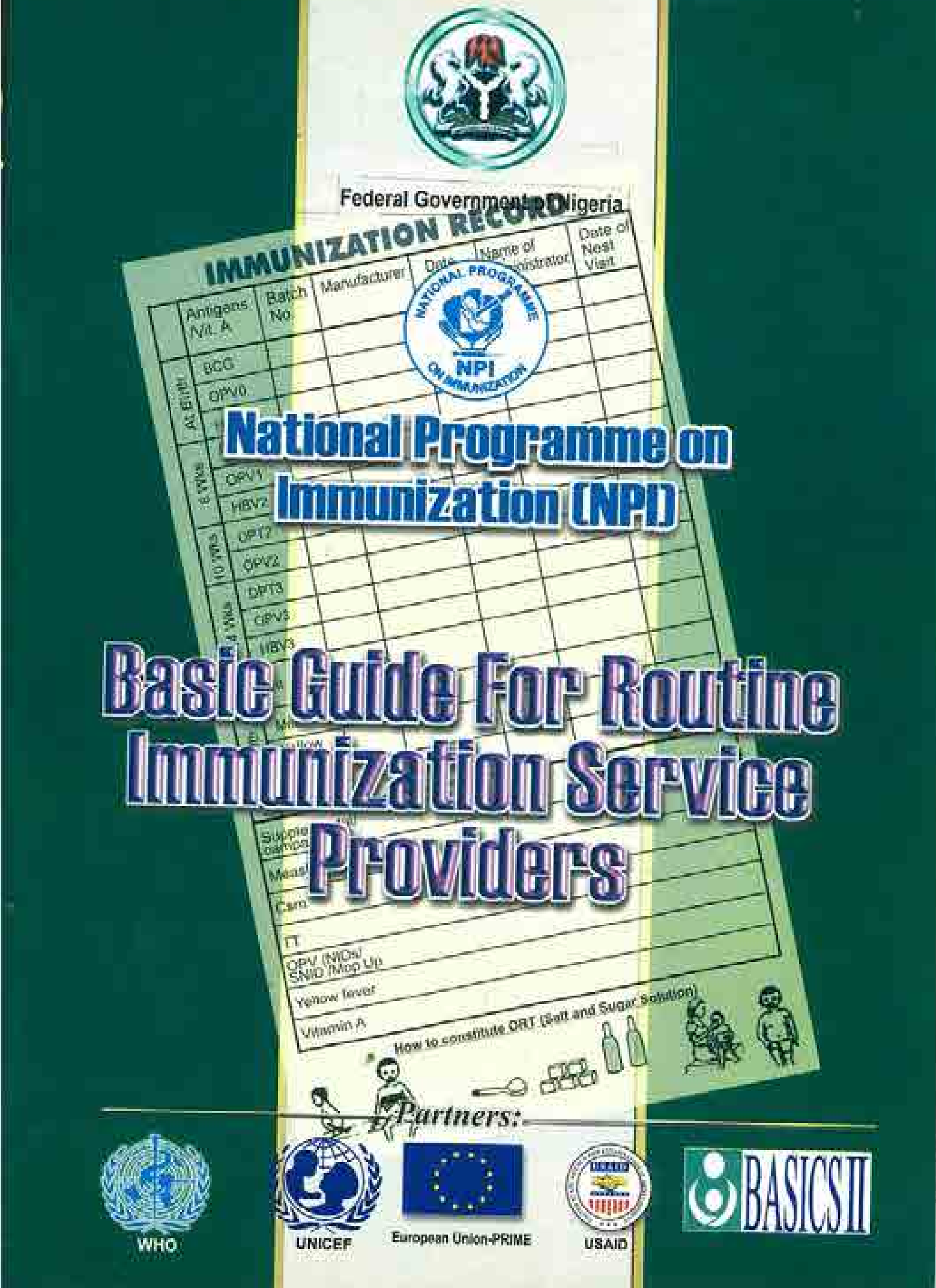


National Programme on Immunization (NPI)

Basic Guide For Routine Immunization Service Providers

Partners:

WHO

UNICEF

European Union-PRIME

USAID

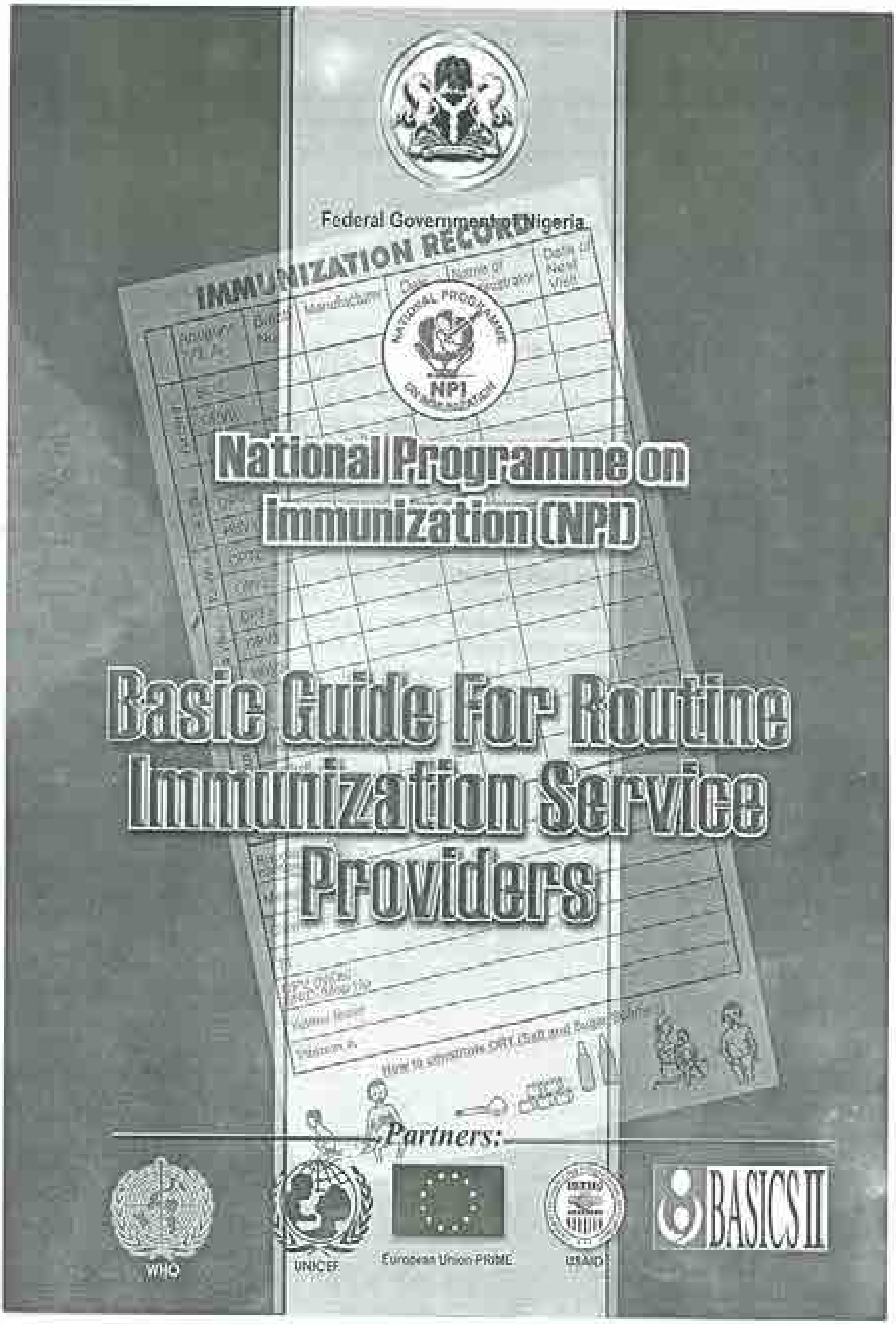
BASICS II

RECOMMENDED TEMPERATURE RANGE FOR VACCINE STORAGE

Type of Vaccine	Primary store MAX 6 Months	Provincial Store MAX 3 Months	District Store MAX 1 Month	Service level MAX 1 Month
OPV	-15°C to -25°C	-15°C to -25°C	+2°C to 8°C	+2°C to 8°C
BCG, Measles, MR, MMR, YF, Hib FD CSM	Storing freeze-dried vaccine at -20°C is not harmful but it is unnecessary. WHO no longer recommends them to be stored at -20°C. Instead, these vaccines should be kept in refrigeration and transported at +2° to +8°C		+2°C to 8°C	+2°C to 8°C
Hep B, DTP-HepB Hib liquid DTP DT TT, Td	+2°C to 8°C	+2°C to 8°C	+2°C to 8°C	+2°C to 8°C

KICK POLIO OUT OF NIGERIA

Every Child has the right to be immunized


Federal Government of Nigeria
IMMUNIZATION RECORD
NPI
National Programme on Immunization (NPI)
Basic Guide For Routine Immunization Service Providers
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Federal Government of Nigeria
National Programme on Immunization (NPI)

Sponsored by European Union/PRIME

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FOREWORD

Immunization remains the most cost effective tool to reducing childhood. morbidity and mortality occurring from Vaccine Preventable Diseases (VPDs) such as: Tuberculosis, Poliomyelitis, Diphtheria, Whooping Cough, Tetanus, Neo-natal tetanus, Measles, Yellow Fever, Hepatitis B and CSM.

In recognition of the above, the National Programme on Immunization (NPI) has continued in its efforts to implement sustainable strategies and interventions in collaboration with the States, LGAs and Partners, with the vision of making immunization a community-owned, community-driven and community-operated service.

Furthermore, in line with its enabling Act 12 of 1997, NPI has continued to ensure the provision of potent vaccines to States and LGAs, with corresponding qualities of needles and syringes. NPI has also supported the States and LGAs with cold chain and logistics equipment, human, technical and financial support required for the programme implementation.

Immunization Service Delivery comprises of two broad categories namely:- Routine and Supplemental Immunization, which are indeed complementary in the reduction of childhood morbidity and mortality occurring from VPDs. The ***Basic Guide for Routine Immunization Service Providers*** is focused primarily on the provision of routine services, which is the cornerstone of all immunization efforts. The basic guide has taken into consideration the current immunization practices, as well as the significant up-to-date information on immunization service delivery, such as accelerated programmes for polio, measles, neonatal tetanus, phased introduction of Yellow Fever and Hepatitis B, Injection Safety practices and AEFI (Adverse Effects Following Immunization). These up-to-date inclusions underscore the need for a constant review of our strategies, plans and flexibility to respond to issues.

While the impact of immunization on the reduction of childhood morbidity and mortality in Nigeria has been remarkable, it is yet to reach its full potential. It is therefore our belief that this basic guide, a simple and easy to understand tool, will assist all health workers at all operational levels to deliver adequate immunization service to our children.

If the use of this basic guide can improve the task of providing this effective and efficient service to every Nigerian child, then the efforts put into its development would have been worthwhile. I thank you all for committing yourselves to the Child's right to immunization.

Dr (Mrs) 'Dere Awosika
National Coordinator/Chief Executive
National Programme on Immunization

ACKNOWLEDGEMENT

National Programme on Immunization expresses its appreciation to its partners who in one way or the other made the production of this ***Basic Guide for Routine Immunization Service Providers*** possible.

We wish to especially thank **WHO, UNICEF, BASICS II and EU-PRIME** for their contributions and continuous support.

TABLE OF CONTENTS

LIST OF FIGURES

Page

Section 1

Section 2

Section 3

LIST OF TABLES

LIST OF ACRONYMS

AEFI	Adverse Effects Following Immunization
AFP	Acute Flaccid Paralysis
AIDS	Acquired Immune Deficiency Syndrome
BASICS	Basic Support for Institutionalizing Child Survival
BCG	Bacilli Calmette Guerin
CSM	Cerebro Spinal Meningitis
DPT	Diptheria Pertussis Tetanus
DSN	Disease Surveillance and Notification
EPI	Expanded Programme on Immunization
EU-PRIME	European Union - Partnership to Reinforce Immunization Efficiency
FEFO	First to Expire, First Out
GVT	Government
HB	Hepatitis B
I.U.	International Units
LGA	Local Government Area
M & E	Monitoring and Evaluation
NIDs	National Immunization Days
NNT	Neonatal Tetanus
NPI	National Programme on Immunization
ORS	Oral Rehydration Solution
OPV	Oral Polio Vaccine
% HF	Percentage Health Facilities
PHC	Primary Health Care
PVT	Private
TB	Tuberculosis
TT	Tetanus Toxoid
UNICEF	United Nations Childrens' Fund
USAID	United States Agency for International Development
VPDs	Vaccine Preventable Diseases
VVM	Vaccine Vial Monitor
WCBA	Women of Child Bearing Age
W H O	World Health Organization
YF	Yellow Fever

FEDERAL GOVERNMENT OF NIGERIA

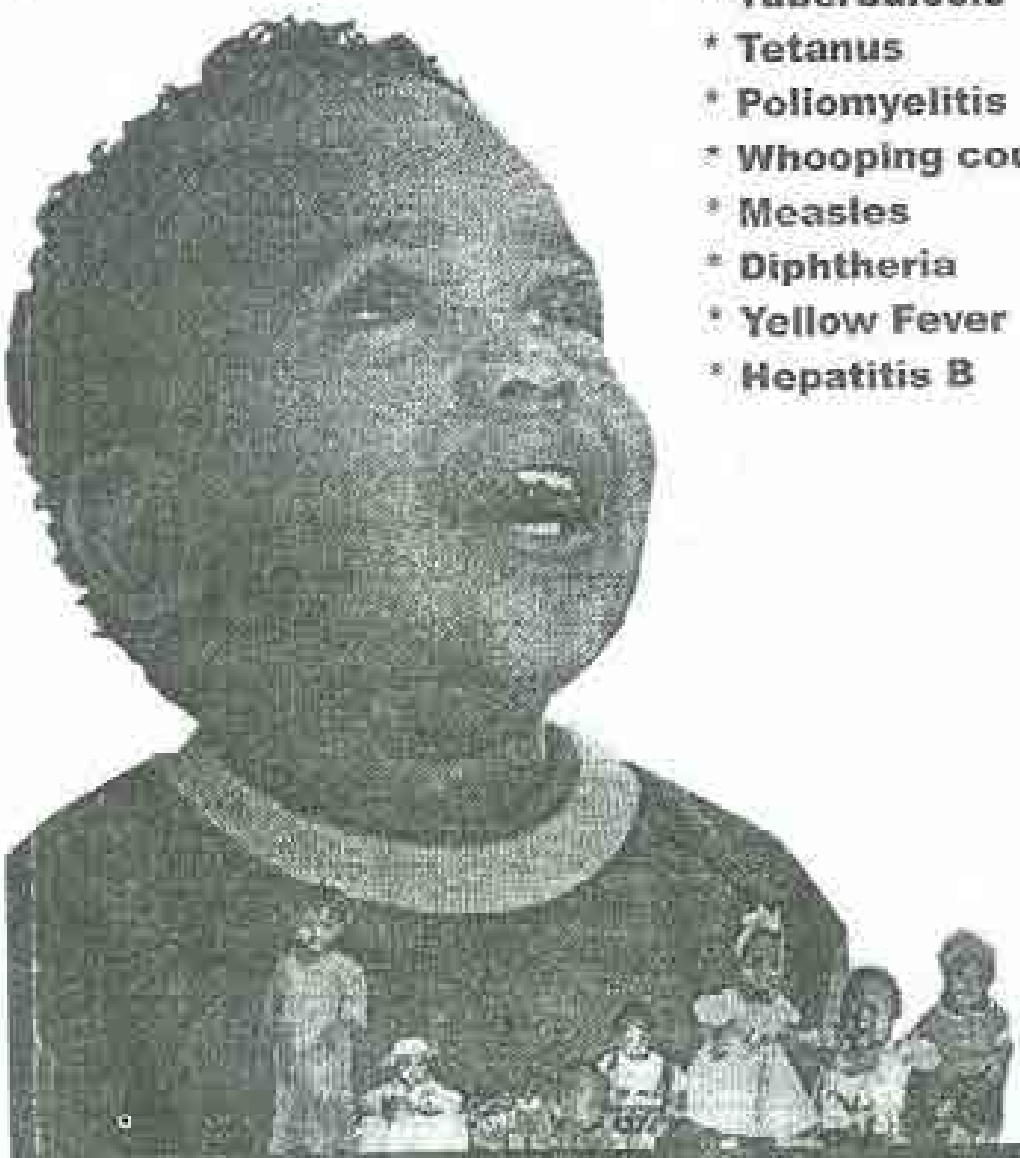
NATIONAL PROGRAMME ON IMMUNIZATION

SUPPORTED BY

EUROPEAN UNION/PRIME

Ensure Safe, Effective and Efficient Provision of Immunization Services for our Children against:

* Tuberculosis
* Tetanus
* Poliomyelitis
* Whooping cough
* Measles
* Diphtheria
* Yellow Fever
* Hepatitis B



IMMUNIZATION IS FREE

THE RIGHT OF EVERY CHILD

Introduction to the Sections

The Sections in this *Basic Guide for Routine Immunization Service Providers* are intended for health workers who deliver immunization services to children and women in Nigeria. By observing the guidelines and procedures in these sections, the health worker will be able to deliver safe, effective and efficient immunization services.

This guide also serves as training and reference manual for all levels of service providers. They present the knowledge, skills and attitudes that health workers need in order to provide immunization services.

There are five (5) sections altogether.

The Guide is organized in sections as follows:.

Section 1.
NPI target diseases, vaccines and their administration;

Section 2.
Cold Chain and Vaccine Management.

Section 3.
How to provide safe and quality immunization services.

Section 4.
Communicating with clients/parents and communities for improved routine immunization coverage.

Section 5.
Monitoring immunization coverage, dropout and quality of service.

SECTION 1:

NPI TARGET DISEASES, VACCINE AND THEIR ADMINISTRATION

Contents

About Section 1

This Section describes nine of the infectious diseases that kill or disable children and the vaccines that can prevent them. The diseases are: tuberculosis, diphtheria, pertussis, tetanus, poliomyelitis, measles, yellow fever, hepatitis B, and cerebrospinal meningitis

For each disease the following information is provided:
- What the disease is.
- How it is spread.
- The signs and symptoms.
- The complications.
- Treatment and prevention.

For each vaccine the following information is provided:
- What it is.
- How it is stored.
- When it is given.
- The number and amount of the dose(s).
- Where it is given (site of immunization).
- How it is given.
- Any side effects that may occur and how they will be treated.

This Section is intended for the use of the health worker at the immunization service delivery point.

This Section should be used as training material for service providers and reference material for immunization service delivery.

1.0 Tuberculosis (TB)

1.0.1 What is tuberculosis?

- Tuberculosis is caused by a germ called **Mycobacterium tuberculosis**.
- It usually attacks the lungs, and other parts of the body, including the bones, joints and brain.
- People of all ages can contract tuberculosis.
- The risk of developing TB is highest in children aged under 3 years and in very old people, although anyone may be affected.

1.0.2 How is tuberculosis spread?

- Tuberculosis is spread through the air. When a person with the disease coughs or sneezes, the germs enter the air.
- A person inhaling air that contains TB germs may become infected.
- TB can spread rapidly where people are living in crowded conditions.
- In some areas it is possible to become infected by consuming unpasteurized milk (bovine TB).
- Persons with TB infection who have weakened immune systems (i.e. difficulty to fight diseases, for instance people with HIV/AIDS), are more likely to develop the disease than those with normal immune systems.

1.0.3 What are the signs and symptoms?

The general symptoms of TB include:

- weakness
- weight loss
- fever
- night sweats

In TB of the lungs (pulmonary TB) the symptoms include:

- persistent cough
- chest pain
- coughing up of blood

However, in young children the only sign of pulmonary tuberculosis may be:

- failure to thrive
- stunted growth

Other signs and symptoms depend on the part of the body that is affected. For instance, in TB of the bones and joints there may be

- swelling
- pain
- crippling effects in the hips, knees or spine

1.0.4 How is tuberculosis treated?

- People with TB must complete a course of curative therapy, which usually involves taking two or more anti-tuberculosis drugs for at least six months.
- Unfortunately, some people fail to take the medications as prescribed or to complete their course of therapy, or they may be given ineffective treatments. This may lead to multi-drug-resistant TB, which is difficult to treat and can be spread to other people.
- A person with the disease can infect others for several weeks even after he or she begins treatment.

1.0.5 How is tuberculosis prevented?

The best protection available for children against tuberculosis infection is immunization with BCG vaccine.

1.1 BCG Vaccine

1.1.1 What is BCG Vaccine?

- BCG vaccine protects against tuberculosis.
- The letters, B, C and G stand for bacillus of Calmette and Guerin
- Bacillus means bacterium/germ
- Calmette and Guerin are the names of the people who developed the vaccine.
- BCG vaccine comes in powder form and ***before use*** must be reconstituted with the accompanying diluent.
- The reconstituted vaccine is even more sensitive to heat than the powder and must therefore be used within six hours or discarded.
- Wrap reconstituted BCG vaccine in foil or paper to protect it from sunlight.

1.1.2 How it is stored

- BCG vaccine and diluent should be stored at a temperature between 0° C and +8° C.
- Dry BCG vaccine (i.e. not reconstituted) can be stored at freezing temperatures and is not damaged by freezing.
- Store BCG vaccine and its diluent side-by-side in a refrigerator, cold box or vaccine carrier.

1.1.3 When it is given

- BCG vaccine is given at birth or as soon as possible after birth.
- It should not be given to children who have clinical HIV/AIDS.

1.1.4 The number and size of doses

- One dose of 0.05 ml.

Important Note:

- **If there is no nodule at the injection site six weeks after a BCG vaccination, the injection must be repeated.**
- **If there is no scar six weeks after the second injection (i.e. by 12 weeks), the child should be referred to a doctor.**

1.1.5 Where it is given

- BCG vaccine is injected in the top layer of the skin (intradermal) of the upper left arm (see figure 1.1.5a and 1.1.5b).
- Health workers use the same place on every child for BCG injections so that everyone knows where to look for the scar.

Figure 1.1.5a: Position of syringe and needle for BCG vaccine (intradermal)

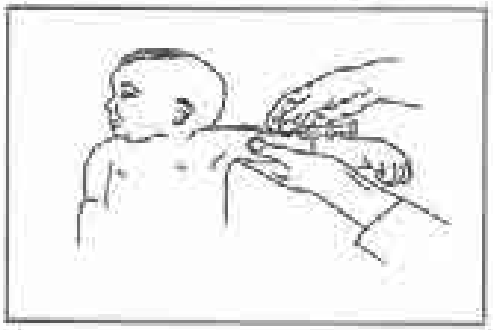
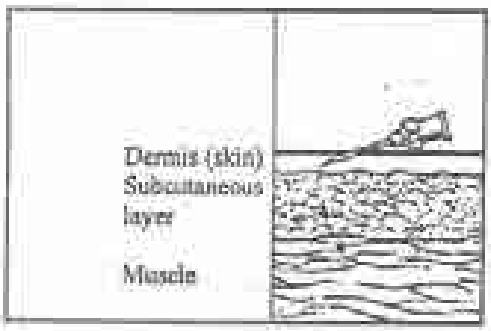


Figure 1.1.5b: Needle position for injection of BCG vaccine (intradermal)



1.1.6 How it is given

Table 1.1.6 BCG administration guidelines

	Recommendation	Comment
Age	Birth	If not given at birth, as soon as possible after birth
Dose size	Usually 0.05ml	See the manufacturer's instructions. If the child is over 1 year old give 0.1ml
Number of doses	One	If the child is over 1 year old give 0.1ml
Injection site	Upper left arm in top layer of skin	Do not rub or apply anything to injection site

1.1.7 Side effects

Normal reaction

- When BCG vaccine is injected, a small raised lump appears at the injection site. This usually disappears within 30 minutes.
- After approximately two weeks, a red sore develops which is 10mm in diameter (the size of the end of an unsharpened pencil).
- The sore remains for another two weeks and then heals. A small scar about 5mm across, resulting from the sore, remains for life. This is a sign that the child has been effectively immunized.

Swelling of glands or formation of abscess

Sometimes the glands in a child's armpit or near the elbow swell up after injection with BCG vaccine, or he / she may develop an abscess. Swollen glands or abscesses occur because:

- A non-sterile needle or syringe was used
- Too much vaccine was injected
- The vaccine was injected under the skin instead of in its top layer

1.1.8 How to treat side effects

Table 1.1.8 Treatment of side-effects (BCG)

Vaccine	Side effects	Treatment	Remarks
BCG	• Small sore will develop at site after a week and may last for about 2 weeks	• Keep dry and clean (do not put any ointment or medicine on it)	Will leave a small scar
	• Swollen glands	• Refer to a doctor	
	• Abscess	• Refer to a doctor	

1.2 Diphtheria

1.2.1 What is diphtheria?

Diphtheria is caused by a germ called **Corynebacterium diphtheriae**.

- The germ produces a toxin that can harm or
- destroy human body tissues and organs.
- One type of the disease affects the pharynx
- and other parts of the throat.
- Another type, commoner in the tropics, causesulcers on the skin.
- Diphtheria affects people of all ages, but mostly non-immunized children under 15 years of age.

1.2.2 How is diphtheria spread?

- The type of diphtheria that affects the throat is spread in droplets and secretions from the nose, throat and eyes when there is close contact between infected and uninfected people
- The other type is spread through contact with skin ulcers. This form of the disease is often disseminated on clothing and other articles that have been contaminated with fluid from skin ulcers.
- The spread of the disease is favoured by overcrowding and poor living conditions.
- People infected with diphtheria usually become ill within two to four days, although the symptoms may not appear until six days have elapsed.
- Infected individuals can usually spread the disease to others for up to four weeks, or longer.
- During outbreaks and epidemics some infected persons may carry the germ without showing any signs or symptoms (healthy carriers) but can still spread the disease to other people.

1.2.3 What are the signs and symptoms?

When diphtheria affects the throat and tonsils, the early symptoms and signs are:

- Sore throat,
- Loss of appetite
- Slight fever
- Within two to three days a bluish-white or grey membrane forms in the throat and tonsils. If there is bleeding the membrane may become greyish-green or black. It sticks to the soft palate of the throat, and bleeding may occur if attempts are made to remove it, croup.

The patient may recover at this point or may develop severe forms of the disease.

Patients with severe disease:

- Do not show high fever
- May develop severe weakness
- May develop swelling of the neck and obstruction of the airway

1.2.4 What are the complications?

- Abnormal heartbeats may occur during the early phase of the illness or weeks later
- Heart failure may result

In the type of diphtheria affecting the skin, the lesions may be painful, reddened and swollen.

- Patients with severe disease or complications may die.

Note: Any chronic skin lesions may become infected with diphtheria.

1.2.5 How is diphtheria treated?

- Persons in whom diphtheria is suspected should be given appropriate antibiotics.
- They should be isolated to avoid exposing others to the germs.
- Patients become non-infectious about two days after the commencement of antibiotic treatment.

1.2.6 How is diphtheria prevented?

- The most effective way of preventing diphtheria is to maintain a high level of immunization in the community.
- A mother can pass protective antibodies to her baby, but this protection lasts for only about six months after birth.
- Diphtheria toxoid vaccine is given together with pertussis vaccine and tetanus toxoid as DPT vaccine.

Remember:

- **Diphtheria is spread from person to person in airborne droplets and through close contact.**
- **The disease can spread rapidly and result in large epidemics where immunization coverage is low.**
- **It most often affects children under 15 years of age.**
- **The most effective way to prevent diphtheria is to maintain a high level of immunization coverage in the community.**

1.3 Pertussis

1.3.1. What is pertussis?

- Pertussis, or whooping cough, is a disease of the respiratory tract caused by a germ called **Bordetella pertussis**.
- The germ lives in the mouth, nose and throat.
- The disease is common in non-immunized children all over the world.
- It has become increasingly so in recent years and severe epidemics have occurred in countries where immunization coverage is low.
- The disease is most dangerous in children aged less than 1 year.

1.3.2. How is Pertussis spread?

- Pertussis spreads very easily from person to person through droplets produced by coughing or sneezing.
- Most persons exposed to the germs become infected.
- In many countries the disease occurs in regular epidemic cycles of three to five years.
- The most susceptible people are the youngest non-immunized children.
- The disease is most readily transmitted as from seven days after a person has been exposed to the germs until three weeks after the start of coughing.

1.3.3 Signs and symptoms of Pertussis

There are usually three stages in the illness:

Stage 1

Initially a child appears to have a common cold with:

- Runny nose
- Watery eyes
- Sneezing
- Fever and
- A mild cough

Many children with pertussis have coughing bouts, which may last four to eight weeks.

Stage 2

- The cough worsens.
- The child has numerous bouts of rapid coughing.
- At the end of these bouts the child takes in air with a high-pitched whoop.
- The child may turn blue because of a lack of oxygen during a long bout of coughing.
- Vomiting and exhaustion often follow the coughing attacks, which are particularly frequent at night.

This stage usually lasts one to six weeks but may go on for up to ten weeks. The attacks become milder with the passage of time.

Stage 3
- Recovery takes place.
- The coughing gradually becomes less intense and stops in two to three weeks.

Note: Usually there is no high fever during the illness.

1.3.4 Complications of Pertussis

Complications are most probable in young infants.
- The commonest and the cause of most deaths is bacterial pneumonia.
- Convulsions and seizures may occur. These arise because of
  - the reduced oxygen supply to the brain during coughing attacks or
  - the toxins released by the pertussis germs.

- Inflammation of the middle ear (otitis media)
- Dehydration.

1.3.5 What is the treatment for pertussis?
- Treatment with an antibiotic, usually erythromycin, may make the illness less severe.
- The use of antibiotics also reduces the ability of the patient to infect others because the medicines kill germs in the nose and throat.
- Plenty of fluids should be given to prevent dehydration.

1.3.6 How is pertussis prevented?
- Prevention involves immunization with pertussis vaccine, which is usually given in combination with diphtheria and tetanus as DPT.
- Newborns and infants are **not** protected against pertussis by maternal antibodies.
- A person infected with pertussis usually acquires lifelong immunity.

Remember:

- **Pertussis is a bacterial infection spread from person to person by sneezing and coughing.**
- **The disease is highly infectious, especially where people live in crowded conditions and nutrition is poor.**
- **Infants and very young children are the people most likely to be infected, to have serious complications, and to die from the disease.**
- **The most effective way to prevent pertussis is to immunize all children aged under 1 year.**

1.4 Tetanus including maternal and neonatal tetanus, (MNT)

1.4.1 What is tetanus?
- Tetanus or lockjaw, is caused by the germ **Clostridium tetani**, which grows in damaged tissue, for instance in a wound or in a baby's umbilical cord.
- The germ is common in the environment, often occurring in soil containing manure.
- The bacteria form spores that can survive in the environment for years.
- The toxin they produce poisons the nerves that control the muscles, and this causes stiffness.
- In tetanus the affected person's muscles all contract, making the body stiff. The disease is particularly common and serious in newborn babies, when it is called **neonatal tetanus (NNT).**
- People of all ages can contract tetanus.
- Neonatal tetanus kills between 500 000 and 1 million babies in the world every year.
- Almost all babies who contract the disease die.
- In Nigeria, NNT is a major cause of neonatal deaths.
- Maternal tetanus commonly occurs following an abortion or after delivery.

1.4.2 How is tetanus spread?
- Tetanus is **not** transmitted from person to person.
- A person may become infected if soil or animal dung enters a wound or cut. This may

happen, for example, if a wound is made with a dirty tool.

- Tetanus germs are likely to grow in deep puncture wounds caused by dirty nails, needles, barbed wire, thorns, wood splinters and animal bites.
- A newborn baby may become infected if the knife, razor or other instrument used to cut the umbilical cord is dirty. (Use new and sterile instruments always)
- Infection may also occur if animal dung or ash is used to dress the cord, or if soil enters the baby's navel.
- If the hands of the person delivering are not clean, the baby may become infected.
- Infants and children may also contract tetanus when dirty instruments are used for circumcision, scarification and skin piercing.
- Also when dirt, charcoal or other unclean substances are rubbed into a wound.

Remember:

- **Neonatal tetanus remains a serious problem in countries with poor immunization coverage and unclean practices associated with childbirth.**
- **Infants and children may also contract tetanus when dirty instruments are used for circumcision, scarification and skin piercing. Use new and sterile instruments always!**
- **If untreated, tetanus is a very serious disease at any age. Almost every person contracting tetanus dies.**

1.4.3 What are the signs and symptoms?

In all cases of tetanus, the incubation period is usually between 3 and 10 days but may be as long as three weeks. In newborn babies, the symptoms usually appear 4 to 14 days after birth. The shorter the incubation period, the higher is the risk of death.

- Muscular stiffness in the jaw is a common first sign, followed by:
- Stiffness of the neck
- Difficulty in swallowing
- Stiffness of the stomach muscles
- Muscle spasms
- Sweating
- Fever

Newborn babies with tetanus appear normal at birth but stop sucking 3 to 10 days later. At 5 to 13 days they are still not breast-feeding, the whole body becomes stiff, severe muscle contractions and convulsions occur, and death follows in most cases.

1.4.4 What are the complications?

- Fractures of the spine or other bones may occur as a result of muscle spasms and convulsions.
- Abnormal heartbeat
- Coma
- Pneumonia and other infections may also occur.
- Death is particularly likely in the very young.

1.4.5 What is the treatment for tetanus?

- Wounds should be thoroughly cleaned and dead tissue should be removed.
- For persons with wounds that are neither clean nor minor and who are not fully protected against tetanus, tetanus immune globulin (ATS) should be given immediately.
- Antispasmodics
- Antibiotics may also be used.

Note: Persons who recover from tetanus do not have natural immunity. They will need vaccinations.

1.4.6 How is tetanus prevented?

- The prevention of neonatal tetanus requires women of childbearing age to receive correct doses of tetanus toxoid as per schedule.
- This results in the protection of mothers and in tetanus antibodies being transferred from them to their foetuses.
- Infants are thus protected against the disease at birth.
- Clean practices during delivery and clean wound care are also very important in preventing tetanus.

Remember:

- **Tetanus is caused by bacteria found in the soil.**
- **Infection occurs when unclean objects puncture or cut the skin and umbilical cord and also during unclean delivery practices.**
- **Nearly all newborns with tetanus die.**
- **All children should be immunized against tetanus because antibodies transferred from the mother before birth last for only a few months.**
- **The most important way to achieve prevention is to immunize women of childbearing age and to ensure clean delivery practices.**

1.5 Diphtheria-Pertussis-Tetanus (DPT) vaccine

1.5.1 What it is

Diphtheria-pertussis-tetanus (DPT) vaccine is made from:

- Diphtheria toxoid
- Pertussis vaccine
- Tetanus toxoid

1.5.2 How it is stored

- DPT vaccine should be stored at a temperature between 0°C and +8° C.
- The diphtheria and tetanus toxoid parts of DPT vaccine are damaged by freezing therefore **do not freeze DPT vaccine.**
- Pertussis vaccine is damaged by heat.
  To check if DPT vaccine has been frozen, shake the vial. If granules appear a short time afterwards, the vaccine has been spoilt and you must dispose of it. This is called the **shake test**. To perform the "shake" test do as follows:

- Take two DPT vials, one that you think might be frozen and another from the same manufacturer that you **KNOW** has been frozen for comparison.
- Shake both vials.
- Look at the vaccine inside the two vials.
- Let the sediment settle for 15-30 minutes.
- Again look at the vaccine inside the two vials, if the vaccine in both vials look similar (granules collected at the bottom), dispose of the suspected vaccine.

1.5.3 When it is given

DPT vaccine should be given at the ages of:

- 6 weeks
- 10 weeks
- 14 weeks

The interval between doses must be **at least 4 weeks.**

DPT vaccine should **NOT** be given to children over 5 years of age or to children who have suffered a severe reaction to a previous dose of this vaccine. Instead, a combination of tetanus and diphtheria toxoids (Td) should be given where available.

1.5.4 The number and size of doses

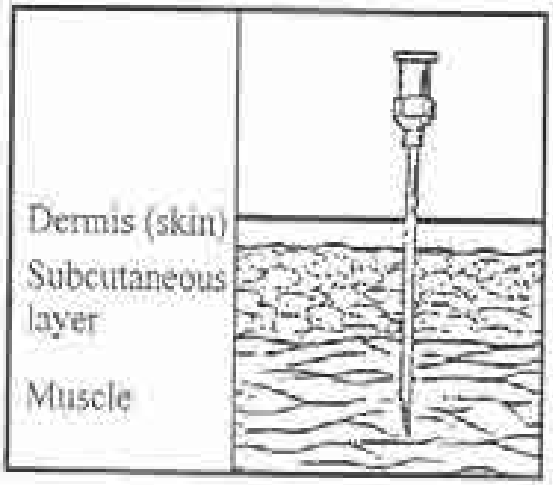
- Three doses are given each of 0.5 ml.

1.5.5 Where it is given

- DPT is injected into the muscle in the outer part of the thigh (see figure 1.5.5a and 1.5.5b).

Figure 1.5.5a: Site of injection of DPT Vaccine (outer part of the thigh)

Figure 1.5.5b Needle position for injection of DPT vaccine (intramuscular)



1.5.6 How it is given

Table 1.5.6 DPT administration guidelines

	Recommendation	Comment
Age	DPT 1—— 6 weeks DPT 2—— 10 weeks DPT 3—— 14 weeks	If a child is not given DPT vaccine at 6 weeks, give it as soon as possible thereafter. Wait 4 weeks between doses. Complete all 3 doses before 6 months of age to avoid side effects which are commoner after that age.
Dose size	0.5ml for each dose	See the manufacturer's instructions
Number of doses	Three	
Injection site	Muscle of outer upper thigh	Never immunize in the buttock

1.5.7 Side-effects

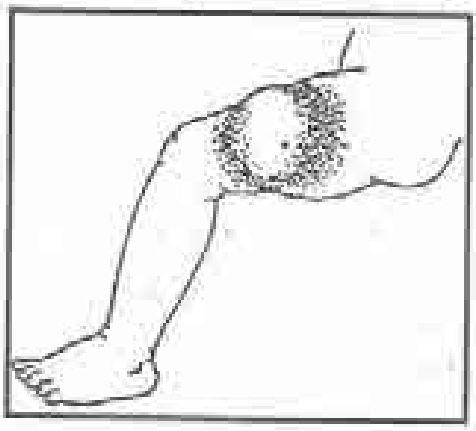
Reactions to DPT vaccine are usually mild. They include:

- **Fever:** A child may have fever the evening after receiving DPT vaccine. The fever should disappear within a day.

Note: Fever that begins more than 24 hours after DPT injection is unlikely to be a reaction to the vaccine.

- **Soreness:** Some children have pain, redness or swelling at the injection site.
- **Abscess:** An abscess may develop a week or more after a DPT injection. This can happen because:
  - A non-sterile needle or syringe was used
  - The vaccine was not injected into the muscle.

Figure 1.5.7 Abscess caused by non-sterile syringe or incorrectly administered injection



1.5.8 How to treat side-effects

Table 1.5.8 Treatment of side-effects (DPT)

Vaccine	Side-effect	Treatment	Remarks
DPT	• Fever	• Paracetamol and tepid bath	Will disappear within 1 day
	• Pain and soreness	• Paracetamol	
	• Abscess	• Antibiotics	May require incision and drainage

1.6 Tetanus toxoid (TT)

1.6.1 What it is

- Tetanus toxoid is a substance derived from the inactivation of tetanus toxin. Tetanus toxin is a product from the causative agent of tetanus (Clostridium tetani).
- Tetanus toxoid (TT) is given to women of childbearing age to prevent maternal and neonatal tetanus.
- It is the same tetanus toxoid as that given to children in DPT vaccine.

When given to a woman, who is or becomes pregnant, the antibodies that form in her body cross the placenta into the fetus. These antibodies protect the baby against tetanus during birth and for a few months thereafter. They also protect the woman against tetanus.

1.6.2 How it is stored

- Tetanus toxoid should be stored at a temperature between 0° C and +8° C.
- It should never be frozen.

1.6.3 When it is given

Five doses are given to women of childbearing age:

- TT 1: at first contact with woman of childbearing age, or as early as possible in pregnancy.
- TT 2: At least 4 weeks after TT 1.
- TT 3: At least 6 months after TT 2
- TT 4: At least 1 year after TT 3
- TT 5: At least 1 year after TT 4

1.6.4 The number and size of doses

- Five doses are given each of 0.5ml.

1.6.5 Where it is given

Tetanus toxoid is injected into the muscle of the upper arm of the woman.

Figure 1.6.5a Position and Site for injection of TT vaccine (intramuscular)

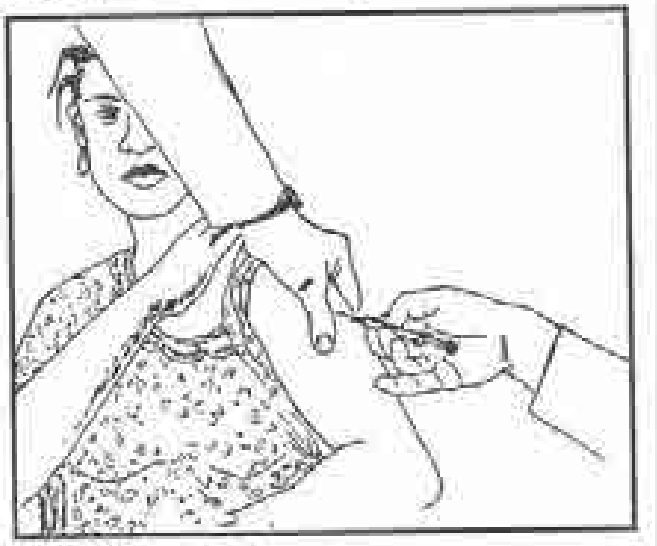
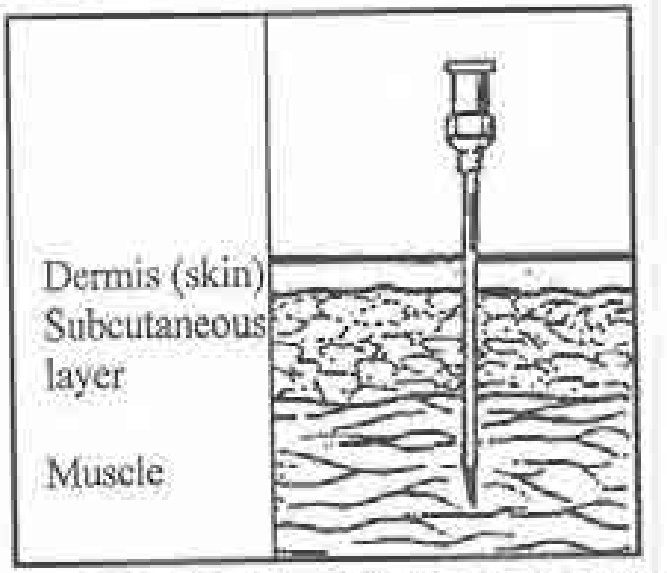


Figure 1.6.5b Needle position for injection of TT vaccine (intramuscular)



1.6.6 How it is given

Table 1.6.6 Tetanus toxoid administration guidelines

	Recommendation	Comment
Age		Period of protection
	TT 1: at first contact with woman of childbearing age, or as early as possible in pregnancy	No protection
	TT 2: At least 4 weeks after TT 1.	3 years
	TT 3: At least 6 months after TT 2	5 years
	TT 4: At least 1 year after TT 3	10 years
	TT 5: At least 1 year after TT 4	All childbearing years
Dose size	0.5ml	See manufacturer's instructions
Number of doses	5	Provide protection during child bearing years
Injection site	Muscle of upper arm	Never immunize in the buttock

1.6.7 Side-effects

After injection a woman may have:
- Mild pain
- Redness
- Warmth
- Swelling for one to three days at the injection site.

