usually feels quite well, and experiences few or no symptoms (17).

By the time that the first symptoms of measles appear, circulating antibodies are already detectable in the blood, and the height of the symptomatology coincides with the peak of the antibody response (18). In other words, the 'illness', is simply the definitive effort of the immune system to clear the virus from the blood. Equally noteworthy is the fact that the virus is eliminated by sneezing and coughing, i.e., via the same route through which it entered in the first place.

It is evident that the process of mounting an acute illness like the measles, no less than recovering from it, involves a general mobilization of the entire immune system, including inflammation of the previously sensitized tissues at the portal of entry, activation of leukocytes and macrophages, liberation of the serum complement system, and a host of other mechanisms, of which the production of circulating antibody is only one, and by no means the most important.

Such a splendid outpouring leaves little

doubt that such illnesses are in fact the decisive experiences in the normal physiologic maturation of the immune system as a whole in the life of a healthy child. For not only will the child who recovers from the measles never again be susceptible to it (19); such an experience also cannot fail to prepare the individual to respond even more promptly and effectively to any infections he may acquire in the future. The ability to mount a vigorous acute response to organisms of this type must therefore be reckoned among the most fundamental requirements of general health and well-being.

In contrast, when an artificially attenuated virus such as measles is injected directly into the blood, by-passing the normal portal of entry, at most a brief inflammatory reaction may be noted at the injection site, or in the regional lymph nodes; but there is no 'incubation period' of local contact at the normal portal of entry, and consequently very little possibility of eliminating the virus via the same route.

Even more important is the fact that the virus has been artificially 'attenuated' so that it will no longer initiate a generalized response, or indeed any of the nonspecific defense mechanisms that help us to respond to infection generally. By 'tricking' the body in this fashion, we have accomplished what the entire immune system seems to have evolved in order to prevent. We have placed the virus directly into the blood, and given it free and immediate access to the major immune organs and tissues, without any obvious way of getting rid of it.

The result is, indeed, the production of circulating antibodies against the virus, which can be measured in the blood; but the antibody response now occurs as an isolated technical feat, without any generalized inflammatory response, or any noticeable improvement in the general health of the organism. Exactly the opposite, in fact: the price that we have to pay for those antibodies is the persistence of viral elements in the blood for prolonged periods of time, perhaps permanently, which in turn presupposes a systematic weakening of our ability to mount an effective response not only to measles, but also to other acute infections as well.

Far from producing a genuine immunity, then, the vaccines may act by actually interfering with or *suppressing* the immune response as a whole, in much the same way that radiation, chemotherapy, corticosteroids and other anti-inflammatory drugs do. Artificial immunization focuses on *antibody production*, a single aspect of the immune process, disarticulates it and allows it to stand for the whole, in much the same way as chemical suppression of an elevated blood pressure is accepted as a valid substitute for a genuine cure of the patient whose blood pressure has risen. Worst of all, by making it difficult or impossible to mount a vigorous, acute response to infection, artificial immunization substitutes for it a much weaker, *chronic* response, with little or no tendency to heal itself spontaneously.

Moreover, adequate models already exist for predicting and explaining what sorts of chronic disease are likely to result from the chronic, long-term persistence of viruses and other foreign proteins within the cells of the immune system. It has long been known that live viruses, for example, are capable of surviving or remaining latent within the host cells for years, without continually provoking acute disease. They do so simply by attaching their own genetic material as an extra particle or 'episome' to the genome of

the host cell, and replicating along with it, which allows the host cell to continue its own normal functions for the most part, but imposes on it additional instructions for the synthesis of viral proteins (20).

Latent viruses of this type have already been implicated in three distinct types of chronic disease, namely, 1) *recurrent or episodic acute diseases*, such as herpes, shingles, warts, etc. (21); 2) *'slow-virus'* diseases, i.e., subacute or chronic, progressive, often fatal conditions, such as kuru, creuzfeldt-jakob disease, subacute sclerosing panencephalitis (SSPE), and possibly guillain-barré syndrome (22); and 3) *tumors*, both benign and malignant (23).

In any case, the latent virus survives as a clearly "foreign" element within the cell, which means that the immune system must continue to try to make antibodies against it, insofar as it can still respond to it at all. Because the virus is now permanently incorporated within the genetic material of the cell, these antibodies will now have to be directed against the cell itself.

The persistence of live viruses or other foreign antigens within the cells of the host therefore cannot fail to provoke auto-immune phenomena, because destroying the infected cells is now the only possible way that this constant antigenic challenge can be removed from the body. Since routine vaccination introduces live viruses and other highly antigenic material into the blood of virtually every living person, it is difficult to escape the conclusion that a significant harvest of auto-immune diseases must automatically result.

Sir Macfarlane Burnet has observed that the components of the immune system all function as if they were collectively designed to help the organism to discriminate 'self' from 'non-self', i.e., to help us to recognize and tolerate our own cells, and to identify and eliminate foreign or extraneous substances as completely as possible (24). This concept is exemplified not only by the acute response to infection, but also by the rejection of transplanted tissues, of "homografts," both of which result in the complete and permanent removal of the offending substance from the body.

If Burnet is correct, then latent viruses, auto-immune phenomena, and cancer would seem to represent different aspects of the same basic dilemma, which the immune system can neither escape nor resolve. For all of them presuppose a certain degree of *chronic immune failure*, a state in which it becomes difficult or impossible for the body either to recognize its own cells as unambiguously its own, or to eliminate its parasites as unequivocally foreign.

In the case of the attenuated measles virus, it is not difficult to imagine that introducing it directly into the blood would continue to provoke an antibody response for a considerable period of time, which is doubtless the whole point of giving the vaccine; but that eventually, as the virus succeeded in attaining a state of latency within the cell, the antibody response would wane, both because circulating antibodies cannot normally cross the cell membrane, and because they are also powerful immunosuppressive agents in their own right (25).

The effect of circulating antibody will thereafter be mainly to keep the virus *within* the cell, i.e., to continue to prevent any acute inflammatory response, until eventually, perhaps under circumstances of accumulated

stress or emergency, this precarious balance breaks down, antibodies begin to be produced in large quantities against the cells themselves, and frank auto-immune phenomena of necrosis and tissue destruction supervene. Latent viruses, in this sense, are like biological 'time bombs', set to explode at an indeterminate time in the future (26).

Auto-immune diseases have always seemed obscure, aberrant, and bizarre, because it is not intuitively obvious why the body should suddenly begin to attack and destroy its own tissues. They make a lot more sense, and, indeed, must be reckoned as 'healthy', if destroying the chronically infected cells is the only possible way of eliminating an even more serious threat to life, namely, the persistence of the foreign antigenic challenge within the cells of the host.

Tumor formation could then be understood as simply a more advanced stage of chronic immune failure, according to the same model. For, as long as the host is subjected to enormous and unremitting pressure to make antibodies against itself, that response will automatically tend to become less and less effective.

Eventually, under stress of this magnitude, the auto-immune mechanism could easily break down to the point that the chronically infected and genetically transformed cells, no longer clearly 'self' or 'non-self', begin to free themselves from the normal restraints of 'histocompatibility' within the architecture of the surrounding cells, and begin to multiply autonomously at their expense.

A tumor could then be described as 'benign' insofar as the breakdown of histocompatibility remains strictly localized to the issue of origin, and 'malignant', insofar as it begins to spread to other cell types, tissues, and organs, even in more remote areas. Malignancy might simply represent the reactivation of the virus from its latent phase into a more acute mode, albeit with less inflammation and more tissue destruction than the original wild-type infection.

If what I am saying turns out to be true, then what we have done by artificial immunization is essentially to trade off our acute, epidemic diseases of the past century for the weaker and far less curable chronic diseases of the present, with their amortizable suffering and disability. In doing so, we have also opened up limitless evolutionary possibilities for the future of ongoing *in vivo* genetic recombination within the cells of the race.

The individual vaccines reconsidered

I want next to consider each of the vaccines on an individual basis, in relation to the infectious diseases from which they are derived.

The MMR is composed of attenuated live measles, mumps, and rubella viruses, administered in a single intramuscular injection at about 15 months of age. Subsequent re-immunization is no longer recommended, except for young women of childbearing age, in whom the risk of congenital rubella syndrome (CRS) is thought to warrant it, even though the effectiveness of re-immunization is questionable at best.

Prior to the vaccine era, measles, mumps, and rubella were reckoned among the 'routine childhood diseases', which most schoolchildren contracted before the age of puberty, and from which nearly all recovered, with permanent, lifelong immunity, and no complications or sequelae.

But they were not always so harmless. Measles, in particular, can be a devastating disease when a population encounters it for the first time. Its importation from Spain, for instance, undoubtedly contributed to Cortez' conquest of the great Aztec Empire; whole villages were carried off by epidemics of measles and smallpox, leaving only a small remnant of cowed, superstitious warriors to face the bearded *conquistadores* from across the sea (27). In more recent outbreaks among isolated, primitive peoples, the case fatality rate from measles averaged 20 to 30 percent (28).

In both these so-called 'virgin-soil' epidemics, not only measles but also polio and many other similar diseases take their highest toll of death and serious complications among adolescents and young adults, healthy and vigorous people in the prime of life, and leave relatively unharmed the group of school-age children before the age of puberty (29).

This means that the evolution of a disease such as measles from a dreaded killer to an ordinary disease of childhood presupposes the development of nonspecific or 'herd' immunity in young children, such that, when they are finally exposed to the disease, it activates defense mechanisms already prepared and in place, resulting in the long incubation period and the usually benign, self-limited course described above.