This reaction may be more common after later doses than earlier ones.

Table 1.6.8 Treatment of side-effects (TT)

1.6.8 How to treat side-effects

Vaccine	Side-effects	Treatment	Remarks
TT	Mild pain	Paracetamol	Will disappear within 1 to 3 days
	Redness and warmth	No treatment necessary	
	Swelling	No treatment necessary	

1.7 Poliomyelitis (Polio)

1.7.1 What is polio?
- Polio is caused by the **poliomyelitis** virus.
- It is a crippling disease that can occur in adults but it is much commoner in children.

1.7.2 How is polio spread?
- The virus enters the body through the mouth when people eat food or drink water contaminated by faeces.
- The disease is most likely to spread in areas of poor sanitation.
- The virus enters the bloodstream and may invade certain types of nerve cells, which it can damage or destroy.
- The virus also occurs in throat secretions, and is sometimes spread in airborne droplets through close contact with persons carrying the infection who are sneezing or coughing, or through other types of exposure to throat and nose secretions.

The disease is very easily spread.
- Nearly all children living in households where someone is infected become infected.
- Persons are most likely to spread the virus 7 to 10 days before and 7 to 10 days after they first experience symptoms of the disease.
- Infected persons who do not have symptoms can also spread the disease.

Remember:

- **Many people who contract polio do not become seriously ill but may spread the disease to others who may become ill.**
- **About 1 child in every 200 infected by the polio virus develops paralysis.**

1.7.3 What are the signs and symptoms?

- People infected with the polio virus **may not** feel ill.
- Some may have influenza-like symptoms such as:
  - Fever
  - Loose stools
  - Sore throat
  - Stomach upset
  - Headache
  - Stomach ache
- Sometimes there may be pain or stiffness in the neck, back and legs.
- **The most serious form of the disease is paralytic polio.**
  - It begins with the milder forms but usually causes severe muscle pain.
  - Paralysis usually develops during the first week of illness. The use of one or both legs or arms may be lost, and breathing may be impossible without the help of a respirator.
- In childhood polio there is initially a slight fever.
  - Within 3 to 5 days the child develops a headache, stiff neck, and muscle pain, and the fever then increases.
  - After a further period of 1 to 3 days, the child becomes paralyzed in the legs, arms, face or chest.
  - After a further period of 1 to 3 days, the child becomes paralyzed in the legs, arms, face or chest.

The incubation period ranges from 3 to 35 days. Laboratory testing of the stools is used to confirm cases of polio.

1.7.4 What are the complications?

- About 1 in 200 infected children become paralyzed, and most of these children have some permanent paralysis.
- Death may occur if the muscles used for breathing are paralyzed and no respirator is available.

1.7.5 How is polio treated?

- There is no treatment but the symptoms can be relieved.
- Sometimes the patient has to use a respirator in order for breathing to continue.

1.7.6 How is polio prevented?

- Polio prevention involves immunization with oral polio vaccine (OPV).
- Antibodies from the mother provide protection to the infant for two to three months after birth.
- Infected people who recover can develop natural immunity that protects them against future infection of the Polio strain they had been infected with, but not against others. They still need a full course of OPV
  - OPV is recommended by EPI for the eradication of polio.
  - It is cheap, easy to give, highly effective and safe.
  - The NPI schedule for routine immunization is comprised of four doses, starting at birth and ending at 14 weeks of age.

Remember:

- **Polio is caused by a virus and can lead to severe, possibly lifelong, paralysis.**
- **The disease is easily spread from person to person and from hand to mouth, through eating food or drinking water that has been contaminated with faeces from an infected individual and occasionally by droplets.**
- **The recommended method of prevention in children is to immunize with oral polio vaccine (OPV).**

1.8 Oral polio vaccine (OPV)

1.8.1 What it is

- Oral polio vaccine (OPV) gives protection against the three types of viruses that cause polio.
- It is a liquid that comes in two types of containers:
  - Small plastic bottles that work like droppers
  - Glass vials with droppers in a separate plastic bag.
- From January 1996 all OPV vials supplied by WHO/UNICEF have had a vaccine vial monitor (VVM) attached.
  - The VVM shows the health worker whether the OPV in the vial to which the monitor is attached is safe to use.

1.8.2 How it is stored

- OPV should be stored at a temperature between 0C and +8C at health facility level.
- It is easily damaged by heat
- OPV is not harmed by freezing

1.8.3 When it is given

- OPV should be given at:
  - OPV0 at birth
  - OPV1 at 6 weeks of age
  - OPV2 at 10 weeks of age
  - OPV3 at 14 weeks of age
- The interval between doses must be at least four weeks.

1.8.4 The number and size of doses

- Four doses are given each of two drops.
- If a child has diarrhoea, give OPV as usual but administer an extra dose, i.e. a fifth dose, at least four weeks after he or she has received the last dose in the schedule.

1.8.5 Where it is given

- OPV is dropped in the mouth with the dropper that comes with the vaccine.

1.8.6 Side-effects

- OPV has no side-effects.

1.9 Measles

1.9.1 What is measles?

- Measles is caused by the measles virus and is highly infectious, i.e. very easily spread.
- It kills more children than any other of the EPI target diseases.
- It is constantly present in some populations and often occurs in epidemic proportions.
- In conditions of crowding and poverty where large numbers of non-immunized people are in close contact the stage is set for measles epidemics.

1.9.2 How is measles spread?

- Measles is spread by contact with nose and throat secretions of infected people and in airborne droplets released when an infected person sneezes or coughs.
- Transmission by airborne droplets can occur even two hours after an infected person has left a room or other closed area.
- An infected person can infect others a few days before and for several days after he or she develops symptoms.
- The disease spreads easily wherever infants and children gather together.

1.9.3 What are the signs and symptoms?

- The incubation period ranges from 7 to 18 days.
- The first sign of infection is a high fever lasting 1 to 7 days.
- During this period, there may be a runny nose, cough, red and watery eyes, and small white spots inside the cheeks (koplik spots).
- After several days a slightly raised rash develops, spreading from the face and upper neck to the body and then to the hands and feet over a period of about three days. It lasts for five to six days and fades successively from the same areas.
- There may also be loss of appetite and loose stools, especially in infants.

1.9.4 What are the complications?

Complications occur particularly in children aged less than 5 years and in adults aged over 20 years. They are:

- Severe diarrhoea which may be a problem, especially in infants.
- Dehydration from severe diarrhoea.
- Inflammation of the middle ear.
- Inflammation of the respiratory tract.
- Pneumonia, which is the commonest cause of death, associated with measles.
  - This occurs usually because the measles virus weakens the immune system.

  - The pneumonia may be caused by the measles virus itself or by other germs.
- Encephalitis, a dangerous swelling of the brain.
- Blindness (measles is a major cause among children in Africa).
- **Severe measles** is particularly likely in:
  - Poorly nourished children, especially those not receiving sufficient vitamin A.
  - Children living in crowded conditions, and
  - Those with immune systems that have been weakened by AIDS or other diseases.

Note: Infants born to mothers who have had measles are usually immune for six to eight months.

1.9.5 What is the treatment for measles?

Treatment of uncomplicated measles is symptomatic and supportive with antipyretics, fluids, calamine lotion and Vitamin A.

Treatment of complications of measles includes:

- Vitamin A administration, which helps to avoid the complications of eye damage and blindness.
  - All children with severe measles, and all children in developing countries with measles, should receive vitamin A supplementation as soon as they are seen at a health facility, and a second dose should be given the next day.
- Antibiotics for secondary bacterial infections.
- General nutritional support and the treatment of dehydration with oral rehydration solution (ORS) may be necessary.
- Encouraging children with measles to eat and drink.

Table 1.9.5 Treatment with Vitamin A

AGE	IMMEDIATELY ON DIAGNOSIS	NEXT DAY
Infants < 6 months	50,000 IU	50,000 IU
Infants 6 -11 months	100,000 IU	100,000 IU
Children 12 months plus	200,000 IU	200,000 IU

1.9.6 How is measles prevented?

The prevention of measles involves immunization with measles vaccine. Children aged less than 12 months, if not immunized, are the most likely to acquire measles infection. Therefore all children should:

- Receive one dose at nine months or before the age of 1 year.
- Be immunized against measles on admission to hospital because of the danger of infection.
- Be isolated for at least four days after the skin rash appears if admitted to hospital with measles.
- Be isolated for the duration of the illness if they are also **malnourished.**

Note: If they are aged between 6 and 9 months the initial dose should be followed by a second as soon as possible after the age of 9 months.

Remember:

- **Measles is a highly infectious viral disease that is spread from person to person through sneezing, coughing and close personal contact.**
- **It is the main killer of children among the EPI target diseases.**
- **All children should receive measles vaccine at 9 months and before the age of 1 year.**
- **Severe complications of measles can be avoided if proper treatment is given.**

Some 124 million children worldwide under 5 years of age suffer vitamin A deficiency. In areas known to be vitamin A deficient, vitamin A can be given at the same time as measles vaccine or any other recommended EPI vaccine.

1.10 Measles vaccine

1.10.1 What it is

Measles vaccine is for preventing measles.

- It comes in powder form together with a diluent. It must be reconstituted before use.
  - Reconstituted measles vaccine **must be used within six hours** then discarded.

Note: Where there is vitamin A deficiency, such as Nigeria, vitamin A is often given at the same time with measles vaccine.

1.10.2 How it is stored

- Measles vaccine and diluent should be stored at a temperature between 0°C and –8°C.
- Freezing **does not** damage dry measles vaccine.

1.10.3 When it is given

- Measles vaccine is given at 9 months or as soon as possible after 9 months regardless of whether they have had measles before or not.
- Maternal antibodies against measles last longer than other antibodies, so immunization with measles vaccine is often not effective before 9 months of age.
- During epidemics, children from 6 to 9 months of age may receive a dose but they must be given a second dose at 9 months of age. The doses must be at least 4 weeks apart.

Note: All children between 6 and 9 months of age who are admitted to hospital should be given a dose of measles vaccine. This should <u>not</u> be marked on their immunization cards. Another dose should be given at 9 months of age.

1.10.4 The number and size of doses

- One dose of 0.5 ml is given.

1.10.5 Where it is given

- Measles vaccine is injected into the subcutaneous layer of the upper **left** arm.

Figure 1.10.5a Position of Measles vaccine Injection

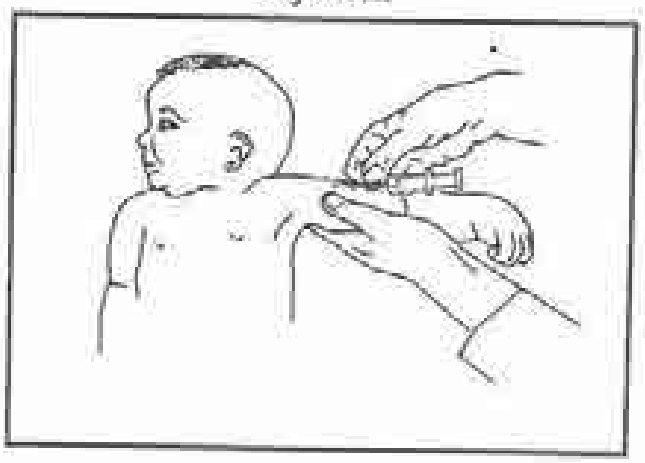
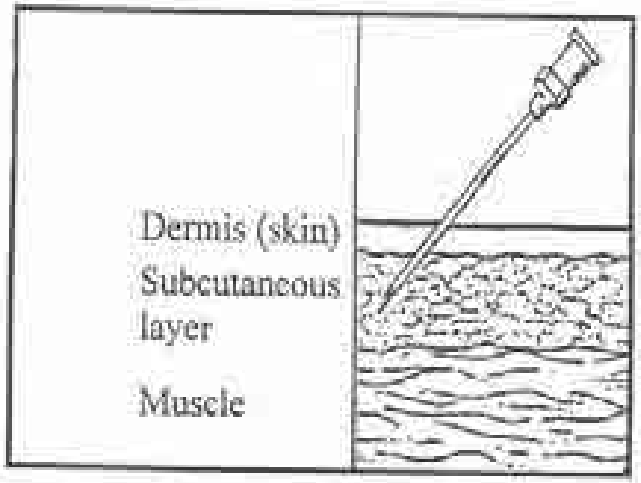


Figure 1.10.5b Needle position for measles injection (subcutaneous)



1.10.6 How it is given

Table 1.10.6 Measles vaccine administration guidelines

	Recommendation	Comment
Age	9 months	If a child is not immunized at 9 months, immunize as soon as possible thereafter. All children 9 months of age should receive measles vaccine regardless of whether they have had measles before or not. All children between 6 and 9 months of age who are admitted to hospital should be given a dose of measles vaccine. This should not be marked on their immunization cards. Another dose should be given at 9 months of age. The doses must be at least 4 weeks apart.
Dose size	0.5 ml	See the manufacturer's instructions.
Number of doses	One	
Injection site	Subcutaneous injection in upper left arm	Press the site gently with cotton wool after injection.

1.10.7 Side-effects

- A mild fever and rash lasting one to three days may occur approximately a week after immunization.

1.10.8 How to treat Side-effects

Table 1.10.8 Treatment of side-effects (Measles vaccine)

Vaccine	Side-effects	Treatment	Remarks
Measles	• Mild temperature • Slight rash may appear	Give paracetamol No treatment	Will go away in 2 - 4 days

1.11 Yellow fever

1.11.1 What is Yellow fever?

- Yellow fever is caused by the yellow fever virus.
- It is an acute disease of high mortality
  - In areas where the disease is endemic about 5% of infected persons die from the disease.
  - In epidemics, when large numbers of people are infected during a short period, up to 50% of infected people may die.
- It occurs in tropical and subtropical areas, mainly in sub-Saharan Africa, Central and South America
- It affects people of all ages

1.11.2 How is Yellow fever spread?

- The yellow fever virus is spread by

mosquitoes of the Aedes species when they bite humans.

- It is not spread directly from person to person.
- The Aedes mosquitoes act as hosts for the infection and transmit it to people, and are said to be vectors of the diseases. They breed in small accumulations of stagnant water.
- Once infected, mosquitoes carry the virus for life.
- Mosquitoes may acquire the virus by biting either infected monkeys or humans, and they can then spread it to humans.

1.11.3 What are the signs and symptoms?

- The illness may be so mild that it is not noticed or diagnosed.
- It can be confused with malaria, hepatitis and other diseases.
- Three to six days after a mosquito has infected a person he or she suddenly develops:
  - Fever
  - Chills
  - Headache
  - Backache
  - General muscle pain
  - Stomach upset and vomiting
- As the disease progresses:
  - The affected person becomes slow and weak
  - There is bleeding of the gums
  - There may be blood in the urine
  - There may be jaundice and black vomitus

1.11.4 What are the complications?

The disease usually lasts two weeks, after which the patient either recovers or dies. Some of the complications include:

- Convulsion
- Coma
- Death

1.11.5 What is the treatment for yellow fever?

- Yellow fever is diagnosed by performing a laboratory blood test.
- There is no specific treatment but patients may require fluids to compensate for dehydration.
- Persons recovering from yellow fever have lifelong immunity.

1.11.6 How is yellow fever prevented?

- The disease is prevented by immunization with yellow fever vaccine.
- It is given to children in a single dose, at 9 months at the same time as measles vaccine.
- The vaccine is very safe and effective, producing antibodies against yellow fever that can last for 10 years or longer.
- Prevention also involves the elimination of stagnant water in which the vector mosquitoes breed.

Remember:

- **Yellow fever is caused by a virus that is transmitted by Aedes mosquitoes.**
- **It is an acute disease from which patients either recover completely or die.**
- **Yellow fever causes about 30 000 deaths annually worldwide.**
- **Children in 33 African countries (including Nigeria) are at highest risk for the disease.**
- **The yellow fever vaccine is safe and effective against the disease.**

1.12 Yellow Fever Vaccine

1.12.1 What it is

- Yellow fever vaccine is recommended for control of yellow fever, as part of the routine immunization schedule in countries where the disease is endemic as in Nigeria.
- Yellow fever vaccine comes in powder form and must be reconstituted with its diluent before use.
- Reconstituted vaccine **must be used within six hours** then discarded.

1.12.2 How it is stored

- Yellow fever vaccine and diluent must be stored at a temperature between 0°C and +8°C.
- Reconstituted yellow fever vaccine is easily damaged by heat.

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- It is not spread directly from person to person.
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- Reconstituted vaccine **must be used within six hours** then discarded.

1.12.2 How it is stored
- Yellow fever vaccine and diluent must be stored at a temperature between 0°C and +8°C.
- Reconstituted yellow fever vaccine is easily damaged by heat.

1.12.3 When it is given

- Yellow fever vaccine is usually given at 9 months of age, at the same time as measles vaccine.
- It should **NOT** be given to children under 6 months
- Yellow fever vaccine should not be given to children who have clinical AIDS.

1.12.4 The number and size of doses

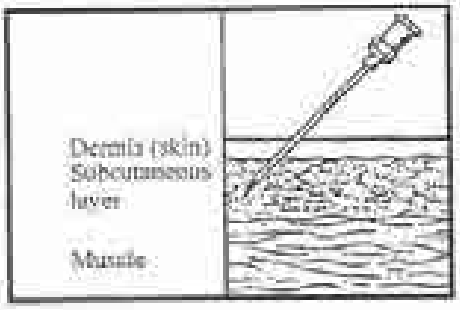
- One dose of 0.5 ml is given.

1.12.5 Where it is given

The vaccine is given subcutaneously in the upper **right** arm.

Figure 1.12.5a Site for injection of yellow fever vaccine (upper arm)

Figure 1.12.5b Needle position for injection of yellow fever vaccine (subcutaneous)



1.12.6 How it is given

Table 1.12.6 Yellow fever vaccine administration guidelines

Item	Recommendation	Comment
Age	9 months	Not younger than 6 months
Dose size	0.5 ml	See the manufacturer's instructions
Number of doses	One	
Injection site	Subcutaneously in the upper **right** arm	Opposite arm from measles. Press the site gently with cotton wool after injection.

1.12.7 Side-Effects

Children may get:

- Fever
- Headache
- Mild muscle or joint pain

1.12.8 How to treat side-effects

Table 1.12.8 Treatment of side-effects (Yellow Fever)

Vaccine	Side-effect	Treatment	Remarks
Yellow fever	• Mild fever	Give paracetamol	Will disappear within 2 - 4 days
	• Headache or mild muscle pain	Give paracetamol	

1.13 Hepatitis B

1.13.1 What is hepatitis B?

- Hepatitis B is a disease caused by the **Hepatitis B virus**, which affects the liver.
- People infected usually recover, but some continue to carry the virus for many years and can spread the infection to others. These are chronic carriers.
- It is estimated that there are about 350 million carriers of Hepatitis B virus worldwide.

1.13.2 How is hepatitis B spread?

The Hepatitis B virus is carried in the blood, saliva, semen, vaginal fluids and most of the other body fluids. However, it is usually spread by contact with blood in the following ways:

- Injection with unsterilized needles or syringes contaminated by hepatitis B virus from an infected person, for instance another patient or a needle-user.
- Transmission of hepatitis B virus by mothers to their babies during the birth process, when contact with blood always occurs.
- Transmission between children during social contact through cuts, scrapes and scratches.
- Transmission during sexual intercourse through contact with blood or other body fluids.
- The incubation period averages six weeks but may be as long as six months.

The disease occurs all over the world and can affect all age groups. Most chronic carriers are in China, South-East Asia, and Africa.

Note: The virus does not occur in an infected person's stools unless the stools contain blood. It does occur in the milk of infected mothers but in such small amounts that breast-feeding can continue.

1.13.3 What are the signs and symptoms?

- The symptoms which may last several weeks, include:
  - General weakness and fatigue that may continue for months.
  - Loss of appetite
  - Jaundice
  - Stomach upsets
  - Influenza-like symptoms
  - Dark urine and pale stools
- A laboratory blood test is required to confirm whether a person is a carrier or has hepatitis B virus disease.
- Most acute infections in adults are followed by complete recovery, and the affected people rarely become chronic carriers. They are protected throughout their lives.
- Many infected children, even though they may not be acutely ill as a rule, become chronic carriers, and many develop severe complications.

Note: Children rarely show signs and symptoms of the infection. A person with no symptoms may remain infected for many years and can spread the infection to others (such a person is more likely to suffer complications caused by liver damage in the long term).

1.13.4 What are the complications?

Most serious complications include:

- Chronic hepatitis
- Cirrhosis
- Liver failure
- Liver cancer
- Death

Remember:

- **There are about 150 million carriers worldwide of hepatitis B virus, most of whom are unaware that they are carriers.**
- **Most babies born to mothers who are carriers also become carriers**
- **About 25% of untreated babies who are infected with hepatitis B virus subsequently develop severe chronic liver disease or even liver cancer.**
- **Hepatitis B kills some 1.1 million people worldwide annually.**

1.13.5 What is the treatment for hepatitis B?

- Treatment for the acute infection is mainly supportive.
- In chronic infection, the disease can sometimes be controlled by immunosuppressive drugs.

1.13.6 How is it prevented?

- Hepatitis B can be prevented by hepatitis B vaccine.
- NPI recommends that children receive three doses during the first year of life as follows:
  - At birth or as soon as possible after birth
  - At 6 weeks of age
  - At 14 weeks of age
- All pregnant women should be tested to determine whether they carry the virus in their blood.
- Babies of mothers who are carriers should then receive an injection of hepatitis B antibodies (hepatitis B immune globulin) together with the first dose of vaccine at birth.
- In some countries including Nigeria the hepatitis B vaccine is offered to high-risk groups. These include adolescents and young adults, since the virus is sexually transmitted and is also easily spread through needle sharing.
- Health workers are also offered the vaccine because they are at risk from needle-stick injuries and exposure to contaminated blood and blood products.

Remember:

- **The hepatitis B virus is spread through contact between people's blood and other body fluids.**
- **The disease occurs in both acute and chronic forms.**
- **The younger a person is on becoming infected, the less probable it is that symptoms will occur but the more probable it is that he or she will become a carrier of the disease and develop a severe liver condition later.**
- **Most people are infected by non-symptomatic carriers of the disease, and mothers who are carriers infect many children.**
- **All children should receive hepatitis B vaccine, starting at birth, at the age of 6 weeks and at 14 weeks.**

1.14 Hepatitis B Vaccine

1.14.1 What it is

- Hepatitis B vaccine is a cloudy liquid that comes in a vial or a pre-filled syringe.
- It does not have to be reconstituted.
- Hepatitis B vaccine must be mixed by shaking before administration.
- Hepatitis B vaccine may come as combination vaccine.
- Hepatitis B vaccine is used for preventing Hepatitis B infection.

1.14.2 How it is stored

- Hepatitis B vaccine should be stored at a temperature between 0° C and + 8° C.
- Both heat and freezing damage hepatitis B vaccine.
- Use the shake test to find out if it has been frozen (see section on DPT).

1.14.3 When it is given

- In places where transmission at birth is likely as in Nigeria, the recommended schedule for Hepatitis B vaccine is at:
  - Birth
  - 6 weeks
  - 14 weeks.

1.14.4 The number and size of doses

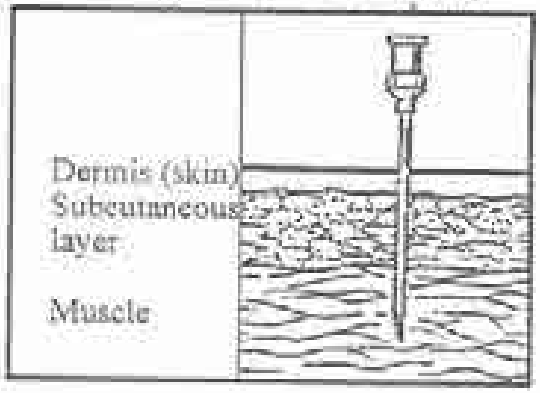
- Three doses are given each of 0.5mls.

1.14.5 Where is it given

- Hepatitis B vaccine is injected in the muscle of the upper thigh (see figure 1.14.5a and 1.14.5b).

Figure 1.14.5a Site for injecting hepatitis B vaccine (upper thigh)

Figure 1.14.5b Needle position for hepatitis B injection (intramuscular)



1.14.6 How it is given

Table 1.14.6 Hepatitis B vaccine administration guidelines

	Recommendation	Comment
Age	At birth At 6 weeks At 14 weeks	Wait at least 4 weeks between each dose.
Dose size	0.5 ml	See the manufacturer's instructions
Number of doses	3	
Injection site	Intramuscular into the upper thigh	Never immunize into the buttock

Note: When DPT vaccine is given at the same time as Hepatitis B vaccine, do not inject both in the same thigh.

1.14.7 Side-effect

A child may develop a mild fever for one or two days after an injection of hepatitis B vaccine.

1.14.8 How to treat side -effect

Table 1.14.8 Treatment of side-effect (Hepatitis B vaccine)

Vaccine	Side effect	Treatment	Remarks
Hepatitis B	Mild fever	Paracetamol	Will disappear within in 2 - 4 days

1.15 Cerebrospinal Meningitis (CSM)

1.15.1 What is cerebrospinal meningitis?

- Cerebrospinal meningitis is caused by bacteria called **Neisseira meningitidis.**
- The disease affects the meninges, which cover the brain and spinal cord.
- The disease occurs worldwide with explosive epidemics periodically in the meningitis belt of tropical Africa.
- Epidemics in Nigeria occur between the months of November and April.

1.15.2 How is CSM spread?

- CSM is spread by droplets and direct contact.
- It can spread rapidly in overcrowded and poor sanitary conditions.
- The incubation period is 2 to 10 days but a carrier state is common.
- Children and young adults are the most susceptible but during epidemics all age groups may be affected.

1.15.3 What are the signs and symptoms?

- CSM can present in many ways ranging from mild fever to severe disease with shock, circulatory collapse and septicaemia
- The typical picture of acute pyogenic meningitis is:
  - Fever
  - Headache
  - Nausea and vomiting
  - Neck stiffness
  - A characteristic petechial rash
  - Loss of consciousness

1.15.4 What are the complications?

The complications of cerebrospinal meningitis include:

- Deafness
- Arthritis
- Encephalitis
- Death

1.15.5 How is CSM treated?

- The most effective treatment for the individual case is a single injection of long-acting (e.g. oily) chloramphenicol.

1.15.6 How is CSM prevented?

- CSM is prevented by immunization with the CSM vaccine.
- In epidemics rifampicin in addition to immunization can be used to prevent disease among close contacts of cases.

1.16 CSM Vaccine

1.16.1 What it is

- CSM vaccine comes in powder form and before use must be reconstituted with accompanying diluent.
- Reconstituted vaccine must be used within 6 hours then discarded.
- CSM vaccine protects against cerebrospinal meningitis.

1.16.2 How it is stored

CSM vaccine and diluent should be stored at a temperature between 0 and +8°C.

1.16.3 When it is given

- During mass campaigns the vaccine should be targeted at persons between 2 years and 30 years of age.
- During epidemics of CSM, the vaccine is administered to everyone aged 2 years and above in the affected areas.

1.16.4 Number and size of doses

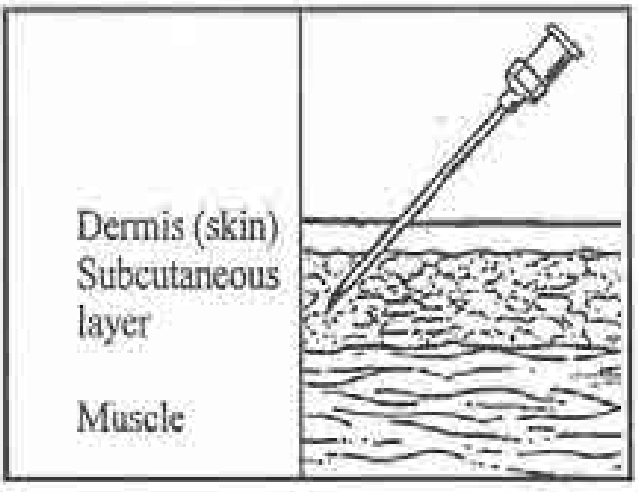
- One dose of 0.5ml is given.

1.16.5 Where it is given

CSM vaccine is injected into the subcutaneous layer of the **right** upper Arm.

Figure 1.16.5a Site for injecting CSM vaccine (right upper arm)

Fig 1.16.5b Needle position for injection of CSM vaccine (subcutaneous)



1.16.6 How it is given

Table 1.16.6 CSM vaccine administration guidelines

	Recommendation	Comment
Age	At 2 years of age and above 2 to 30 years	During epidemics people of all ages are immunized. During mass campaigns
Dose size	0.5ml	See manufacturer's instructions
Number of doses	One dose every 3 years	Vaccination-induced immunity lasts 1 to 3 years
Injection site	Subcutaneous injection in the upper **right** arm	Gently press the site with cotton wool

1.16.7 Side-effects

Local pain with swelling, fever and malaise may occur which lasts for 2 to 3 days after vaccination.

1.16.8 How to treat side-effects

Table 1.16.8 Treatment of side-effects (CSM vaccine)

Vaccine	Side effect	Treatment	Remarks
CSM	• Local pain with swelling • Fever and malaise	No treatment Tepid bath and paracetamol	Will disappear within 2 - 4 days

1.17 Vitamin A and Vitamin A Deficiency (VAD)

1.17.1 Learning Objectives

- Know the importance of Vit. A
- Know recommended doses for each age group and the number of capsules and drops to give each age group
- Recognize the type of capsules of vitamin A available for distribution
- Know side effects/safety, effectiveness of Vit. A capsules

1.17.2 What do we know about vitamin A and its deficiency?

Vitamin A is essential for:

- Growth and development,
- Strengthening of the immune system and hence is critical in helping the body resist infection and disease.
- Limiting the severity of illness and increasing the chances of curability.
- Increase chances of survival.
- Vitamin A deficiency (VAD) causes:
- Reduced resistance to infection leading to dramatically increased risk of death from preventable diseases such as measles, diarrhea and malaria.
- Preventable blindness in children
- Anemia.

1.17.3 How can Vit. A deficiency be prevented?

Vitamin A deficiency can be prevented by eating enough vitamin A-rich foods. Synthetic vitamin A can be added during the processing of some foods, (food fortification). Another way to make sure that children and women get enough vitamin A is to give them vitamin A drops by mouth. This is called vitamin A supplementation.

1.17.4 What are the contacts to give vitamin A supplements?

- Adding vitamin A to NIDs is one of the quickest and least expensive ways of reaching a large number of children in high-risk group.
- Routine immunization could also be used to give our vitamin A supplements at high-risk groups.

- To ensure that children at-risk receive two doses of vitamin A each year, Child Health Weeks may be organized.

1.17.5 What is the correct dose of vitamin A?

The recommended and the correct dose of vitamin A is age specific (see Table below)

Do NOT give more than recommended dose. Side-effects are rare if you give the correct dose. An overdose may cause headache, nausea, vomiting, and diarrhoea, which usually stops in a day.

Table 1.17.5 Vitamine A dosage schedule

Age Group	Dose to be given	Amount of Vitamin A	
		If 100,000 IU (blue) capsule is given:	If 200,000 IU (red) capsule is given:
6 - 11 months	100,000 IU	All drops in one blue capsule	**Half** of the drops in one red capsule (4 drops)
12 - 59 months	200,000 IU	All drops in two blue capsules	All drops in one red capsule, (8 drops).

1.17.6 How should vitamin A be administered?

Step 1. Check that you know what dose of vitamin A to give to what age group.

Step 2. If you are using only 200,000 IU sized capsules half dose (for 6 months) is 4 drops and full dose (for 12 months) is 8 drops ie the entire content of the capsule.

Step 3. Check to see that you are well positioned at the station to allow you do all the task associated with vitamin A administration.

Step 4. As each child arrives, find out his/her age, and decide the correct dose for the age group.

Step 5. Use scissors to cut open the vitamin A capsule and squeeze out the drops into the child's mouth. If only half dose is to be given to a child, squeeze out the required number of drops directly in the child's mouth and discard the rest.

Step 6. Discard all used vitamin A capsule in a plastic bag or container.

Step 7. Put one mark on the tally sheet for each child given vitamin A.

1.17.7 Summary

- Vitamin A is important to protect children from becoming very sick with common disease.
- Vitamin A is safe for children and high dose supplement protects them for 6 months.
- All children aged 6-59 months (through age 5) need a vitamin A supplement.
- Vitamin A supplement will be distributed during some rounds of NIDs. Supplements are also available at health facilities throughout the year.
- Children sick with measles, certain eye problems, severe diarrhoea or severe malnutrition should visit health centres because they may need additional vitamin A and other treatment.

1.18 Contraindications to immunization

- There are **few** contraindications for immunization.
- All vaccines should be given on schedule, except a child is so sick as to be hospitalised. That child should be immunized before discharge.
- Immunize even when a child has a low-grade fever, a mild cold, diarrhoea or other mild illness.
- **If a child has diarrhoea when you give OPV**, administer an extra dose i.e. a fifth dose, at least four weeks after he or she has received the last dose in the schedule.

Department vaccine should **not** be given to children over 5 years of age or to children who have suffered a severe reaction to a previous dose of this vaccine. Instead, a combination of tetanus and diphtheria toxoids (Td) may be given.

Note: Neither BCG nor yellow fever vaccines should be given to children who have clinical AIDS. However, measles vaccine is not contraindicated in children with clinical AIDS because measles can be life threatening in these children.

1.18.1 Giving vaccines at the same time

- All EPI vaccines are safe and effective when given at the same time.
- Inject them in different parts of the body.
- Do not give more than one dose of the same vaccine to a client in one session.
- Space doses of the same vaccine at least four weeks apart.

1.19 Summary

Table 1.19.1 Administration guidelines for immunization of children < 1 Year

Vaccine	No. of Doses	Age	Minimum Interval between doses	Route of Administration	Dose	Vaccination site
BCG	1	At birth or as soon as possible after birth	-----	Intradermal	0.05 ml	Upper left arm
OPV	4	At birth and at 6, 10 and 14 weeks of age	4 weeks	Oral	2 drops	Mouth
DPT	3	At 6, 10 and 14 weeks of age	4 weeks	Intramuscular	0.5 ml	Outer part of thigh
Hepatitis B	3	At birth, 6 and 14 weeks	4 weeks	Intramuscular	0.5 ml	Outer part of thigh
Measles	1	At 9 months of age	-----	Subcutaneous	0.5 ml	Upper left arm
Yellow fever	1	At 9 months of age	-----	Subcutaneous	0.5 ml	Upper right arm
Vitamin A	2	At 9 months and 15 months	6 months	Oral	100,000 IU 200,000 IU	Mouth

Intradermal = into the skin

Intramuscularly = into a muscle

Subcutaneous = under the skin

2 doses of Vit. A can be given to children 6 - 59 months at least 6 month apart at any clinic visit.

Table 1.19.2 Administration guidelines of tetanus toxoid (TT) for women of childbearing age.

	Recommendation	Comment
Age	TT 1: at first contact with woman of childbearing age, or as early as possible in pregnancy.	<u>Period of protection</u> No protection
	TT 2: At least 4 weeks after TT 1	3 years
	TT 3: At least 6 months after TT 2	5 years
	TT 4: At least 1 year after TT 3	10 years
	TT 5: At least 1 year after TT 4	All childbearing years
Dose size	0.5ml	See manufacturer's instructions
Number of doses	Five	**Provides protection during child bearing years**
Injection site	Muscle of upper arm	Never immunize into the buttock

SECTION 2:

THE COLD CHAIN AND VACCINE MANAGEMENT

Contents:

About Section 2

This Section describes what the cold chain is, what vaccine storage equipment is needed in health facilities, and how to use and maintain the equipment.

This Section is intended for the use of the health worker at the immunization service delivery point.

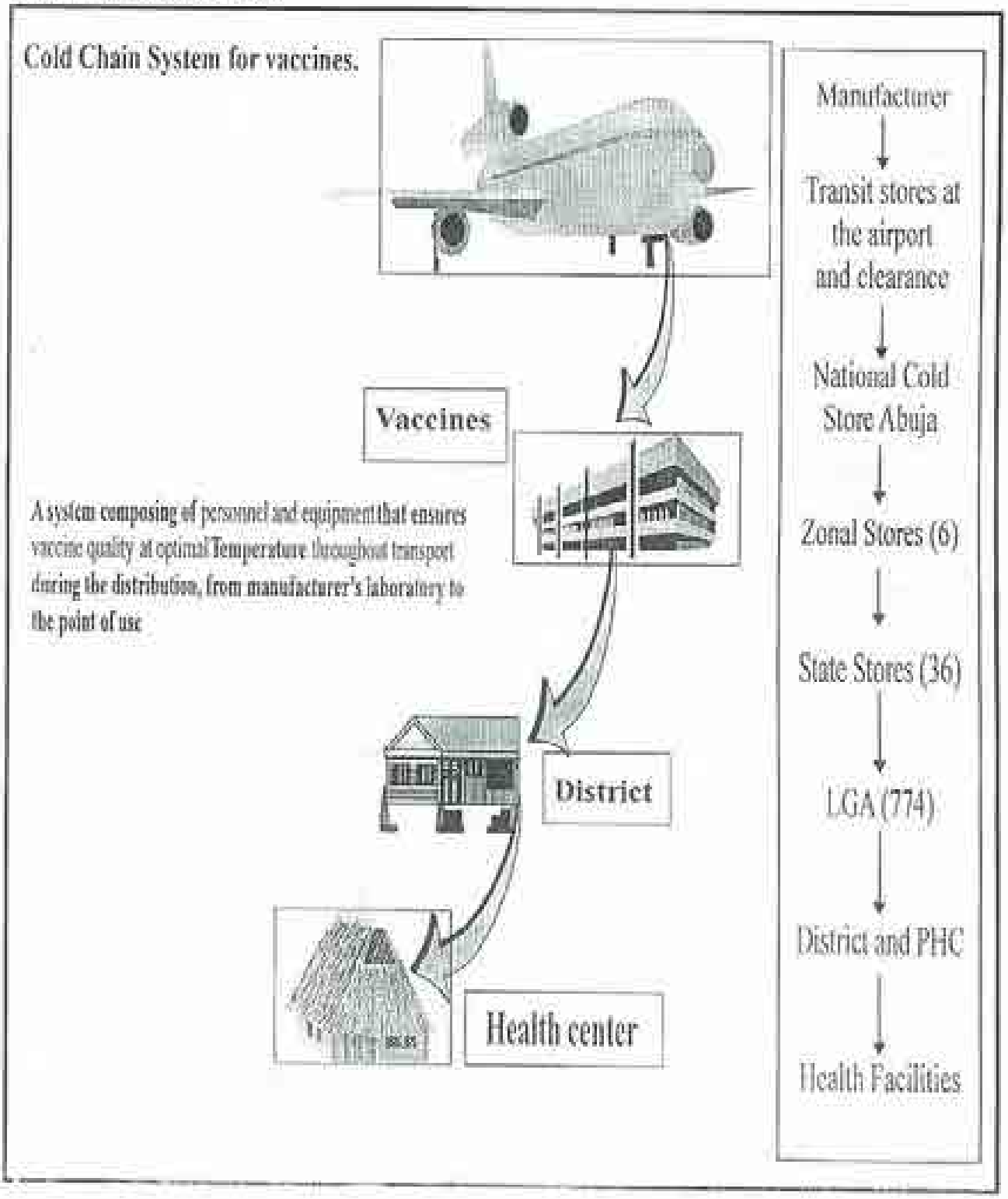
This Section should be used as training material for service providers and reference material for immunization service delivery.

2.0 What is the cold chain?

The cold chain is a system of manufacturing, storage and distribution of vaccines in a potent state (at prescribed temperatures) from the manufacturer to the actual vaccination site.

Vaccines are sensitive to heat and must be kept cold at all times. The equipment and people that keep vaccines cold during their journey are together called the **cold chain.**

Figure 2.0 The cold chain



2.0.1 Maintenance of the cold chain requires vaccine and diluent to be:

- Collected from an airport as soon as it arrives.
- Transported at the correct temperature from the airport and
- from one store to another.
- Stored at the correct temperature in national, zonal, state,
- LGA stores and in health facilities.
- Transported at the correct temperature to health facilities and outreach sites.
- Kept at the right temperature during immunization sessions.

2.0.2 The health worker is responsible for maintaining the cold chain:

- While vaccine is stored in the health facility.
- While it is being transported to outreach sites, and
- During immunization sessions.

Note: The cold chain must never be broken.

2.1 What cold chain equipment is used in Health facilities?

Different levels of the health care system need different equipment for transporting and storing vaccines and diluents at the correct temperature.

- **National and zonal stores** need cold rooms, freezers. Refrigerators and cold boxes with ice packs for transportation of vaccines to the next level.
- **State and LGA stores** need freezers, refrigerators and cold boxes with ice packs for transportation.
- **Health facilities** need cold boxes and vaccine carriers with ice packs, and may have a refrigerator and a freezer.

2.1.1 Cold boxes

A cold box is an insulated container that is lined with frozen ice packs to keep vaccines and diluents cold.

- Cold boxes are used by health facility staff to collect and transport vaccine supplies from LGA stores to immunization posts.
- They are also used to store vaccines or may be used when the refrigerator is out of order or being defrosted.

Different models of cold boxes have different vaccine storage capacities. Health facilities usuully need one or more cold boxes that can hold:

- A one-month supply of vaccine and diluent plus
- A 1 to 2 week reserve stock of vaccines and diluent.

In addition to their vaccine storage capacity, cold boxes are selected according to their **cold life.**

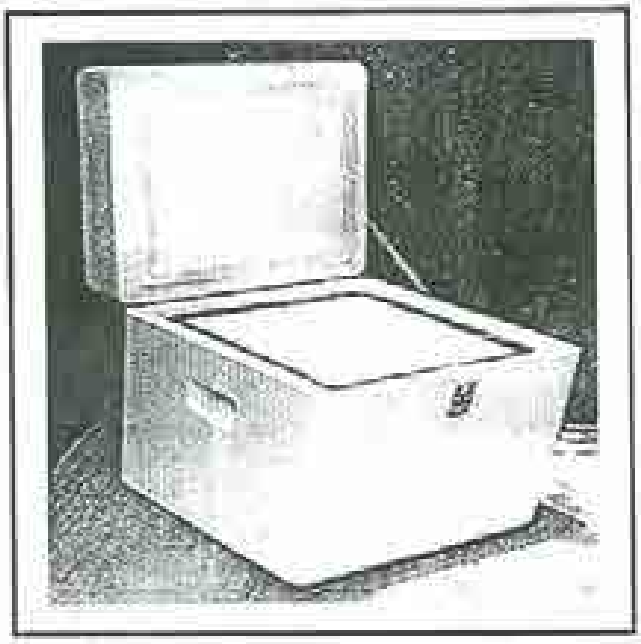
Cold Life

The cold life of a cold box or vaccine carrier is the time taken for the temperature inside to rise from 3° C to +10° C without the lid being opened. Different models have a cold life of **2 to 8 days.**

The most suitable cold box for a particular health facility is determined by:

- The vaccine storage capacity needed.
- The cold life needed, this depending on the longest time that vaccine will be stored in the box.
- Its weight, this depending on how the box will be transported, e.g. by motorcycle or bicycle.