Under these circumstances, the rationale for wanting to vaccinate young children against measles is limited to the fact that a very small number of deaths and serious complications have continued to occur, chiefly pneumonia, encephalitis, and the rare but dreaded subacute sclerosing panencephalitis (SSPE), a slow-virus disease with a reported incidence of 1 per 100,000 cases (30). Pneumonia, by far the commonest complication, is usually benign and self-limited, even without treatment (31); and even in those rare cases in which bacterial pneumonia supervenes, adequate treatment is currently available.

By all accounts, then, the death rate from wild-type measles is very low, the incidence of serious sequelae is insignificant, and the general benefit to the child who recovers from the disease, and to his contacts and descendants, is very great. Consequently, even if the measles vaccine could be shown to reduce the risk of death or serious complications from the disease, it still could not justify the high probability of auto-immune diseases, cancer, and whatever else may result from the propagation of latent measles virus in human tissue culture for life.

Ironically, what the measles vaccine certainly has done is to reverse the historical or evolutionary process to the extent that measles is once again a disease of adolescents and young adults (32), with a correspondingly higher incidence of pneumonia and other complications, and a general tendency to be a more serious and disabling disease than it usually is in younger children.

As for the claim that the vaccine has helped to eliminate measles encephalitis, I myself, in my own relatively small general practice, have already seen two children with major seizure disorders which the parents clearly ascribed to the measles vaccine, although they would never have been able to prove the connection in a court of law, and never even considered the possibility of compensation.

Such cases therefore never make the official statistics, and are accordingly omitted from conventional surveys of the problem. Merely

injecting the virus into the blood would naturally favor a higher incidence of deep or visceral complications affecting the lungs, liver, and brain, for which the measles virus has a known affinity.

The case of immunizing against mumps and rubella seems *a fortiori* even more tenuous, for exactly the same reasons. Mumps is also essentially a benign, self-limited disease in children before the age of puberty, and recovery from a single attack confers lifelong immunity. The principal complication is meningoencephalitis, mild or subclinical forms of which are relatively common, although the death rate is extremely low (33), and sequelae are rare.

The mumps vaccine is prepared and administered in much the same way as the measles, usually in the same injection; and the dangers associated with it are likewise comparable. Again like the measles, mumps too is fast becoming a disease of adolescents and young adults (34), age groups which tolerate the disease much less well. The chief complication is acute epididymo-orchitis, which occurs in 30 to 40 percent of the males affected past the age of puberty, and usually results in atrophy of the testicle on the affected side (35); but it also shows a strong tendency to attack the ovary and the pancreas.

For all of these reasons, the greatest favor we could do for our children would be to expose them all to the measles and mumps when they are young, which would not only protect them against contracting more serious forms of these diseases when they grow older, but would also greatly assist in their immunological maturation with minimal risk. I need hardly add that this is very close to the actual evolution of these diseases before the MMR vaccine was introduced.

The same discrepancy is evident in the case of rubella, or 'German measles', which in young children is a disease so mild that it frequently escapes detection (36), but in older children and adults not infrequently produces arthritis, purpura, and other severe, systemic signs (37). The main impetus for the development of the vaccine was certainly the recognition of the 'congenital rubella syndrome' (CRS), resulting from damage to the developing embryo *in utero* during the first trimester of pregnancy (38), and the relatively high incidence of CRS traceable to the rubella outbreak of 1964.

But here again, we have an almost entirely benign, self-limited disease transformed by the vaccine into a considerably less benign disease of adolescents and young adults of reproductive age, which is, ironically, the group that most needs to be protected against it. Moreover, as with measles and mumps, the simplest and most effective way to prevent CRS would be to expose everybody to rubella in elementary school; reinfection does sometimes occur after recovery from rubella, but much less commonly than after vaccination (39).

The equation looks somewhat different for the diphtheria and tetanus vaccines. First of all, both diphtheria and tetanus are serious, sometimes fatal diseases, even under the best of treatment; this is especially true of tetanus, which still carries a mortality of close to 50 percent.

Furthermore, these vaccines are not made from living diphtheria and tetanus organisms, but only from certain 'toxins' elaborated by them; these poisonous substances are still highly antigenic, even after being

inactivated by heat. Diphtheria and tetanus 'toxoids' therefore do not protect against infection *per se*, but only against the systemic action of the original poisons, in the absence of which both infections are of minor importance clinically.

Consequently, it is easy to understand why parents might want their children protected against diphtheria and tetanus, if safe and effective protection were available. Moreover, both vaccines have been in use for a long time, and the reported incidence of serious problems has remained very low, so that there has never been much public outcry against them.

On the other hand, both diseases are quite readily controlled by simple sanitary measures and careful attention to wound hygiene; and, in any case, both have been steadily disappearing from the developing countries, since long before the vaccines were introduced.

Diphtheria now occurs sporadically in the United States, often in areas with significant reservoirs of unvaccinated children. But the claim that the vaccine is 'protective' is once again belied by the fact that, when the disease does break out, the supposedly 'susceptible' children are in fact no more likely to develop clinical diphtheria than their fully immunized contacts. In a 1969 outbreak in Chicago, for example, the Board of Health reported that 25 percent of the cases had been fully immunized, and that another 12 percent had received one or more doses of the vaccine and showed serological evidence of full immunity; another 18 percent had been partly immunized, according to the same criteria (40).

So, once again, we are faced with the probability that what the diphtheria toxoid has produced is not a genuine immunity to diphtheria at all, but rather some sort of chronic immune *tolerance* to it, by harboring highly antigenic residues somewhere within the cells of the immune system, presumably with long-term suppressive effects on the immune mechanism generally.

This suspicion is further aggravated by the fact that all of the DPT vaccines are alum-precipitated and preserved with Thiomersal, an organomercury derivative, to prevent them from being metabolized too rapidly, so that the antigenic challenge will continue for as long as possible. The fact is that we do not know and have never even attempted to discover what actually becomes of these foreign substances, once they are inside the human body.

Exactly the same problems complicate the record of the tetanus vaccine, which almost certainly has had at least some impact in reducing the incidence of tetanus in its classic acute form, yet presumably also survives for years or even decades as a potent foreign antigen within the body, with long-term effects on the immune system and elsewhere that are literally incalculable.

'Whooping cough', much like diphtheria and tetanus, began to decline as a serious epidemiological threat long before the vaccine was introduced. Moreover, the vaccine has not been particularly effective, even according to its proponents; and the incidence of known side-effects is disturbingly high.

The power of the pertussis vaccine to damage the central nervous system, for example, has received growing attention since Stewart and his colleagues reported an alarmingly high incidence of encephalopathy and severe

convulsive disorders in British children that were traceable to the vaccine (41). My own cases, a few of which were reported above, suggest that hematological disturbances may be even more prevalent, and that, in any case, the *known* complications almost certainly represent a small fraction of the total.

In any case, the pertussis vaccine has become controversial even in the United States, where medical opinion has remained almost unanimous in favor of immunizations generally; and several countries, such as West Germany, have discontinued routine pertussis vaccination entirely (42).

Pertussis is also extremely variable clinically, ranging in severity from asymptomatic, mild, or inapparent infections, which are quite common actually, to very rare cases in young infants less than 5 months of age, in whom the mortality is said to reach 40 percent (43). Indeed, the disease is rarely fatal or even that serious in children over a year old, and antibiotics have very little to do with the outcome (44).

A good deal of the pressure to immunize at the present time thus seems to be attributable to the higher death rate in very young infants, which has led to the terrifying practice of giving this most clearly dangerous of the vaccines to infants at 2 months of age, when their mothers' milk would normally have protected them from all infections about as well as it can ever be done (45), and the effect on the still developing blood and nervous system could be catastrophic.

For all these reasons, the practice of routine pertussis immunization should be discontinued as quickly as possible, and more studies done to assess and compensate the damage that it has already done.

Poliomyelitis and the polio vaccines present an entirely different situation. The standard Sabin vaccine is trivalent, consisting of attenuated, live polioviruses of each of the three strains associated with poliomyelitis; but it is administered orally, in much the same way as the infection is acquired in nature. The oral or non-injectable route, which leaves the recipient free to develop a natural immunity at the normal portal of entry, i.e., the GI tract, would therefore appear to represent a considerable safety factor.

On the other hand, the wild-type poliovirus produces no symptoms whatsoever in over 90 percent of the people who contract it, even under epidemic conditions (46); and, of those people who do come down with recognizable clinical disease, perhaps only 1 or 2 percent ever progress to the full-blown neurological picture of 'poliomyelitis', with its characteristic lesions in the anterior horn cells of the spinal cord or medulla oblongata (47).

Poliomyelitis thus presupposes peculiar conditions of susceptibility in the host, even a specific *anatomical* susceptibility, since, even under epidemic conditions, the virulence of the poliovirus is so low, and the number of cases resulting in death or permanent disability was always remarkably small (48).

Given the fact that the poliovirus was ubiquitous before the vaccine was introduced, and could be found routinely in samples of city sewage wherever it was looked for (49), it is evident that effective, natural immunity to poliovirus was already as close to being universal as it can ever be, and *a fortiori* no artificial substitute could ever equal or even approximate that result. Indeed, because the virulence of the poliovirus was so low to

begin with, it is difficult to see what further attenuation of it could possibly accomplish, other than to abate as well the full vigor of the natural immune response to it.