Figure 2.1.1: Small vaccine cold box



2.1.2 Vaccine carriers

Like cold boxes, vaccine carriers are insulated containers that are lined with frozen ice packs to keep vaccines and diluents cold. They are smaller than cold boxes and easier to carry if you are walking, but they do not stay cold for as long. They stay cold only for 2 to **72 hours.**

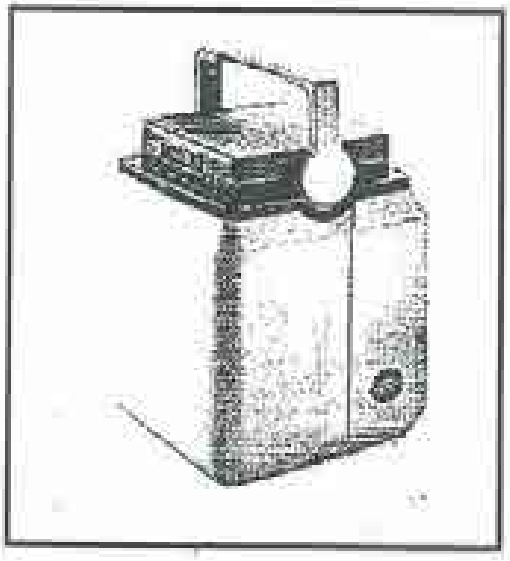
- Vaccine carriers are used to transport vaccine and diluent to outreach sites and for temporary storage during immunization sessions.
- In small health facilities, they are used to transport vaccine supplies from the LGA.
- In addition, they are used to store vaccines when the refrigerator is out of order or being defrosted.
- Designated vaccine carriers should be used to temporarily store and transport AFP stool specimens to maintain the **reverse cold chain.**

Different models of vaccine carriers have different storage capacities.

The type of vaccine carrier needed in a particular health facility depends on:

- The number of vaccine vials, diluents and ice packs to be transported.
- The cold life needed.
- The means of transport.

Figure 2.1.2: Large vaccine carrier



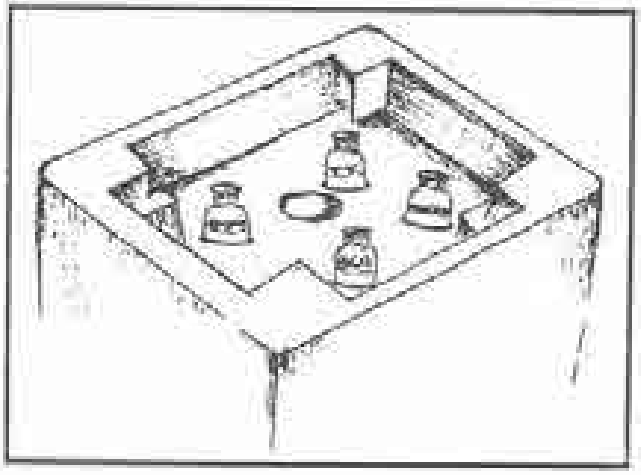
2.1.3 Foam Pad

A foam pad is a piece of soft foam that fits on top of the ice packs in a vaccine carrier.

- When the carrier lid is open the foam pad keeps the vaccines underneath in a cool state.
- It also holds and protects vaccine vials during immunization sessions.

Note: Cups with ice and ice packs are no longer recommended for holding vaccine and diluent during immunization sessions.

Figure 2.1.3: Foam pad



Note: Do not put opened vials in the holes that come with some icepacks. Use a foam pad.

2.1.4 Ice packs

Ice packs are flat, square plastic bottles that can be filled with water and then frozen. The required number in a particular cold box or vaccine carrier varies.

Ice packs are available in three sizes:

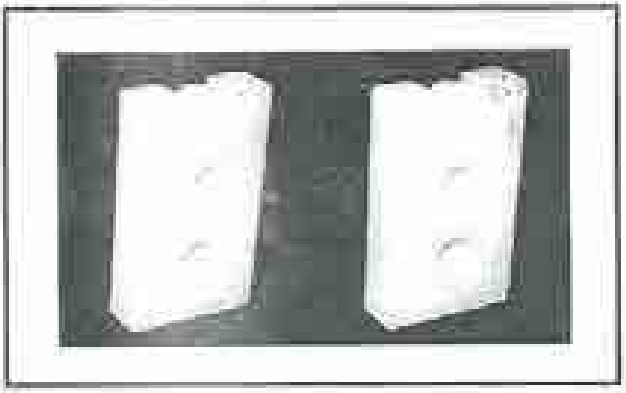
0.6 litre for cold boxes.
0.3 litre for vaccines carriers
0.4 litre for vaccine carriers.
Every health facility should have at least two sets of ice packs: one being frozen while the other is in use.
Ice packs are used for freeze-dried vaccines (YF, BCG, Measles) and OPV

2.1.5 Chilled water packs (Conditioned Ice Packs)

These are similar to the ice packs in every

material respect, the only difference being that water is not allowed to freeze before being used for vaccine transportation.
THEY ARE USED FOR TRANSPORT OF FREEZE SENSITIVE VACCINES
Such as DPT, TT, HBV in order to avoid momentary freezing in transit.

Figure 2.1.4: Ice packs



2.1.6 Refrigerators

Health facility refrigerators may be powered by

- Electricity
- Gas
- Kerosene
- Solar energy

Electric refrigerators are usually the least costly to run and the easiest to maintain but must have a reliable electricity supply.

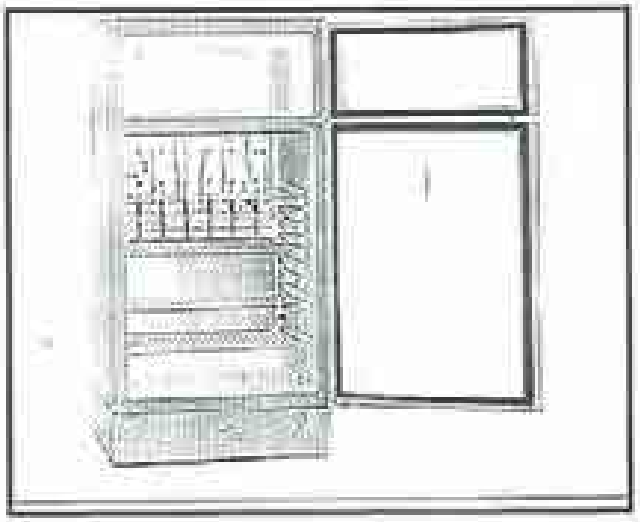
Note: Where the electricity or fuel supply is not reliable, ice-lined refrigerators can maintain the appropriate temperature for 16 hours without power if they operate with electricity for at least 8 hours a day.

Refrigerators have different capacities for storing vaccine and for freezing and storing ice packs.

A refrigerator in a health centre should be able to hold:

- A one-month supply of vaccines and diluents **and**
- A one-to two-week reserve stock of vaccines and diluents (i.e. an
- additional 25-50% of the one-month supply) **and**
- Frozen ice packs or bottles of salt water in the bottom of the refrigerator to keep it cool if the power fails **and**
- **Nothing** in half the total space available to allow air to circulate around the vaccines and diluents so as to keep them cool.

Figure 2.1.6: Two of the most common refrigerators



Arranging Vaccine in the CC

Chest refrigerators:

Lowest 20cm: DO NOT place DPT, TT,DT,HepB and liquid HIB
Cover the bottom of these models to prevent the possibility of people putting the freeze-sensitive vaccines there Use basket for ice sensitive vaccines!!!

2.1.7 Freezers

Freezers are used to keep vaccines at temperatures below 0C and to freeze ice packs.

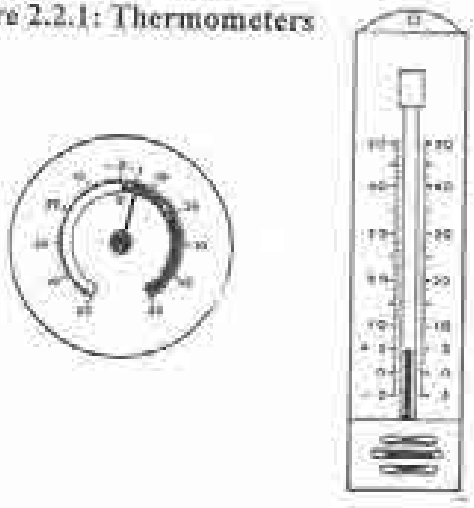
2.2 What cold chain monitoring equipment is used in health facilities?

The purpose of cold-chain monitoring equipment is to keep track of the temperature to which vaccine and diluent are exposed in refrigerators, cold boxes and vaccine carriers during storage and transportation.

2.2.1 Thermometers

Health facility staff use thermometers to monitor the temperature of refrigerators, cold boxes and vaccine carriers.

Figure 2.2.1: Thermometers

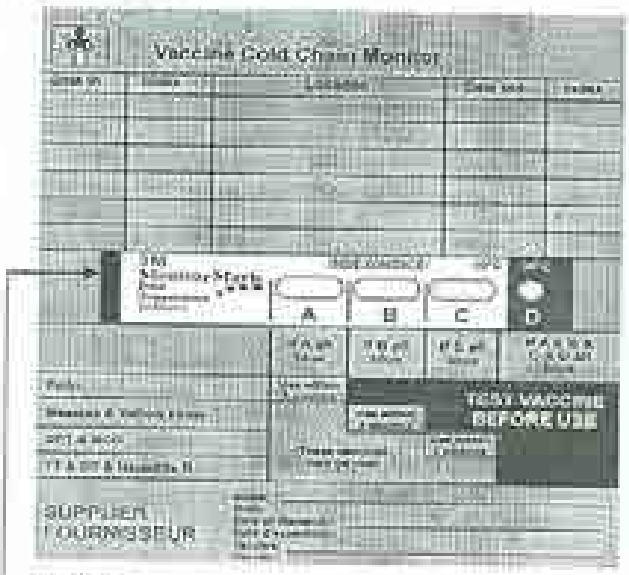


2.2.2 Vaccine cold chain monitors

A vaccine cold-chain monitor is a card which changes colour when vaccine is exposed to temperatures that are too high. Health workers use them to estimate the length of time that the vaccine has been exposed to high temperature.

Manufacturers pack these monitors in the cold boxes containing the BCG, DPT, Yellow fever, Hepatitis B, CSM, Polio and Measles vaccines.

Figure 2.2.2:



CCM
(All windows white)

2.2.3 Freeze watch indicators

A freeze watch indicator consists of a small vial of red liquid attached to a white card and covered in plastic. The vial breaks if the temperature where the indicator is located drops below 0° C for more than one hour, conduct the shake test, if positive do not use vaccine, discard them!

Manufacturers pack temperature indicators with DPT, HB and TT vaccines to monitor them during transportation and storage.

Freezing damages some vaccines namely: DPT TT, DT, DPT combinations, and liquid Hep. B Hepatitis B vaccine and any Hep. B combinations.

Freezing irreversibly reduces potency of the antigens mentioned above.

Avoid freezing the vaccines during transportation by ensuring that conditioned ice/chilled water packs are used ONLY. All freeze sensitive vaccines should be stored with freeze indicators.

- Place a Freeze Watch indicator in every refrigerator with freeze-sensitive vaccines.
- Use the Freeze Watch to warn of exposure to freezing temperatures, **NOT** to decide whether to discard vaccine.

Figure 2.2.3 Freeze watch indicator

No Freezing Normal

Freezing!

Freeze indicator

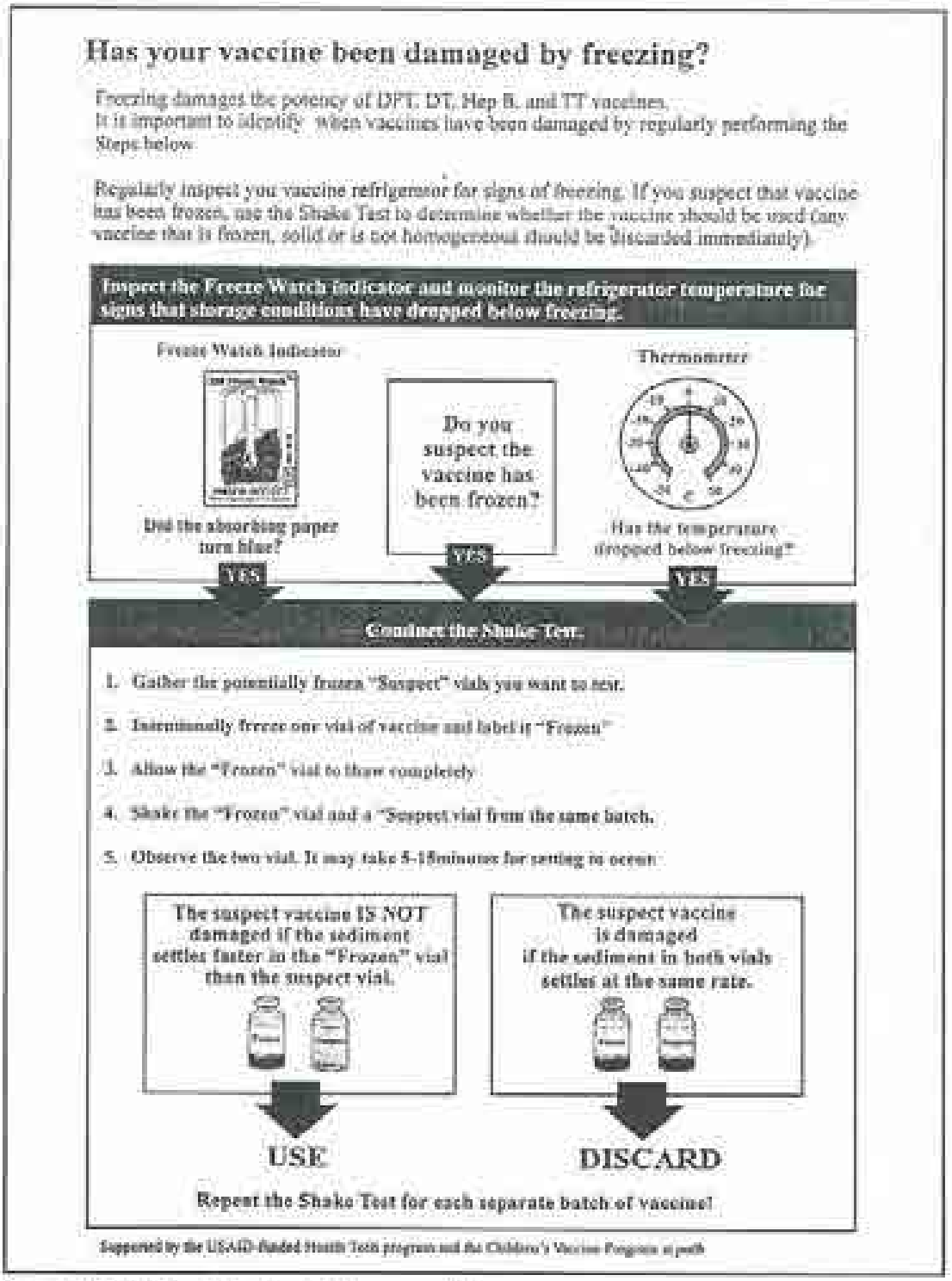
New ELECTRONIC type **FREEZE TAG** which is more sensitive than the freeze indicator

2.2.4 Shake Test

- Take a vial of vaccine of the same type & batch number as the vaccine you want to test, and made by the same manufacturer.
- Clearly mark the vial as "FROZEN"
- Freeze the vial at 20°C overnight, until the contents are completely solid.

The shake test (to determine whether vaccine has been frozen)

Figure 2.2.4: Shake Test--check if DPT, HB or TT Vaccine has been frozen.



Note: If a vial fails the shake test, dispose of it.

- Let it thaw. Do NOT heat it!
- Take your "TEST" vial from the batch that you suspect has been frozen.
- Hold the "FROZEN" vial and the "TEST" vial together in one hand.
- Shake both vials vigorously for 10-15seconds.
- Place both vials on a flat surface side-by-side and start continuous observation of the vials until test is finished.

Note: If the vials have large labels, which conceal the vial contents, turn both vials upside down and observe sedimentation in the neck of the vial.

- Use an adequate source of light to compare the sedimentation rates between vials if
- The TEST vial sediments slower than the FROZEN vial THEN use the vaccine batch
- Sedimentation is similar in both vials OR the TEST vial sediments faaters than the FROZEN vial THEN vaccine damaged; discard all affected vaccine.

2.2.5 Vaccine vial monitors

A vaccine vial monitor (VVM) is a label on a vaccine vial that changes colour irreversibly when exposed to heat over a period of time. Health workers check the VVM before they open a vial to see whether the vaccine has been damaged by heat.

Note: Manufacturers attach VVMs to all OPV vials, because they are the most sensitive to heat. Eventually, VVMs will be attached to the vials of other vaccines.
VVMs for liquid vaccines are attached to the label while for freeze dried vaccines to the cap.

Figure 2.2.5 Vaccine Vial Monitors

The VVM is a circle with a small square inside it. It is printed on a product label or attached to the cap of a vaccine vial or tube or to the neck of an ampoule. (Fig.2.2.5a).

Fig. 2.2.5a. Vaccine vial monitor (showing no heat exposure)

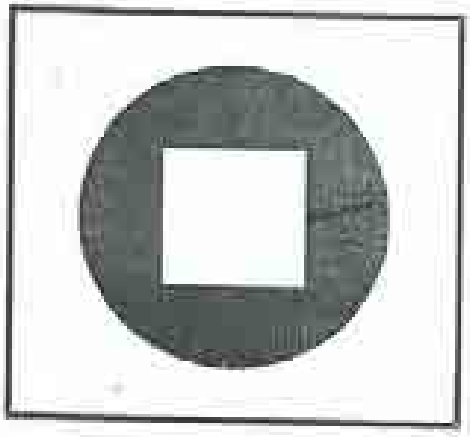
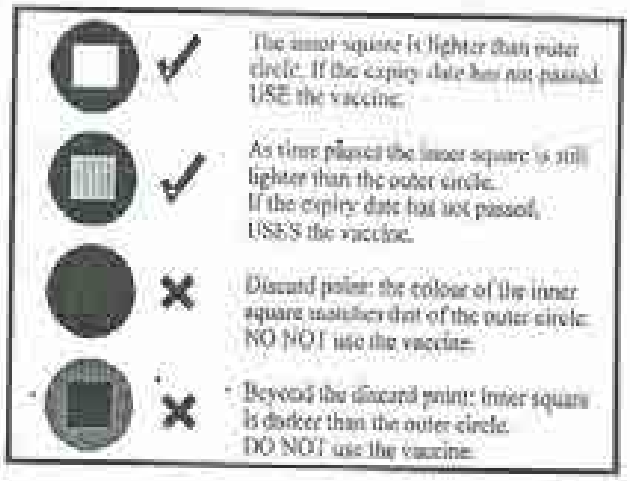


Fig. 2.2.5b. How to read a VVM



2.3 How to monitor and adjust the temperature

2.3.1 Monitoring the temperature in vaccine refrigerators

To monitor the temperature of the main section of a refrigerator you need:

- A thermometer
- A temperature chart, which you should tape to the outside of the door

Read the temperature on the thermometer in the main section **every** morning and afternoon, including workdays, weekends and holidays.

On the chart, record the temperature for the day and time, as shown in figure 2.3.1 below.

Figure 2.3.1: Refrigerator temperature chart

NATIONAL PROGRAMME ON IMMUNIZATION
DAILY TEMPERATURE INSPECTION RECORD SHEET

Location			**National Strategic Cold store, Abuja**					
Equipment			**Cold Room No.**					
Correct temperature range			**+2°C to +8°C**					
Week commencing Monday:								
Day	**A.M**	**°C**	**OK?**	**Initials**	**P.M.**	**°C**	**OK?**	**Initials**
Mon								
Tue								
Wed								
Thur								
Fri								
Sat								
Sun								

Fill this form twice every 24 hours, seven days a week

- Check the thermometer and write down the temperature and the time of the inspection
- Check the continuous temperature record. Write "Yes" in the OK column ONLY if the temperature has stayed within the correct temperature range since the time of the last inspection. Otherwise write "NO" and report this to your supervisor.
- In the Notes section, write down all unusual events, mechanical noises, etc. Report these to your supervisor.
- Every Monday morning, start a new sheet and give the completed one to your supervisor

Notes:

ALWAYS REMEMBER: The person completing this form is responsible for the safety of the vaccine!

Responsible staff should also know what action to take if the temperature at the time of inspection is outside the safe range.

If the temperature is above or below the safe temperature range, adjust the thermostat.

What a chart has been completed, replace is with a new one. Keep the completed charts in a record book for future reference.

2.3.2 How to adjust the temperature of Vaccine Refrigerators

If the temperature is too **WARM** (above +8° C), proceed as follows:

- Make sure that the refrigerator is working: check the fuel or power supply.
- Check whether the door of the freezer closes properly. The seal may be broken.
- If the refrigerator is working, turn the thermostat knob so that the arrow points to a **HIGHER** number. This will make the refrigerator cooler.
- If the refrigerator is not working, store vaccines in an alternative place until the refrigerator is repaired.

If the temperature is too **COLD** (below 0° C), proceed as follows:

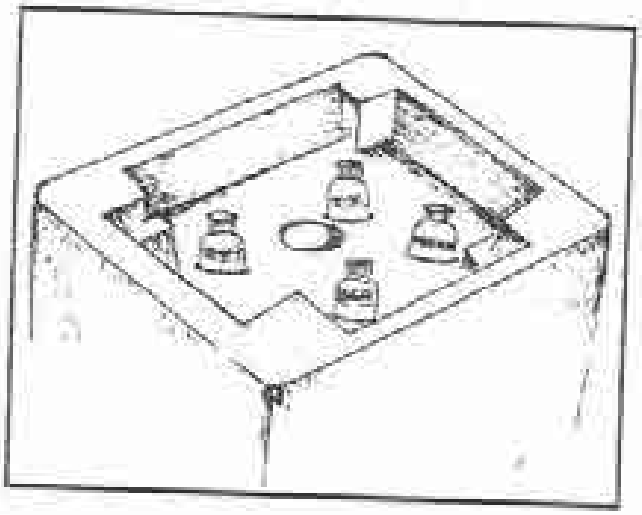
- Turn the thermostat knob so that the arrow points to a **LOWER** number.
- This will make the refrigerator warmer.
- Check DPT, HB and TT vaccines for damage by using the shake test.

2.3.3 Maintaining correct temperatures in cold boxes and vaccine carriers.

The temperature in vaccine carriers and cold boxes cannot be adjusted but you can maintain the temperature below + 8° C if you keep heat out as follows:

- Keep the lid tightly on the vaccine carrier in transit.
- During immunization sessions, keep opened vials on the foam pad of your vaccine carrier. The foam pad keeps vaccines inside the carrier cool while providing a place to hold and protect vaccine vials in use.

Figure 2.3.3: Foam pad in use



Remember:

- **Do not put vials back under the foam pad after each use. If you keep lifting up the foam pad the inside of the carrier will become warm.**
- **Keep cold boxes and vaccine carriers in the shade. Do not leave a cold box or vaccine carrier in a vehicle that is standing in the sun. Take it out of the vehicle and put it in the shade.**

2.4 Making ice packs

It takes 48 hours (two days) to completely freeze an ice pack.

Make ice packs as follows:

- Fill ice pack with clean cold water and put the cap on tightly.
- Hold each ice pack upside down and squeeze it to make sure that there is no leak.
- Put the ice packs upright or on their sides in the freezer and close the door.
- Leave them in the freezer for at least 48 hours to freeze solid.

Keep ice packs that do not fit in the freezer on the bottom shelf of the main section in order to keep this section cold.

When you put these ice packs into the freezer they will freeze relatively quickly because the water inside will already be cold.

Remember:

- **You do not have to refill ice packs every time you use them. Use the same water repeatedly.**
- **An ice pack melts quickly if not completely frozen. Make sure that the centre is frozen as well the outside.**

2.5 How to load cold chain equipment

Cold-chain equipment, including refrigerators, cold boxes and vaccine carriers, must be loaded correctly to maintain the temperature of the vaccine and diluent inside.

Note: There should be one person in each health facility who has the main responsibility for the cold chain. The responsibilities should include:

- **Storing vaccines, diluents and frozen ice packs.**
- **Checking and recording the temperature twice daily.**
- **Maintaining the facility's cold-chain equipment.**
- **Vaccine stock management.**

However, all health workers in a health facility should know how to monitor the cold chain and what action to take if the temperature is too high or too low.

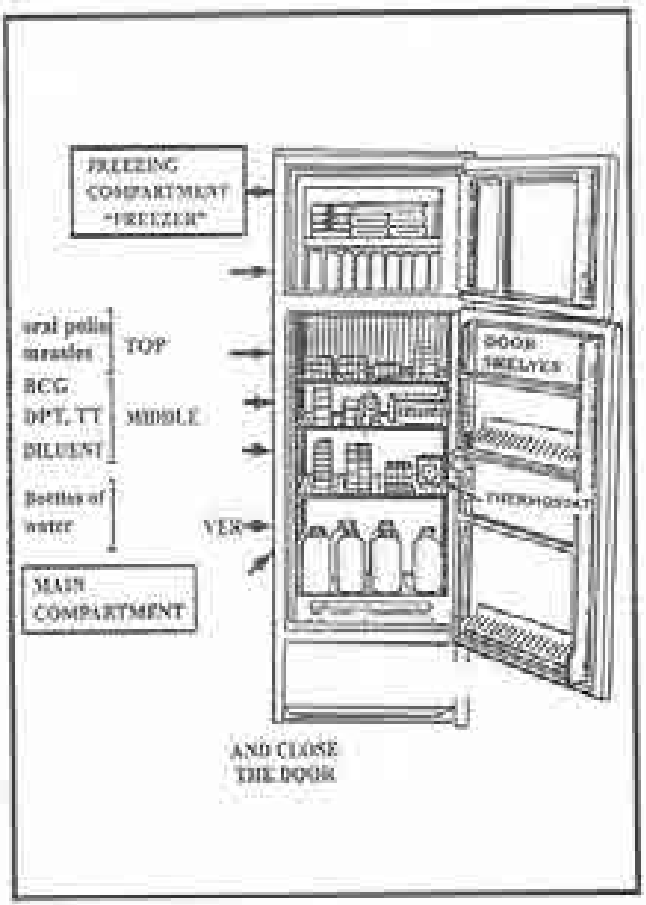
2.3.1 Loading vaccine refrigerators

Vaccine refrigerators have two sections:

- **A main section** for storing vaccines and diluents, in which the temperature should be kept between 2° C and + 8° C. Thermostats in this section are used to adjust the temperature.
- **A freezer** for freezing ice packs: this section should be kept below 2° C. Load a vaccine refrigerator as follows:
  - Freeze and store frozen ice packs in the freezer.
  - Put vaccines and diluents on the top and middle shelves of the mains section:
  - **OPV,** and **measles** vaccine on the **top shelf**
  - **BCG, DPT, HB, TT, CSM** and **yellow fever** vaccines on the **middle shelves**
  - **Diluents next to the vaccines** with which they were supplied.
  - Arrange the boxes of vaccine in stacks between which the air can move.

Note: Storing items other than vaccines, diluents and ice packs in a vaccine refrigerator is forbidden.

Figure 2.5.1 A health center refrigerator showing vaccines stored correctly



Remember:

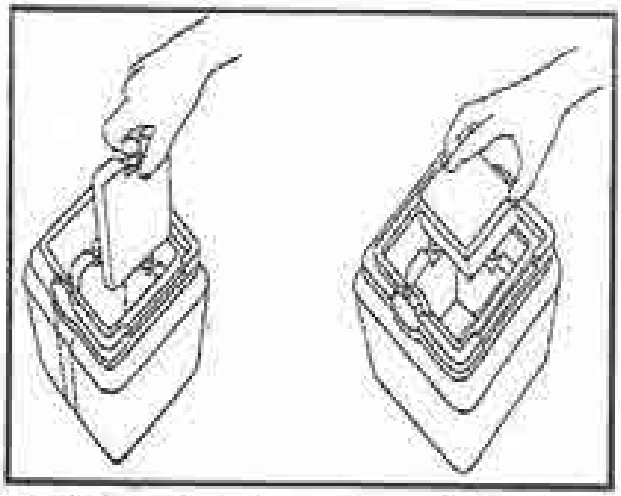
- DO NOT put vaccines on the door shelves: the temperature is not low enough.
- DO NOT keep expired vaccines in the refrigerator. Keep them aside and return to the LGA store for proper disposal.
- DO NOT keep any food, drink or drugs in a vaccine refrigerator.
- DO NOT keep AFP stool specimens in a vaccine refrigerator.
- Opening the refrigerator door raises the temperature.
- Before you open the door, plan what you are going to do.
- When you open the door, do what you have to do quickly and close the door as soon as possible.
- Try not to open the refrigerator door more than three times a day.
- Refrigerator and Freezers should be kept clean.
- They should stay in a dry and ventilated room.

2.5.2 Loading cold boxes and vaccine carriers

Load vaccine into cold boxes and vaccine carriers as follows:

- Quickly take all the frozen ice packs you need from the freezer and close the door.
- Put ice packs against each of the four sides of the cold box or vaccine carrier.

Figure 2.5.2 Arranging ice packs in a vaccine carrier



- Quickly take all the vaccines and diluent you need from the main section of the refrigerator and close the door.
- For outreach sessions, take unopened vials only. Put the vaccines and diluent in the middle of the cold box or carrier. Vials may be kept in their boxes or packed without them, depending on how many vials you need.
- When moving freeze sensitive/liquid vaccines: DPT, TT, DTP and combinations and Hep. B vaccines and combinations use ONLY conditioned/chilled water packs and NOT frozen ice packs.

2.5.3 Conditioning of Ice Packs

Layout frozen ice packs, preferably in single rows but never in more that two rows.

Wait until there is a small amount of liquid water inside the ice packs. This will take up to one hour at +20° c and rather less at higher temperatures.

Shake one of the ice packs every two minutes. The ice is conditioned as soon as it begins to move about slightly inside its container.

Figure 2.5.3 Ice pack conditioning Process

Why chilled water packs?

Current policy recommends ice packs to be conditioned.

- Put a thermometer on top of the vaccines unless vaccine vial monitors are attached to the vials.
- Put frozen ice packs on top of the OPV, Measles, YF, BCG vaccines.
- Put conditioned ice pack or chilled water packs on top of TT, DPT, HBV vaccines.
- For vaccine carriers, place a foam pad on top of the ice packs.
- Close the carrier lid tightly.

2.6 Opened multi-dose vial policy

Opened multi-dose vials of liquid vaccines from which one or more doses have been removed, following standard sterile procedures, may be used in the next immunization session, if **all** of the following conditions are met:

- The expiry date has not passed **and**
- The vaccine has not been contaminated **and**

- The vials have been stored under appropriate cold chain conditions **and**
- The VVM on the vial, if attached, has not reached the discard point.
- Liquid vaccines to which the statement above applies include OPV, DPT, HB and TT.
- Keep opened multi-dose vials of OPV, DPT, HB and TT that meet the conditions above in a special box marked **returned** in the main section of the refrigerator, so that you remember to use them first in the next session.
- Freeze-dried vaccines, which include BCG, measles, CSM and yellow fever, must be discarded six hours after reconstitution or at the end of the immunization session, whichever comes sooner.
- Keep plastic bottles or ice packs filled with salt or detergent water on the bottom shelf. They help to keep the temperature constant.

2.7 How to maintain cold-chain equipment

2.7.1 Maintenance of vaccine refrigerators

- A refrigerator works well only if it is cleaned and defrosted regularly.
- Thick ice does **NOT** keep a refrigerator cool but makes it work harder and use more power or fuel.
- You should therefore remove ice when it becomes more than 0.5 cm thick or at least once a month.

To defrost and clean a refrigerator, proceed as follows:

- Take out all the vaccines, diluents and frozen ice packs and transfer them to a cold box lined with frozen ice packs.
- Turn off the power supply to the refrigerator.
- Leave the door open and wait for the ice to melt. Do not try to remove the ice with a

knife or ice pick, since doing so can permanently damage the refrigerator.

- When the ice has melted, clean the inside of the refrigerator with a clean cloth.
- Turn the refrigerator on again.
- When the temperature in the main section falls to +8° C or lower, return the vaccines, diluent and ice packs to their appropriate places.

Note: If you need to defrost your refrigerator less than once a month:
- You may be opening it too often (more than three times daily) or
- The door may not be closing properly.

2.7.2 What to do when a vaccine refrigerator is not working

If your vaccine refrigerator stops working:

- **First protect the vaccines**
- **Then deal with the refrigerator.**

2.7.3 Protecting the vaccines

- If you think that the problem will last only a short time you may use a cold box or vaccine carrier lined with frozen ice packs for temporary storage.
- For a longer duration, use another refrigerator.

2.7.4 Restoring the refrigerator to working order

- Check the power or fuel supply. If there is no power, make other arrangements until power is restored. If there is no fuel, get more fuel as soon as possible.
- If a lack of power or fuel is not the problem, repair the refrigerators or report it to your repair technician or supervisor.

2.7.5 Maintaining cold boxes and vaccine carriers

Knocks and sunlight can cause cracks in the walls and lids of cold boxes and vaccine carriers. If this happens the vaccines inside will be exposed to heat.

Remember:

- **Vaccines are damaged by heat whether they are exposed to a lot of heat in a short time (e.g., as a result of keeping vaccine in a closed vehicle in the sun) or a small amount of heat over a long period (e.g., as a result of the frequent opening of a refrigerator door).**
- **Maintaining the cold chain demands constant vigilance.**

2.8 Summary

2.8.1 Cold chain

The cold chain is a system of manufacturing, storage and distribution of vaccines in a potent state (at prescribed temperatures) from the manufacturer to the actual vaccination site. The equipment and people that keep vaccines cold during their journey are together called the **cold chain.**

2.8.2 Cold chain equipment

- Cold boxes
- Vaccine carriers
- Ice packs
- Refrigerators
- Freezers

2.8.3 Cold chain monitoring equipment

- Thermometers
- Vaccine cold chain monitors
- Freeze watch indicators
- Vaccine vial monitors

2.8.4 How to monitor and adjust the temperature

- Read the temperature on the thermometer in the main section every morning and afternoon, including workdays, weekends

and holidays.

- If the temperature is above or below the safe temperature range, adjust it by turning the thermostat knob appropriately.

- The temperature in vaccine carriers and cold boxes cannot be adjusted but you can maintain the temperature below + 8°C if you keep heat out by keeping the lid tightly closed and using the foam pad.

2.8.5 Making ice packs

- It takes 48 hours (two days) to completely freeze an ice pack.
- You do not have to refill ice packs every time you use them. Use the same water repeatedly.
- An ice pack melts quickly if not completely frozen. Make sure that the centre is frozen as well as the outside.

2.8.6 How to load cold chain equipment

- Freeze and store frozen ice packs in the freezer.
- Put vaccines and diluents on the top and middle shelves of the mains section of the refrigerator as follows:
  - OPV and measles vaccine on the top shelf.
  - BCG, DPT, HB, TT, CSM and yellow fever vaccines on the middle shelves. Keep freeze sensitive vaccines away from the evaporator.
  - Diluents next to the vaccines with which they were supplied.
- Arrange the boxes of vaccine in stacks between which the air can move.
- Load vaccine into cold boxes and vaccine carriers as follows:
  - Put frozen ice packs against each of the four sides of the cold box or vaccine carrier.
  - Put the vaccines and the diluent in the middle of the cold box or carrier.
  - Put ice packs on top of the vaccines and a Foam pad on top of ice packs for vaccine carriers.
  - Close the vaccine carrier lid tightly.

2.8.7 The shake test

- Freezing can damage DPT, HBV and tetanus toxoid (TT) vaccines. You can find out whether this has occurred by using the **shake test.**

- Freeze sensitive vaccines should be transported with chilled water packs and/ or at ambient temperature (without ice or ice packs).

- Heat sensitive vaccines (OPV, Measles, BCG should be transported with frozen ice packs. Creating these "two temperature" cold chain helps to prevent accidental freezing of freeze sensitive vaccines during transportation.

- For OPV, Measles and BCG put ice packs on top of the vaccines.

- For liquid/freeze sensitive vaccine put chilled water packs on top of the vaccines. Do not use frozen ice packs in order to avoid accidental freezing in transit. Avoid wrapping Frozen ice packs with papers to transport Freeze sensitive vaccines.

- For vaccine carriers, place a foam pad on top of the ice packs.

2.8.8 Opened multi-dose vial policy

Opened multi-dose vials of liquid vaccines from which one or more doses have been removed may be used in the next immunization session, if all of the following conditions are met:

- The expiry date has not passed **and**
- The vaccine has not been contaminated **and**
- The vials have been stored under appropriate cold chain conditions **and**
- The VVM on the vial, if attached, has not reached the discard point.

Reconstituted vaccines must be used within 6 hours then discarded.

2.8.9 How to maintain cold-chain equipment

- A refrigerator works well only if it is cleaned and defrosted regularly.

- Thick ice does NOT keep a refrigerator cool

Recommended temperature range for vaccine storage

Type of vaccine	Primary store MAX 6 Months	Provincial store MAX 3 Months	District store MAX 1 Month	Service level MAX 1 Month
OPV	[illegible]	[illegible]	+2°C to 8°C	+2°C to 8°C
BCG, measles, MR, MMR, YF, Hib FD CSM	[illegible]	[illegible]	+2°C to 8°C	+2°C to 8°C
HepB, DTP-HepB Hib liquid, DTP-IPV, YF/rd	+2°C to 8°C	+2°C to 8°C	+2°C to 8°C	+2°C to 8°C

- but makes it work harder and use more power or fuel.

- You should therefore remove ice when it becomes more than 0.5 cm thick or at least once a month.

2.8.10 To defrost and clean a refrigerator, proceed as follows:

- Take out all the vaccines, diluents and frozen ice packs and transfer them to cold box lined with frozen ice packs.

- Turn off the power supply to the refrigerator.

- Leave the door open and wait the ice to melt. Do not try to remove the ice with a knife or ice pack, since doing so can permanently damage the refrigerator.

- When the ice has melted, clean the inside of the refrigerator with a clean cloth.

- Turn the refrigerator on again.

- When the temperature in the main section falls to +8° C or lower, return the vaccines, diluent and ice packs to their appropriate places.

Note: If you need to defrost your refrigerator less than once a month:
- **You may be opening it too often (more that three times daily) or**
- **The door may not be closing properly.**

2.8.11 What to do when a vaccine refrigerator is not working

If your vaccine refrigerator stops working:

- First protect the vaccines
- Then deal with the refrigerator.

2.8.12 Protecting the vaccines

- If you think that the problem will last only a short time you may use a cold box or vaccine carrier lined with frozen ice packs for temporary storage.

2.8.13 Restoring the refrigerator to working order

- Check the power or fuel supply. If there is no power, make other arrangements until power is restored. If there is no fuel, get more fuel as soon as possible.

- If a lack of power or fuel is not the problem, repair the refrigerators or report to your repair technician or supervisor.

2.8.14 Maintaining cold boxes and vaccine carriers

Knocks and sunlight can cause cracks in the walls and lids of cold boxes and vaccine carriers. If this happens the vaccines inside will be exposed to heat.

2.8.15 Common Problems

(A) **Malfunctioning of Refrigerator/Freezer**
1) Low voltage - use stabilizer
2) Facility relay
3) Facility capacitor
4) Damaged compressor

(B) **Vaccine Distribution**
1) Mis-match of vaccines and diluents - only diluents from the same manufacturer and batch should be used.
2) Some attention given to the vaccines should be given to the diluent at the point of collection.

SECTION 3

HOW TO PROVIDE SAFE AND QUALITY IMMUNIZATION SERVICES

Contents:

About Section 3

This Section describes what a health worker should do before, during and after an immunization session. The module explains:

- How to Organise an immunization session with particular attention to planning vaccine and syringe/needle requirements.
- How to Assess and decide whether or not to give a vaccination to a particular child or woman
- Vitamin A and Vitamin A Deficiency (VAD)
- How to Record immunization activities in an immunization register and on immunization cards.
- How to Prepare vaccines for an immunization session and how to reconstitute BCG, measles, yellow fever and CSM vaccines.
- How to Ensure safe injections.
- How to Administer each vaccine.
- What to do after an immunization session
- How to conduct outreach sessions

This Section is intended for the use of the health worker at the immunization service delivery point.

This Section should be used as training material for service providers and reference material for immunization service delivery.

3.0 Preparing for immunization sessions in a fixed health facility

Immunization sessions must be arranged so that the clients will attend for the first dose and return for subsequent doses. The preparations include:

- Scheduling days and times for sessions
- Making sure that vaccines, supplies and equipment are available
- Arranging space for the convenience and comfort of health workers and clients.

3.0.1 Scheduling

- Immunization services should be scheduled so that people can use them.
- If people are not coming to sessions or if too many people are attending you may need to change the days, times or frequency of the sessions.
- Calculate the number of sessions per week or month you need, as described in the box below.

How to calculate the number of immunization sessions

- Calculate the **annual target population**. For children this is the number aged under one year. If you do not know the size of the target population, assume it to be 4% of the total population of the catchment area.

- **Example:** if an area has a total population of 3,600, multiply 3,600 by 4% to obtain the annual target population (144 children).

- Calculate the **monthly target population** by dividing the annual target population by 12.

  Example: divide 144 by 12 to obtain the monthly target population (12 children).

- Calculate the **average number of contacts per month.** A contact refers to each time a child attends an immunization session. 5 contacts are required for a child to be fully immunized.

  To calculate the average number of contacts per month, multiply the monthly target population by 5.

  Example: multiply 12 by 5 to obtain the average number of contacts per month (60 contacts).

- Calculate the required **maximum number of sessions per month** by dividing the average number of contacts per month by the number of children that can be served by the health centre staff in a session. Depending on the number of staff and the availability of vaccines, supplies and equipment, this could be 10, 15, 20 or more.

  Example: divide 60 by 15 to obtain the maximum number of sessions per month (4 sessions per month, or 1 session per week).

Note: The same process can be used to calculate the number of sessions you need to vaccinate women with tetanus toxoid.

- After you have calculated the number of sessions per week or month, discuss with clients and other community members which days and times would be most convenient for them.
- Keep in mind that
  - Working parents may be able to bring their children to the health facility only in the early morning or late afternoon.
  - A market day may be a convenient time for clients/parents to avail themselves of immunization services (either fixed or outreach).

- Make sure that
  - Health facility staff will be available to give immunizations on the proposed days and times.
  - You will have the vaccines and other supplies that you need on those days.
  - After agreeing with the community people and leaders, you inform everyone in the community about the days and times when immunizations will be given.

- If you give immunizations only on demand without **scheduling sessions** you may find that you run out of vaccines before the end of the month.
  - This happens when you open a vial on demand for a few clients or for a poorly attended immunization session and throw the remaining vaccine away at the end of the day.
  - By **scheduling sessions** you can estimate your vaccine needs more accurately and reduce wastage.

Note: You should not deny service to people who cannot come for immunizations on the scheduled days and times. Immunize at every opportunity.

3.0.2 Supplies and equipment needed

Generally, you need the same supplies and equipment for fixed and outreach sessions.