For the fact remains that even the attenuated virus is still alive, and the people who were anatomically susceptible to it before are still susceptible to it now. This means, of course, that at least *some* of these same people will develop paralytic polio from the vaccine (50), and that the others may still be harboring the virus in latent form, perhaps within those same cells.

The only obvious advantage of giving the vaccine, then, would be to introduce the population to the virus when they are still infants, and the virulence is normally lowest anyway (51); and even this benefit could be more than offset by the danger of weakening the immune response, as we have seen. In any case, the wole matter is clearly one of enormous complexity, and illustrates only too well the hidden dangers and miscalculations that are inherent in the virtually irresistible attempt to beat nature at her own game, to eliminate a problem that cannot be eliminated, i.e., the susceptibility to disease itself.

So even in the case of the polio vaccine, which appears to be about as safe as any vaccine ever *can* be, the same fundamental dilemma remains. Perhaps the day will come when we can face the consequences of deliberately feeding live polioviruses to every living infant, and admit that we should have left well enough alone, and addressed ourselves to the art of healing the sick when we have to, rather than to the technology of eradicating the possibility of sickness, when we don't have to, and can't possibly succeed in any case.

Vaccination and the path of medical technology

In conclusion, I want to go back to the beginning, to the essentially political aspects of vaccination, that oblige us all to reason and deliberate together about matters of common concern, and to reach a clear decision about how we choose to live. I have stated my own views regarding the safety and effectiveness of the vaccines, and I hope that others of differing views will do the same.

That is why I am deeply troubled by the atmosphere of fanaticism with which the vaccines are imposed on the public, and serious discussion of them is ignored or stifled by the medical authorities, as if the question had already been settled definitely and for all time. In the words of Sir Macfarlane Burnet,

> It is our pride that in a civilized country the only infectious diseases which anyone is likely to suffer are either trivial or easily cured by available drugs. The diseases that killed in the past have in one way or another been rendered impotent, and, in the process, general principles of control have been developed which should be applicable to any unexpected outbreak in the future (52).

Quite apart from the truth of these claims, they exemplify the smugness and self-righteousness of a profession and a society that worships its own ability to manipulate and control the processes of nature itself. That is why, as Robert Mendelsohn has said, "we are quick to pull the trigger, but slow to examine the consequences of our actions (53)."

Indeed, one would have to say, methodically slow. In 1978, for example, the American

Academy of Pediatrics, which had been charged by the Congress with the responsibility to formulate guidelines for Federal compensation of "vaccination-related injuries," issued the following eligibility restrictions:

1. Compensation should be made available to any child or young person under the age of 18 years, or a contact of such person of any age, who suffers a major reaction to a vaccine mandated for school entry or continuation in school in his or her state of residence.

2. Such a reaction should have been previously recognized as a possible consequence of the vaccine given.

3. Such a reaction should have occurred no more than 30 days following the immunization (54).

These restrictions would automatically exclude all of the chronic diseases, or indeed anything other than the very few adverse reactions that have so far been identified, which clearly represent only a tiny fraction of the problem.

Still less can either the government or the medical establishment be considered ignorant of the possibility that lurks in every parent's mind and heart, namely, that the vaccines cause cancer and other chronic diseases. Precisely that possibility was raised by Prof. Robert Simpson of Rutgers in a 1976 seminar for science writers, sponsored by the American Cancer Society.

> Immunization programmes against flu, measles, mumps, polio, and so forth may actually be seeding humans with RNA to form latent proviruses in cells throughout the body. These latent proviruses could be molecules in search of diseases; when activated, under proper conditions, they could cause a variety of diseases, including rheumatoid arthritis, multiple sclerosis, systemic lupus erythematosus, parkinson's disease, and perhaps cancer (55).

Unfortunately, this is the sort of warning that very few people are willing or able to hear at this point, least of all the American Cancer Society or the American Academy of Pediatrics. The fact is, as Dubos points out, that all of us still want to believe in the 'miracle', regardless of the evidence.

> The faith in the magical power of drugs often blunts the critical senses, and comes close at times to a mass hysteria, involving scientists and laymen alike. Men want miracles as much today as in the past. If they do not join one of the newer cults, they satisfy this need by worshipping at the altar of modern science. This faith in the magical power of drugs is not new. It helped to give medicine the authority of a priesthood, and to recreate the glamour of ancient mysteries (56).

The idea of eradicating measles or polio has come to seem attractive to us, simply because the power of medical science makes it seem technically possible; we worship every victory of technology over nature, just as the bullfight celebrates the triumph of human intelligence over the brute beast.

This is why we do not begrudge the drug companies their enormous profits, and gladly volunteer our own bodies and those of our children for their latest experiments. Vaccination is essentially a religious sacrament of our own participation in the miracle, a veritable *auto-da-fe* in the name of modern civilization itself.