3.0.2a Vaccines

- If you do not have a refrigerator, obtain the number of vaccine vials and diluent vials you need for the day from the District or LGA store.
- If you have a refrigerator, take from the refrigerator the number of vaccine vials and diluent vials you will need for the entire session.
  - Thus, you open the refrigerator door only twice, once at the beginning of the session and once at the end (to return vials).
- Use the table below to estimate how many 10 dose vaccine vials and diluent vials you will need for a session. The number depends on the size of the target population and the number of sessions you have per month or week (see section on scheduling above).

Table 3.0.2 Calculating vaccine and diluent requirement

Number of clients	Number of vials needed
Less than 10	1 vial of each vaccine and diluent
From 10 to 30	2 to 4 vials of each vaccine and diluent, depending on the number of doses in each vial.
More than 30	4 or more vials of each vaccine and diluent, depending on the number of doses in each vial.

Note: It is a good idea to keep extra vials of vaccine and diluent in reserve.

- Select and use vaccines in the following order:

  First: Vials of OPV, DPT, HB and TT vaccine that have been opened for use in a previous fixed session.

  Second: Unopened vials that have been out of the refrigerator for more than three hours.

  Third: The oldest vaccines whose expiry date has not passed.

Remember:
You must not use vials
- **Whose expiry date has passed**
- **Which have no labels**
- **Which have changed VVMs to stage 3 or 4**
- **That are suspected to be contaminated**
- **That are suspected to have lost their potency due to exposure to heat and / or freezing**

Return such vials to the LGA store for proper disposal

3.0.2b Injection equipment / consumables

Syringes and needles:

- You must have at least one single-use syringe and needle, including auto-disable (AD) syringes, for each client expected.
- You must use one sterile syringe and one sterile needle, including auto-disable (AD) syringes, for each vaccine given to the client.

Other materials:

- Clean water
- Cotton swabs
- Metal file to open ampoules
- Vaccine carrier (with foam pad) to hold vaccine and diluent vials during the session and keep them cold.
- Ice packs for the vaccine carrier.

Note: Ice packs must be frozen in a refrigerator or ice pack freezer before you put them in the vaccine carrier and cold box. Vaccine carriers and cold boxes will NOT freeze ice packs.

3.0.2c Record-keeping materials

- Immunization register
- Immunization card for children and women
- Immunization tally sheets
- Paper, pencils, pens

3.0.2d Cleaning equipment

- Hand-washing items: soap in a soap dish, water, towel.
- Container for waste.
- Disposal boxes for used syringes and needles.

3.0.3 Arranging health facility space for Immunizations

The arrangement of the space in your health facility will affect how you do your work and how quickly clients finish the vaccination process. The space that you set up for immunization sessions should be:

- In a clean area not directly exposed to sunlight, rain or dust

- Convenient for the health worker who is preparing and administering the vaccines.
- Easily accessible to clients but arranged so that the immunization station is not overcrowded and is properly ventilated.
- Convenient for effecuve flow of clients with specified entrance and exit.
- Quiet enough for the health worker to be able to explain what he or she is doing and give advice.

The health facility should have a:

- Space where clients can sit before they receive vaccines.
- Space and equipment for screening, registration, vaccinating and recording.
- Table for vaccines and injection equipment / materials.
- Chair on which a parent can sit while holding a child for vaccination.
- Chair for the health worker.

If you provide other services during immunization sessions you need space and equipment for them as well. Set up a separate station for each of these services, which may include:

- Weighing babies and charting their growth.
- Treatment of common illnesses.
- Antenatal care
- Health education

3.0.4 Arranging equipment at the immunization station

You need a table in a cool place to hold the equipment you use while giving vaccines.

On the table you should put:

- a vaccine carrier with foam pad in which to place vaccines and keep them cold.
- a safety disposal box for used syringes and needles.
- a tally sheet and pencils.
- cotton swabs

Near the table you should have:

- a waste box
- water in a bowl

- soap in a soap dish
- a hand towel

If you are registering at the same station you need an immunization register, tally sheets and immunization cards there.

3.1 Assessing the client (screening)

The purpose of assessing a client is to find out what immunizations he or she is eligible for and whether there is any reason not to give them.

- You must know:
  - the standard immunization schedules for children and women
  - how to recognize contraindications on which to base your decisions.
- If the client has come to the health facility for reasons other than immunization, such as treatment or antenatal care, screen them and give the necessary immunization.
- If a client is ill, give her or him help as soon as possible but make sure that you immunize the client before or after treatment.

Note: If a child with measles or another communicable disease comes to the health facility, immediately isolate her or him from others and treat.

3.1.1 Answer the following questions before you immunize:

3.1.1a Is this the right time to give a child an immunization?

- Look at the child's immunization card.
- If he or she does not have one, ask the parent how old the child is and what vaccinations he or she has had.
- Check the immunization register, where you may find records of a child's earlier vaccinations.

Below is the schedule recommended by NPI for immunizing children.

Table 3.1.1a NPI Immunization Schedule for children

AGE	VACCINES
Birth	BCG, OPV0, HB1
6 weeks	DPT1, OPV1, HB2
10 weeks	DPT2, OPV2
14 weeks	DPT3, OPV3, HB3
9 months	Measles, Yellow fever
9 months	Vitamin A 100,000IU
15 months	Vitamin A 200,000IU

Note: In the meningitis belt people above 2 years should have CSM vaccine every 3 years and during epidemics and mass campaigns.

3.1.1b Does the child need another BCG injection?

- If a child received a BCG injection during the last visit (at least 6 weeks ago), look at the child's upper left arm at the injection site.
- If there is no swelling, ulcer or a scar, re-immunize the child with BCG and record the date on the register, tally sheet and card.

3.1.1c How many doses should a child have before 1 year of age to be fully immunized?

To be fully immunized a child should receive:

- **Only 1 dose each of BCG, measles and yellow fever vaccines.**
- **4 doses of OPV.**
- **3 doses of DPT vaccine.**
- **3 doses of HB vaccine.**

3.1.1d Has sufficient time elapsed since the previous dose?

- None of the multi-dose vaccines (OPV, DPT, HB vaccine) should be given less than **four weeks** apart.
- If the interval between the previous dose and now is less than four weeks, give an appointment for a date at least 4 weeks from the previous dose.
- The child is not adequately immunized if the interval between doses is less than 4 weeks.

3.1.1e Is this the right time to give a woman TT vaccination?

Below is the schedule recommended by NPI for giving tetanus toxoid to women of childbearing age.

Table 3.1.1b NPI Immunization schedule for women

Dose	When to give	Period of Protection
TT1	At first contact with woman of childbearing age; or as early as possible in pregnancy.	None
TT2	At least 4 weeks after TT1	3 years.
TT3	At least 6 months after TT2	5 years.
TT4	At least 1 year after TT3	10 years.
TT5	At least 1 year after TT4	All childbearing years

3.1.1f Is the woman at the right age for tetanus toxoid?

- In Nigeria, childbearing age group includes women in the age group of 15 to 49 years.
- In some cases pregnancy occurs before 15 years or after 49 years and as such all pregnant women should be immunized with TT.

3.1.1g How many doses should she receive?

- 5 doses of tetanus toxoid give protection for at least the childbearing years.

3.1.1h How much time has passed since the previous dose?

- See the schedule above for the time you should wait between doses.

3.1.1i Can I give different vaccines at the same time?

- All vaccines are safe and effective when administered at the same time but they should be given at different sites.
- For example, a child aged 1 year who has **never been immunized** can receive BCG, OPV1, DPT1, measles and yellow fever vaccines at one time.

Remember:

- **Do not give more than one dose of the same vaccine at one time.**
- **Do not mix different vaccines in one syringe before injection.**
- **Use a different syringe and needle for each vaccine and for each injection.**
- **Use a different site for each injection.**

3.1.1j Should I immunize even though the child or woman has received one or more doses of the vaccine in a campaign or outbreak response?

- Special immunization campaigns are sometimes conducted against polio, measles, neonatal tetanus and CSM.
- These campaigns target people in a certain age group irrespective of their previous immunization history.
- If children, previously immunized during polio or measles campaign attend a health facility or outreach site for routine polio or measles immunization, you should vaccinate them as if the campaign had not occurred.
- Tetanus toxoid received as part of a neonatal tetanus campaign should be counted as one of the doses in a woman's immunization schedule and should be recorded as such.

3.1.1k Is there a contraindication to Immunization?

- There are few contraindications to immunization.
- You should immunize every eligible child and woman, except in the following rare situations:
  - Do not give the second or third dose of DPT vaccine to a child who has had a severe reaction to an earlier dose. Severe reactions include a convulsion or shock within three days after the injection.
  - Do not give BCG or yellow fever vaccine to a child with clinical AIDS.
  - If a parent strongly objects to vaccinating their sick child even after proper counselling, do not give it.

Remember:

- **There are almost no contraindications to immunization.**
- **You can vaccinate children and women affected by:**
  - **Minor illnesses, including colds, diarrhea and fever**
  - **Allergy, asthma**
  - **Malnutrition.**
- **You can vaccinate premature infants and breast-feeding children.**

3.1.2 Completing assessment and informing clients.

- When you assess clients, use their immunization cards to find out what vaccines they have had and which ones they need.
- When you finish the assessment discuss with the client/parent:
  - what vaccines are required on the day of the assessment
  - when to return
  - possible side effects and explain what to do about them.
- If another health worker is administering the vaccines, the health worker assessing should tick the appropriate boxes on the card to show which vaccines are to be administered.
- Do not write down the date of the vaccination at this time. Only do so when the vaccine has been given.

Give the card back to the client/parent and ask them to take it to the vaccination station.

Remember:

- **If the assessment is not performed carefully you may miss an opportunity to vaccinate**
  Two common reasons for missing such an opportunity are:
  - **Failure to administer all the vaccines for which a child is eligible at each visit**
  - **Failure to give a vaccine because of false contraindications to immunization**

3.2 Vitamin A and Vitamin A Deficiency (VAD)

3.2.1 Learning Objectives

- Know the importance of Vit. A
- Know recommended doses for each age group and the number of capsules and drops to give each age group
- Recognize the type of capsules of vitamin A available for distribution
- Know side effects/safety, effectiveness of Vit. A capsules

3.2.2 What do we know about vitamin A and its deficiency?

Vitamin A is essential for:

- Growth and development,
- Strengthening of the immune system and hence is critical in helping the body resist infection and disease.
- Limiting the severity of illness and increasing the chances of curability.
- Increase chances of survival.
- Vitamin A deficiency (VAD) causes:
- Reduced resistance to infection leading to

dramatically increased risk of death from preventable diseases such as measles, diarrhea and malaria.
- Preventable blindness in children
- Anemia.

3.2.3 How can Vit. A deficiency be prevented?

Vitamin A deficiency can be prevented by eating enough vitamin A-rich foods. Synthetic vitamin A can be added during the processing of some foods, (food fortification). Another way to make sure that children and women get enough vitamin A is to give them vitamin A drops by mouth. This is called vitamin A supplementation.

3.2.4 What are the contacts to give vitamin A supplements?

- Adding vitamin A to NIDs is one of the quickest and least expensive ways of reaching a large number of children in high-risk group.
- Routine immunization could also be used to give our vitamin A supplements at high-risk groups.
- To ensure that children at-risk receive two doses of vitamin A each year. Child Health Weeks may be organized.

3.2.5 What is the correct dose of vitamin A?

The recommended and the correct dose of vitamin A is age specific (see Table 3.2.5below)

Do NOT give more than recommended dose. Side-effects are rare if you give the correct dose. An overdose may cause headache, nausea, vomiting, and diarrhoea, which usually stops in a day.

Table 3.2.5 Vitamin A dosage

Age Group	Dose to be given	Amount of Vitamin A	
		If 100,000 IU (blue) capsule is given:	If 200,000 IU (red) capsule is given:
6 - 11 months	100,000 IU	All drops in one blue capsule	**Half** of the drops in one red capsule (4 drops)
12 - 59 months	200,000 IU	All drops in two blue capsules	All drops in one red capsule. (8 drops).

"Two doses of Vitamin can be given to children 6-59 months at least 6 months apart at any clinic visit"

3.2.6 How should vitamin A be administered?

Step 1. Check that you know what dose of vitamin A to give to what age group
Step 2. If you are using only 200,000 IU sized capsules half dose (for 6 months) is 4 drops and full dose (for 12 months) is 8 drops ie the entire content of the capsule.
Step 3. Check to see that you are well positioned at the station to allow you do all the task associated with vitamin A administration.
Step 4. As each child arrives, find out his/her age, and decide the correct dose for the age group.
Step 5. Use scissors to cut open the vitamin A capsule and squeeze out the drops into the child's mouth. If only half dose is to be given to a child, squeeze out the required number of drops directly in the child's mouth and discard the rest.
Step 6. Discard all used vitamin A capsule in a plastic bag or container.
Step 7. Put one mark on the tally sheet for each child given vitamin A.

3.2.7 Summary

- Vitamin A is important to protect children from becoming very sick with common disease.
- Vitamin A is safe for children and high dose supplement protects them for 6 months.
- All children aged 6 -59 months (through age 5) need a vitamin A supplement.
- Vitamin A supplement will be distributed

during some rounds of NIDs. Supplements are also available at health facilities throughout the year.

- Children sick with measles, certain eye problems, severe diarrhoea or severe malnutrition should visit health centres because they may need additional vitamin A and other treatment.

3.3 After Immunization sessions

3.3.1 Complete the records and give appropriate information to clients/parents.

- Complete the immunization register, tally sheets and client cards.
- Inform the clients/parents the date, time and place of the next immunization visit, the number of visits remaining, possible side effects and how to deal with them.

3.3.2 Care of vaccines after immunization sessions

- If the vaccine vial monitor on a vial shows that the vaccine inside has been exposed to excessive heat, discard the vaccine.
- Discard BCG, CSM, measles and yellow fever vaccines if they have not been used within six hours of reconstitution.
- Discard DPT vaccine, hepatitis B vaccine and tetanus toxoid if they have been frozen.

3.3.3 Disposal of syringes and needles

- After each injection put the syringe and needle directly into a safety disposal box. Do **not** recap the needle.
- Then burn and bury the safety disposal box.

3.3.4 Prevent injuries and infections from unsafe injection practices

- Use only sterile single-use syringes and needles.
- Use the appropriate injection techniques.
- Handle used needles carefully to avoid needle-stick injuries.
- Dispose of used syringes and needles properly.

3.3.5 Organising outreach immunizations sessions

- Schedule days and times for outreach sessions that are convenient for the community.
- Set up the outreach site in a clean, well-ventilated, well-lit and shaded area with clear client flow system.
- You may provide services additional to immunizations on an outreach visit, including prevention, treatment and health promotion provided the site is set up to accommodate these services.
- Keep the carrier in the shade.
- Keep opened vials on the foam pad of the vaccine carrier during sessions.
- Keep the lid on the vaccine carrier in transit.
- Do not leave ANY syringes and needles at an outreach site.
- Take ALL your waste back to the health facility.
- Leave the outreach site clean and tidy.

3. 4 Using the immunization register & client's card

All health facilities should keep an immunization register in which information is written about every person who comes to the facility for immunization services.

- The register provides a record of what the health facility does and helps health workers to keep track of the vaccinations they give to each person (see figure 3.4a below)
- An immunization register should include at least the following information:
- Card number
- Name of client;
- Client's address;
- Client's age or birth date;
- Client's sex
- Vaccinations given e.g. OPV1, DPT1 (by day, month and year of visit)

Figure 3.4a Sample of immunization register

NATIONAL PROGRAMME ON IMMUNIZATION

CHILD'S IMMUNIZATION REGISTER

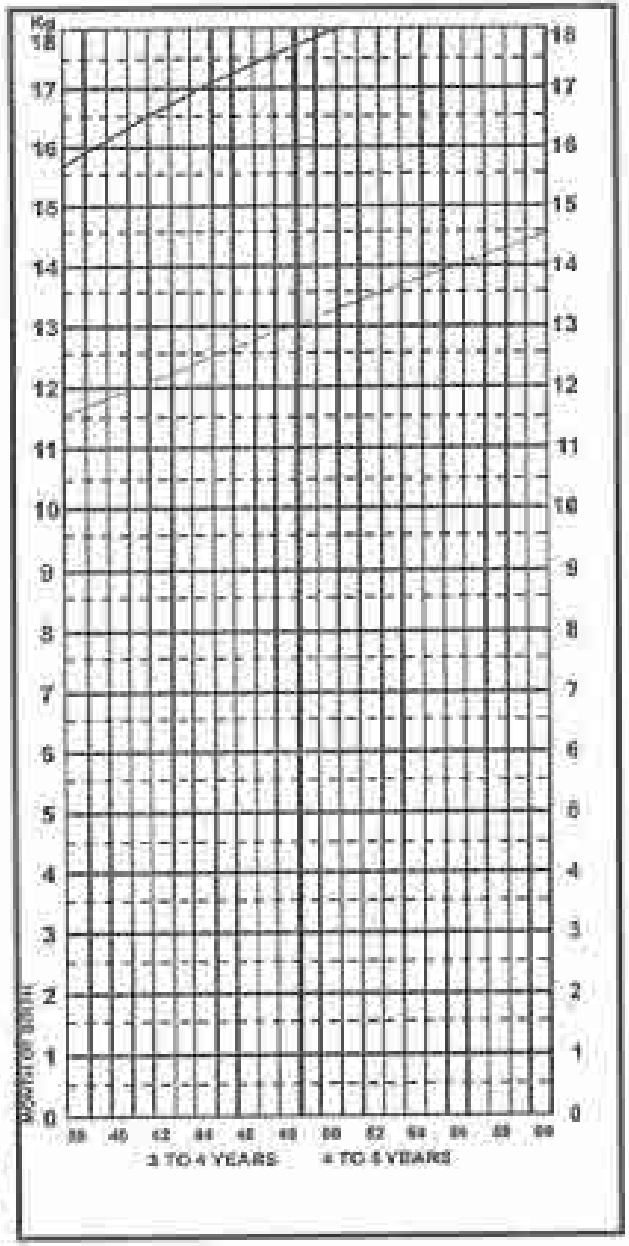
STATE..... LGA..... DISTRICT..... HEALTH FACILITY.....

Date	Card No.	Name	Sex	Address	DOB	Vit. A	BCG	Oral Polio		DPT		HBV		Measles	Yellow Fever	
								0-11M	12-23M	0-11M	12-23M	0-11M	12-23M			

- When a client arrives at a health facility or outreach site, the first thing you should do is to register her or him.
- Fill in all the columns except that for vaccines. This should be completed after the vaccines have been administered.
- If a client/parent does not have an immunization card, you should provide one, and enter on it the person's name, address and date of birth. More information is added when the client is screened (see figure 3.4b, c, d & e below).

Note: Do not write down the date of an immunization until it has been given.

Figure 3.4b Front of Child's Health Chart



NATIONAL PROGRAMME ON IMMUNIZATION

CHILD HEALTH CHART

CHILD'S NAME _____ SEX M/F

CHILD'S NR _____ MOTHER'S NR _____

DATE OF BIRTH _____ WEIGHT AT BIRTH _____

FATHER'S NAME _____

MOTHER'S NAME _____

CHILD'S ADDRESS _____

WARD _____ HEALTH _____

DISTRICT _____ LGA _____ STATE _____

IMMUNIZATION SCHEDULE

BCG/OPV0/HBV1 _____ At Birth

OPV1/DPT1/HBV2 _____ 6 Weeks

OPV2/DPT2 _____ 10 Weeks

OPV3/DPT3/HBV3 _____ 14 Weeks

Vit. A1 _____ 9 Months

Measles/YF _____ 9 Months

Vit. A2 _____ 15 Months

"2 doses of Vit. A can be given to children 6-59 months at least 6 months apart at any clinic visit"

Sponsored by: European Union PRIME Project

IMMUNIZATION RECORD

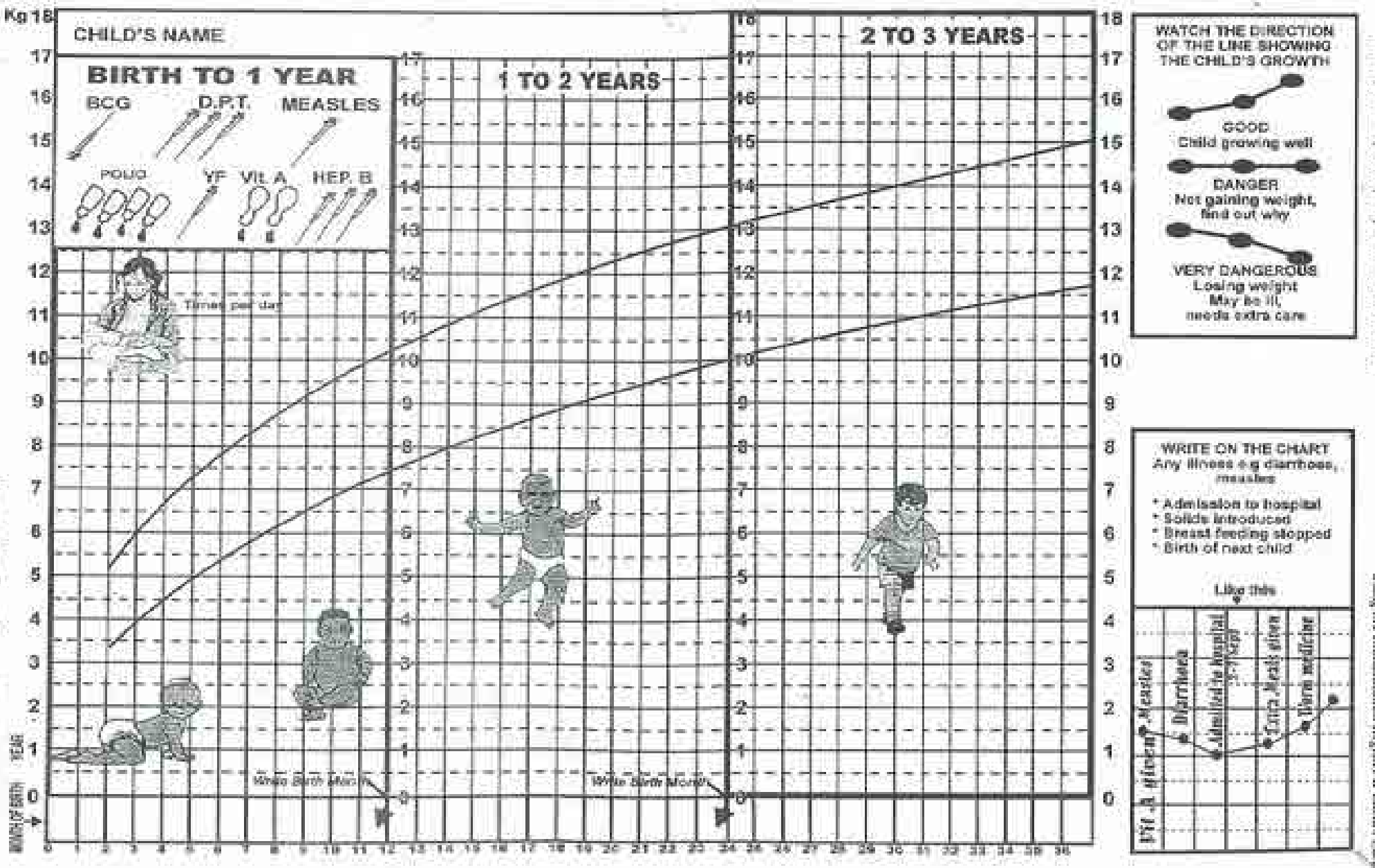
Antigen/Vit A		Batch No	Initials/Signature	Route/ Dose	Name of Administration	Date of Next Visit
At Birth	BCG					
	OPV0					
	HBV1					
6 Wks	DPT1					
	OPV1					
	HBV2					
10 Wks	DPT2					
	OPV2					
14 Wks	DPT3					
	OPV3					
	HBV3					
9 Mth	Vit. A1					
9 Mth	Measles					
	Yellow Fever					
15 Mth	Vit. A2					
Supplementary Campaigns						
Measles						
ESAI						
YF						
DPT/polio booster/Hep (p)						
Yellow fever						
Vitamin A						

How to reconstitute ORT (Salt and Sugar Solution)

How to provide safe and quality immunization services

Using the Immunization Record Card

Figure 3.4c Back of Child's Health Chart



Have a separate card for immunization section

Keep the Immunization Register & Child's Card

Figure 3.4d Front of Immunization Card for Women

NATIONAL PROGRAMME ON IMMUNIZATION

PERSONAL HEALTH CARD

(TO BE OWNED BY PERSONS 5 YEARS AND ABOVE)

CLINIC/CARD NO_____ SEX: M F (Circle)

NAME_____

PHC HOUSE NUMBER	DISTRICT	SETTLEMENT	HOUSE NO	HOUSEHOLD NO

FOR WOMEN OF CHILD BEARING AGE ONLY

Date of Birth of Last Child _____ Day _____ Month _____ Year _____

FOR EACH SUBSEQUENT PREGNANCIES:

1.	Date of ANC visits				
	Date TT Given				
	Test Done (Lab)				
	Date of Delivery				
	Outcome of pregnancy				
	Delivery by				
2.	Date of ANC visits				
	Date TT Given				
	Test Done (Lab)				
	Date of Delivery				
	Outcome of pregnancy				
	Delivery by				
3.	Date of ANC visits				
	Date TT Given				
	Test Done (Lab)				
	Date of Delivery				
	Outcome of pregnancy				
	Delivery by				
4.	Date of ANC visits				
	Date TT Given				
	Test Done (Lab)				
	Date of Delivery				
	Outcome of pregnancy				
	Delivery by				

TETANUS TOXOID SCHEDULE FOR WOMEN OF CHILD BEARING AGE:

1st Dose - First health contact or early in pregnancy
2nd Dose - 4 weeks after first TT
3rd Dose - 6 months after second TT
4th Dose - One year after third TT or next pregnancy
5th Dose - One year after fourth TT or next pregnancy

Figure 3.4e Back of Immunization Card for Women

Personal Data

A.
1. Date of Birth..................day.................month..................year...............
2. Marital status. Single/Married/ Other (Circle)
3. No of Children...
4. Occupation...
5. Education Primary/Seconday/Tertiary/Other (Circle)

B. IMMUNIZATION

IMMUNIZATION	DATE GIVEN				
Tetanus Toxoid (1,2,3,4,5)					
Yellow Fever					
Hepatitis B					
C. S. M.					
Others (Please specify)					

Personal Health Information

DESCRIPTION	GROUPING			
Blood Group	Type B	Type A	Type A	Type AB
Genotype	AA	AS	SS	
Rh factors				
Previous Operation (Specify)				
Others (Specify)				

Date of Update

Disability	
Congenital abnormalities	
Chronic diseases	
Mental disability	

Contact with Health Services

Date	Diagnosis (Reason for contact (Including FP)	Services Provided			Referrals (Specify)
		Type	Where	By Who	

3.5 Preparing vaccines for use during a session.

3.5.1 Washing hands

- By washing your hands with soap and water you remove germs from them and help to prevent contamination.
- Some germs remain on your hands even after thorough washing. You should therefore avoid touching the needles.

Figure 3.5.1 Washing hand

3.5.2 Checking the vaccine and diluent vial labels

Before you use any vaccine or diluent, check the labels:

- Is the label still attached to the vial?
- Is it the right vaccine or diluent?
- Has the vaccine or diluent passed its expiry date?

Remember:

- **If the label has come off, keep aside and return to LGA store.**
- **If the vaccine inside has passed its expiry date, do not use it.**

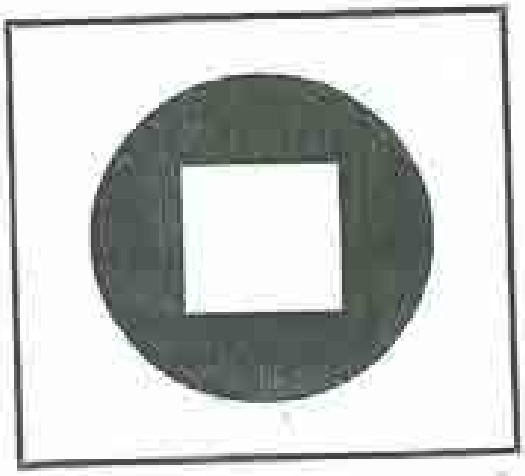
First to Expire, First Out (FEFO)

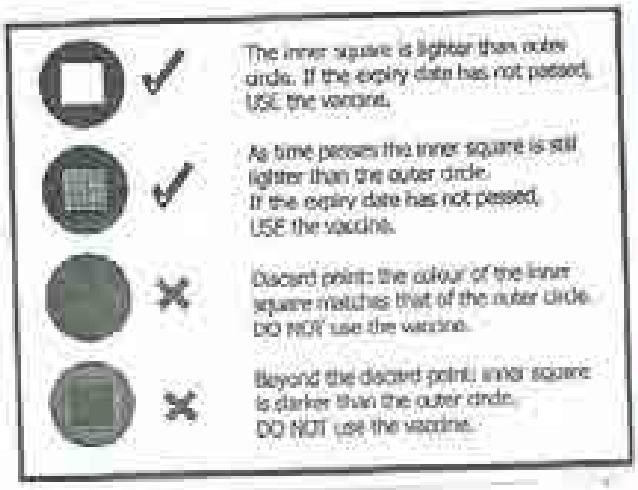
3.5.3 Checking the vaccine vial monitor (VVM)

- The VVM indicates whether the vaccine has been exposed to excessive heat and is printed on the vial label or cap. It is a square inside a circle.
- If a vaccine vial has a VVM attached, check the colour changes on the square.

- If the square has changed colour as described below, the vaccine inside can no longer give protection against disease and you must discard the vaccine:
  - If the inner square is lighter than the outer circle and the expiry date has not passed, **USE** the vaccine.
  - If the inner square is the same colour or darker than the outer circle, **DO NOT USE** the vaccine.

Figure 3.5.4 Vaccine vial monitors showing colour changes





3.6 Ensuring safe injections

- Every injection must be safe.
- An injection is safe for the:
  - **Client**, when a sterile syringe and a sterile needle and appropriate injection techniques are used.
  - **Health worker**, when she or he avoids needle-stick injuries.

- **Community**, when used injection equipment is disposed of correctly.

3.6.1 Types of injection equipment

The following types of single-use syringes and needles are used in Nigeria to administer injectable vaccines:

- disposable
- auto-disable (AD)

- A sterile packed syringe and needle must be used for each injection and they must be destroyed immediately after use.

- Disposable syringes and needles
  - should be used for immunization only in settings where it is guaranteed that they will be destroyed after a single-use, as verified by monitoring of consumption and supervision of disposal.
  - must be used only once. The reuse of single-use syringes places the general public at high risk of disease and death.

- Auto-disable syringes
  - Are designed so that it is **impossible** to use them more than once.
  - present the lowest risk of person-to-person transmission of blood-borne pathogens.
  - are the preferred type of disposable equipment for administering vaccines, particularly in mass immunization programmes.

3.6.2 Sizes of syringes and needles

Different sizes of syringes and needles are needed for different uses.

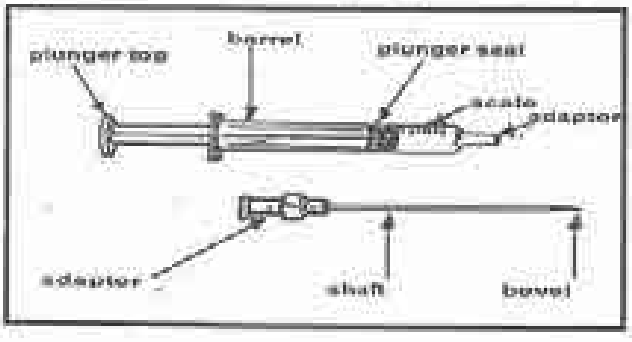
Table 3.6.2 Syringes and needles used for immunization

Use	Single-use syringe	Needle size
BCG (for intradermal injections)	0.1 ml	10 mm, 27 or 28 gauge
All other vaccines (for intramuscular or subcutaneous injections)	1 or 2 ml	25mm, 23 gauge
Reconstitution	5.0 ml	21gauge

3.6.3 Parts of a syringe and needle

- It is important to know what these parts are called in order to handle the equipment safely (see figure 3.6.3, 3.6.4a and 3.6.4b).

Figure 3.6.3 Parts of a syringe and needle

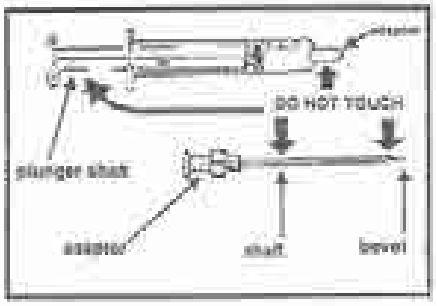


3.6.4 Handling syringes and needles safely

- You have to hold a syringe to give an injection.
- Any part of the syringe that you touch becomes contaminated.
- You should not touch parts that come into contact with the vaccine you are injecting or with the patient.

- Do **not** touch the:
  - **Shaft** of the needle
  - **Bevel** of the needle
  - **Adaptor** of the needle
  - **Adaptor** of the syringe
  - **Plunger seal** of the syringe
  - **Plunger shaft** of the syringe.

Figure 3.6.4a Parts of a syringe and needle, which must not be touched

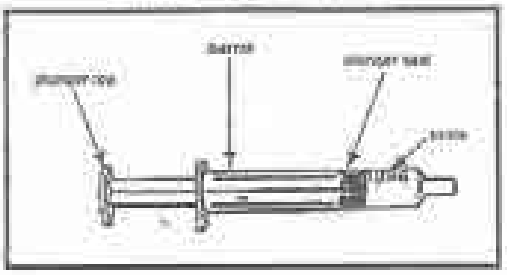


- If you touch any of these parts by accident, discard the syringe and needle and get new sterile ones.

You may touch the:

- Barrel
- Plunger top

Figure 3.6.4b Parts of a syringe and needle, which may be touched



3.7 Reconstituting vaccines

- BCG, measles, CSM and yellow fever vaccines must be reconstituted before they can be used.
- Reconstitution means mixing the dry powder form of a vaccine with the diluent so that the vaccine can be injected.

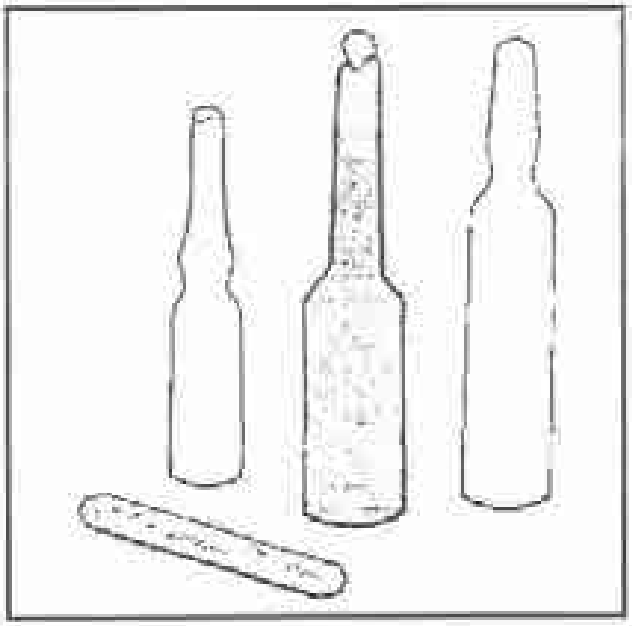
Remember:

- **Do not begin reconstitution until clients have arrived and you are ready to immunize.**
- **Reconstituted vaccine should be used within six hours then discarded.**
- **Wash your hands with clean water and soap before reconstituting vaccines**

3.7.1 Steps for reconstituting vaccines.

The diluent for reconstituting BCG, measles, CSM and yellow fever vaccines is usually held in ampoules, which are glass bottles that you open by breaking off their pointed glass tops (see figure 3.7.1).

Figure 3.7.1 Ampoules and metal file



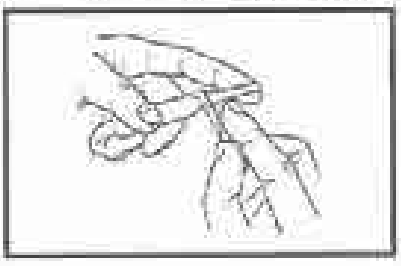
3.7.1a Read the label on the ampoule to be sure that:

- it is the diluent the manufacturer sent with the vaccine.
- the vaccine has not expired (check expiry date).
- the diluent should be at the same temperature as the vaccine. The diluent should not be hot
- there are no cracks on the ampoule.

3.7.1b Open an ampoule as follows (see figure 3.7.1a and 3.4.1b):

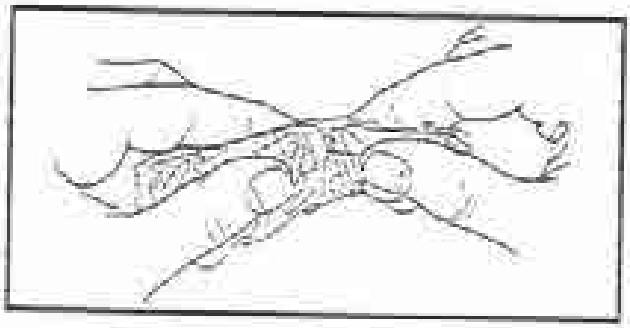
- Hold it between your thumb and middle finger
- Use your index finger to support the top
- Take the metal file that is packed with the ampoules and file hard around the neck of the ampoule you wish to open.

Figure 3.7.1a "Filling" the neck of the ampoule



- Wipe the outside of the ampoule with cotton wool and clean water. This removes pieces of glass produced by filing and prevents them from getting into the vaccine.
- Hold the ampoule in a piece of clean gauze and gently break off the top. It breaks where you made the scratch.

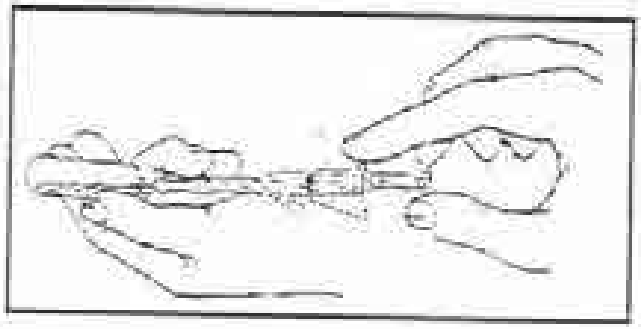
Figure 3.7.1b Breaking off the neck of an ampoule



3.7.1c Draw diluent into syringe

- Choose a sterile mixing (5ml) syringe and needle and use it only for reconstituting one vial of vaccine.
- Fix needle and syringe very well
- Put the needle in the open top of the ampoule and pull back the plunger to draw all the diluent from the ampoule into the syringe.

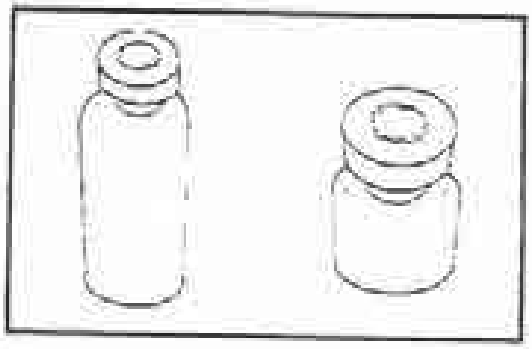
Figure 3.7.1c Taking fluid from an ampoule



3.7.1d Open vaccine vial or ampoule

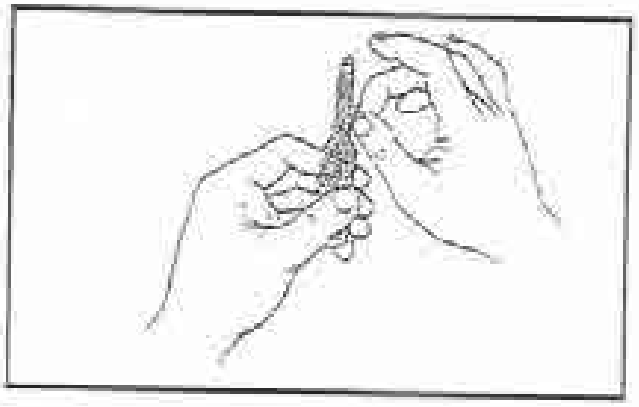
Most vaccines come in vials, except for BCG vaccine, which comes in ampoules. A vial is a glass bottle with a rubber stopper held in place by a metal cap (see figure 3.7.1d). The centre of the metal cap is pre-cut so that it can easily be removed.

Figure 3.7.1d Vials



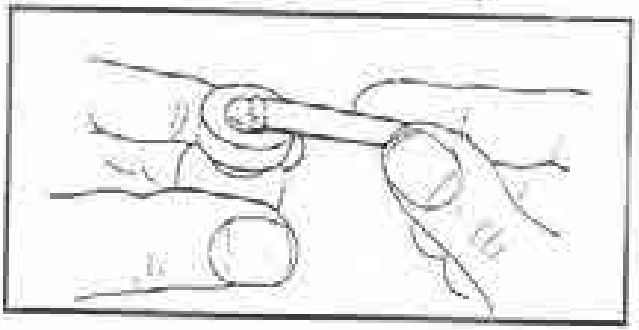
- Before opening a vial, check the VVM. Read the expiry date on the label to make sure you can still use the vaccine.
- Flick the vial or ampoule to make sure that all the vaccine powder is at the bottom (figure 3.11).
- Do not use a vial without a label

Figure 3.7.1e Flicking a vaccine ampoule



- Lift up the centre of the metal cap, using the same metal file as for opening ampoules (see figure 3.7.1f).

Figure 3.7.1f: Lifting the metal cap

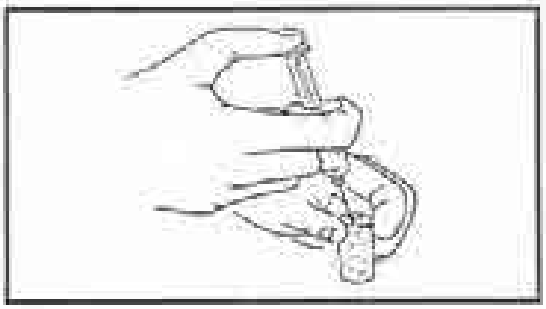


3.7.1e Reconstitute the vaccine

- fix the needle onto the syringe very well
- Insert the mixing needle into the vaccine vial or ampoule

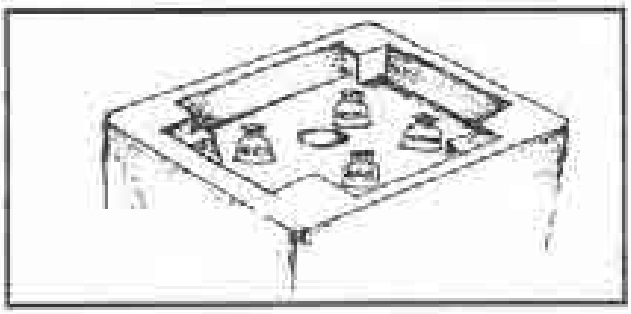
- Hold the plunger end of the mixing syringe between your index and middle fingers and push the plunger in with your thumb. This empties the diluent into the vaccine (see figure 3.7.1g).

Figure 3.7.1g Emptying a syringe



- To mix the diluent and vaccine, draw the mixture slowly up into the syringe and inject it slowly back into the vial or ampoule. Repeat this several times.
- Put the vaccine on the foam pad of your vaccine carrier (see figure 3.14).
- Keep the vaccine carrier in the shade.

Figure 3.7.1h Keeping vaccine cold on a foam pad



Dispose of the empty diluent ampoule in a waste box.

Note: Discard all reconstituted vaccines after six hours.

Remember:

Use ONLY the diluent that the manufacturers send with the vaccine.

- **BCG diluent with BCG vaccine**
- **measles diluent with measles vaccine**
- **CSM diluent with CSM vaccine**
- **Yellow fever diluent with yellow fever vaccine**

3.7.2 Drawing vaccine from a vaccine vial

When you are ready to give an injection, follow the steps indicated below for drawing the vaccine from a vaccine vial into a syringe:

- **Wash hands with soap and water just before administering vaccines**

- **Again check the vaccine label:**
  - Is the label still attached to the vial?
  - Is it the right vaccine?
  - Has the vaccine or diluent passed its expiry date?

- **Check the vaccine vial monitor (VVM) once more**
  - If the inner square is lighter than the outer circle and the expiry date has not passed, **USE** the vaccine.
  - If the inner square is the same colour or darker than the outer circle, **DO NOT USE** the vaccine.

- **Draw the correct dose of vaccine into the syringe**
  - Assemble a sterile syringe and needle. Turn the needle adaptor to make sure that the needle is fixed firmly to the syringe.
  - Draw air into the syringe by pulling back on the plunger. You need the same amount of air in the syringe as the amount of fluid to be taken out of the vial.
  - Push the needle through the rubber stopper into the vaccine vial.
  - Inject the air into the vial by pushing in the plunger.
  - Draw the vaccine out of the vial by pulling back the plunger. The vaccine comes out easily because the air you have injected takes the place of the vaccine.
  - Point the needle upwards and press in the plunger to get rid of air bubbles and excess vaccine.
  - Read the scale on the barrel of the syringe to make sure that you have the correct amount of vaccine.
  - You are now ready to inject the vaccine

- **Cleaning the skin before an injection**
  - Use cotton wool and a small amount of water. Do not use spirit or antiseptic.

3.8 Vaccine administration

3.8.1 BCG vaccine administration
How it is given

- BCG vaccine comes as a dry powder and before use must be reconstituted with the accompanying diluent.

Remember:

Before you use BCG vaccine check whether the:

- **label is still attached to the vial; if it is not, keep aside and return to LGA store.**
- **vaccine or diluent are the right ones.**
- **expiry date of the vaccine or diluent has passed; if it has, do NOT use it. Keep aside and return to LGA store.**
- **VVM (if one is present on the vial) has changed colour; if it has, do NOT use it. Keep aside and return to LGA store.**

- Position the child
  - Ask the parent to free the child's arm from its clothing, to sit the child on her or his lap, and to hold the child firmly.

- Inject the BCG vaccine
  - BCG vaccine is injected in the top layer of the skin (intradermal) of the upper left arm.
  - Inject the vaccine in the same place for each child to make it easy to find the BCG scar subsequently.
  - The dose of BCG is only 0.05ml.
  - To measure and inject such a small dose accurately, you must use a special 0.1ml BCG syringe (see figure 3.8.1a), and a special BCG needle (10mm, 27 or 28 gauge).
  - Load the syringe with BCG vaccine. Do NOT shake the BCG vaccine ampoule. Shaking can damage the vaccine.
  - Hold the child's arm with your left hand so that:
    - your left hand is under the arm;
    - your thumb and fingers reach around the arm and stretch the skin tight.
  - Hold the syringe in your right hand, with the bevel of the needle facing up towards you.

Figure 3.8.1a BCG syringe and needle

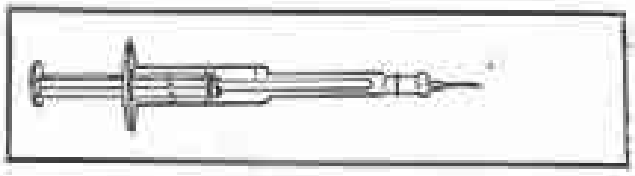


Figure 3.8.1b Position of BCG syringe and needle

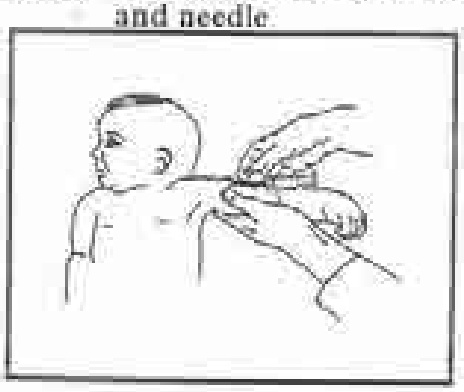
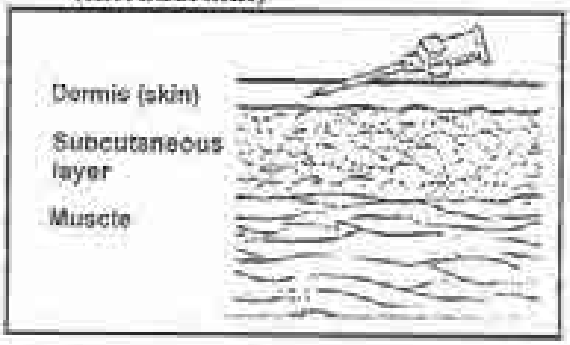
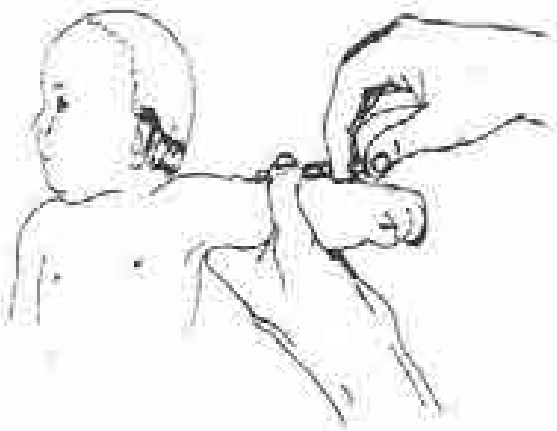


Figure 3.8.1c BCG needle position (intradermal)



  - Lay the syringe and needle almost flat along the child's arm (see figure 3.8.1b).
  - Insert the tip of the needle just under the skin insert only the bevel and a little bit more.
  - Keep the needle FLAT along the arm, so that it goes into the top layer of skin only. Keep the bevel facing UP (see figure 3.8.1c).
  - Do NOT push too far and do NOT point down or the needle will go under the skin. If BCG is injected under the skin an abscess or enlarged glands may result.
  - To hold the needle in position, put your left thumb on the lower end of the syringe near the needle, but DO NOT touch the needle (see figure 3.8.1d).
  - Hold the plunger end of the syringe between the index and middle fingers of your right hand press the plunger in with your right thumb.
  - Inject the vaccine and remove the needle.

Figure 3.8.1d Injecting BCG vaccine



- **If you have injected BCG correctly** you will see a clear, flat-topped swelling on skin, like a mosquito bite. The swollen skin may look pale with small pits.
- When an intradermal injection is given correctly the plunger is hard to push.
- If the vaccine goes in easily you may be injecting too deeply. In this event, proceed as follows:
  - Stop injecting immediately, correct the position of the needle, and give the remainder of the dose but no more.
  - If the whole dose has already gone under the skin, count the child as being injected. Do NOT repeat the dose.
  - Ask the parent to return with the child if any side-effects, such as abscesses or enlarged glands, appear.
  - Inform the parent not to dress or express the site of injection.

3.8.2 DPT vaccine administration

How it is given

- The combination diphtheria-pertussis-tetanus (DPT) vaccine is in a liquid form.

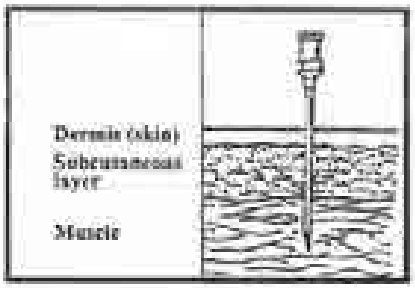
- Prepare the DPT vaccine
  - Shake the vial so that the sediment at the bottom mixes completely with the liquid.
  - If the toxoid is not well mixed, the correct dose cannot be given.
  - If you suspect that the toxoid has been frozen and thawed, check for damage by using the **shake test**.

- Position the child
  - Ask the parent to remove any clothing from the child's right or left leg so that the thigh is bare.
  - The child should sit on the parent's lap (see figure 3.8.2a).
  - The parent's left arm should be around the child, supporting her or his head and holding the outside arm.
  - The child's inside arm should be tucked around the parent's body.
  - The parent's right hand should be holding the child's legs firmly.

- Inject the DPT vaccine
  - Inject DPT vaccine into the thigh. **NEVER** into the buttock.

Figure 3.8.2a Holding a child for DPT immunization

Figure 3.8.2b Needle position for DPT injection (intramuscular)



Remember:

The buttock should NOT be used as an immunization site for children or women.

  - You need a sterile single-use 1ml or 2ml syringe with a sterile 25mm, 23-gauge needle.
  - Put your finger and thumb on the **OUTER** part of the middle of the child's thigh (see

figure 3.8.2a).
- Stretch the skin flat between your finger and thumb.
- Quickly push the needle straight down through the skin between your fingers. Go deep into the muscle (see figure 3.82b).
- Press the plunger with your thumb to inject the vaccine.
- Withdraw the needle and gently press the site with cotton wool.

Remember:

- **Inject DPT into the child's thigh.**
- **Do NOT inject DPT into the buttock.**
- **DPT vaccine should NOT be given to children over 5 years of age**
- **DPT vaccine should NOT be given to children who have suffered a severe reaction to a previous dose of this vaccine. Instead, a combination of tetanus and diphtheria toxoid (Td) may be given.**
- **Do not freeze DPT.**

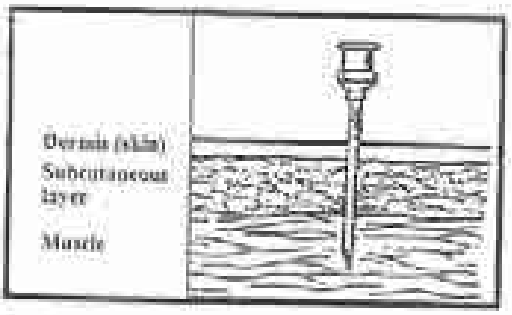
3.8.3 TT vaccine administration

How it is given

- Tetanus toxoid is in liquid form and is a component of the DPT vaccine given to children.
- Prepare tetanus toxoid
  - Shake the vial so that the sediment at the bottom mixes completely with the liquid.
  - If the toxoid is not well mixed the correct dose cannot be given.
  - If you suspect that the toxoid has been frozen and thawed, check for damage by using the **shake test.**
- Inject tetanus toxoid
  - You need a single-use sterile 1ml or 2ml syringe with a 25mm, 21 or 23 gauge needle.
  - Ask the woman whether she prefers the vaccine to be given in her left or right arm.
  - Put your finger and thumb on the **OUTER** part of the woman's upper arm.
  - Use your left hand to squeeze up the muscle of the arm (see figure 3.8.3a).

Figure 3.8.3a Giving tetanus toxoid

Figure 3.8.3b Needle position for tetanus toxoid immunization (intramuscular)



- Push the needle straight down through the skin between your fingers. Go deep into the muscle (see figure 3.8.3b).
- Gently press the plunger with your thumb to inject the toxoid.
- Withdraw the needle and gently press the site with cotton wool.

Remember:

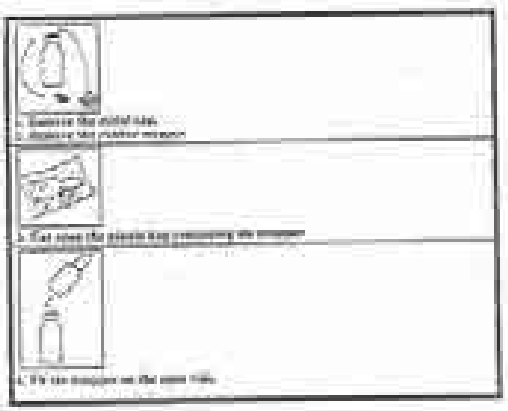
- **Give 0.5ml of TT on five occasions:**
  - **TT1 as soon as the women reaches childbearing age or as early in pregnancy as possible;**
  - **TT2 at least four weeks after TT1;**
  - **TT3 at least six months after TT2;**
  - **TT4 at least one year after TT3;**
  - **TT5 at least one year after TT4;**
- **Do not freeze tetanus toxoid.**

3.8.4 Oral polio vaccine (OPV) administration

How it is given

- OPV is in liquid form.
- Open the OPV container
  - Oral polio vaccine comes in either a plastic dropper bottle or a glass vial with the dropper in a separate plastic bag.
  - To open a dropper bottle, remove the cap and put the bottle on the foam pad in the vaccine carrier to keep it cold (see figure 3.8.4a).

Figure 3.8.4a Opening a glass vial of OPV



- Position the child
  - Ask the parent to hold the child firmly in a reclining position on her or his lap.
- Give the OPV
  - Open the child's mouth by squeezing the cheeks gently between your fingers. This makes the child's lips point outward.
  - Hold the dropper over the child's mouth at an angle of 45°.
  - Let two drops of vaccine fall from the dropper on to the child's tongue (see figure 3.8.4b).
  - Do not let the dropper touch the child's mouth.

Figure 3.8.4b Giving OPV

Remember:

- **Give 2 drops of OPV into the child's mouth at:**
  - **birth,**
  - **6 weeks,**
  - **10 weeks and**
  - **14 weeks.**
- **OPV is the most heat sensitive of the childhood vaccines.**
- **Keep it at appropriate temperature on the foam pad and check the VVM before use.**

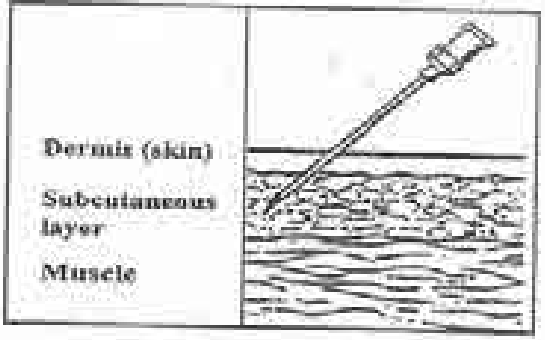
3.8.5 Measles vaccine administration

How it is given

- Measles vaccine comes in powder form and before use must be reconstituted with the accompanying diluent.
- Position the child
  - Clothing should be removed from the child's **left** upper arm.
  - The child should sit on the parent's lap as follows:
    - The parent's left arm should be around the child, supporting her or his head and holding the left shoulder.
    - The child's right arm should be tucked around the parent's body.
    - The parent's right arm should hold the child's legs out of the way, and the parent's right hand should hold the child's left hand (see figure 3.8.5a).

Figure 3.8.5a Holding a child for measles immunization

Figure 3.8.5b Needle position for measles injection (subcutaneous)



Note: To control the needle, support the end of the syringe with your thumb and finger while you push the needle in. Do NOT touch the needle itself.

- Inject measles vaccine
  - You need a single-use sterile 1ml or 2ml syringe with a sterile 25mm, 23 gauge needle.
  - Hold the child's arm from underneath. Your fingers reach around and **pinch up** the skin
  - Push the needle into the pinched-up skin. The needle should go in at a sloping angle, not straight down (see figure 3.8.5c). Do not push the needle too far in.
  - Gently press the plunger with your thumb to inject the vaccine.
  - Withdraw the needle and press the site gently with cotton wool.

Figure 3.8.5c Giving measles vaccine

Note: All children between 6 and under 9 months of age who are admitted to hospital should be given a dose of measles vaccine. This should NOT be marked on their immunization cards. Another dose should be given at 9 months of age.

Remember:

- **Give measles vaccine into the left upper arm at 9 months of age or as soon as possible thereafter.**
- **Discard reconstituted measles vaccine after six hours.**

3.8.6 Yellow fever vaccine administration

How it is given

- Yellow fever vaccine comes in powder form that must be reconstituted with the accompanying diluent before use.
- Position the child
  - Yellow fever vaccine should be injected into the right arm.
  - Clothing should be removed from the child's right upper arm.
  - The child should sit on the parent's lap as indicated below
  - The parent's right arm should be around the child, supporting her or his head.
  - The child's left arm should be tucked around the parent's body.
  - The parent's left arm should hold the child's legs out of the way, and the parent's left hand should hold the child's right hand (see figure 3.8.6a).

gure 3.8.6a Holding a child for yellow fever immunization

Inject yellow fever vaccine

- You need a sterile single-use 1ml or 2ml syringe with a sterile 25mm, 23-gauge needle.
- Hold the child's arm from underneath. Your fingers reach around and **pinch up** the skin.
- To control the needle, support the end of the syringe with your thumb and finger while you push the needle in. **Do not** touch the needle itself (see figure3.8.6b).
- Push the needle into the pinched-up skin. The needle should go in at a sloping angle, not straight down (see figure 3.8.6c).
- Do not push the needle too far in.
- Gently press the plunger with your thumb to inject the vaccine
- Withdraw the needle and press the site with cotton wool.

Figure 3.8.6b Giving yellow fever vaccine

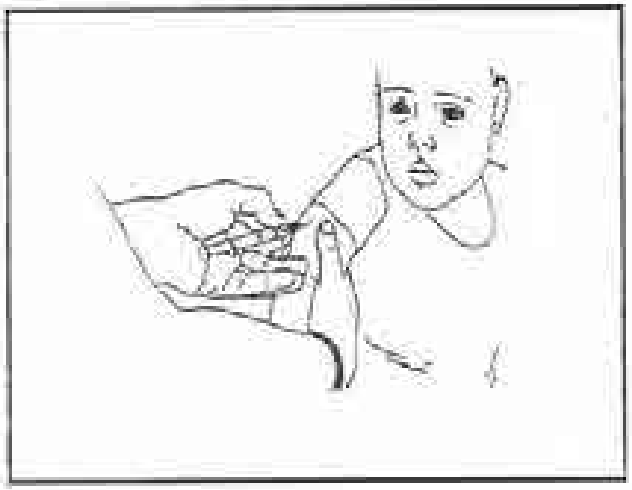
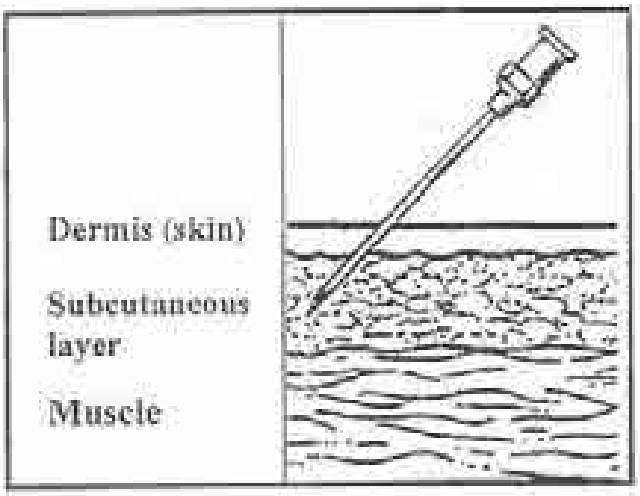


Figure 3.8.6c Needle position for yellow fever immunization(subcutaneous)



Remember:

- **Give 0.5ml yellow fever vaccine once at 9 months of age or as soon as possible thereafter.**
- **Yellow fever vaccine is given at the same time as measles vaccine but use different arms.**
- **Protect reconstituted yellow fever vaccine from heat and sunlight.**
- **Discard reconstituted yellow fever vaccine after six hours or at the end of the immunization session, whichever is sooner.**

3.8.7 Hepatitis B vaccine administration - How it is given

- Hepatitis B vaccine is in liquid form.
- Prepare hepatitis B vaccine
  - Shake the vial so that the sediment at the bottom mixes completely with the liquid.
  - If the vaccine is not well mixed the correct dose cannot be given.
  - If you suspect that the vaccine has been frozen and then thawed, check for damage by using the **shake test.**
- Position the child
  - When hepatitis B vaccine is given at the same time as DPT vaccine it should be injected into the thigh not used for DPT vaccine.
  - Ask the parent to remove any clothing from the child's lower limbs so as to uncover her or his thigh.
  - The parent's left arm should be around the child, supporting her or his head and holding the outside arm (see figure 3.8.7a).
  - The child's inside arm should be tucked around the parent's body.
  - The parent's right hand should hold the child's legs firmly.

Figure 3.8.7a Holding the child for hepatitis B immunization

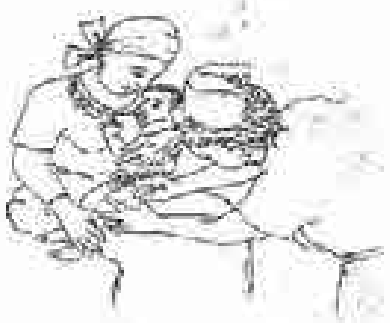
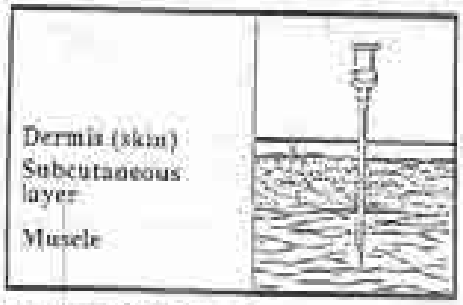


Figure 3.8.7b Needle position for hepatitis B immunization (intramuscular)



- Inject hepatitis B vaccine
  - You need a single-use sterile 1ml or 2ml syringe with a 25mm, 23 gauge needle.
  - Put your finger and thumb on the **outer** part of the middle of the child's thigh.
  - Stretch the skin flat between your finger and thumb.
  - Quickly push the needle straight down through the skin between your fingers. Go deep into the muscle (see figure 3.8.7b).
  - Press the plunger with your thumb to inject the vaccine.
  - Withdraw the needle and gently press the site with cotton wool.

Remember:

- Give a total of 3 doses of hepatitis B vaccine at:
  - birth
  - 6 weeks
  - 14 weeks
- Inject hepatitis B vaccine into the thigh of a child, NEVER into the buttock.

3.8.8 CSM vaccine administration

How it is given

- CSM vaccine comes in powder form and must be reconstituted with accompanying diluent before use.

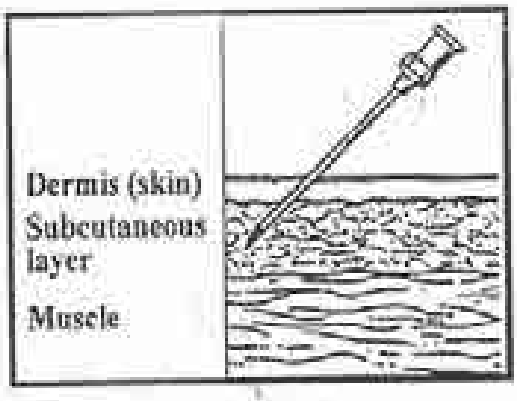
- Position the child
  - Ask the parents to remove clothing – from the child's upper arm.
  - To receive the injection the child should sit on the parent's lap.
  - The parent's right arm should be around the child, supporting her or his head and holding the right shoulder.
  - The child's left arm should be tucked around the parent's body.
  - The parent's left arm should hold the child's legs out of the way, and the parent's left hand should hold the child's right hand (see figure 3.8.8a).

Figure 3.8.8a Holding a child for CSM immunization

- Inject CSM vaccine
  - You need a single-use sterile 1ml or 2ml syringe with a sterile 25mm, 23-gauge needle.
  - Hold the child's arm from underneath. Your fingers reach around and **pinch up** the skin.
  - To control the needle, support the end of the syringe with your thumb and finger while you push the needle in. **Do not** touch the needle itself (see figure 3.8.8b).
  - Push the needle into the pinched-up skin. The needle should go in at a sloping angle, not straight down. Do not push the needle too far in (see figure 3.8.8c).

Figure 3.8.8b Giving CSM Vaccine

Figure 3.8.8c Needle position for CSM injection (subcutaneous)



  - Gently press the plunger with your thumb to inject the vaccine
  - Withdraw the needle and gently press the site with cotton wool.

Remember:

- Give 0.5ml of CSM vaccine from 2 years of age during mass campaigns and epidemics.
- Protect reconstituted CSM vaccine from heat and sunlight.
- Discard reconstituted CSM vaccine after six hours or at the end of the immunization session, whichever is sooner.

3.9 After immunization of each child

3.9.1 Complete the records. Give appropriate information to clients/parents.

- After each client is immunized the health worker should:
- Complete the **tally sheet**.
- Write down the date for each vaccine and dose administered in the **immunization register.**
- Write down the date for each vaccine and dose administered in the **client's card.**
- Give the card back to the parent.
- Thank the parent for coming.

- Remind the client or parent about:
  - The date and time of the next immunization.
  - Where to attend for the next immunization.
  - The number of immunization visits remaining.
  - The side effects that may occur.
  - How to deal with these side effects.

- **At the end of an immunization session:**
  -Use daily tally sheets to prepare daily records of immunization.

3.9.2 Care of vaccines after immunization sessions

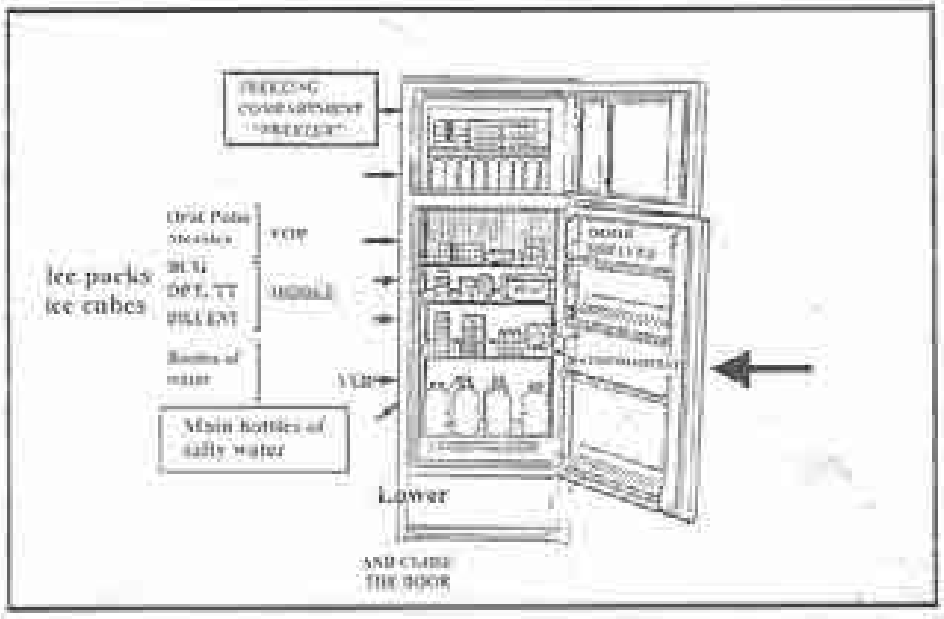
In the past all vaccine vials that had been opened for an immunization session were discarded at the end of the session, regardless of the type of vaccine or the number of doses left in the vials.

The WHO opened multi-dose vial policy of 2000 makes the following recommendations:

- Liquid vaccines: OPV, DPT, hepatitis B and TT
  You may use opened multi-dose vials of liquid vaccines from which one or more doses have been removed following standard sterile procedures, in the next immunization session, **if all of the following conditions are met:**
  - The expiry date has not passed.
  - The vaccine has not been contaminated.
  - The vials have been stored under appropriate cold chain conditions **and**
  - The VVM on the vial, if attached, has not reached the discard point.

Note: Keep opened multi-dose vials of OPV, DPT, hepatitis B and TT that meet the conditions above in a special <u>return box</u> in the main section of the refrigerator, so that you remember to use them first in the next session.

Figure 3.9.2 Vaccine refrigerator, highlighting the return box



- **Freeze-dried vaccines: BCG, measles and yellow fever.**
  - You must discard freeze-dried vaccines 6 hours after reconstitution or at the end of the immunization session, whichever comes sooner.
- **All vaccines**

You must discard an opened vial of any vaccine (including single dose and multi dose, liquid and freeze dried) immediately if any of the following conditions apply:

- Sterile procedures have not been followed.
- You suspect that the vaccine has been contaminated.
- You suspect the vaccine has lost its potency due to exposure to heat or damage by freezing.
- You see evidence of contamination, such as floating particles in the vaccine.

Remember:
- **If the vaccine vial monitor on a vial shows that the vaccine inside has been exposed to unacceptably high temperatures, discard the vaccine.**
- **Discard BCG, measles, CSM and yellow fever vaccines if they have not been used within six hours of reconstitution.**
- **Discard DPT vaccine, hepatitis B vaccine and tetanus toxoid if they have been frozen.**

3.10 Disposing of syringes and needles

All used syringes and needles must be safely disposed of.

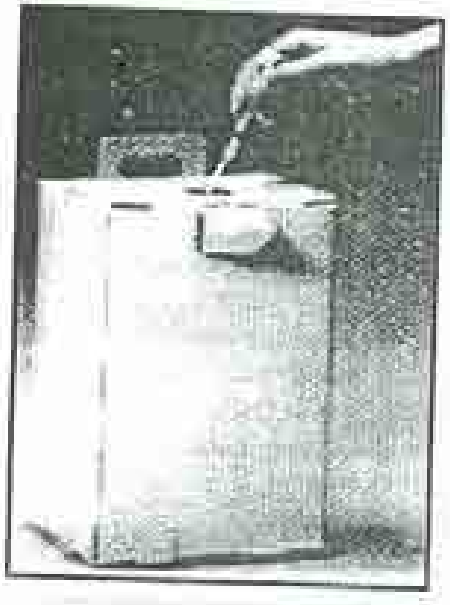
3.10.1 Equipment for Disposal

- Before disposal, used syringes and needles should be placed in a puncture-proof container.
- Special puncture-proof boxes for collection and destruction by burning may be purchased. These are waterproof and tamper-proof, and needles cannot pierce them.
- Alternatively, you may use containers made of thick plastic or thick cardboard, for collecting syringes and needles and

transporting them to an incinerator or other site where they can be burned and buried.

Figures 3.10.1a Handmade safety disposal box

3.10.1b Safety disposal box



3.10.2 Procedures for disposal of used injection Equipment

All used injection equipment must be safely disposed of. Syringes and needles are to be used only once and then destroyed. The system for tracking the destruction of injection equipment should be used.

Follow these steps to dispose of injection equipment safely:

- **Place syringes and needles in a disposal box (see figure 3.10.1)**
  - After use, single-use syringes and needles should be placed directly in a disposal box.
  - To avoid needle-stick injuries, do **NOT** attempt to recap the needle or to separate the syringe and needle.
  - Used syringes and needles should not be transferred from container to container.

- **When the box is full, dispose of it by burning**
  - A manufactured disposal box can hold approximately 100 syringes and needles.
  - When full it should be destroyed by incineration as close as possible to the point of use and as soon after the immunization session as is practical.
  - The compound in which incineration takes place must be secure.
  - The method of choice of destruction of full safety boxes is incineration, preferably in an appropriate high temperature incinerator (above 800°C).
  - If such an incinerator is not available, a low-temperature incinerator (300°-400°C) may be used (limited to an uninhabited area).
  - Ultimately full safety boxes may be incinerated in small numbers by open burning (limited to an uninhabited area).
  - Preferably syringes and needles should be incinerated at LGA
  - level where incinerators will be operated. An exchange strategy should be used, where new syringes and needles are given in exchange of used syringes and needles.

- **Bury the remaining debris**
  - Residue from incineration (oxidized needles and vials) should be safely removed and properly buried in an appropriate pit.
  - Bury them deeply in a sanitary pit, controlled landfill, or a similar location

Remember:

- **After each injection put the syringe and needle directly into a safety disposal box. Do not recap the needle.**
- **Then burn and bury the safety disposal box.**

- **Prevent injuries and infections**

You can reduce the risk of injuries and infections when handling injection equipment as follows:

- Take care to prevent injuries when:
- using needles to give immunizations.
- handling needles after giving immunizations.
- disposing of used needles.
- Do not recap used needles
- Do not remove used needles from syringes.
- Place used syringes and needles in safety disposal boxes.
- Keep the safety disposal box as close as possible to the place where you give injections.
- Immediately and thoroughly wash hands and other skin surfaces that have been contaminated with blood or other body fluids.

Remember:

To avoid injuries and infection from unsafe injection practices:

- **Use only sterile single-use syringes and needles.**
- **Use the appropriate injection techniques.**
- **Handle used needles carefully to avoid needle-stick injuries.**
- **Dispose of used syringes and needles properly.**

3.11 Organising outreach immunization Sessions

Outreach immunization sessions are held in a location other than a health facility, from which health workers can go out and return the same day. They are held periodically, at various intervals, e.g. weekly, fortnightly or monthly. Successive outreach sessions in a community should be held in the same place (for example, the school), on the same day of the month (for example every Wednesday) and at the same time, to maximize the likelihood that people will remember to attend.

3.11.1 Scheduling days and times for outreach sessions

- You need to know the size of the target population and the number of children and women that you can immunize in one session.
- For the best results, consult with community leaders and clients about dates and times. They can help to mobilize the community on scheduled outreach days and can liase with other members of the community.

3.11.2 Setting up an outreach site

- The place where you give immunizations during an outreach visit may be in a building or in the open air.
- If in a building it should be well lighted and well ventilated. If in the open air it should be in the shade.
- In arranging the immunization site, make sure that:
  - the waiting area is clean, comfortable and out of the sun.
  - people are effectively guided to the entrance, the immunization stations and the exit by means of signs or the arrangement of chairs, tables or ropes.
  - the number of people at the immunization and other stations

are limited, so there is no crowding.
- everything you need is within reach, on or near your immunization table.

- Members of the community can supply you with tables, chairs and other furniture and can help you to set up the outreach site.
- You may provide services additional to immunizations on an outreach visit, including prevention, treatment and health promotion. Make sure that the site is set up to accommodate these services.

3.11.3 Special tasks on completing an outreach session

After an outreach session, you have tasks that are additional to those following a session at a fixed site, as described below:

- Packing the vaccine carrier
- Check the ice packs to make sure that the ice has not melted.
- Pack only unopened vaccines in the vaccine carrier.
- Put empty vials and opened vials in an appropriate container to take back to the health facility to be discarded.

3.11.4 Leaving the outreach site

- Collect your waste and take it back to the health facility for disposal (see figure 3.10.1).
- Do not leave empty or opened vials at the site.
- Do not leave any syringes or needles at the site.
- As soon as they have been used, syringes and needles should be placed in a safety disposal box and this should be taken back to the health facility to be appropriately disposed of.
- Clean the outreach site.
- Return tables, chairs and other equipment to the appropriate places.
- Thank the local people who have helped to organize the session and remind them when you will return.

Figure 3.11.4 Collecting waste

3.11.5 Returning unopened vaccines to the refrigerator

- If the ice packs are still frozen, put unopened vials in the **return box** in the vaccine refrigerator so that they will be used first during the next session.
- If **all** the ice in the ice packs has melted, discard all the vaccines **EXCEPT** for any in vials carrying vaccine vial monitors that have not changed colour. Put these vaccines in the **return box** in the refrigerator for use during the next session.
- Put the ice packs from the carrier into the freezer.
- Check and record the temperature of the refrigerator.

3.11.6 Cleaning the vaccine carrier

- After taking care of its contents, wipe the carrier with a damp clean cloth and check for cracks.

Remember:

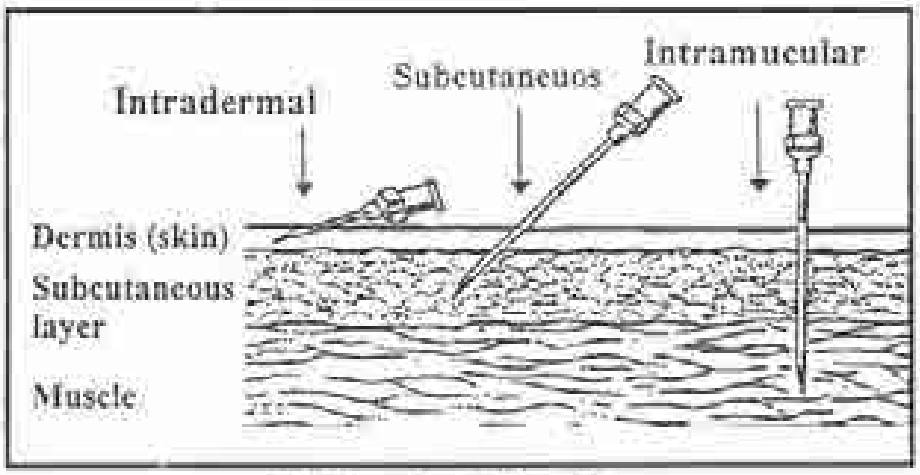
- **Keep the carrier in the shade.**
- **Keep opened vials on the foam pad of the vaccine carrier during sessions.**
- **Keep the lid on the vaccine carrier in transit.**
- **Do not leave ANY syringes and needles at an outreach site.**
- **Take ALL your waste back to the health facility.**
- **Leave the outreach site clean and tidy.**

3.12 Summary of administration guidelines

Table 3.12.1 Summary of injection sites

Vaccine	Kind of Injection	Injection site
BCG	Intradermal	Upper left arm
DPT	Intramuscular	Outer part of thigh
OPV	Oral	Mouth
Hepatitis B	Intramuscular	Outer part of thigh
Measles	Subcutaneous	Upper left arm
Yellow fever	Subcutaneous	Upper right arm
Tetanus toxoid	Intramuscular	Upper arm
CSM	Subcutaneous	Upper arm
Vitamin A	Oral	Mouth

Figure 3.12.1 Different needle positions



Intradermal: into the skin
Intramuscular: into a muscle
Subcutaneous: under the skin

Table 3.12.2 BCG administration guidelines

	Recommendation	Comment
Age	Birth	If not given at birth as soon as possible thereafter.
Dose size	0.05 ml	See the manufacturer's instructions. If child is over 1 year old, give 0.1 ml.
Number of doses	1	
Injection site	Upper **left** arm in top Layer of skin	Do not rub or apply any thing to injection site. If there is no nodule at the injection site 6 weeks after vaccination, the injection must be repeated. If there is no scar 6 weeks after the second injection (i.e. by 12 weeks), refer to a doctor.

Table 3.12.3 DPT administration guidelines

	Recommendation	Comment
Age	DPT 1.....6 weeks DPT 2.....10 weeks DPT 3.....14 weeks	• If a child is not given DPT vaccine at 6 weeks, give it as soon as possible thereafter. • Wait 4 weeks between doses. • It is recommended that a child complete all 3 doses before 6 months of age to minimize side effects, which are commoner after that age.
Dose size	0.5 ml for each dose	See the manufacturer's instructions.
Number of doses	3	
Injection site	Muscle of upper thigh.	Never immunize in the buttock.

Table 3.12.4 Oral polio vaccine (OPV) administration guidelines

	Recommendation	Comments
Age	OPV 0.....at birth OPV 1.....at 6 weeks OPV 2.....at 10 weeks OPV 3.....at 14 weeks	There must be at least 4 weeks between doses.
Dose size	Two drops	See the manufacturer's instructions
Number of doses	4	Additional doses may be received during supplemental campaigns, e.g. National Immunization Days (NIDs)
Immunization site	Mouth	Place the dropper at an angle of 45° to the child's mouth

Table 3.12.5 Measles vaccine administration guidelines

	Recommendation	Comment
Age	At 9 months	All children should be given measles vaccine at 9 months or as soon as possible thereafter, regardless of whether they have had measles before or not. A child aged between 6 and 9 months who is immunized with measles vaccine when hospitalised should receive a second dose at 9 months of age.
Dose size	0.5 ml	See the manufacturer's instructions.
Number of doses	1	
Injection site	Subcutaneous injection in the upper left arm.	Press the site gently with cotton wool.

Table 3.12.6 Yellow fever vaccine administration guidelines

	Recommendation	Comment
Age	9 months	Not younger than 6 months
Dose size	0.5 ml	See the manufacturer's instructions.
Number of doses	1	
Injection site	Subcutaneous in the upper right arm.	Opposite arm from measles.

Table 3.12.7 Hepatitis B vaccine administration guidelines

	Recommendation	Comment
Age	Dose 1 – birth Dose 2 – 6 weeks Dose 3 – 14 weeks	Wait at least 4 weeks between each dose.
Dose size	0.5 ml	See the manufacturer's instructions.
Number of doses	3	
Injection site	Muscles of the upper thigh	Never immunize in the buttock.

Table 3.12.8 Administration guidelines for children < 1 Year

Vaccine	Number of Doses	Age	Minimum Interval	Route of Immunization	Dose	Vaccination site
BCG	1	At birth or as soon after birth as possible	------	Intradermal	0.05 ml	Upper left arm
OPV	4	At birth and at 6, 10 and 14 weeks of age	4 weeks	Oral	2 drops	Mouth
DPT	3	At 6, 10 and 14 weeks of age	4 weeks	Intramuscular	0.5 ml	Outer part of thigh
Hepatitis B	3	At birth,6 and 14 weeks	4 weeks	Intramuscular	0.5 ml	Outer part of thigh
Measles	1	At 9 months	------	Subcutaneous	0.5 ml	Upper left arm
Yellow fever	1	At 9 months	------	Subcutaneous	0.5 ml	Upper right arm
Vitamin A	2	At 9 months and 15 months	6 months	Oral	100,000 IU 200,000 IU	Mouth

Intradermal = **into the skin**
Intramuscular = **into a muscle**
Subcutaneous = **under the skin**

"Two doses of vitamin A can be given to children 6-59 months at least 6 months apart at any clinic visit"

Table 3.12.9 Administration guidelines for women of childbearing age Tetanus toxoid (TT)

	Recommendation	Comment
Age	-TT1 as soon as the women reaches childbearing age or as early in pregnancy as possible	<u>Period of protection</u> None
	-TT2 at least 4 weeks after TT1	3 years
	-TT3 at least 6 months after TT2	5 years
	-TT4 at least 1 year after TT3	10 years
	-TT5 at least 1 year after TT4	All childbearing years
Dose size	0.5 ml	See the manufacturer's instructions.
Number of doses	5	Provides protection during childbearing years.
Injection site	Muscle of upper arm	Never immunize into the buttock

SECTION 4:

COMMUNICATING WITH CLIENTS/PARENTS AND COMMUNITIES FOR IMPROVED ROUTINE IMMUNIZATION COVERAGE

Contents:

About Section 4

This section deals with communication between clients/parents and health workers in one-on-one and group situations. It identifies the six (6) essential messages that each client/parent should be familiar with.

It also contains suggestions for involving communities in immunization programme planning and implementation.

Finally the section presents (in Annex 1) a list of mothers' concerns about immunization and some of the information that can be used to address these concerns.

This section is intended for the use of the health worker at the immunization service delivery point.

The section should be used as training material for service providers and reference material for immunization service delivery.

4.0 Communication in General

Communication means delivering messages that can be understood. Health workers not only give messages to parents but also receive messages from them. In both cases, communication takes place only when the messages are understood. The purpose of effective health communication is to change the behaviour of the client/parent.

To make sure that your communication is effective:

- Find out what the person you are communicating with already knows, and use terms that he or she understands.
- Do not rush.
- Acknowledge what the person says or indicates.
- Make sure that the person understands you. Ask questions that require answers other than "yes" or "no".

The following plays show an exchange between a health worker and a client highlighting some of the common problems in communication. Following the play, analyze the quality of the "communication" involved.