Nobody in his right mind would seriously entertain the idea that, if we could somehow eliminate, one by one, measles and polio and all the known diseases of mankind, we would be any the healthier for it, or that other even more serious diseases would not quickly take their place.

Still less would a rational being suppose that the illnesses from which he suffered were 'entities' somehow separable from the patients who suffer them, and that, with the appropriate chemical or surgical sacrament, this separation can literally be carried out.

Yet these are precisely the 'miracles' we are taught to believe in, and the idolatries to which we aspire. We prefer to forget the older and simpler truths, that the propensity or susceptibility to illness is deeply rooted in our biological nature, and that the phenomena of disease are the expression of our own life energy, trying to overcome whatever it is trying to overcome, trying, in short, to heal itself.

The myth that we can find technical solutions for all human ailments seems attractive at first, precisely because it by-passes the problem of healing, which is a genuine miracle in the sense that it can always fail to occur. We are all genuinely at risk of illness and death at every moment; no amount of technology can change that: to stand at all times in the front lines against disease, and to attack and destroy it whenever and wherever it shows itself.

That is why, with all due respect, I cannot have faith in the miracles or accept the sacraments of Merck, Sharp, and Dohme and the Center for Disease Control. I prefer to stay with the miracle of life itself, which has given us illness and disease, but also the arts of medicine and healing, through which we can acknowledge and experience our pain and our vulnerability, and sometimes, with the grace of God and the help of our fellow men, an awareness of health and well-being that transcends all boundaries. That is my religion; and, while I would willingly share it, I would not force it on anyone.

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(Courtesy: *Journal of the American Institute of Homoeopathy, 1983.*)

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Dr. Alok Pandey is trying to live the concept of Integral Health.

Immunization news

Jottings by the staff of the GPV's Expanded Programme on Immunization (EPI)

Newswatch

Attacking vaccines can cost lives and damage health

Freedom of expression is a human right. A study, however, published in the British journal *Lancet*[1] at the end of January suggests that exercising that right to attack vaccines too hastily can have a dire, even deadly, impact on health. The study found that the incidence of a disease can be up to 100 times higher in a country where vaccination against the disease is disrupted by anti-vaccine movements than in countries where coverage of the population with the vaccine remains constantly high. Artur Galazka, a member of the study research team and former EPI medical officer, believes "this is one of the first global reviews to show clearly that a dramatic impact can result from anti-vaccination propaganda."

The study looked at the incidence of pertussis (whooping cough) between 1940 and 1995 in two groups of countries: those where vaccination with the diphtheria-tetanus-pertussis combination vaccine (DTP) was reaching a steady 90-100% of the population for many years and those where DTP coverage fell precipitously following vaccine scares. The first group included former East Germany, Hungary, Poland and the United States; the latter, former West Germany, Italy, Japan, Russia, Sweden and the United Kingdom.

The study's comparison of neighbouring countries – Sweden and Norway, Spain and Portugal, Canada and the U.S., Greece and Hungary – one with, the other without, an anti-vaccination lobby, is particularly telling: pertussis incidence rates were 10- to 100-fold greater in the less protected neighbour. The difference, in fact, could be much greater, the study notes, since the research group used numbers of reported cases to calculate incidence, and these numbers are notoriously well below the true incidence of disease. "And history tells us," notes Dr Galazka, "that it can take 10 to 20 years to reverse the damage wrought by anti-vaccination movements."

That damage can be considerable. "Cases [of pertussis] among children deprived of vaccine may have exceeded hundreds of thousands," says the study report, "and disease-related clinical complications (e.g. pneumonia, encephalopathy and seizures) may have numbered tens of thousands." Although the study focussed on disease incidence rather than deaths, "other reports indicate that pertussis mortality also increased [with] excess [newborn] deaths inversely related to vaccination coverage during pertussis outbreaks." ▶

A case in point

At the end of February, 4 weeks after publication of the study described here, the *Lancet* ran 2 reports, one[2] by 13 scientists from London suggesting a possible link between the mumps-measles-rubella (MMR) vaccine and inflammatory disease of the bowel (Crohn's disease) and autism, and calling for further research to investigate the possibility; the other providing scientific evidence refuting such a link[3]. (A WHO review, also published in February, of 9 reports of a link between measles vaccine and Crohn's disease found none to be "very convincing."[4])

In the same issue of the *Lancet*, an editorial[5] by Robert Chen and Frank DeStefano of the U.S. Centers for Disease Control and Prevention points to several scientific flaws in the London study but notes that "no vaccine is perfectly safe...[However,] because vaccines are given to millions of healthy people, usually infants, extremely high standards for vaccine safety are demanded."