THE PLAY: The Health Worker (HW) and Mrs. Taiwo, Scene 1

HW:	Number 6! *(shouts towards the row of seated women)* . . . Number 6!
Mrs. Taiwo:	Yes Nurse? *(she stands up and moves towards the procedure table with her baby*
HW:	O! You do not know you are here for injections? Quickly now. Your card!
Mrs. Taiwo:	*(becomes uncertain of what to do and stands in front of the procedure table*
HW:	O! Are you confused now! You do not know you have to sit down? Don't waste my time. I have many children for immunization today
Mrs. Taiwo:	*(sits down and gets her baby ready for injection)*
HW:	*(writes on the card and then gives the baby an injection without any regard for the baby or the mother; he writes on papers on his desk, ignoring the mother)*
Mrs. Taiwo:	**Please . . . I do not know the injection you gave my child and if I am to bring her back for another immunization.**
HW:	Look, are you stupid? Bring that your card. Everything is in this your card. You have to be reading this card properly and make it your Bible or Qur'an. You see I have already marked the injection I gave your baby on the card.
HW:	**The card also contains the immunization schedule as follows *(head down he reads the information from the card as rapidly as possible):***
(Continues):	At birth.....BCG & OPV0, HB1 At 6 weeks.....DPT1 & OPV1, HB2 At 10 weeks.....DPT2 & OPV2

At 14 weeks.....DPT3 & OPV3, HB3
At 9 months.....Vit A 1st dose
At 9 months.....Measles, Yellow fever
At 15 months.....Vit A 2nd dose.

HW: **Madam! You see, this immunization card is very important. You must also save it as you have save your gold. If you lose it, no school will admit your child. Your child will also need it for international travels. Woman, if you love this your child and don't want him to die, you must give him Paracetamol if he gets fever after this immunization. You must also come back soon and complete the immunization as scheduled.**

(Continues):

Mrs. Taiwo: Please Nurse…

HW: Madam! No questions. You are wasting my precious time. I have told you that I am always very busy in this clinic. Number 7!

THE PLAY: The Health Worker (HW) and Mrs. Taiwo, Scene 2

HW: Madam with card number 6, please, come this way.

Mrs. Taiwo: Yes Nurse (she stands up and moves towards the procedures table with her baby)

HW: Please sit down. How are you and how is your baby today? May I see your card?

Mrs. Taiwo: Fine Ma! (Sits down and gets her baby ready for vaccination). I do not have a card. Today is my first day.

HW: Don't worry. I will give you a card. (Health worker takes the card out and records all the necessary information and directs Mrs. Taiwo to get her child ready for vaccination).

Mrs. Taiwo: Can I confirm that your child's name is Dele, and he is 2 weeks Old

Mrs. Taiwo: Yes, Nurse. Thank you.

HW: Mrs. Taiwo I am going to give your child BCG vaccine on his left upper arm and OPV drugs into his month. BCG protects your child against tuberculosis, which give children a chronic cough. OPV prevents polio, that disease which can make children lame. BCG is a very small Injection that does not cause much pain. It may give a small lump that will last only a few weeks. You should keep the injection site dry and do not dress it (HW gives the injection on the left upper arm of the child). OPV does not cause any problems.

Mrs. Taiwo: Thank you Nurse. I am so happy you are not angry with me.

HW: O Mrs. Taiwo why would I be angry with you?

Mrs. Taiwo: Ah! You know the other mothers told me that because I did not bring my child immediately after birth, the nurses were going to shout at me. Thank you very much.

HW: (Records the vaccine given and tells Mrs. Taiwo the date, place and time of the next vaccinations. The HW also explains the immunization schedule to Mrs. Taiwo as follows):

At birth.....BCG & OPV0, HB1
At 6 weeks.....DPT1 & OPV1, HB2
At 10 weeks.....DPT2 & OPV2
At 14 weeks.....DPT3 & OPV3, HB3
At 9 months.....Vit A 1st dose
At 9 months.....Measles, Yellow fever
At 15 months.....Vitamin A (2nd dose)

Mrs Taiwo, do you have any questions or anything, which you would like me to explain further?

Mrs. Taiwo: Yes, Nurse. What should I do if I miss my child's immunization appointment?

HW: Mrs. Taiwo, I know it is not always easy to keep all the appointments, but you should try as much as possible to keep the immunization appointments. Immunizations are very important for protecting your children against dangerous childhood diseases. But if you fail to keep an appointment, just come on the next immunization day even if the child is sick. We give immunizations everyday in this clinic.

Mrs. Taiwo: Thank you Nurse, (smiling). I will make sure I do not miss any immunization appointment.

HW: Bye-bye Mrs. Taiwo, see you in 4 weeks time.

Discussion

Compare the behavior of the health worker in the two scenes described above.

Q.1: What do you think about the way the health worker dealt with the mother?

Q.2: What should the health worker have done under both circumstances?

The two scenes above show different types of communication between health workers and clients/parents. Scene 1 displays the common problems with communication, while Scene 2 show some of the qualities of effective communication. The following sections will describe basic principles and qualities of effective communication.

4.0.1 Basic Principles of Effective Communication

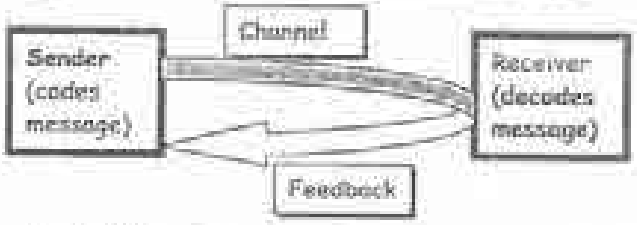
Effective communication should be guided by the following basic principles:

- There should be
  - A message
  - A sender
  - A receiver
  - The channel
  - Feedback
- Effective communication should be a two-way process and cannot be said to be complete if there is no response or feedback to the sender of information.
- Effective communication involves:
  - Finding out what the clients/parents you are communicating with already know and using terms that he/she understands.
  - Making sure that the client understands you by asking questions that require answers other than "yes" or "no."
  - Acknowledging what the client/parent says or indicates (answer all questions directly).

If you ask " do you understand?", and someone answers "yes" you cannot be sure that he or she really does understand.

If you ask "when you will bring your child for his next immuninization?" And some one answers with the right date, you know that he or she has understood you.

Figure 4.0.1: The Communication Process



4.0.2 Qualities of effective communication

People will only grasp health education messages through an effective communication process. Some of the qualities of an effective communication process are:

- **Friendliness:**

A friendly contact between a health worker and a client/parent should show good inter-personal relationship, which includes:

- Warm welcome including greetings
- Showing concern
- Showing respect
- Being kind and polite
- Giving praise and encouragement

- **Simplicity:**

Health education messages should:

- Be short
- Be clear
- Be straight forward
- Use simple language understood by the client/parent.

- **Timeliness:**

The message should:

- Be relevant to the client/parent's particular situation.
- Be logical and systematic.
- Summarize the key information.

- **Truthfulness:**

Health education messages should be factual. They should:

- Contain only the truth
- Correct any misconceptions

- **Good listener**

In effective communication both the sender and the receiver should be good listeners. Good listening includes:

- paying attention
- repeating what the client/parent says for clarity
- good eye-contact
- good body gestures which includes smiling, nodding, words like 'aah', 'yes', 'okay'

4.0.3 Communication categories

An effective communication process should make use of both **verbal and non-verbal methods.** Using a combination of these during communication helps to make clients/parents Feel that health workers are interested in their well being and care about them.

Verbal communication involves:

- the use of spoken words between the sender and the receiver
- greeting clients warmly, acknowledging their concerns.
- talking politely and respectfully with them.
- acknowledging the good steps clients have taken; if you cannot find any, the client should be credited for bringing the child to the clinic.

Non-verbal communication involves:

- showing your attitude through your posture and your expression without speaking.
- welcoming clients warmly with a smile
- paying attention and being patient with the client/parent.
- encouraging a friendly atmosphere during clinic sessions.

Remember:
- **Message sent should be simple and straight forward**
- **Message should contain only the truth**
- **There should be immediate feed back**
- **Both sender and receiver must be good listeners**
- **A variety of communication methods should be used to keep interest**
- **Receipt of a message should be confirmed**

4.1 Addressing the concerns of clients/parents first

People may come to a health facility or outreach site for some reason other than to seek immunization. For example, a woman may have a sick child or may be worried about her pregnancy.

- Respond to the clients/parents concerns first by giving advice or providing treatment
- Then screen for immunization
- Address concerns about immunization immediately by correcting any misconceptions. For example, if a woman believes false rumors that a vaccine is a contraceptive she will not care about anything else you have to say. Talk to her about this first.

4.2 Communicating essential messages about immunization

It is important to keep messages simple and straight to the point. Health talks should contain only one or two topics per session. Health workers should understand that clients/parentsare busy people who should not be kept for too long at the clinic. Often times, clients complain about too lengthy talks and have given this as one of the reasons for nonattendance at immunization sessions.

4.2.1 Six key messages about immunization:

There are six essential messages that clients/parents should receive if they or their children are to be fully protected against the EPI diseases:

a) What vaccine(s) was given and the number of visits a child still needs in order to be fully immunized or the number of doses a woman receiving tetanus toxoid still needs.

Tell clients/parents

- What vaccine(s) was given.
- How many more visits are needed before their children are fully immunized. how many more times a woman of child bearing age has to return in order to secure full protection for themselves and their unborn babies.

At subsequent visits:

- Make people feel a sense of accomplishment by praising them for the vaccines they have already received.
- Always go through the part of the immunization schedule that remains for the specific client, and
- Emphasize the need to complete the schedule to ensure full protection for their children and themselves.

Table 4.2.1: Immunization schedule for children < 1 year of age

Age	Vaccines
Birth	BCG, OPV 0, HB 1
6 weeks	DPT 1, OPV 1, HB 2
10 weeks	DPT 2, OPV 2,
14 weeks	DPT 3, OPV 3, HB 3
9 months	Measles, Yellow fever
9 and 15 months	Vitamin A

Table 4.2.2 Immunization schedule for women of child bearing age

Dose	When given	Period of protection
TT1	At first contact with women of childbearing age, or as early as possible in pregnancy.	No protection
TT2	At least 4 weeks after TT1	3 years
TT3	At least 6 months after TT2 or during next pregnancy	5 years
TT4	At least 1 year after TT3 or during next pregnancy	10 years
TT5	At least 1 year after TT4 or during next pregnancy	All childbearing years

b) What side effects may occur and how to treat them

Explain to clients/parents:

- the expected side effects for each vaccine given.
- that side effects are normal and indicate that the vaccine is working.
- that side effects are usually mild compared to the disease the child can get if he/she is not immunized.
- what to do about the side effects if they occur as follows:
  - The BCG sore is normal. Do not put anything on it. It heals by itself and a scar develops.
  - Fever may occur after some injections. This is normal. Give Paracetamol.
  - Soreness may occur at the injection site. It will disappear after three or four days.
  - A rash may develop following an injection of measles vaccine. This is normal.
- If an abscess develops after an injection, go immediately to a health facility.
- To bring the child back to the health facility if a side effect seems serious or continues for more than 2 to 4 days.

Note: Make sure that the client/parent realizes that there will be minor side effects and that they are normal.

Answer all questions with the help of the table below.

Table 4.2.3: Expected side effects and treatment

Vaccine	Side effects	Treatment	Remarks
BCG	•Small "sore" will develop at site after a week and may last for about 2 weeks	•Keep dry and clean (do not put any ointment or medicine on it)	Will leave a small scar
DPT	•Mild temperature •Redness, pain or slight swelling at site of injection	•Tepid bath •Paracetamol •No treatment necessary	Will disappear within 2-4 days
Measles	•Mild temperature •Slight rash may appear	•Give paracetamol •No treatment necessary	Will disappear within 2-4 days
Yellow	•Mild temperature •Headche or mild muscular pain	•Give paracetamol	Will disappear within 2-4 days

c) The date of the next immunization

Keeping records are necessary for good management of the immunization programme.

- Be specific. Name the day of the week e.g. Monday, and the date, e.g. 4th August. Say how many weeks ahead the date is, e.g. "four weeks from today".
- If calendars are not commonly used, give other reference points as reminders, for instance market days, phases of the moon, festivals or other community events.
- Write the next immunization appointment date on the immunization card. If the client is not literate encourage her to get someone to read it to her.

d) The place and time of the next immunization

It is important for the client/parent to understand the place and time for the next immunization session. This is particularly important if you are changing locations as in outreach sessions.

Inform the client/parent:

- Where to attend the next immunization session
- The particular time of day for immunization and come to an agreement about this with the client/parent.

e) To bring the child for immunization even if he/she is sick

Immunization is important even for a sick child.

Inform the parent that:

- if the child has a cold or is not feeling well that he/she should be brought to the health worker to decide whether the child can be immunized or not.
- it is especially important to immunize the sick or malnourished child because they are most vulnerable to catching serious childhood diseases.

Remember:
A child may be safely immunized unless he/she is so sick that he/she must be hospitalized.

- **You should give DPT even if the child has a fever.**
- **You should give OPV even if the child is vomiting or has diarrhea.**
- **You should give measles vaccine even if the mother reports that the child has had measles previously.**
- **Sick, weak or malnourished children especially need the protection that immunization can provide.**

f) To take good care of the immunization card and to try to bring it every time the woman and/or child come to a health facility. The vaccination card should be kept like a birth certificate.

Remind the clients/parents:

- of the importance of the immunization card/home health booklet
- That the immunization card is a record of services provided and services still needed to fully protect the client.

Note: Each of the six messages should be given more than once. The likelihood of their being remembered increases if different health workers give them, e.g. the one giving immunizations and the one completing the paperwork at the exit point. Check clients' understanding by asking questions that require answers other than a "yes" or a "no."

Remember to always give 6 messages:

1. **What vaccines were given and how many more times the client should come back to be fully protected.**
2. **Expected side effects and how to treat them.**
3. **When to come back for the next immunization.**
4. **Where to go for the next immunization.**
5. **The need to bring the child back for immunization even if he/she is ill.**
6. **To safeguard the immunization cards and always bring it to the service point.**

4.3 Communicating with groups

Another opportunity for communicating about immunization occurs when groups of people are gathered, perhaps waiting for immunization or attending community meetings. Figure 4.3.1 below.

The key to communicating effectively with groups is to address the shared interest of the group members. As with individuals, you should deal with group members' concerns at the outset. Annex 1 discusses some "mothers' concerns" that have been noted in the past.

Figure 4.3.1 A group discussion

4.3.1 Group Discussion Techniques

Discussion provides an effective way to obtain and give information or ideas. Some ways in which you can encourage discussion are indicated below.

- The group's knowledge of the topic.
  - Remember that you are not giving them a test
  - Let them discuss freely
  - Allow participation from as many people as possible
- Invite them to ask questions (**see 6.** for commonly asked questions).
- Share the knowledge you have.
  - You do not have to know all the answers.
  - If you are not sure about something, say so. You can look it up in a book or find out from someone else and respond at the next meeting.

- Tell stories and ask people what they think happened in them, and why.

- Sing songs or encourage people to make up their own songs.

- Put on short plays about immunization and encourage group members to create their own, figure 4.3.2

- Guide them to come up with their own local solutions to the problems. Let them be part of the problem solving discussions.

- Use visual aids such as pictures to illustrate what you are talking about.

  - Before using a visual aid, test it on people in the community to make sure that they understand your message.
  - If they do not, change the visual aid

Figure 4.3.2 **Health workers conducting a play**

4.3.2 Involving the community in communicating immunization messages

Community involvement is a major ingredient in the process of providing health messages to the people. Apart from being the receiver of health messages, members of the community can for example, channel health information to families, associations and other community groups as follows:

- During community meetings
- Through community drama

- Using town/village announcers
- During religious events (at mosques and churches)
- During festivals
- During market days

4.4. Involving the community in planning immunization services.

If a community is to be fully protected against the vaccine preventable diseases you have to gain its support. You cannot achieve everything on your own.

4.4.1 Establish good working relations with community leaders, social mobilization committee (SMC) members and members of the community:

- Spend time with local government officials and traditional leaders. They can help you to decide:

  - when to hold sessions
  - where to hold outreach sessions
  - whom to seek as contact persons for mobilizing the community and to help you during sessions.

- Have regular meetings with your local community contact persons and SMCs. They can help you to:
  - remind parents when to bring their children for immunizations.
  - encourage women to obtain their tetanus toxoid immunizations.
  - explain to clients what is going on during immunization sessions.
  - organize outreach sessions and provide health education.

- Establish rapport with private and traditional health providers e.g., Traditional Birth Attendants (TBAs) in the local area.

4.4.2 Learn from community members:

- Recognize the knowledge and experience of community members and learn from them.

- Talk with people, not to them.

4.4.3 Organize and encourage community planning and action for improved immunization coverage in your catchment area.

Seek and obtain assistance from the LGA and community leaders to:

- Identify the "catchment area" boundary of the health facility in which you work;
- List all the communities within the catchment area for which the health facility is responsible;
- Obtain or prepare a map of the catchment area showing the communities, major geographic and man-made landmarks (e.g. roads, schools, religious buildings, private health providers)
- List the major associations, for example, Non-Governmental Organisations (NGOs), Community Based Organizations (CBOs), with their leadership as well as private health providers (e.g.clinics and maternity homes).
- Estimate the target population (infants, pregnant women, children under 5 years of age, women of child bearing age) in the catchment area;
- Encourage the use of health committees in your catchment area for planning and action. The membership should include community leaders, community organisations and associations, private health providers as well as members from your health facility. Where they are dormant, the health worker should reactivate the committees.
- Work with the action committee to:
  - Review the situation of child health in the catchment area.
  - Set child survival goals (e.g., all children should live).
  - Select priority health issues for community action (e.g. reducing deaths from vaccine preventable diseases).
  - Set objectives to be achieved when addressing first-phase child health issues (e.g., Immunizing all infants in the catchment area each year)
  - Identify problems and obstacles to achieving the objective(s).
  - Propose specific solutions (using available or local resources) to the obstacles/problems identified (e.g. increase outreach sites with community support for transport/logistics /Mobilization).
  - Develop a concrete work plan for implementing the proposals.
  - Specify the ways the community will routinely assess progress in implementing work plan and in achieving the objective(s).
  - Establish the manner in which the community will continue to work together on the selected health issues and when and how they will address additional (second phase) issues as progress is made.
- Encourage close collaboration through implementation of the work plan:
  - Ensure reliable and quality immunization services at static and outreach sites
  - Prepare members of the community (in association with social mobilization committees where they exist) as health promoters to channel health information to families, associations and other community groups in various ways:
  - During community meetings
  - Through community drama
  - During market days
  - Using town/ village announcers
  - During religious events (at mosques and churches)
  - During festivals
  - Train community members to help you with the organization of patient flow, the completion of immunization cards, the administration of oral polio vaccine, and other tasks during service delivery.
- Encourage the continuation of health committee involvement in health issues through:
  - Continuous feedback of information about health facility activities and service outcomes (e.g. on the number of

children fully immunized, the number of newborns protected from neonatal tetanus, and coverage in percentage terms).
- Special health service consideration for health committee members.
- Arranging recognition for community leaders and active health committee members at LGA level.
- Provision of additional training.

Remember:

- **Get people involved in all elements of program planning--from problem identification to planning to implementation of activities;**
- **Listen to and learn from the people;**
- **Encourage communities to take ownership of health programs to ensure sustainability.**

4.5. Mothers' Concerns about Immunization

4.5.1 :"Are the childhood diseases not part of the normal process of a child's development? Why should I prevent this by having the baby immunized?"

- Some people believe that childhood diseases are a normal part of growing up, because in the olden days, when immunization was not available, these diseases were much more common.
- What many people do not realize, however, is that before immunization was available, many more children died or were crippled by vaccine preventable diseases.
- Even today, some children who are not fully immunized die from these diseases, are maimed, crippled, made blind or deaf and are weakened for life.
- This is disheartening because this suffering could be prevented by immunization.

4.5.2. "What are these so-called childhood diseases?"

- **Measles** is a very serious disease of childhood, which is characterized by rash and high fever. It reduces children's resistance to illness and makes them more likely to die when they are attacked by other diseases or faced with harsh conditions that take advantage of weakened children.
- **Tetanus** is another very serious disease that affects both children and adults. Neonatal tetanus kills many babies during their first month of life. Newborns who are unprotected by immunization are very susceptible because the tetanus germs enter through the umbilical cord stump during or shortly after childbirth. Such babies with tetanus often stop sucking. They become stiff, have severe muscle spasms and usually die.
- **Poliomyelitis (polio)** is a disease that kills many children. It leaves many children crippled (lame). For instance, many of the crippled children that are begging foralms on streets are victims of polio.

- **Whooping cough (pertussis)** is a disease (related to breathing) known by the loud "whoop" that children with the disease make when they cough and vomit. Small children are more likely to choke than whoop.

- **Diphtheria and Tuberculosis** are the other two dangerous infections that may affect children. Diphtheria usually affects the breathing system while tuberculosis causes a long standing cough and weight loss.

4.5.3 "Why should I bring my baby for measles vaccination? After all, measles is a common childhood disease, which children normally recover from.

- It is true that measles is a common childhood disease and almost every child gets measles if not immunized.

- It is a serious disease.

- In fact, measles kills more children in Nigeria than any of the other diseases that immunization can prevent.

What happens is this:

- Infants may appear to have recovered from the fever, and the rash may appear to have disappeared, but the ill effects of measles can continue unseen for as long as a year.

- Measles weakens the child's immunity so much that he/she is more likely to get bronchitis, pneumonia, diarrhea, or even blindness.

- In some cases, measles infections can also cause brain damage.

- These complications are more common and more serious in malnourished children.

- Since malnutrition is a widespread problem in Nigeria, measles vaccination is very necessary for every child.

- Children recover better from measles if they were given Vitamin A.

4.5.4 "I have seen some children affected by measles before the age of about 9 months when the immunization is supposed to be given. If so, when should I bring my child for measles immunization?"

- Babies receive natural protection against measles when in the mothers' womb and for almost the first six months of life.

- If the measles immunization is given before the baby is 9 months old, the natural protection received from the mother may interfere with the immunization, so the vaccine will not be very effective.

- Protection obtained from mothers' womb becomes insufficient to prevent measles when they are about 9 months old.

- Hence 9 months is the best age to give the measles immunization.

There are two possible explanations for cases of "measles" that occur before the age of 9 months.

- Many of these cases are probably not measles, but are other rash diseases that resemble measles. This is why health workers are instructed to give the measles immunization at 9 months even if the mother believes the baby already had measles.

- The second explanation is that a few of the babies really do get measles before 9 months, because the protection from their mothers' womb wears off earlier. But there is no way of knowing the children that belong to this group. So to be on the safe side, it is best to give the vaccine at 9 months.

Health workers should stress to mothers:

- The great importance of bringing their babies for measles immunization as soon as they are 9 months old, even if the mothers think their babies may already have had measles.

4.5.5."Some children still have measles after getting the measles vaccine. Of what value is such immunization?

- Although the great majority of children do respond to measles immunization and are

fully protected, it is also true that a small number of children who receive measles vaccine still get the disease afterwards.

- Measles immunization offers excellent protection against contracting the disease.

- The protection offered by a vaccine varies slightly among individual children for the following possible reasons:

  - If the child is not well fed, his resistance will be lower and he may contract the disease.

  - If the child is immunocompromised (lowered resistance to infections) from diseases such as tuberculosis, HIV/AIDS, diabetes.

  - If the child has Vitamin A deficiency.

- It is extremely important to note that the measles cases in immunized children are much more likely to be milder. So those few children who are immunized but still get the disease still receive a tremendous benefit from the immunization.

4.5.6. "My baby received the immunization in the thigh two times, but still had one of the diseases that the immunization was supposed to prevent. How is this possible?"

- It is a pity that this child still had the disease despite mother's good efforts to get her immunized. The reason for this was that she didn't bring the baby back for the third dose of the vaccine (DPT or HB).

- For a child to have a full protection it is necessary for the child to complete the three doses of DPT and HB.

- The immunizations for tuberculosis, yellow fever and measles require only one dose.

- For oral polio vaccine, three doses are normally sufficient while four doses are recommended in order to have higher protection.

4.5.7. "My husband refused to let me bring the baby back for more immunization because the last time the baby received one dose of immunization, the baby fell sick."

- It is true that sometimes a baby develops a mild temperature after receiving a vaccine. This is a "side effect" of immunization rather than a real sickness.

- Side effects are milder and much safer than an actual attack of the diseases that immunization prevents.

- Almost all side effects will disappear in a short time.

- You may want to make your baby more comfortable by giving the baby tepid baths or paracetamol to bring down the temperature.

Note: This mother should tell her husband that the health workers have explained to her that mild fever is normal and not harmful to the child. She could also bring in her husband to the clinic for health education.

4.5.8 After my friend's new baby was given the first injection in the upper arm, the baby developed a small sore at the site of the injection. Is this something to worry about?

- The sore should not be a cause for worry. This is a normal reaction after the BCG injection for tuberculosis.

- It shows that the vaccine is actively working to protect the baby against the disease.

- About 2-4 weeks after the injection, a small lump appears at the site of the injection.

- The mother should leave the lump alone, keep it dry and should not dress it.

- The lump may later break into a small sore with a little discharge. When it heals it will leave a small, depressed scar.

- However, if the discharge continues without the sore drying up, the health worker should be consulted.

4.5.9. "I didn't bring my baby for the immunization appointment because he had diarrhea."

- Several studies have shown that immunizing a child who is slightly ill will not harm the child and will not make the illness worse.
- In fact, the weak condition of a child who is malnourished or ill with cough, cold, diarrhea, or fever makes him/her particularly vulnerable to disease.
- Immunization is therefore very urgent and important in sick children. So if a baby is not well, the baby should still be taken for immunization.

Note:

- **The health worker should postpone immunization only when he observes that a sickness is so serious as to require the baby's admission to the hospital.**
- **The Federal Ministry of Health and the World Health Organization recommend that immunization should not be postponed because of minor illnesses.**
- **Health workers should encourage mothers to keep their immunization appointment even if their children are sick.**
- **Mothers should understand that it is the health worker who should decide if the baby is too sick for immunization.**

4.5.10 "You said that the baby's immunization should start at birth. Since I couldn't bring the baby at birth, can I still bring him for immunization later?"

- Yes this mother should still bring the baby for vaccination as soon as possible.
- The health worker should appreciate that, while it is best to follow the ideal immunization schedule, on no account should the baby be denied complete vaccinations.
- Even if the baby is brought later to begin immunization, the baby should still receive all the vaccinations.
- Inform the client/parent that:
  - Every effort must be made to complete full immunization before the baby is one year old when he/she is still very vulnerable to the vaccine preventable diseases.

4.5.11. "What should I do if I miss my child's immunization appointment?"

- This mother should be encouraged to come to the health facility on the next immunization day.
- If a mother misses the baby's immunization appointment but brings the baby for immunization on a later day, the health worker should:
  - not reprimand or abuse the mother,
  - praise her because she still keeps the appointment of her baby, even though late, and
  - encourage the mother to keep future appointments.

Note:

- **A child will be "fully protected" after the completion of all immunization**
- **It is very important for parents to bring their babies for vaccination as close as possible to the correct time, and**
- **Health workers should make sure that all the vaccinations are given as soon as the babies are due to receive them.**

4.5.12 "My cousin's baby is ten months old and has never received any vaccination.

What vaccine can she receive if she is brought to the health facility?"

- A baby over nine months old can safely be given one dose of each of the vaccines at the appropriate sites on the same visit.

- This baby can therefore be given the following vaccines: BCG, DPT, OPV, HB and measles vaccines.
- One month later, the second dose of DPT, HB vaccine and OPV can be given.
- The third dose of the same vaccines can be given a month after that.
- You don't have to keep measles vaccine to be the last to be received. As long as the baby is 9 months old, he can get the measles vaccine.

4.5.13 "I don't think I will continue to visit the clinic for immunization because the last time I visited there, I wasted the whole day"

This mother may have been delayed, but wasting "a whole day" may be far from the truth. But it is true that mothers may wait too long in some clinics to have their babies immunized. Health staff recognize this problem and recommend the following guidelines for all health workers:

- Be prompt, so that mothers can go home on time.
- Register and administer the vaccines strictly on "first come, first served" basis. Your acquaintances should take their turns like everyone else.
- Do not chat with colleagues and friends while mothers wait.
- During screening and checking of vaccination cards, do not make mothers look stupid, ignorant, or careless. Be supportive if a mother forgets or loses her card.
- Always be friendly.
- Always avoid unpleasant remarks

4.5.14. "I know the nurse is trying to do a good job, but the health talks are a bit boring after hearing them several times without end"

In the past, some health talks have been too long or too difficult for mothers to understand. However, health talks contain information that is extremely important for the families' health.

Therefore the following are some suggestions to make the talks more interesting and effective:

- Health talks should be short, to the point, and interesting.
- In giving information, remember that mothers are responsible adults who have been providing for families, even though they may be illiterate. Use local proverbs, idioms, and even prayers to make health talks more interesting.
- Mothers have come to a health clinic not to a classroom. Make the health "talk" much more of a health "discussion." Encourage mothers to ask questions and to answer questions that other mothers raise.
- Let mothers comment, listen to their personal experiences, and let them realize that you also wish to learn from them.

4.5.15 "Some time ago, when I visited the clinic, I forgot my child's immunization card at home. The health worker was angry with me."

This health worker was probably expressing the importance of the child's health record. She wants to see that children are healthy and growing without problem. But she should never embarrass or abuse a mother. The health worker needs to find a way to show how important the card is in a friendly way. The card tells mothers and health workers:

- The vaccines that the child has already received and the time he/she received them
- The date of the next appointment when vaccines will be due and given

Note:

- **The child health card is very important, it should be kept like a birth certificate**
- **Mothers should be encouraged to keep it safe and clean.**
- **Mothers should always bring it when they come to the clinic for**

immunization and other visits.

4.5.16. "I stopped bringing my child for immunization because my husband refused to support me with transport money."

- The responsibilities of caring for the child rest on both the father and the mother.
- The innocent child depends on both of them for security, growth, and development.
- Protection against diseases through immunization is every child's birth right just as the provision of food, shelter, clothing, care, and education.
- If the mother reminds daddy of his role as stated above and he still does nothing about it, she should do all in her power to set some money aside for transportation for the sake of her child. This will make
  - the mother happy in future
  - the child healthy and happy

Note: Immunization is a symbol of parental care and love for children. Therefore, fathers should give all moral, material, and financial support, to their wives in order to get their children immunized.

4.5.17.I have already brought my baby for three immunization visits. Isn't that enough to protect him?"

- Three visits are not enough to fully protect a child unless the baby started the immunization when he was much older than recommended.
- For babies who follow the recommended schedule immediately after birth, complete protection from vaccine-preventable diseases requires **five visits.**

4.5.18. "Why do the health workers give me the tetanus toxoid injection when they say it is for the protection of the baby?"

- Many things that affect the mother during pregnancy affect the baby also.
- Therefore, the tetanus toxoid vaccine given to the mother protects her from this terrible disease and also protects her newborn baby.
- Nigeria's immunization policy recommends that women receive five properly spaced tetanus toxoid injections to ensure full protection for her and her babies throughout her childbearing years.

4.5.19 My husband says that the vaccines given to women are intended to stop them from getting pregnant. Some people even say that immunization causes HIV/AIDS. What can you tell us about such things?

- It is not true that immunization causes HIV/AIDS or stops people from getting pregnant
- Immunization is a safe and effective way to reduce deaths from vaccine preventable diseases and has been in use worldwide for many years.
- In almost every country of the world immunization is a standard practice.
- Immunization saves millions of lives each year around the world and is considered the most effective preventive health action available.

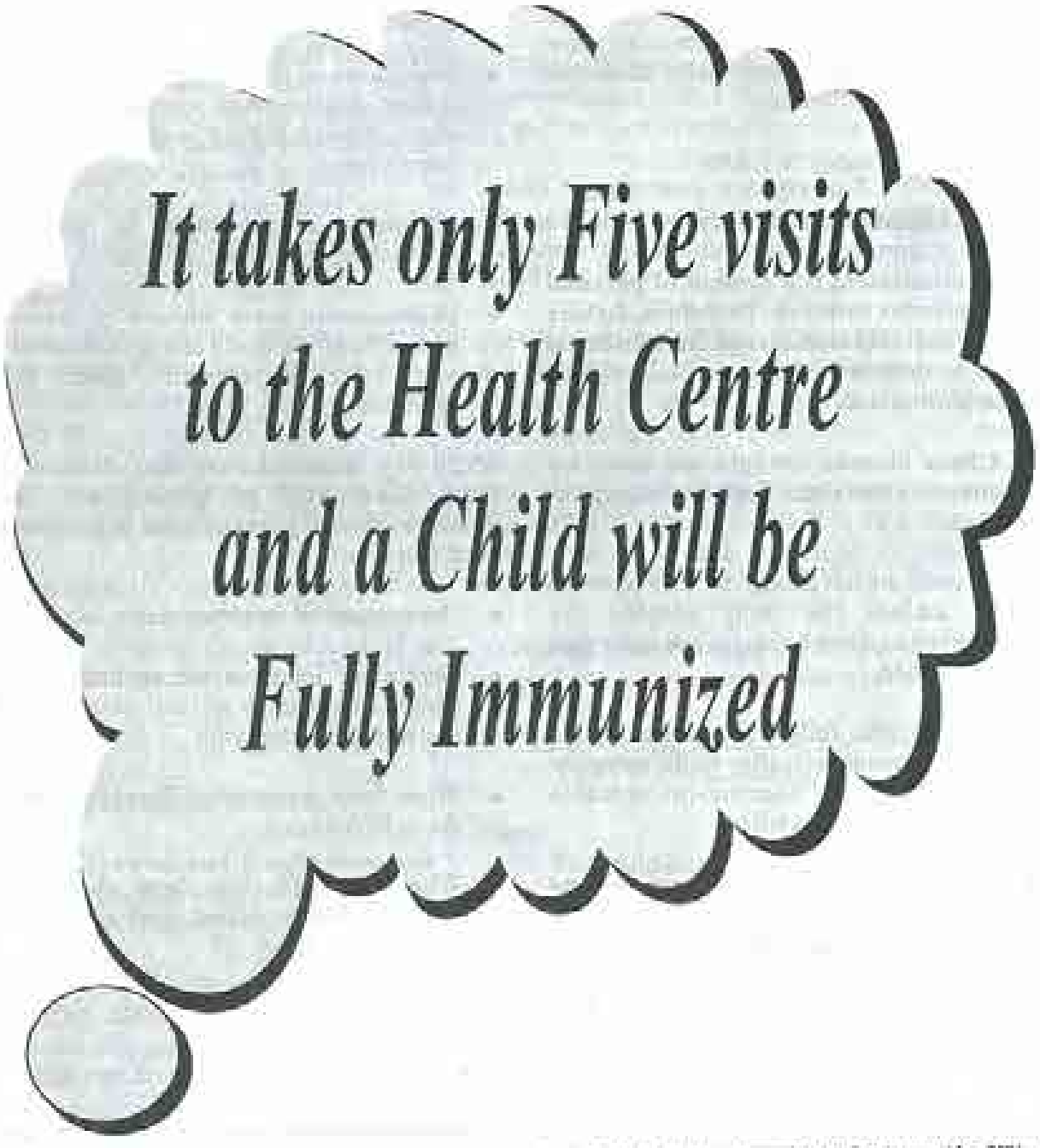
4.5.20 My husband says that diseases are from God and so giving my child immunization to prevent them is like playing God. Is it true?

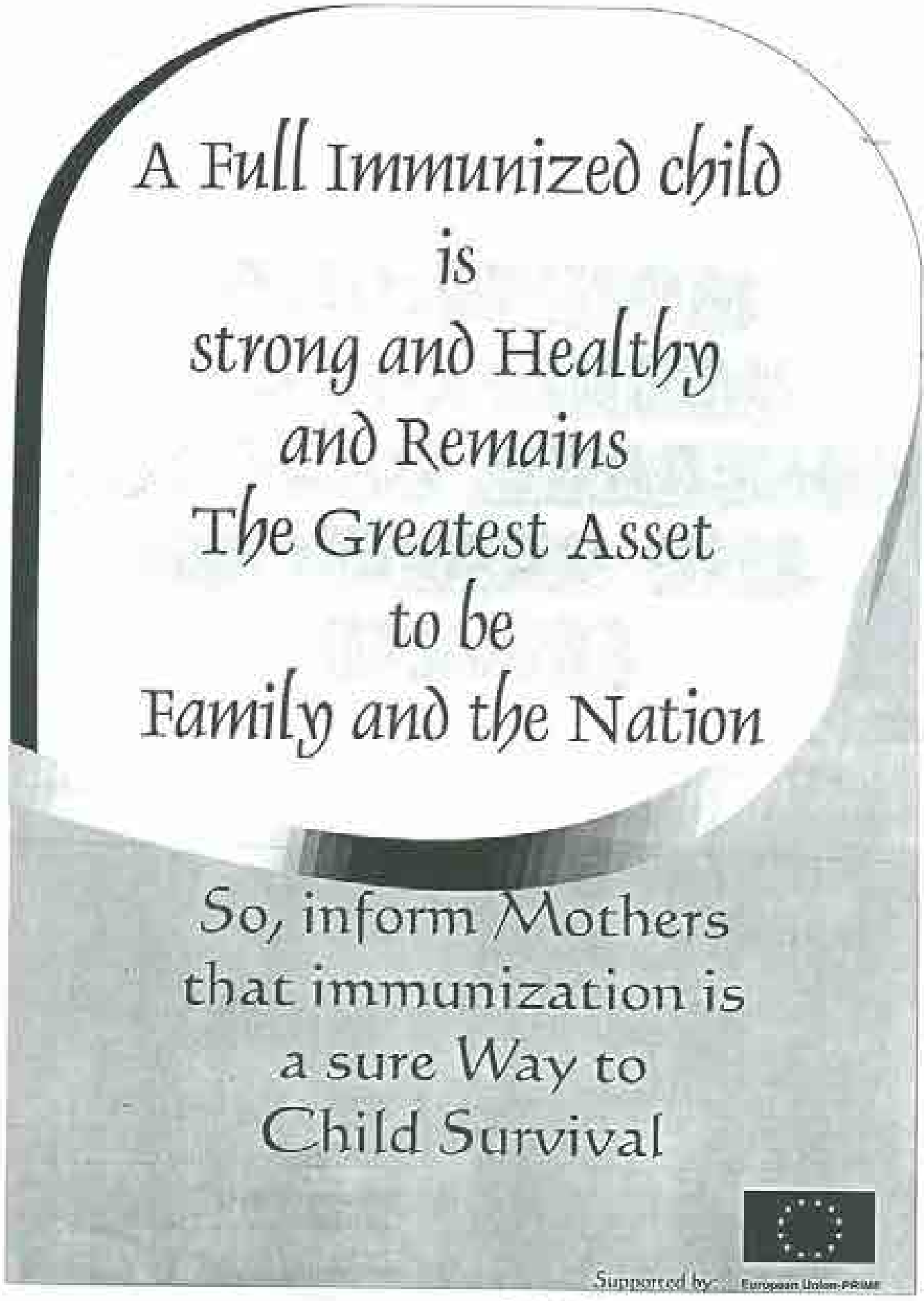
- Diseases are caused by germs.
- Germs are found in the environment and carried by water, air and soil which the child is always in contact with.
- When these germs attack the child's system, she or he falls sick.
- When the child takes these vaccines, the body's ability to defend itself against these germs is enhanced.

- It is therefore very important that we keep our environment clean always and take our children for immunization.

4.5.21 We are told that vaccines contain some prohibited materials. Why should I allow my child to receive such vaccines?

- Vaccines are not made from prohibited materials.
- Vaccines are derived mainly from germs that cause the diseases, but which are no longer harmful to the child
- A child that is not immunized is exposed to getting deadly vaccine preventable diseases.
- To ensure that vaccines remain sterile, potent and safe, they require very small amounts of some chemicals which have been found to be safe
- Vaccines are tested and proven to be safe for your child
- The benefit of vaccination heavily outweighs any side-effect.




A Full Immunized child
is
strong and Healthy
and Remains
The Greatest Asset
to be
Family and the Nation
So, inform Mothers
that immunization is
a sure Way to
Child Survival
Supported by:
European Union-PRIME

SECTION 5:

MONITORING IMMUNIZATION COVERAGE, DROPOUT AND QUALITY OF SERVICE

Contents

About Sections 5

This sections describes the monitoring of immunization coverage, dropout and quality of service.

The sections on immunization coverage and dropout describe how to:

- Record immunizations.
- Report immunizations to the next higher level.
- Use immunization coverage and dropout monitoring charts.
- Interpret coverage data.
- Identify problems and their causes.
- Take action to increase coverage and reduce dropout.

The section on monitoring quality of service describes how to:

- Set standards.
- Perform self-assessment.
- Identify problems and their causes.
- Take action to improve quality of service.
- Practice supportive supervision.

This module is intended for the use of the health worker at the immunization service delivery point.

This module should be used as training material for service providers and reference material for immunization service delivery.

5.0 Monitoring coverage and dropout

Monitoring means the process of continuous observation and collection of data on immunization programmes, in order to ensure that it is progressing as planned. It involves the routine analysis, presentation and use of selected data for advocacy and decision-making. Through monitoring you can assess how well you are doing and what improvements you should make.

5.0.1 Recording immunizations

- Every health facility must have a system for keeping track of immunizations given during a session.
- Health workers should record each client's immunizations in three places:
  - In an immunization register (for children and for women).
  - On a tally sheet.
  - On an immunization card.

Below are instructions for completing the standard immunization registers and cards for children and women respectively.

a) Instructions for completing children's register

Enter the date of immunization for each antigen given in the appropriate column (see figure 5.0.1a).

- Each child is registered only once (on her or his first visit), and one row is used per child.
- Put the date of the immunization session in the first column.
- Leave a blank row between the dates of immunization sessions.
- Enter the serial /card number in the second column of the register and write this number in the immunization card.
- Enter the name, sex and address in the appropriate columns.
- Ensure the date of birth (month and year) is written in the DOB column and not the age.
- Enter the date of immunization in the appropriate column for each antigen.

b) Instructions for completing women's register

Enter the date of immunization for each antigen given in the appropriate column (see figure 5.0.1b).

- Each woman is registered only once (on her first visit), and one row is used per woman.
- Put the date of the immunization session in the first column.
- Leave a blank row between the dates of immunization sessions.
- Enter the serial /card number in the second column of the register and write this number in the immunization card.
- Enter the name and address in the appropriate columns.
- Ensure the date of birth (month and year) is written in the DOB column not the age. Enter the date of immunization in the appropriate column for each dose of tetanus toxoid.

Figure 5.0.1a Immunization register for children

NATIONAL PROGRAMME ON IMMUNIZATION

CHILD'S IMMUNIZATION REGISTER

STATE..... LGA..... DISTRICT..... HEALTH FACILITY.....

Date	Card No.	Name	Sex	Address	DOB	Vit. A		BCG	Oral Polio						DPT.				HBV				Measles		Yellow Fever	
									0-11M			12-23M			0-11M			12-23M	0-11M			12-23M				
									0	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd				

Figure 5.8.1b Immunization register for women

NATIONAL PROGRAMME ON IMMUNIZATION

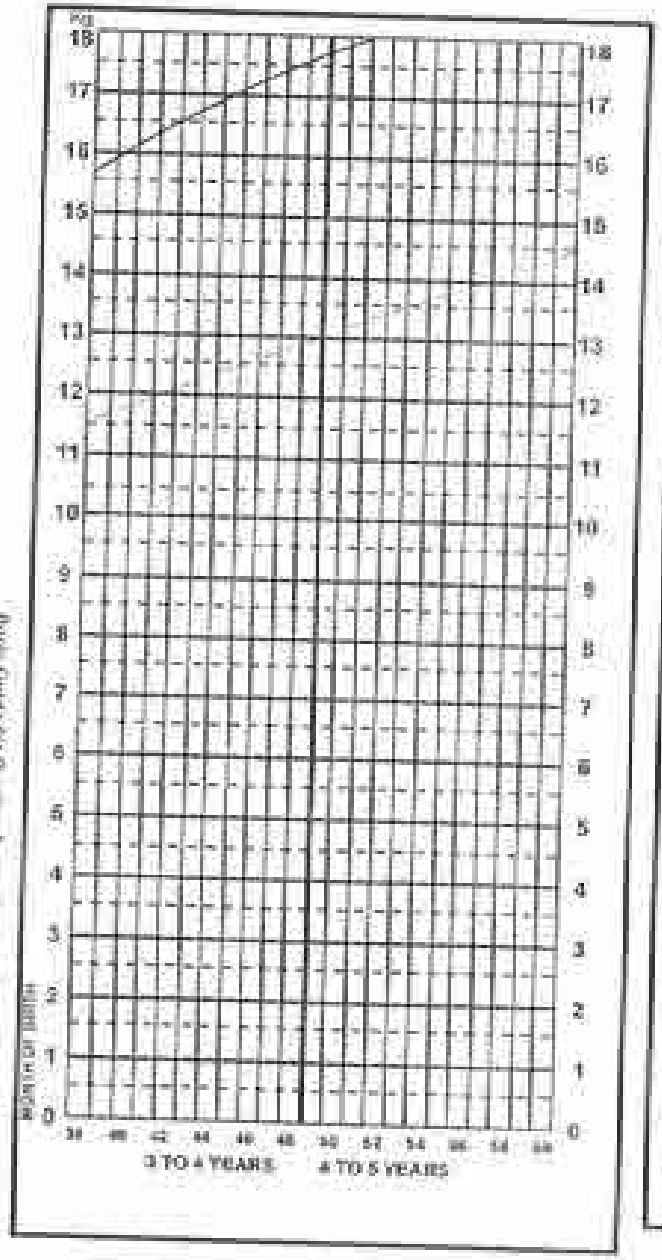
TETANUS TOXOID REGISTER FOR WOMEN OF CHILD BEARING AGE

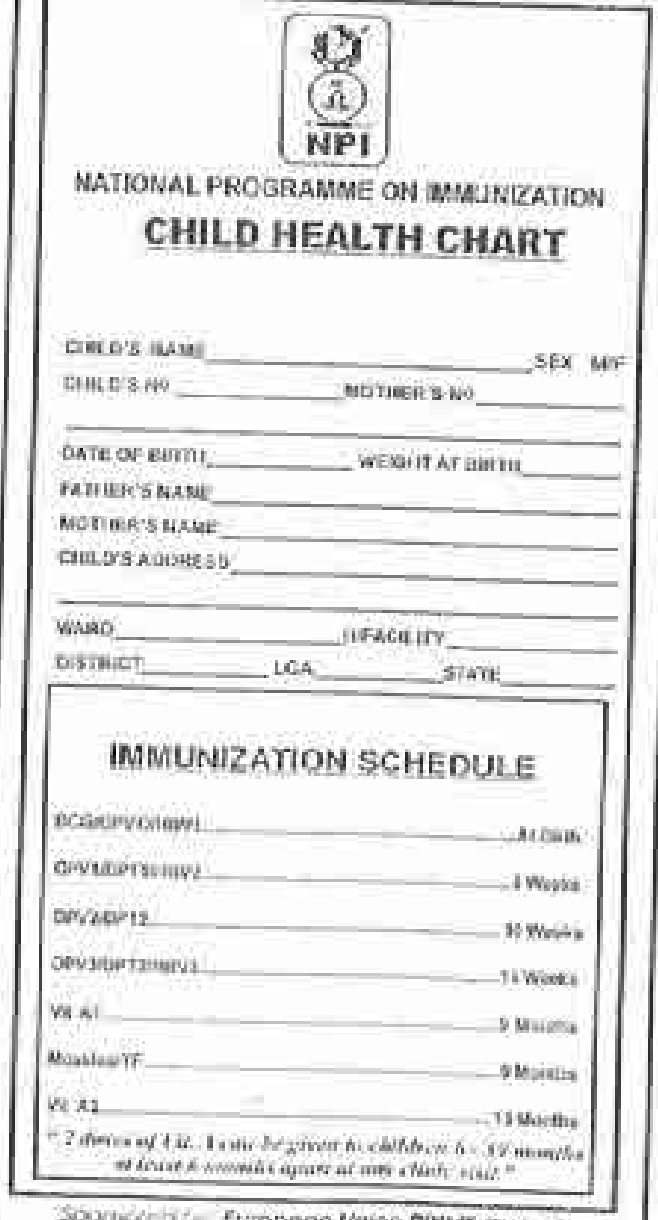
STATE..... LGA..... DISTRICT..... HEALTH FACILITY.....

DATE	CARD NO	DATE OF BIRTH	NAME	ADDRESS	TETANUS TOXOID									
					TT1		TT2		TT3		TT4		TT 5	
					P	NP	P	NP	P	NP	P	NP	P	NP

NOTE:
P = Pregnant Woman
NP = Non-pregnant Woman

Figure 5.0.1c Front of Child's Health Chart





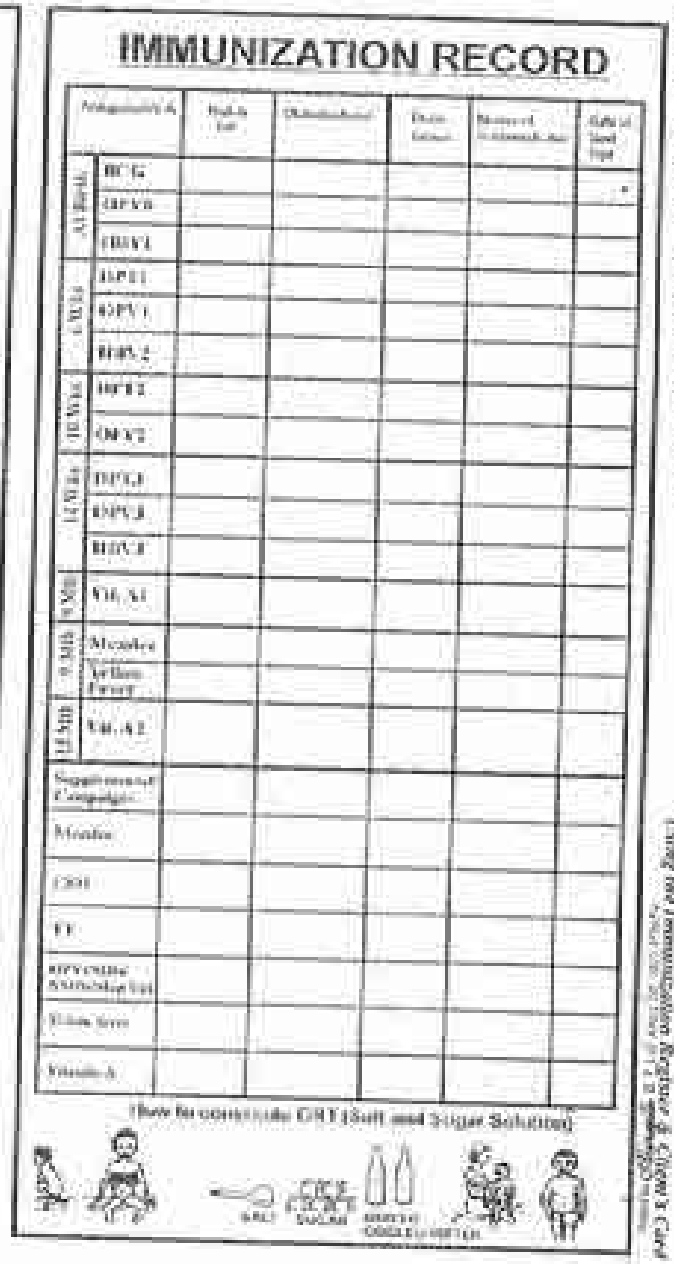


Figure 5.0.1d: Back of Child's Health Chart

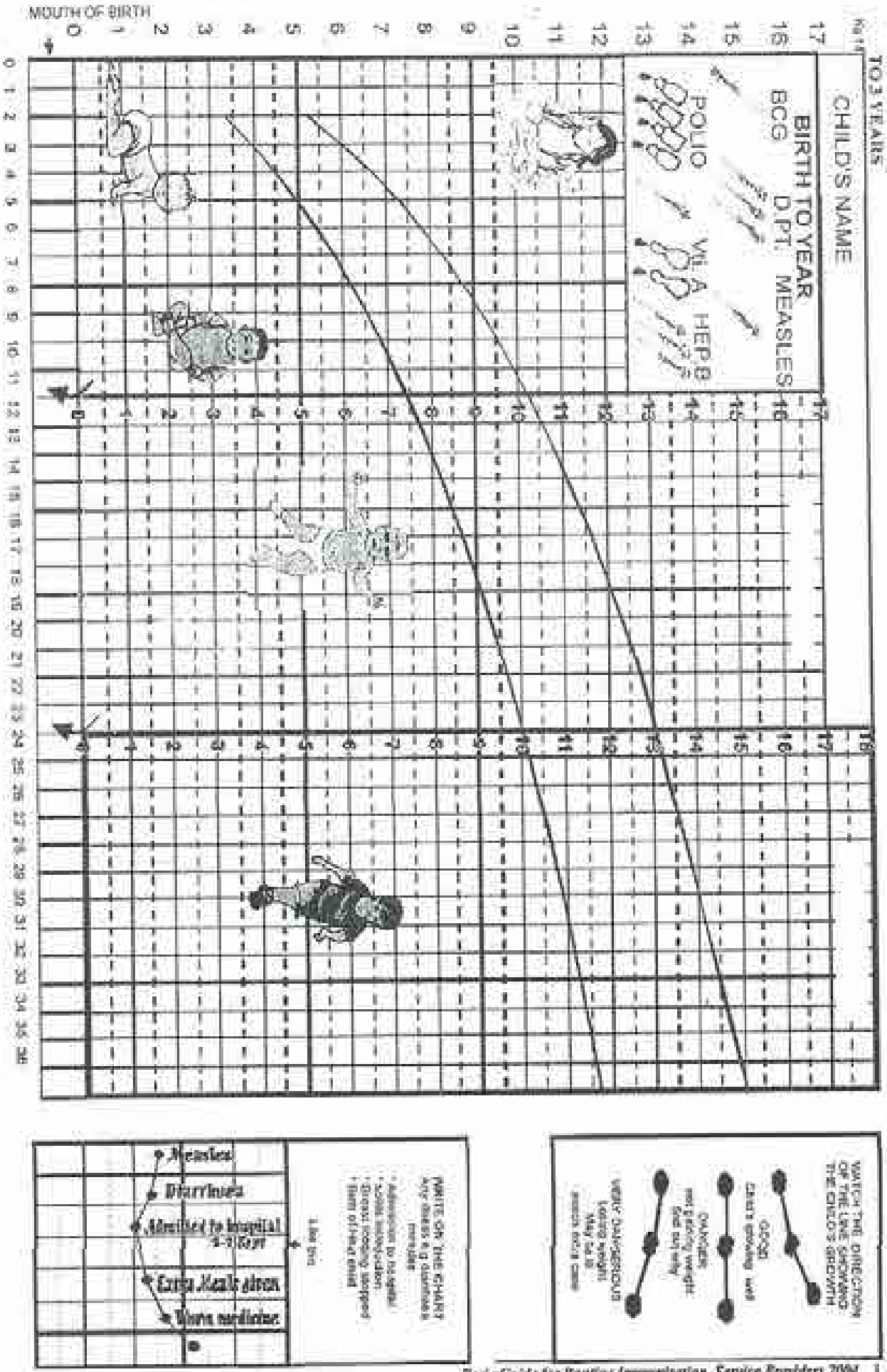


Figure 5.0.1c: Front of Personal Health Chart

NATIONAL PROGRAMME ON IMMUNIZATION

NPI

PERSONAL HEALTH CARD

(TO BE OWNED BY PERSONS 5 YEARS AND ABOVE)

CLINIC/CARD NO_____ SEX: M F (Circle)

NAME_____

PHC HOUSE NUMBER	DISTRICT	SETTLEMENT	HOUSE NO	HOUSEHOLD NO

FOR WOMEN OF CHILD BEARING AGE ONLY

Date of Birth of Last Child _____Day_____ Month_____ Year_____

FOR EACH SUBSEQUENT PREGNANCIES:

1.	Date of ANC visits				
	Date TT Given				
	Test Done (Lab)				
	Date of Delivery				
	Outcome of pregnancy				
	Delivery by				
2.	Date of ANC visits				
	Date TT Given				
	Test Done (Lab)				
	Date of Delivery				
	Outcome of pregnancy				
	Delivery by				
3.	Date of ANC visits				
	Date TT Given				
	Test Done (Lab)				
	Date of Delivery				
	Outcome of pregnancy				
	Delivery by				
4.	Date of ANC visits				
	Date TT Given				
	Test Done (Lab)				
	Date of Delivery				
	Outcome of pregnancy				
	Delivery by				

TETANUS TOXOID SCHEDULE FOR WOMEN OF CHILD BEARING AGE:

1st Dose - First health contact or early in pregnancy
2nd Dose - 4 weeks after 1st TT
3rd Dose - 6 months after second TT
4th Dose - One year after third TT or next pregnancy
5th Dose - One year after fourth TT or next pregnancy

Contact with Health Services

Figure 5.0.1E: Back of Personal Health Chart

Personal Data

A. 1. Date of Birth ..... day ..... month ..... year .....
2. Marital status Single/Married/ Other (Circle)
3. No of Children .....
4. Occupation .....
5. Educatien Primary/Secondary/Tertiary/Other (Circle)

B. IMMUNIZATION

IMMUNIZATION	DATE GIVEN									
BCG		XX	XX	XX	XX	XX	XX			
OPV (0,1,2,3)							XX	XX	XX	
DPT (1,2,3)					XX	XX	XX			
Measles				XX	XX	XX	XX	XX	XX	
Tetanus Toxoid (1,2,3,4,5)										
Yellow Fever										
Hepatitis B										
C. S. M.										
Others (Please specify)										

Personal Health Information

DESCRIPTION	GROUPING			
Blood Group	Type O	Type A	Type A	Type AB
Genotype	AA	AS	SS	
Rh factors				
Previous Operation (Specify)				
Others (Specify)				

	Date of Update
Disability	
Congenital abnormalities	
Chronic diseases	
Mental disability	

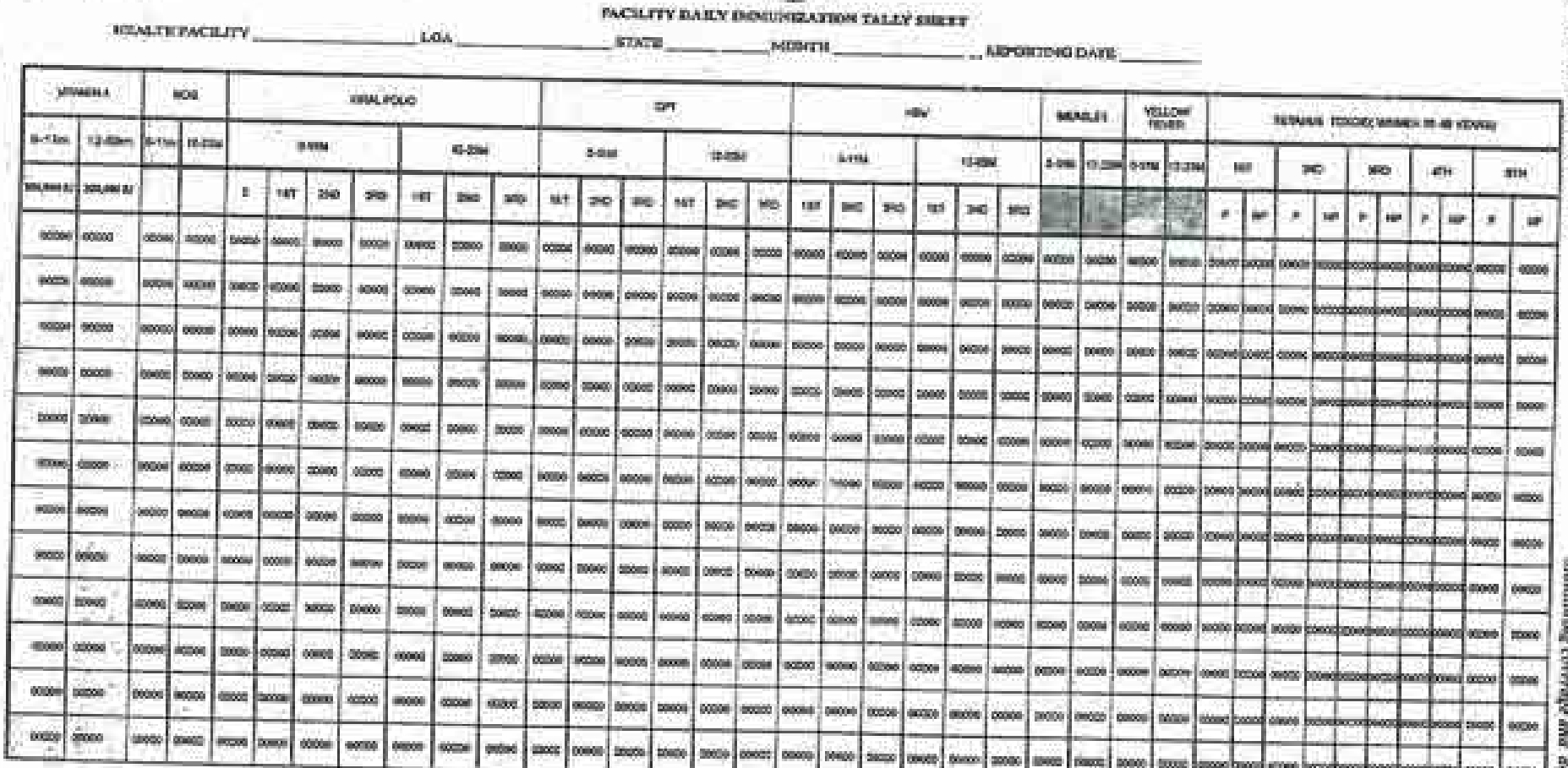
Date	Diagnosis /Reason for contact (Including FP)	Services Provided			Referrals (Specify)
		Type	Where	By Who	

c) **Tally sheets**

- Tally sheets help workers to count the number of doses of vaccinations they give with each antigen in a day.
- They make it easy to give accurate reports on:
- Children's immunizations
- Tetanus toxoid immunizations for women

Below is a sample tally sheet with instructions for use (see figure 5.0.1g).

Fig 5.0.1g **Tally sheet**



FACILITY DAILY IMMUNIZATION TALLY SHEET

HEALTH FACILITY _____ LGA _____ STATE _____ MONTH _____ REPORTING DATE _____

c. Instructions for completing a tally sheet

- Put the date of the immunization session in the first column
- Slash a "0" under the appropriate column for each antigen given
- Draw a line through the sheet below the rows used at the end of each day (use the tally sheet for as many days as possible).
- At the end of each day, count the number of "0s" slashed under each column and transfer the total to the facility immunization summary (monthly) form.

Note: The number of "0s" slashed should be the same as the number of immunizations entered in the Immunization Register for that day.

d. Record Children's Immunizations

After you have immunized a child:

- Record the date on her or his immunization card.
- Record all required information in the immunization register.
- Cross off one of the "0"s on the tally sheet

Note: If the child is under 1 year of age, cross off a "0" in the column headed 011 months. If the child is 1 year of age or older, cross off a "0" in the 12 - 23months column.

e. Record Tetanus Toxoid Immunizations

After you have immunized a woman:

- Record the date on her immunization card.
- Record all required information in the immunization register.
- Cross off one of the "0"s in the tetanus toxoid section of the tally sheet.

Note: If the woman is pregnant, cross off the appropriate "0" (according to dose) in the column headed P (pregnant). If she is not pregnant, cross off an appropriate "0" (according to dose) in the NP (non-pregnant) column.

f. Complete the Tally Sheet at the end of a session

- At the end of each immunization session
  - Count the number of "0"s that you have crossed off.
  - This tells you the number of vaccinations you have given for each antigen.
  - Transfer these numbers to the facility immunization summary (monthly) form (see Figure 5.0.2a below).

Remember:

- **Cross off an "0" on the tally sheet each time you give a vaccine.**
- **If you wait you may forget.**

5.0.2 Report immunizations given to next higher level

- At the end of each day that immunization services are provided, every health facility should complete, the corresponding row on the facility Immunization summary (monthly) form (see figure 5.0.2a) using data from the tally sheet.
- By the last day of the month, the facility immunization summary (monthly) form will be complete, **in duplicate,** and should be submitted by the due date to the LGA level as the immunization report for the month.
- Every month, the LGA monthly (routine immunization) activities report / returns is compiled (see figure 5.0.2b) from the immunization reports of all the health facilities in that LGA.
- The LGA monthly (routine immunization) activities report / returns will be used to prepare ranked graphs of catchment area achievement for activity analysis and improvement.
- The original is sent to the next higher level.

Note:

- **The duplicate copy of the facility immunization summary (monthly) form will be kept in the facility.**
- **Use the numbers from the facility immunization summary (monthly) form to complete the immunization monitoring charts.**

Figure 5.0.2a Facility Immunization Summary (Monthly)

HEALTH FACILITY											LGA						STATE						MONTH														YEAR	
	VITAMIN A		BCG		ORAL POLIO							DPT						HBV						MEASLES		YELLOW FEVER		TETANUS TOXOID (WOMEN 15 - 45 YEARS)										CSM	OTHERS SPECIFY
Day of Month	[illegible]	[illegible]	0-11m	12-23m	0-11m				12-23m			0-11m			12-23m			0-11m			12-23m			0-11m	12-23m	0-11m	12-23m	1ST		2ND		3RD		4TH		5TH			
	[illegible]	[illegible]			0	1ST	2ND	3RD	1ST	2ND	3RD	1ST	2ND	3RD	1ST	2ND	3RD	1ST	2ND	3RD	1ST	2ND	3RD					P	NP	P	NP	P	NP	P	NP	P	NP		

M&E Statistics Officer's Name __________

Signature __________

Full Name __________

Head of Unit's Signature __________

Figure 5.0.2b: LGA Monthly (Routine Immunization) Activities Report Form

NATIONAL PROGRAMME ON IMMUNIZATION (NPI)
LGA MONTHLY (ROUTINE IMMUNIZATION) ACTIVITIES REPORT FORM

L.G.A:.................. STATE:.................. MONTH:.................. YEAR:..................

TOT HFS:.................. GVT:.................. PVT:.................. NO. REPORTING:.......... %HFS:..................

Name of Health Facility	HFS		VIT. A		BCG		ORAL POLIO							DPT						HBV						MEASLES		Y - FEVER			TETANUS TOXOID									
			[illegible]	[illegible]			0 - 11M				12 - 23M			0 - 11M			12 - 23M			0 - 11M			12 - 23M								PREGNANT WOMAN					WCBA				
	GVT	PVT	[illegible]	[illegible]	0-11M	12-23M	0	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	0-11M	12-23M	0-11M	12-23M	[illegible]	1	2	3	4	5	1	2	3	4	5
TOTAL																																								

HEALTH OFFICER:..................................

M & E STATISTICAL OFFICER:..................................

SIGNATURE:..................................

RETURN TO NATIONAL PROGRAMME ON IMMUNIZATION (NPI)

HEAD OF UNIT SIGNATURE:..................................

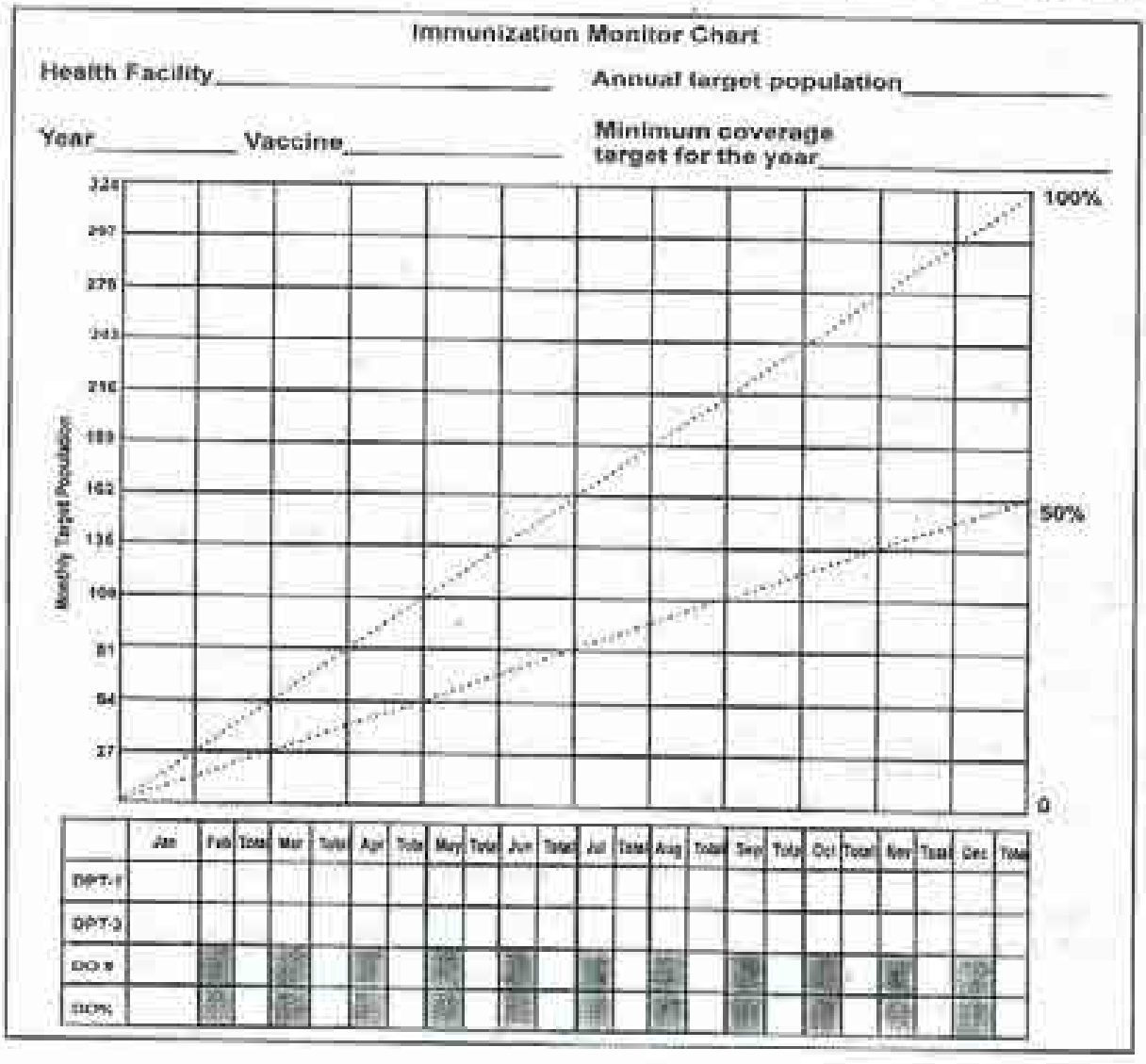
FULL NAME:..................................

5.0.3 Use immunization coverage and dropout monitoring charts

- An immunization monitoring chart:
  - Shows the progress you are making in raising immunization coverage.
  - Shows the level of dropout in your health facility catchment area.
  - Summarizes the information given in monthly immunization report.
- The chart enables you to:
  - Compare the number of people you actually immunize each month with your coverage targets.
  - Determine if the children that start immunization complete their immunizations.
- The chart has two sections (see figure 5.0.3):
  - The graph section in the upper part of the chart, for plotting the data.
  - The table section in the lower part of the chart, for entering the data.

Figure 5.0.3 Monitoring Chart for Children under 1 year

Awe PHC : DPT1 and DPT3 Immunizations Given and Dropout in 2001 (Children 1 year of Age)



Prepare the charts

At the beginning of the year you need to make one immunization monitoring chart for each of the following:

- DPT1 and DPT3 (for children under one year of age)
- TT 2+ for pregnant women

Prepare each chart as follows:

- Write the following information in the chart: heading of the chart
  - the name of the health facility
  - what is monitored on the chart
  - the year

- Determine the annual target population of the PHC catchment area for children under one year and pregnant women. The standard method of calculating the target population is described in the box below (see Annex 2 for another method of calculating target population).

Determining the annual and monthly target populations of children aged under 1 year and of pregnant women.

- Using census or other official data, determine the total population in the area served by the health facility.
- Calculate the number of children under 1 year of age in the area by multiplying the total population by 0.04 (**it is estimated that children under 1 year of age are 4% of the total population in Nigeria**).

  Total population of a catchment area x 0.04 = annual target population of children under 1 year of age

- Calculate the monthly target population by dividing the annual target population by 12 (months).

  Annual target population 12 = monthly target population of children under 1 year of age.

Example:

-Total population of catchment area----------7,500.
-Annual target population of children under one year--------7,500 x 0.04 = 300
-Monthly target population---------- 300 /12 = 25

Note: Follow the same procedure as above for pregnant women for TT immunization. Use 0.05 total population to determine the target for pregnant women. Follow the same steps for Calculation of the annual and monthly target.

- Once you calculate the total target population, write the annual target population at the top of the axis on the left side of the graph and percent (%) on the right e.g. 25%, 50%, 75% and 100%.
  - The coverage target for children's vaccine is the total number of children under 1 year of age. **Note: The target is the same for each dose of each antigen.**
  - The coverage target for tetanus toxoid (TT2+) in pregnant women is the total number of expected pregnant women for the year (that is, 5% of total population). **Note:** TT2+ includes all tetanus toxoid doses given to pregnant women except for the first one; in other words TT2+ includes TT2, TT3, TT4 and TT5 immunizations added together.
- Label the left side of the graph with the cumulative target population for each month and the cumulative percentage on the right side e.g. 25%, 50%, 75% and 100%.
- Add each month's target to the previous total so that the target population rises **cumulatively** until it reaches the annual target population by the end of the 12th month (December). The total number is thus written at the upper left corner of the graph.

Note: "cumulative" means increasing in size by repeated addition.

5.0.4 Children's immunization charts

To complete the preparation of the chart proceed as follows (see figure 5.0.4a):

- Draw a line showing the 100% immunization

coverage target line. This is a diagonal line from the 0 point at the lower left corner of the graph to the point representing the total annual target at upper right hand corner of the graph (100%).

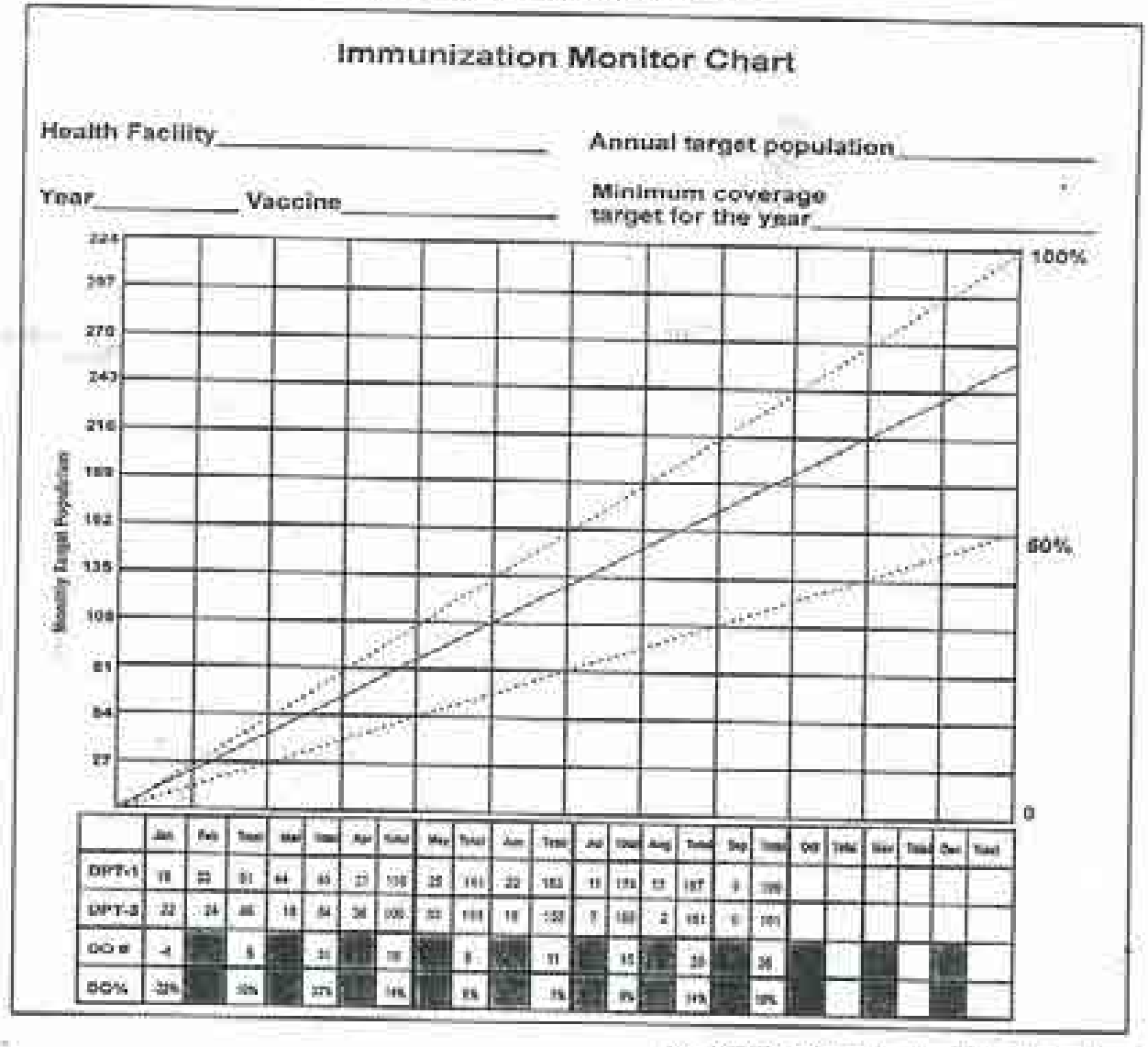
- Draw a second diagonal line from the 0 point at the lower left corner of the graph to the middle point on the right hand axis of the graphthis line represents the 50% line.
- Draw a third diagonal line from the 0 point at the lower left corner of the graph to the point on the right hand axis of the graph that represents the annual coverage target for your catchment area (e.g. 80%).
- Label the first two boxes in the table below the graph with the name of the vaccines and the dose (e.g. DPT 1 and DPT 3)
- Label the next row down in the table DO # (Dropout number).
- Label the last row on the bottom of the table DO % (Dropout percentage)

Fill in the immunization monitoring charts monthly. To record monthly progress on the charts **for children's vaccines**, use data from the facility immunization summary (monthly) form as follows:

- In the boxes in the table under the graph, find the box for the vaccine, dose and month you are recording.
- Write down the total number of children under 1 year of age that received the specific dose that you are monitoring during the month.

Figure 5.0.4a Cumulative chart for children < 1 year with data and target lines

Awe PHC : DPT1 and DPT3 immunizations given and dropout in 2001



- For example, in the chart above (see figure 5.0.4a) the total number of children aged less than 1 year who were immunized with DPT 1 and DPT 3 in March was 44 and 18 respectively.

- Add the current month's figure to the last month's total to obtain the **cumulative** total for the current month.

- For example, on the chart for DPT 1 and DPT 3 the number 44 (children immunized with DPT 1 in March) was added to the 51 children immunized with DPT1 in February to make a total of 95 (cumulative DPT 1 total) for March. Again for April 21 children were immunized with DPT1. This number added to the total for March (95) made a new cumulative total for DPT 1 for April of 116.

Note: "cumulative" means increasing in size by repeated addition. For example, the cumulative total for the number of DPT 3 given by the end of March (see figure 5.0.4a below) is the number given for January (22) plus the number given for February (24) plus the number given for March (18) giving a cumulative total of 64 for March.

- On the graph section of the chart, make a dot for the **cumulative total** on the vertical line **on the right side** of the box for the month.

- Connect the new dot to the previous month's dot with a straight line.

- Do the same for DPT 3. Use the cumulative total for a month to plot a dot on the graph on the vertical line to the right of the box representing a particular month. Connect the new dot to the previous month's dot with a straight line using a different colour for each antigen (see figure 5.0.4b).

Calculate dropout monthly

- Dropout rates compare the **cumulative** number of children who start to receive immunizations with the **cumulative** number of children who do not receive later doses for full immunization in other words, the number of children who "dropout" of the immunization programme.

- To calculate dropout, subtract the cumulative number of doses given later in the series (e.g. DPT 3) from the cumulative number of DPT 1 doses given (the first dose given). Enter the remainder in the row marked "DO #" (dropout number).

- Divide the dropout number (DO #) by the cumulative number of DPT 1 doses given and multiply by 100 to find the dropout percentage (DO %).

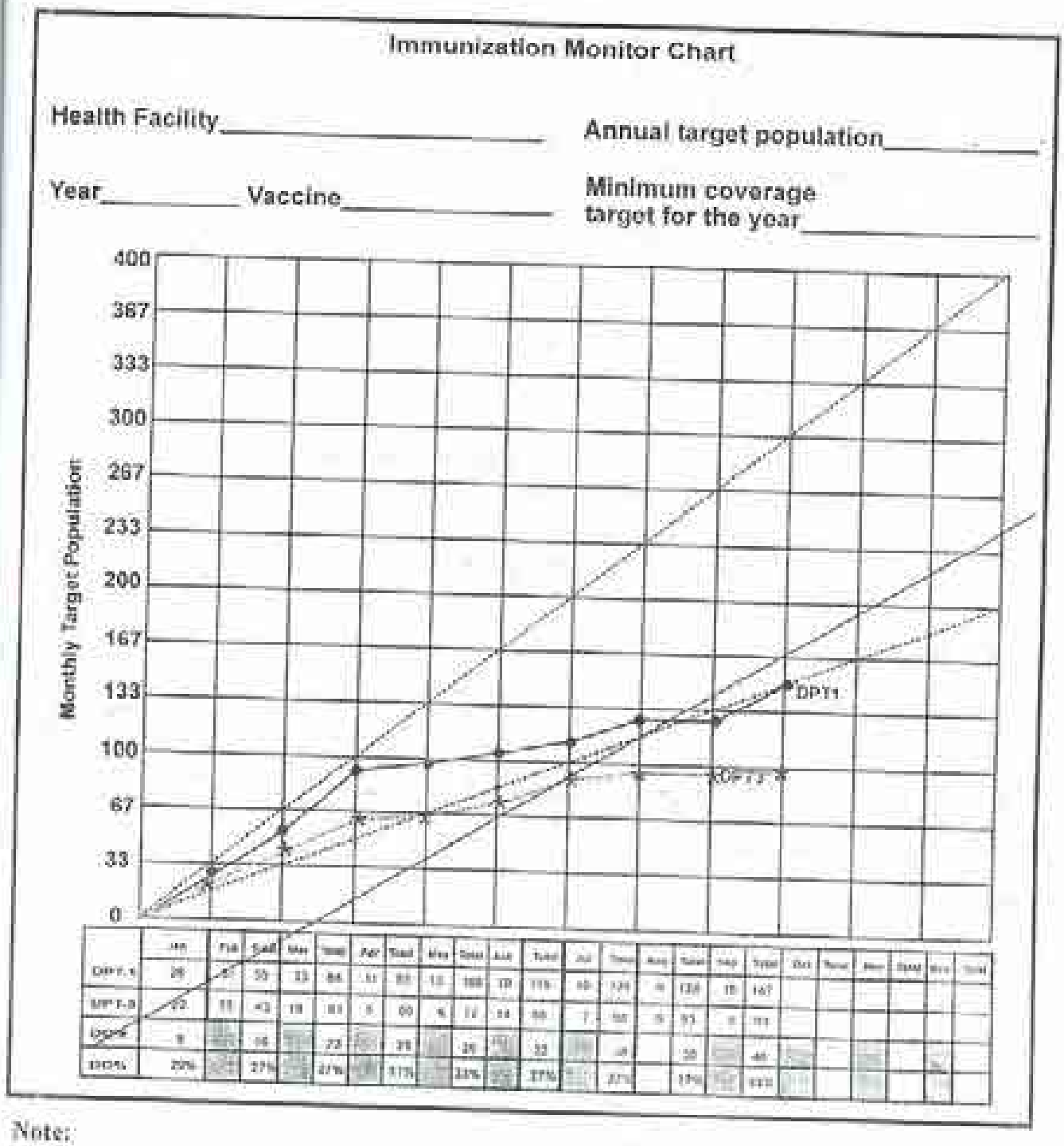
- **For example**, in the chart below: (Figure 5.0.4b)
  - The cumulative number of DPT 1 given by September is 147.
  - The cumulative number of DPT 3 given by the same month is 99.
  - Subtract 99 from 147 and write the remainder (48) in the "DO #" row for September.
  - Then divide the DO# (48) by the cumulative number of DPT 1 given (147) and write the result as a percent (x 100) in the DO% (dropout percent) box in the bottom row of the chartin this example 33%.
  - In other words, 33% of the children who started immunization have not completed the immunization series (as represented by DPT 3) before one year of age.

The formula for this calculation is written as follows for children under 1 year of age:

Calculation of Drop out Rate

$$\frac{\text{Cumulative doses of DPT 1 (minus) cumulative doses of DPT 3}}{\text{Cumulative doses of DPT 1}} \times 100$$

Figure 5.0.4b: Immunization Monitoring Chart for Children
Lassa PHC DPT1 and DPT3 Immunization given and dropout in 2001



Note:

- **WHO recommends that dropout in a well-managed programme should not exceed 10%.**
- **Dropout rates above 10% indicate that something is going wrong.**

5.0.5 Tetanus Toxoid Chart

To complete the preparation of this chart proceed as follows:

- Estimate the total number of pregnant women expected for the year.
- Divide the annual total by 12 to get the **monthly target** number of pregnant women.
- Label the left side of the graph with the cumulative target population for each month and the right side with the cumulative percent e.g. 25%, 50%, 75% and 100%.

- Add each month's target to the previous total so that the target population rises cumulatively until it reaches the annual target population by the end of the 12th month (December). The total number is thus written at the upper left corner of the graph.

- Draw a line showing the 100% immunization coverage target line. This is a diagonal line from the 0 point at the lower left corner of the graph to the point representing the total annual target at upper right corner of the graph (100%).