Meanwhile, parents' advocacy groups, anti- and pro-vaccination activists, public health officials and vaccine industry officials are flooding the media with conflicting, often partisan, statements and calls for action. Whether or not there is even a flickering flame beneath the smoke, the damage to immunization programmes – and to the children they were set up to protect – may well have begun.

Vaccines – not perfect but clearly effective, U.S. data show

Disease	Pre-vaccine year[3]	No. of cases in pre-vaccine year	No. cases in 1997[4]	% change
Diphtheria	1921	206,939	5	-99.99
Measles	1941	894,134	135	-99.98
Mumps	1968	152,209	612	-99.60
Pertussis	1934	265,269	5,519	-97.92
Polio (wild)	1952	21,269	0	-100.00
Rubella	1969	57,686	161	-99.98
CRS[1]	1964-65[5]	20,000	4	-99.98
Tetanus	1948[5]	1,560	43	-97.24
Hib[2]	1984[5]	20,000	165	-99.18
Total		1,639,066	6,644	-99.59
Vaccine adverse events			11,365	

1. Congenital rubella syndrome
2. Invasive *Haemophilus influenzae* type b disease
3. Peak year for no. of cases
4. Provisional data
5. Estimated case numbers: no national reporting in pre-vaccine era

Courtesy *The Lancet*, from reference (5)

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CH-7.

NATIONAL RURAL HEALTH MISSION
राष्ट्रीय ग्रामीण स्वास्थ्य मिशन

CHILD HEALTH

Immunization: Protection from diseases

SWASTH BHARAT

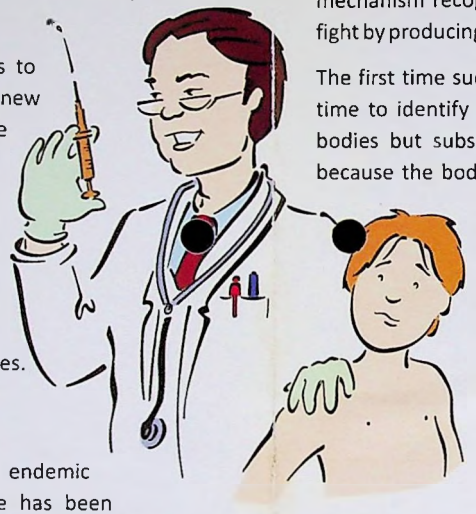
– A NATIONAL INITIATIVE

सत्यमेव जयते

IEC Division
Ministry of Health and Family Welfare
Government of India

BACKGROUND

- India's universal immunization program (UIP) is one of the largest immunization program in the world in terms of number of children targeted.
- Immunization is one of the most cost effective ways for prevention of infectious diseases.
- While the primary goal of UIP is to reduce infant and child mortality, new vaccines like the Hepatitis B vaccine protects against cancer and liver diseases.
- Under UIP, children are vaccinated against 7 vaccine preventable diseases i.e. Diphtheria, Pertussis, Tetanus, Poliomyelitis, Hepatitis B, Childhood Tuberculosis and Measles. In addition, Pregnant mothers are given tetanus toxid vaccination.
- JE vaccine is provided in 112 JE endemic districts and pentavalent vaccine has been introduced in (Tamilnadu and Kerala)



RESEARCH FINDINGS

- India has one of the highest number of un-immunized children in the world. The District Household & Facility Survey–3 (DLHS 2007-08) reveals that 53.5% children (12-23 months) are fully immunized and that [redacted]% children received no vaccination (~4 million) – Coverage Evaluation Survey 2009 – Full Immunization - 61%, No Immunization – 7.6%
- Latest figures from the CES 2009 show that while full vaccination coverage for children has improved in 19 states, it has dropped in the remaining 10 states

TECHNICAL DETAILS

Vaccination is deliberate introduction of the disease causing agent in some form in a healthy child, to incite a special response (known as immune response), which offers protection from contracting the full blown disease in future.

The idea of introducing vaccines (that is live or killed germ particles which has lost ability to produce disease) into the human body is to make the body's defense system believe that it is under attack by the bacteria or the virus. Our defense mechanism recognises this organism and start preparing for a fight by producing protective factors referred to as anti-bodies.

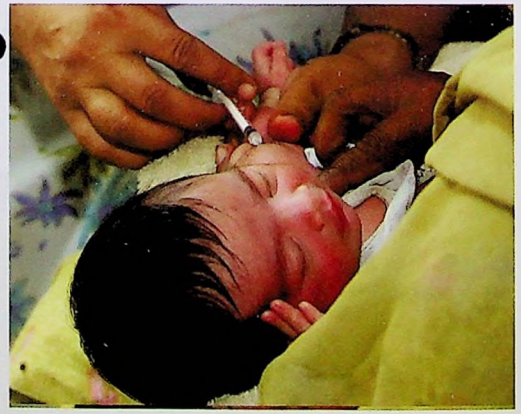
The first time such an interaction occurs, the body takes some time to identify the foreign organism and then produce anti-bodies but subsequently, the anti-body formation is quicker because the body tends to remember the offending organism and accordingly act faster. This process, known as immunological memory, enables the body to produce the same kind of anti-bodies more rapidly and in higher quantities on repeated contacts with the disease causing agent.