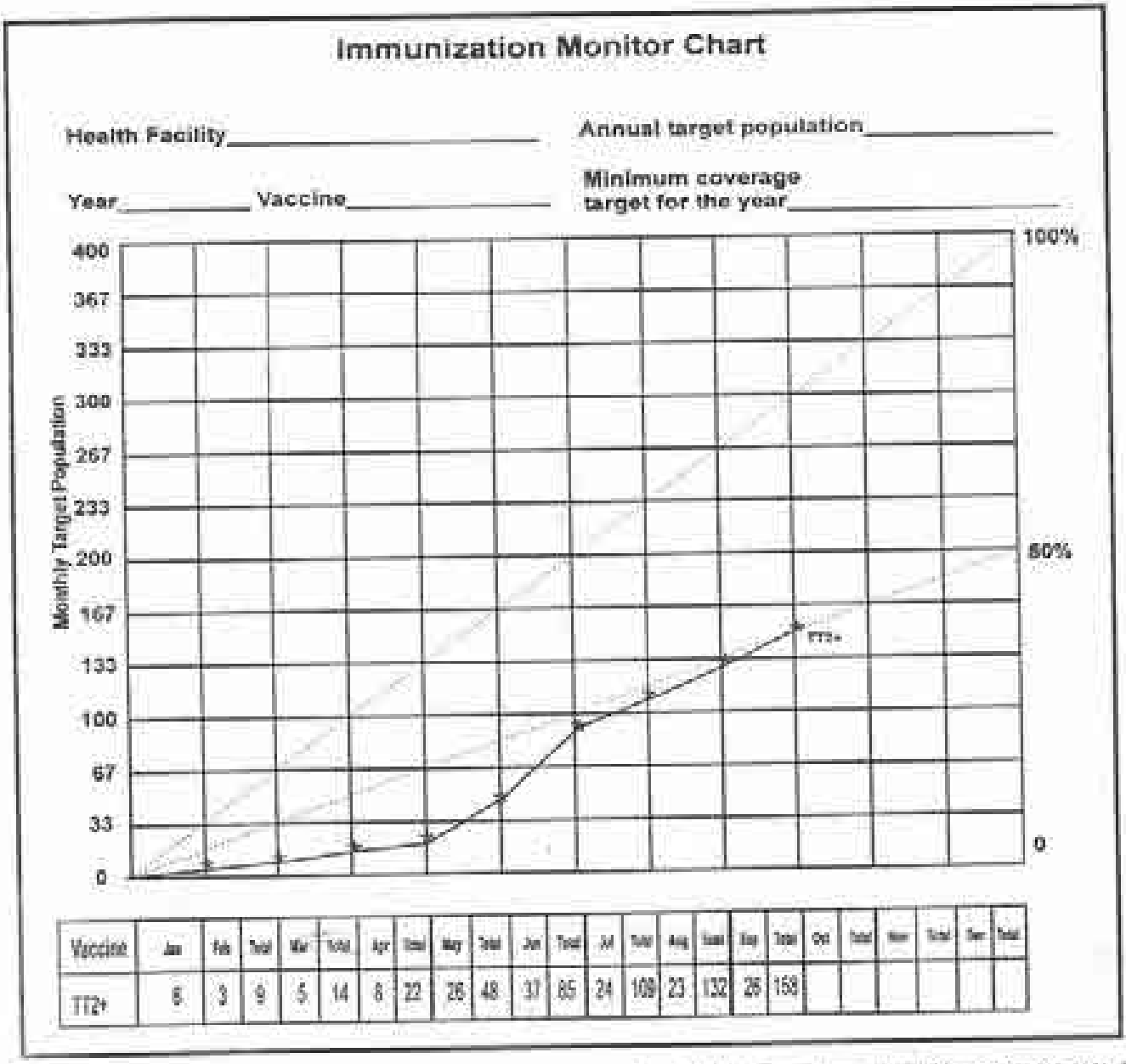
- Draw a second diagonal line from the same point at the lower left corner of the graph to the middle point on the right side of the chart. This line represents the 50% line.

- Draw a third diagonal line from the 0 point at the lower left corner of the graph to the point on the right hand axis of the graph that represents the annual coverage target for your catchment area (e.g. 80%).

- Label the box at the bottom left of the table under the graph with the name of the vaccine and the dose (TT2+)

Figure 5.0.5 Monitoring chart for TT Showing cumulative monthly target

Wazobia PHC: TT2+ Immunizations Given in 2001 (Pregnant Women)



Vaccine	Jan	Feb	Total	Mar	Total	Apr	Total	May	Total	Jun	Total	Jul	Total	Aug	Total	Sep	Total	Oct	Total	Nov	Total	Dec	Total
TT2+	6	3	9	5	14	8	22	26	48	37	85	24	109	23	132	26	158						

Fill in the immunization monitoring charts monthly

To record monthly progress on the charts for tetanus toxoid immunizations for women, use data from the facility immunization summary (monthly) form as follows:

- In the box for the month you are recording, enter the total number of pregnant women who received TT2+ during the month.
- For example, on the above chart for TT2+ the total number of pregnant women who were immunized with TT2 + in June was 37.
- Add the current month's (June) result to the last cumulative total to obtain the current cumulative total.
- For example, on the above chart for TT2+ the number (37) of pregnant women immunized with TT2+ in June was added to 48 (cumulative total for May) to obtain a June cumulative total of 85.
- On the graph, make a dot for the **cumulative total** on the vertical line **on the right side** of the box for the month.
- Connect the new dot to the previous month's dot with a straight line.

Note: The children's immunization chart and the women's tetanus toxoid chart are prepared in the same way. Only the labels and data are different.

5.0.6 Interpret coverage and dropout data

- Every month your immunization monitoring charts for children's vaccine and tetanus toxoid show you the number of people you are immunizing.
  - On the table it shows whether the number immunized each month is increasing or decreasing.
  - On the graph it shows you the number of immunizations given compared with the targets.

- In the case of children's vaccine, the chart also shows:
  - On the table the number and percent of dropouts.
  - On the graph how large the dropout is (the space between the two dots for any month).
- If you are not reaching your targets you should:
  - Try to identify the reasons.
  - Decide how to solve the problems.

Interpreting coverage and dropout data for children's vaccines

- After you have completed immunization monitoring charts for DPT 1 and DPT 3 as described above, analyse the results.

Note: you can prepare charts for other antigens (e.g., BCG and Measles or OPV 1 and OPV 3) but it is recommended to <u>begin</u> monitoring with just one or two indicators.

- Compare the cumulative total line on the graph with the diagonal coverage target lines (the 50% and 100% lines).
  - If the cumulative total line is well above the 50% target line, you are making good progress.
  - The closer the cumulative total is to the 100% target line the better the work.
  - In the graph below (see figure 5.0.6a), the cumulative total is above the 50% target.
  - If the cumulative total line is close to the 50% target line you are making progress but need to strengthen your activities.
  - If the cumulative total line is below the 50% target line you are not making sufficient progress (see figure 5.0.6b). Further analysis and much additional work needs to be done.

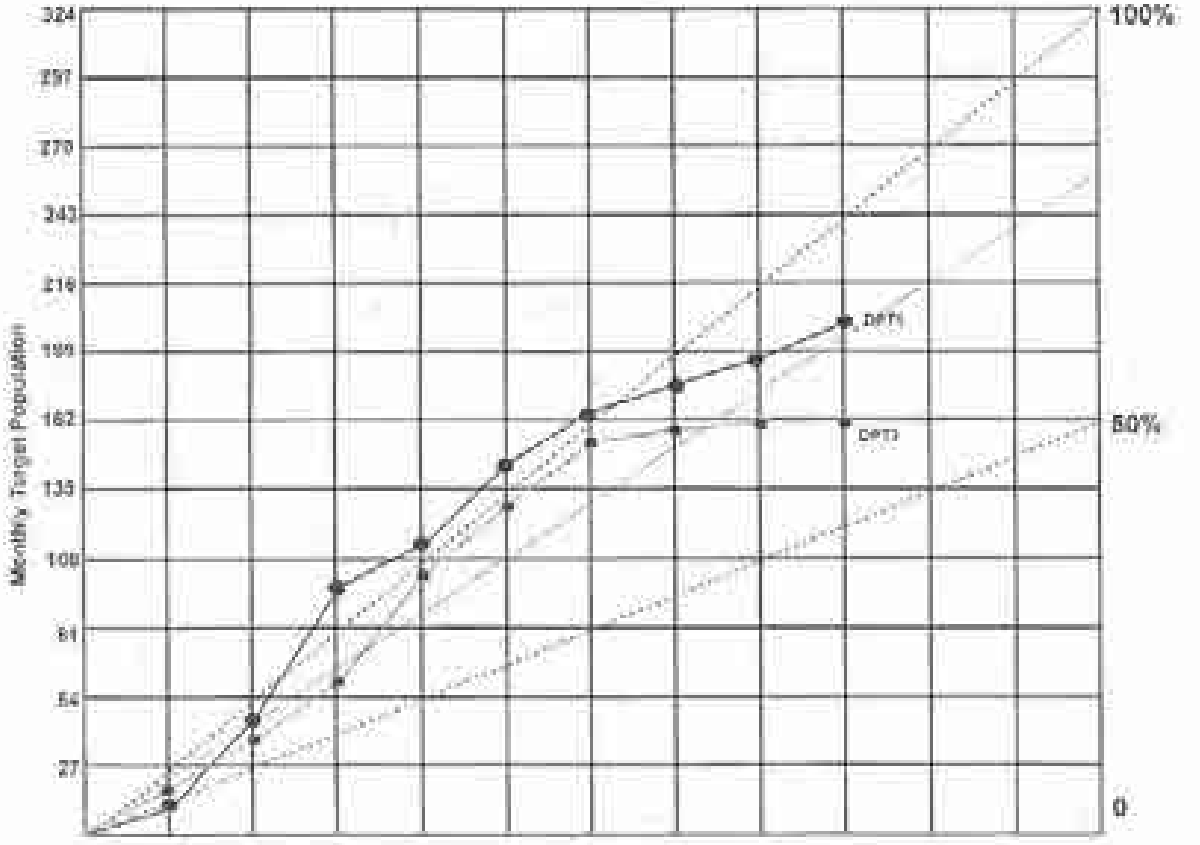
Figure 5.0.6a Cumulative total line above 50% target line

Awe PHC: DPT1 and DPT3 Immunizations Given and Dropout in 2001 (Children < 1 Year of Age)

Immunization Monitor Chart

Health Facility_____ Annual target population_____

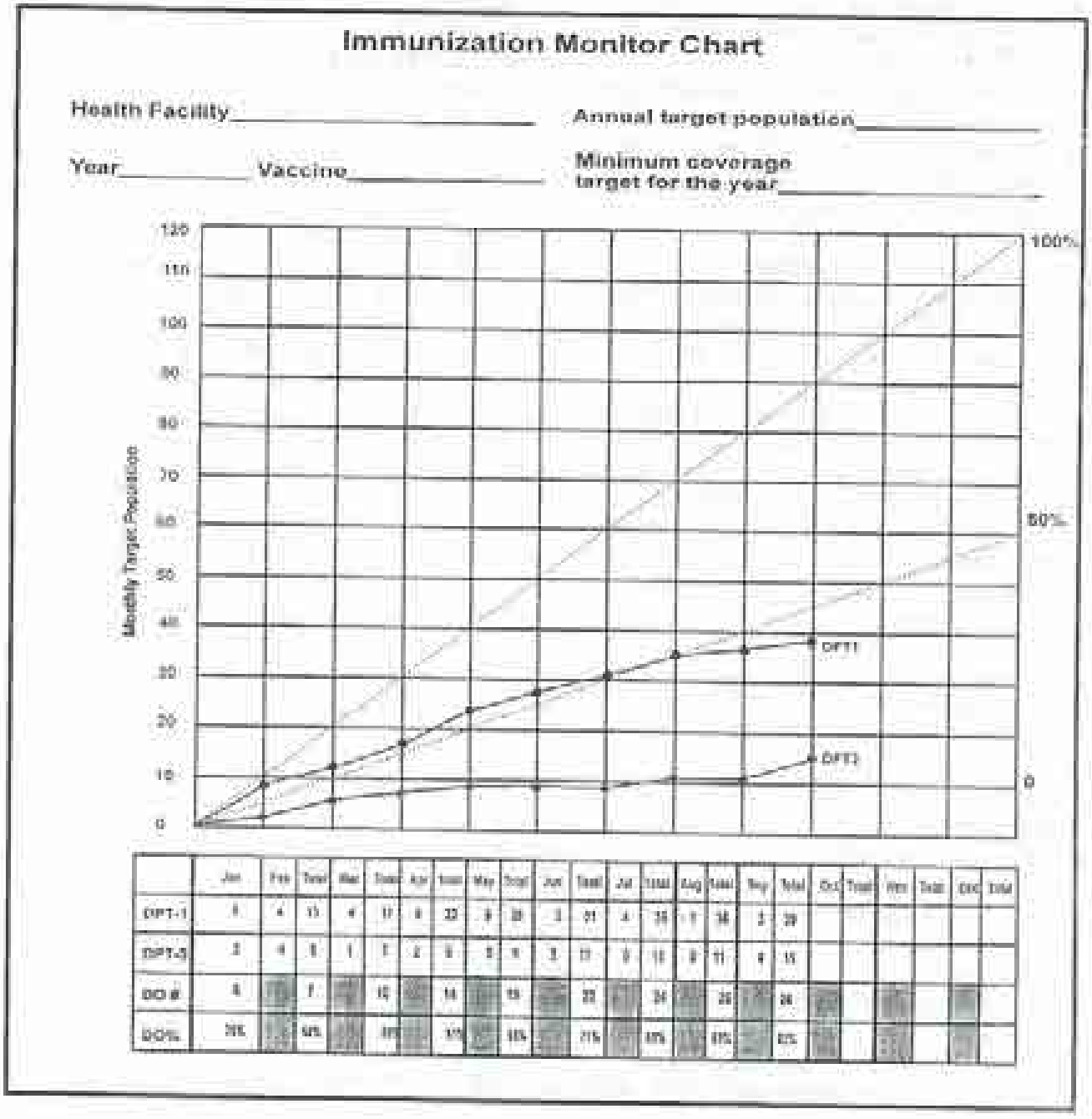
Year_____ Vaccine_____ Minimum coverage target for the year_____



	Jan	Feb	Total	Mar	Total	Apr	Total	May	Total	Jun	Total	Jul	Total	Aug	Total	Sep	Total	Oct	Total	Nov	Total	Dec	Total
DPT-1	18	33	51	44	95	21	116	25	141	22	163	11	174	13	187	9	196						
DPT-3	22	21	43	19	62	26	100	33	133	19	152	7	159	3	161	0	161						
DO #	-4		5		31		16		8		11		15		26		35						
DO%	22%		10%		33%		14%		6%		7%		9%		14%		18%						

Figure 5.0.6b Cummulative total line below 50% target line

Lassa PHC: DPT1 and DPT3 Immunizations Given and Dropout in 2001 (Children < 1 Year of Age)



- Compare current month's data with those of previous months using the two charts above (see figures 5.0.6a and 5.0.6b).
- In the tables at the lower part of the charts, look at the number of immunizations given during the current month and compare it to the number given in previous months.
- Are the numbers increasing or decreasing?
  - In figure 5.0.6b above, despite good coverage at the beginning of the year (above the 100% line from March to June), the immunization trend for both DPT 1 and DPT 3 appears to be down from mid-year on.
  - From May onwards one notices a steady decline in the number of immunizations given each month.
  - Ask questions about what is happening:
    - New staff?
    - No supervision?
    - No supervision?
    - Decrease in supplies?
    - Rumours?
    - Rejection?
    - Inappropriate reporting?

- In figure 5.0.5 above, there seems to be a small decline over time.
- But in addition to the decline, the output is low at Lassa PHC and starting in July dips below the 50% target line.
- If the current trend continues, coverage by the end of the year will be well below the 50% target line. There seems to be a serious problem at this health facility and it seems that nothing is being done to correct it.

Compare results for two vaccines

- Compare the two cumulative total lines for DPT 1 and DPT 3 in the charts above.
- The relative distance (or space) between the two lines indicates the amount of dropout that exists at any time during the programme.
- If the distance between the two cumulative total lines on the chart is wide or is growing wider every month you have a problem.
- The actual numbers of dropout and the percent dropout that exist in the programme is shown in the dropout rows of the table (bottom two rows).
- In figure 5.0.6a above, the health facility was clearly keeping dropout low in January and February
- More children then came for the first time in March to receive DPT 1 compared to the children who received DPT 3. This explains the sudden rise in dropout in March as shown in the graph.
- But as the health facility covered these children well in subsequent months, dropout rapidly came down. This is an example of a well-run programme.
- Then from May on dropout began to climb until it reaches 18% in September (well above the 10% target).
- By August, something has clearly gone wrong at Awe PHC and one wonders why the staff and/or LGA has not noticed, investigated and taken action.
- In figure 5.0.6b above, Lassa PHC has dropout around 60%. This means that out of three children who start immunization only one child completes the three doses (two children of every three drop out). This is the mark of a very poorly managed activity.
- Since Awe and Lassa PHCs are in the same LGA, it appears that the problems at Lassa PHC are specific to that facility/ catchment area and are not related to an overall LGA problem.

Remember:

- **Dropout is an indicator that does not depend on knowing how many children live in a catchment area.**
- **It refers to the children who actually come for immunization.**
- **It is the single most reliable (and revealing) indicator of immunization programme management.**
- **WHO recommends that dropout in a well-managed programme should not exceed 10%.**
- **Dropout rates above 10% indicate that something is going wrong.**
- **If dropout is far above 10%, PHC staff, supervisors and officers, should take urgent action.**

Interpreting coverage data for Tetanus Toxoid (for pregnant women) See Figure 5.0.6c

The same analysis that you use for children's vaccines may be applied to the monitoring of TT immunizations given to pregnant women.

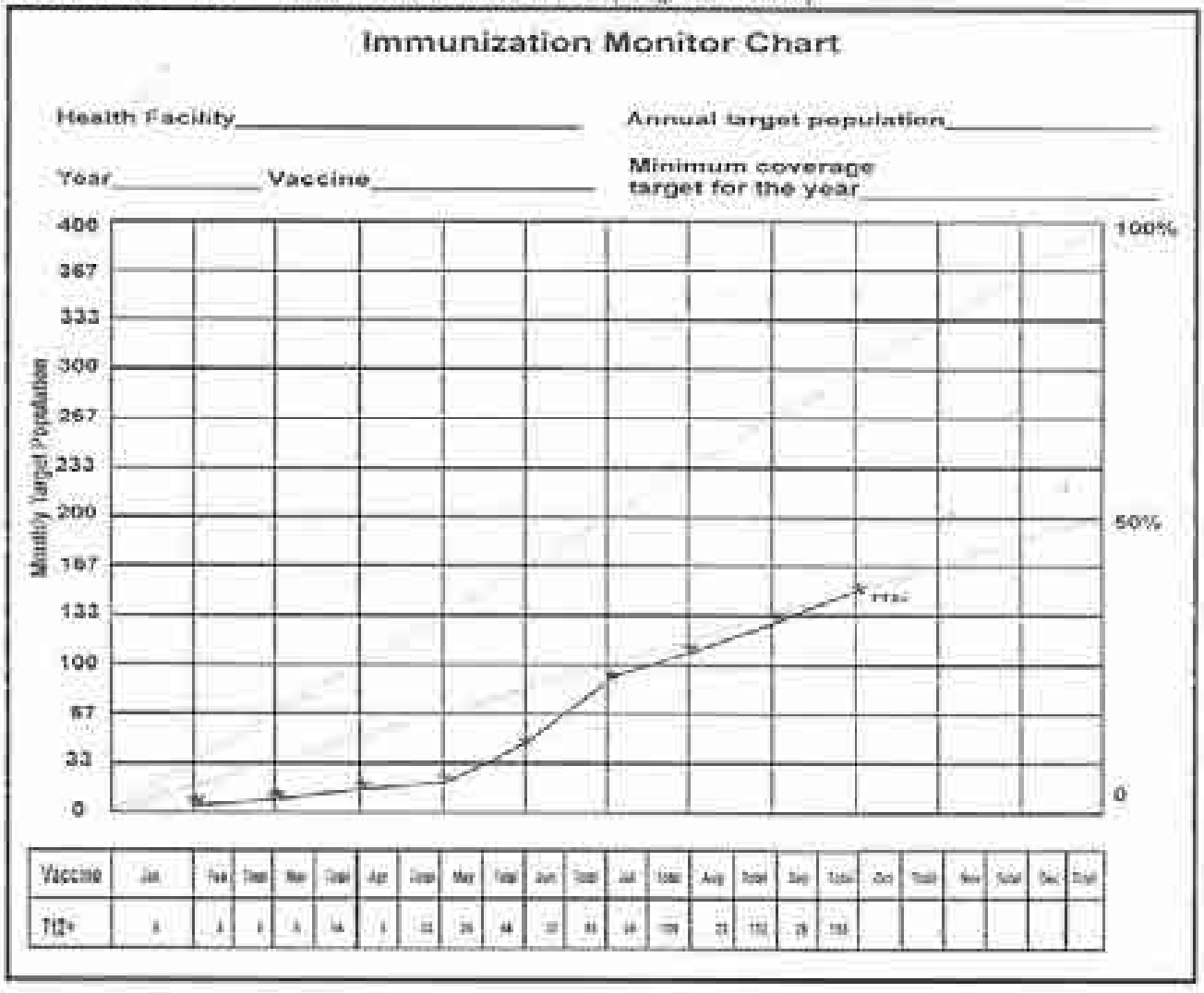
- If the cumulative total line is well above the 50% target line, you are making good progress.
- The closer the cumulative total is to the 100% target line the better the work.
- If the cumulative total line is close to the 50% target line you are making progress but need to strengthen your activities.
- If the cumulative total line is below the 50% target line you are not making sufficient progress. Further analysis and much additional work needs to be done.

- In the case of Wazobia PHC below (Figure 5.0.6c), the cumulative total line is running nearly even with the 50% target line. This indicates progress but more work needs to be done to protect women and their newborns.

Compare current month's data with those of previous months using the chart below.

- In the table in the lower part of the chart, look at the number of immunizations given during the current month (September) and compare it to the number given in previous months.
- Is the number increasing or decreasing or roughly the same?
- In Figure 5.0.6c there is a significant improvement beginning in May.
- However, the number of immunizations given each month (about 25) is well below the estimated number that should be given every month (33 immunizations of TT2+). There is good improvement from May but much remains to be done if neonatal tetanus is to be eliminated in the area.

Figure 5.0.6c Cumulative TT2+ Total line close to the 50% target line
Wazobia PHC: TT2+ Immunizations Given in 2001 (Pregnant Women)



5.0.7: Identify problems and their causes

If your data show that you are making progress you can plan how to maintain and increase immunization services.

If the data show that you are not reaching coverage targets or that the number of immunizations given each month is decreasing or the dropout rate is high, try to find out why by asking the following questions:

- Are there groups of people that do not have access to the health facility or to outreach services that you provide?
- Are there any groups who have access to, but do not use the health facility?

- Why?
- Are they migrants or refugees? there religious, ethnic, language barriers or other reasons?

- Do people know about immunizations and ask for them for their children?

- Do women understand how tetanus toxoid can benefit their newborns and themselves?

- Do people understand that they need more than one dose of some vaccines?

- Do husbands / fathers know about immunization, so as to support immunization of their wives and children?

- Is there community involvement in the planning for and organization of immunization services?

- Are immunizations provided at convenient times and places?

- Are children and women immunized quickly or do they have to wait a long time for the service?

- Are health workers courteous?

- Are there places for mothers to sit?

- Do health workers provide multiple services (i.e. do mothers and children get their other health needs met)?

- Do mothers get the information they want?

- Are health services regular and reliable? Do mothers come only to be turned away because vaccines and supplies did not come or were insufficient?

- Are abscesses or other health problems resulting from immunizations?

- Do people believe that some health problems are caused by immunizations?

- Are clients/parents told when to come back for the next dose or vaccine? Are they aware it is important to complete the immunization schedule?

Where can you find the information?

- You can identify problems by talking with:
  - Community leaders
  - Parents
  - Other health facility workers
- You may also learn by observing what is done during immunization sessions in your facility

Community, political, religious and other leaders can tell you:

- Where under-served groups live.
- Why people do not use services. This is very important.

Parents and women of childbearing age can tell you:

- Whether they are aware of the need for immunizations.
- Why they or their neighbors are not using available immunization services. This is very important.

Other workers in the health facility can tell you:

- **Why** they think parents and women of childbearing age are not using immunization services.

Observing immunization sessions can reveal shortcomings.
Ask the following questions:

- Do you always use sterile techniques?

- Do you always explain:
  - when to return for the next immunization
  - where to return for the next immunization
  - the number of visits needed to complete the immunization schedule
  - what side-effects might occur
  - what to do about side-effects

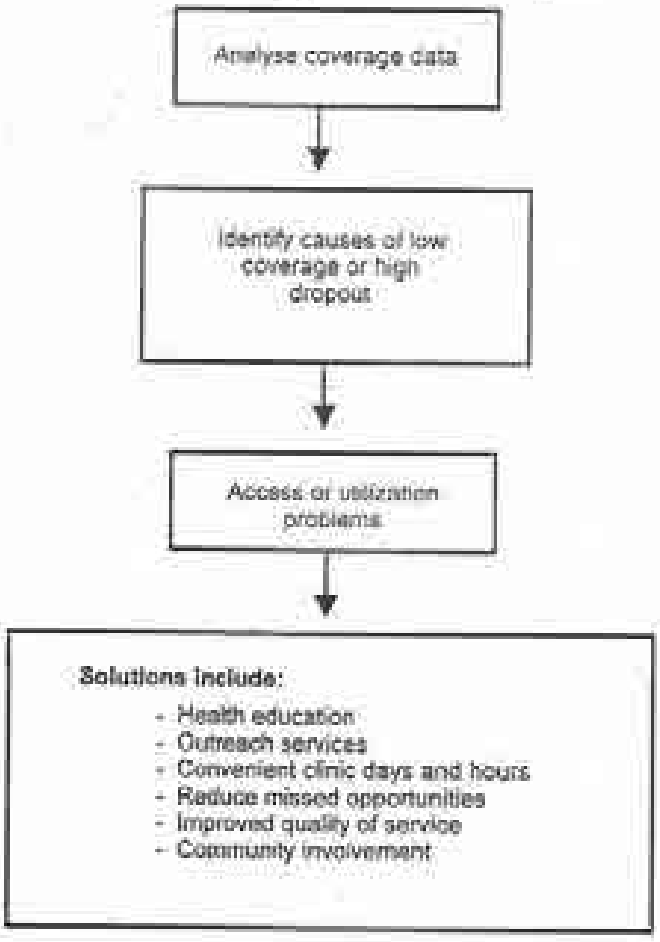
- Do you always show respect for client's time and listen to their concerns?

Note: When you have identified problems you can plan actions for solving them.

5.0.8 Take Action to increase coverage and reduce dropout

After analysing your coverage data you know whether you are making progress, what problems you have (problems of **access or utilization**), and what is causing them. The next step is to solve the problems and prevent similar ones from occurring in the future.

Figure 5.0.8. Taking action to increase coverage and reduce dropout



Working with your supervisor, try to develop solutions that you can handle yourself. If possible, plan activities that do not need a lot of additional resources from the district or LGAs (see figure 5.0.6).

- If people do not have access to immunization services (**access problems**) you may want to increase outreach activities. This may require community involvement and additional vaccines, transport or cold-chain equipment. You may therefore need to undertake planning with community groups in the catchment area and involve staff from the LGA.

- If people have access to immunization services but are not using them (**utilization problems**), consider one or more of the following strategies:

  - Increase people's knowledge about immunization.
  - Change the hours of immunization sessions so that they are more convenient for parents.
  - Involve community members in planning and solving service and / or management problems (e.g. transport problems).

    Routinely assess the immunization status of clients so as to reduce missed opportunities.
  - Ensure caretakers and clients know when to come back and the importance of completing the schedule.
  - Request the supervising authorities to train health workers in areas such as communication skills, immunization safety, organization of fixed and outreach activities, and other skills that may influence client's decisions to use your services.

- **Continue monitoring immunization coverage and dropout, act on what you learn, this way you can increase protection against all the EPI diseases.**

5.1. Monitoring Service Quality

The following activities are associated with monitoring service quality:

- Setting standards
- Self assessment
- Identifying problems and their causes
- Taking action to improve service quality
- Supportive supervision

5.1.1 Setting standards

- Identify the indicators or standards to be

initially measured. To identify practical and acceptable standards, health facility staff in the catchment area come together to discuss programme policies and guidelines and develop the initial standards they will use.

- It is recommended that only a few indicators or standards be used at the beginning. As the programme improves, standards that have been mastered may be set aside and other more complex or advanced standards can be introduced.

Examples of such simple standards are:

- A **schedule of immunization sessions** for the area (giving location, day and time of service for each of the immunization sites) will be pasted in two prominent places at the health facility: outside the door and inside the room where immunizations are given.
- Every **scheduled immunization session will be held** on the day and at the place specified.
- **Tally sheets will be used to record** all immunizations given.
- **A standard register will be used to record** each immunization given to both children and women. Each column will be filled as required and the date of immunization entered under the appropriate antigen/dose.
- The **data in the immunization register** is to be the **same as the data in the facility immunization summary (monthly)** form.
- An up-to-date, standard **immunization monitoring chart (for immunization coverage and dropout) is to be displayed** prominently **at the health facility.**
- **Sufficient vaccines** to immunize all attending clients will be available at each immunization session.
- **Sufficient syringes/needles** will be available at each session.
- **Appropriate temperature** will be maintained **in the cold chain.**
- **Vaccines stored** in the **appropriate shelves in the refrigerator.**
- **One syringe/needle will be used for each injection given.**
- Each **used syringe/needle will be placed directly into a closed, disposable, "collection" box immediately after an injection** is given.
- All **used syringes/needles will be burned in their special containers and buried (after burning) out of reach of the public.**

5.1.2 Self-assessment of selected standards /indicators

- Every health facility needs a system for self-assessment of management and service quality.
- Self-assessment involves the monitoring of service quality indicators.
- Just as with coverage and dropout monitoring, health workers record and assess the level of quality they achieve in managing and providing immunization services. They can then take appropriate action.
- To be objective, self-assessment is based on recorded and observable standards.
- The purpose of self-assessment is to measure achievement and identify areas for further improvement.
- As with coverage, the level of achievement in **quality** is recorded on a ranked graph at LGA level for comparison, analysis and action.

After preliminary standards have been chosen, a series of self-assessment questions are used on a monthly basis to assess the quality of immunization service and management quality. Table 5.1.2a below gives examples of self-assessment questions.

Table 5.1.2a: Examples of self-assessment indicators for service/management quality

S/N	Indicator	Notes
1	**Schedule of immunization sessions available (for the year) for the site giving location, day and time of service for each of the immunization sites**	To mark 'yes' the schedule for the current year must be pasted on the wall in at least 2 places at the immunization site: 1) outside near the main door of the service point and 2) inside the immunization area
2	**Were all immunization sessions held according to schedule during the last month?**	Compare daily immunization reports for the sessions with the schedule of sessions. If immunizations were given on each day of service, check "yes." If a copy of the daily report or the schedule of session is missing, mark "no." If immunizations were not given on even one scheduled immunization day, mark "no."
3	**Were tally sheets used during every immunization session last month?**	If filled-out and dated tally sheets are available on file for all immunization days last month, mark a "yes." If any are missing, mark "no."
4	Are all the columns in the immunization register for the previous month filled appropriately? (For both the child and woman sections of the register)	To answer "yes," the register must contain all the standard columns and the information contained must be legible. Dates must be recorded in the immunizations-given columns. If information is missing, not legible or if check marks are used instead of dates, mark "no."
5	**Are the data in the register the same as the data in the daily report for the last reporting period?**	If filled-out and dated tally sheets are available on file for all immunization days last month, mark a "yes." If any are missing, mark "no."
6	**Is the up-to-date standard immunization monitoring chart for coverage and dropout, pasted on cardboard and displayed prominently at the health facility?**	Mark "yes" if the chart is prominently displayed, the data from the previous month's daily report is recorded on the table, the lines plotted on the graph and the dropout calculated correctly.
7	Was sufficient Vaccine available at each session during last month?	If you had sufficient vaccine for each scheduled session during last month, mark "yes." If even once during last month you did not have enough of even one antigen, mark "no." To be certain review the vaccine requisition form for each session last month. If you are not keeping a record answer "no."
8	**Were sufficient syringes/needles available at each session during last month?**	**If you had sufficient syringes/needles for each scheduled session during last month, mark "yes." If even once during the last month you did not have enough, answer "no." To be certain, review the syringe/needle stock record for the date of each session last month. If you are not keeping a stock record answer "no."**
9	**Appropriate temperature maintained in the cold chain during the last month?**	If all VVMs noted during the last month remained in the "use" category, answer "yes." To be certain review the vaccine requisition form for the record of return for each session last month. If you are not keeping a vaccine requisition form, answer "no."

S/N	Indicator	Notes
10	*Are vaccines stored in the appropriate shelves in the refrigerator?	If vaccines are stored in the appropriate shelves during the last month answer "yes". If even once during the last month, the vaccines were not stored in the appropriate shelves answer "no".
11	*Are the refrigerators used to store only vaccines and diluents?	If the refrigerators are used to store only vaccines and diluents during the last month answer "yes". If even once during the last month, items other than vaccines and diluents are stored in the refrigerators answer "no"
12	One syringe/needle used for each injection last month?	If a separate syringe/needle was used for each injection during last month, mark "yes." To be certain, review the syringe/needle stock record for the date of each session last month. If you are not keeping a stock record answer "no". Then compare the number of syringe/needles used with the number of injections reported in the daily report form for that session. If the number is the same, mark "yes." If not, mark "no."
13	Are all syringes and needles placed directly into a closed, disposable, safety box immediately after use?	To answer "yes" you must be using a specially prepared syringe/needle safety box that has a slot in the top to receive the syringe/needle immediately after use.
14	Are all used syringes/needles burned directly in their special containers and buried out of reach of the public?	To answer "yes," no syringe or needle should be seen exposed on the ground or lying in a pit.

***Applicable to health facilities with refrigerators only**

Completing the annual self-assessment record

- Documentation of successes and problems allows health staff to discuss issues with managers at district and LGA levels and provide a format by which to track progress.
- Health staff ask themselves questions (see examples in Table 5.1.2a above) on a monthly basis. You should ensure that you answer objectively.
- The "yes" or "no" answers recorded identify current successes and problems in service management and form the basis of corrective action.
- Results from self-assessment reviews are recorded on tables, which permit staff to track progress over the year.
- Table 5.1.2b shows a data-recording table for self-assessment at facility level.

Instructions for recording results are as follows:

- Enter a shortened version of the self-assessment questions in the annual self-assessment record.
- In the appropriate month column in which the first self-assessment will take place, record the date you are doing the assessment (continue in the same way each month thereafter).

- Ask yourself each self-assessment question with special attention to the notes (see Table 5.1.2a). Record a "yes" or "no" answer against the question in the appropriate column on the Annual self-assessment record (see Table 5.1.2b). Be careful to follow the notes.

For example, question 5 (see Table 5.1.2a) asks if the data in the immunization register is the same as the data in the monthly report for the previous month.

- The "notes" explain that you must compare at least two different day figures (from the monthly report) with the data in the register.
- If the data is different, you must mark yourself "no."
- If you do not have a copy of the monthly report or if you did not use an immunization register, the answer must likewise be "no."
- If you used the register, if you have a copy of the report and if the data in the two forms are identical for two different days, mark "yes" on the Self-assessment record.
- After answering all the questions, record the number of "yes" answers in the "Total" row.
- Divide the total number of "yes" questions by the total number of questions asked (in this case 12 or 14) and multiply the answer by 100 to tell you what percent of the quality indicators for that month are answered by a "yes." Enter the result in the last row of the self-assessment record (Table 5.1.2b)

Table 5.1.2b Annual self-assessment record

	Self-Assessment indicators/Standards	Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		Date	–	–	29	30	27	30	28	30				
1	Session schedule displayed in 2 places				Y	Y	Y	Y	Y	Y				
2	Sessions held according to schedule				N	Y	N	Y	N	Y				
3	Tally sheets used at each session				N	Y	Y	Y	Y	Y				
4	Register filled out correctly				Y	N	Y	Y	Y	Y				
5	Data in register same as data in monthly report				Y	Y	Y	N	Y	Y				
6	Coverage/dropout chart up-to-date and correct				N	Y	Y	Y	Y	Y				
7	Sufficient vaccine available for each session				N	N	N	Y	N	Y				
8	Sufficient syringes/needles available				N	N	Y	Y	N	Y				
9	Appropriate cold chain temperature maintained				Y	N	Y	N	Y	Y				
10	*Vaccines stored in appropriate shelves				Y	N	N	Y	Y	Y				
11	*Refrigerators used to store only vaccines and diluents				N	Y	Y	Y	N	Y				
12	One syringe/needle used for each injection				Y	Y	Y	Y	Y	Y				
13	Disposable syringe/needle safety box in use				N	N	N	N	N	N				
14	Collection boxes properly disposed of				N	N	N	N	N	N				
Total Answers "Yes"					**6**	**7**	**9**	**10**	**8**	**12**				
% answers "Yes" (level of quality)					**43**	**50**	**64**	**71**	**57**	**86**				

***Applicable to health facilities with refrigerators only**

5.1.3 Identify problems and their causes

- The results of the monthly self-assessment highlight where you are having success and where you have problems in the management of your immunization activity.

- After completing a self-assessment, for each standard/indicator that has a "no" answer, try to find out the reasons for the "no."

For example:

- Use standard/indicator serial number 2 ("Every scheduled immunization session will be held on the day and at the place specified"), then
- List all the sessions that were missed in the previous month and
- Identify the reasons why the answer to the assessment question was "no."

Reasons could include:

- There is no schedule of sessions and thus the answer had to be "no" (see assessment "notes").
- There was a session but no record/report of immunizations is available (see assessment "notes").
- There was a session but nobody came (and thus no record of the session available).
- Staff decided not to go because clients do not turn up anyway.
- Staff simply forgot.
- There is a lack of staff.
- Staff were too tired or on holiday.
- Staff simply did not turn up.
- There was a lack of vaccine or syringes/needles.
- There was no transport and no alternative when one method failed.

5.1.4 Taking action to improve quality of service

Once the major causes of a problem have been identified, corrective action can be taken.
Examples of some of the actions that can be taken are:

- **There is no schedule of sessions**
  - Prepare a schedule and paste it prominently on the wall in at least 2 places.

- **There was no monthly report on file**
  - Start to make and keep copies of the monthly immunization report.

- **There was a session but no one came**
  - Find out why people are not coming (ask mothers, community leaders and others)
  - Discuss situation with community leaders. Involve leaders in planning what to do:
  - Make place, days and/or time of immunization sessions more convenient.
  - Increase the community's knowledge about immunization.
  - Improve personal communication style.

- **Staff forgot**
  - Establish a clear schedule
  - Ensure that immunization activities have a high priority.
  - Develop a reminder system.

- **Staff were not around, on leave or too few**
  - Discuss and document the shortage of staff with the community, LGA and State officials.
  - Prepare community volunteers to work with you to reduce the workload.

- **Lack of vaccine and supplies**
  - Report problems to the immediate supervisor.
  - Discuss with community leadership and ask them to contact LGA.
  - Ensure transport for collection of vaccines and supplies.

Lack of transport or alternative transport

- Document and discuss with LGA.
- Obtain whatever help you can.
- Work with community to find support for transport of supplies and staff.
- Lobby political leadership in the area for assistance with transport to their constituency.

Remember:

- **Focus on the easy problems first.**
- **Address those problems that can be solved with local resources.**
- **Continue monitoring (self-assessment) of service management.**
- **Act on what you learn.**
- **Involve as many persons as possible in solving the identified problems.**
- **Do not cover up the problems.**
- **Remind supervisors and visitors of the help you need.**

5.1.5 Supportive supervision

- In addition to the monitoring (self-assessment) of selected service and management standards by health facility staff, LGA managers periodically use the same assessment questions to review health facility activities, as supervisors.
- Other service-quality indicators (e.g. immunization technique, counselling technique etc.) may also be used.
- The results from these external assessments allow LGA and State supervisors to assist in resolving identified problems and issues.
- The results may also be presented as a graph at LGA level to permit comparison of management indicators in the same way that coverage/dropout indicators may be presented and compared.

Determining the annual and monthly target populations of children aged under 1 year and of pregnant women using polio NIDs figures

As the "total population" of a catchment area is often not available, use the following method to estimate the total number of children under 1 year of age in a PHC catchment area:

- Working with LGA staff and community leaders, determine the communities, villages and autonomous clans that are served by each public health facility in an LGA.
- Ensure that all communities in an LGA are assigned to one public health facility. No community should remain unassigned.
- After listing all the communities served by a PHC facility, determine the number of children under 5 years of age in those communities by using polio NIDs tally sheets and daily route maps for the identified communities.

Note: Use data from the most recent polio NIDs.

- Once the number of children under five from each community in the catchment area are listed and totalled, divide the total by 5 to estimate the number of children under one year of age in the catchment area.
- For pregnant women, use the same procedure except divide the total number of children under 5 years of age by a factor of 4 (25%) to obtain an estimate of women who will become pregnant in that catchment area during the year.
- Divide the total target populations (children under one year and pregnant women) by 12 to calculate the estimated monthly number of infants and pregnant women who may be eligible for immunization.

European Union-PRIME

Remember

- Many people who contact polio do not become seriously ill but may spread the disease to others who may become ill.
- About 1 child in every 200 infected by the polio virus develops paralysis.

Remember

- Vaccines are damaged by heat whether they are exposed to a lot of heat in a short time (e.g as a result of keeping vaccine in a closed vehicle in the sun) or a small amount of heat over a long period (e.g as a result of the frequents opening of a refrigerator door)
- Maintaining the cold chain demands constant vigilance.

Remember

Calculation of drop-Out Rate

$$\frac{\text{Cumulative doses of DPT 1 (minus) cumulative doses of DPT3}}{\text{Cumulative doses of DPT 1}} \times 100$$

Remember

- Message sent should be simple and straight forward
- Message should contain only the truth
- There should be immediate feed back
- Both sender and receiver must be good listeners
- A variety of communication methods should be used to keep Interest
- Receipt of a message should be confirmed

Remember

- Cross of an '0' on the tally sheet each time you give a vaccine If you wait you may forget.

Routine Immunization Schedule

CHILDREN LESS THAN 1YEAR

Vaccine	No of Doses	Age	Minimum Interval between doses	Route of Administration	Dose	Vaccination Site
BCG	1	At birth or as soon as possible after birth	———	Intradermal	0.05ml	Upper left arm
OPV	4	At birth and at 6, 10 and 14 weeks of age	4 weeks	Oral	2 drops	Mouth
DPT	3	At 6, 10 and 14 weeks of age	4 weeks	Intramuscular	0.5 ml	Outer part of thigh
Hepatitis B	3	At birth, 6 and 14 weeks	4 weeks	Intramuscular	0.5 ml	Outer part of thigh
Measles	1	At 9 months of age	———	Subcutaneous	0.5 ml	Upper left arm
Yellow fever	1	At 9 months of age	———	Subcutaneous	0.5 ml	Upper right arm
Vitamin A	2	At 9 months and 15 months of age	6 months	Oral	100,000IU 200,000IU	Mouth

Intradermal = into the skin
Intramuscular = into a muscle
Subcutaneous = under the skin

" 2 doses of Vit. A can be given to children 6 - 59 months at least 6 months apart at any clinic visit."

DIFFERENT NEEDLE POSITIONS

Intradermal: - into the skin
Intramuscular: - into a muscle
Subcutaneous: - under the skin