BCG VACCINE

It offers **protection against Tuberculosis.**

Special precautions

- **Do not rub** the site of injection
- Initially there is a slight swelling followed usually by a **small scar.**



- Occasionally a child may develop swelling of a lymph node (gland) in the armpit after the vaccine. Nothing needs to be done if it is small (size of a pea), not discharging pus and is painless

Know which vaccine is to be given at what age

AGE	VACCINATION
At Birth	BCG, Polio, Hepatits B
1 ½ month	DPT 1, Polio 1, Hepatitis B 1
2 ½ month	DPT 2, Polio 2, Hepatitis B 2
3 ½ month	DPT 3, Polio 3, Hepatitis B 3
9 months	Measles-1, Vitamin A
16-24 months	Booster shots of DPT and Polio, Vitamin A, Measles-2, JE in selected areas

DPT VACCINE

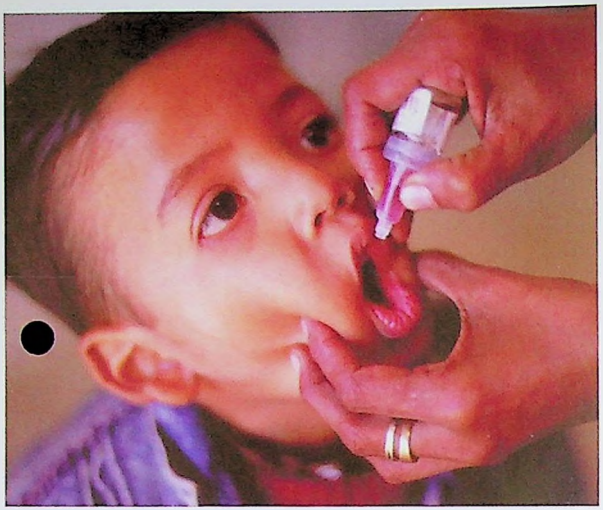
DPT protects against diphtheria or Galghontu , tetanus or Dhanu ba and whooping cough or Kali Khansi. All three are serious diseases. Diphtheria usually manifests with sore throat and quickly progresses to fever, headache & loss of appetite. It causes a **thick gray coating (membrane)** at back of the throat, over the tonsils, that makes it hard to breathe and swallow and can result in suffocation and death.- There is no definitive treatment available except for supportive treatment.

Pertussis better known as **Whooping cough**, is a highly contagious **bacterial infection.** It starts with features of a common cold but quickly progresses to a severe exhausting cough.

Tetanus : A Child can get tetanus by infection of a cut/wound by Dust/Sand/Cowdung/Rusted material etc. It causes painful tightening, severe stiffness and spasms of the muscles all over the body and particularly of the jaw (**lockjaw**). This can lead to convulsions, respiratory failure and death.

POLIO VACCINE

Polio Vaccine provides protection against Poliomyelitis. Polio is an infectious disease caused by polio virus. It enters a child's (or



adult's) body through the mouth. In some children the Polio virus attacks the nervous system and can cause **permanent muscle paralysis** (can't move leg or arm) or weakness.

Children infected with the virus **excrete** it in their stools, thereby posing a danger for the unimmunized children around them.

MEASLES VACCINE

Measles is a **highly infectious** viral disease. The disease is spread by **airborne** droplet infection from secretions of nose and throat.

Clinical symptoms include:

- high fever, cough, running nose, watery eye
- a characteristic **rash appears on 4th day** of illness, **first behind the ears**, upper part of forehead, face and neck, which later spreads to the trunk & limbs.

Infected children may develop **complications** - a serious form of **pneumonia.**

HEPATITIS B VACCINE

Hepatitis B vaccine gives protection against disease caused by Hepatitis B virus. Hepatitis B virus causes destruction of the liver and is the **leading cause of severe liver disease.** Hepatitis B infection can occur at **any age**. Only when it has damaged the liver considerably, do the symptoms become noticeable. And by then, it becomes too late to undo the damage. After an infection, some children may develop a severe liver failure leading to death.

Signs & symptoms

- There may not be any obvious signs & symptoms in a majority of sufferers. Some patients develop symptoms like:
- loss of appetite, nausea/ vomiting
- mild fever , tiredness, bodyache
- there may be yellow discoloration of skin & eyes (jaundice), dark urine & pale stools.

Whom to contact for further clarifications :

In case of any clarifications, ANM/Medical officer of the nearest health facility should be contacted.

At district level, the District Immunization officer (DIO) should be contacted.

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