



Indira Gandhi National Open University
SCHOOL OF HEALTH SCIENCE

BNS-042

Primary Health Care in Common Conditions

**New Born and Child
Health Care**

4

Block

4

NEWBORN AND CHILD HEALTH CARE

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BLOCK INTRODUCTION

As a Mid level Health Care Provider you are expected to provide comprehensive primary health care at subcentre to New Born and Child, so that you can prevent mortality and morbidity among them. You need to develop appropriate knowledge and skills to provide essential newborn care, effective child care, identify danger signs, make appropriate referrals and provide follow up care. You also need to develop skills in implementing various National Schemes and Programmes related to Newborn and Child Care in terms of integrated management of Neonatal and Childhood illness, Rashtriya Bal Swasthya Karyakaram, Universal Programme etc.

The main focus of this block is on Essential New Born Care, Child Care and identification Management among New Born and Children, problems, appropriate referral and follow up care. This will help you to save a large number of deaths among newborn and children.

This block consists of the five units as given below:

Unit-1 deals with Essential Care of Newborn at Birth

Unit-2 focuses on Management of Common Neonatal and Child Health Problems

Unit-3 explains Integrated Management of Neonatal and Childhood Illness

Unit-4 relates to Introduction to Rashtriya Bal Swasthya Karyakaram

Unit-5 describes Universal Immunization Programme (UIP)

You are expected to take prompt action in caring New Born and Child.

UNIT 1 ESSENTIAL CARE OF NEW BORN AT BIRTH

Structure

- 1.0 Introduction
- 1.1 Objectives
- 1.2 Care of Newborn Baby
 - 1.2.1 Immediate Care of a Normal Newborn at the Time of Birth
 - 1.2.2 Routine Care at Birth
- 1.3 Routine Care of Baby after Delivery
 - 1.3.1 Postnatal Environment
 - 1.3.2 Breastfeeding
 - 1.3.3 Warmth
 - 1.3.4 Cord Care
 - 1.3.5 Maintain Hygiene
 - 1.3.6 Identify Danger Signs
- 1.4 Transport of Newborn Baby
- 1.5 Common Accidents and Mishaps in Labour Room
- 1.6 Dos and Don'ts
- 1.7 Let Us Sum Up
- 1.8 Model Answers
- 1.9 References

1.0 INTRODUCTION

Health of the newborn baby depends upon the overall health of the mother and appropriate antenatal care and regular follow up. Institutional delivery plays a vital role in preventing and minimising the complications related to delivery process and reducing neonatal mortality and morbidity. You can play a key role in conducting safe delivery, providing essential new born care at birth and preventing neonatal deaths and complications related to labour. Good liaisoning with the ANM and ASHA workers of your area and follow up visits to antenatal cases will ensure 100% institutional deliveries in your area.

In this unit you will learn and review care of the newborn, routine care of normal new born at birth and after delivery, transport of new born baby, common accidents and mishaps in labour room and Do's and Don'ts Before studying this unit you may refer Block 2 Unit 5, Postnatal care of this Course.

1.1 OBJECTIVES

After completing this unit, you should be able to:

- explain the essential care of the newborn baby at birth;
- discuss the steps of routine care of newborn after the birth;

- identify the danger sign of new born baby
- describe common accidents and mishaps in labour room.

1.2 CARE OF NEWBORN BABY

The care at birth has a major influence on the survival, future health, and well being of a newborn infant. You have already learnt about newborn care in Block 5, Unit 2 and 5 of this course. Let us review as given below.

1.2.1 Immediate Care of a Normal Newborn at the Time of Birth

As soon as baby is born you need to perform following activities:

- **Call out the time of birth and sex of the baby** and show the baby to the mother. Ensure that details are recorded.
- **Deliver the baby on the mother's abdomen** in a prone position with face to one side.
- **If the baby is not crying or not breathing**, resuscitate the new born. The procedure of resuscitation is given in BNSL-043 Block 6, Unit 1.
- **If the baby is crying**, delay cord clamping for 1–3 mins before cutting.
- **Dry baby with a pre-warmed towel while over mother's breast.** Immediately dry the baby but if secretions are present suction first and then dry (this will prevent aspiration as drying itself is stimulation for a baby to breath). Remember to suction **mouth first** and then **nose** to prevent aspiration. Blood or meconium on the baby's skin should be wiped away; however, the white greasy substance covering the baby's body (vernix) should not be wiped off. Because this vernix helps to protect the baby's skin and gets reabsorbed within few hours.
- **Wipe both the eyes with sterile swab.** Clean the eyes using sterile gauze/ cotton. Use separate gauze for each eye. Wipe from the medial side (inner canthus) to the lateral side (outer canthus).
- **Encourage breastfeeding.** Breastfeeding should be initiated within half an hour of birth in all babies.
- **Check cord for any oozing of blood.**
- **Place an identity wrist band on the baby**, this helps in easy identification of the baby and avoiding any confusion. The label should be placed on the wrist or ankle.
- **Cover the baby's head with a cap and cover the mother and baby with a warm cloth/sheet.** Both the mother and the baby should be covered with a warm cloth, especially if the delivery room is cold (temperature less than 25°C). Since head is the major contributor to the surface area of the body, a newborn baby's head should be covered with a cap to prevent loss of heat.
- **Give the baby an injection of vitamin K.**
- **Weigh the baby and record the weight.**
- **Check for any congenital malformations.**

Remember:

- The Labour Room must be warm (maintain room temperature in the range 25–28°C) to avoid hypothermia
- Assess the baby’s breathing; if the baby is not breathing or has difficulty in breathing, initiate resuscitation
- Dose of vitamin K in neonates with birth weight <1000 g – 0.5 mg IM
- Dose of vitamin K in neonates with birth weight >1000 g – 1.0 mg IM

1.2.2 Routine Care at Birth

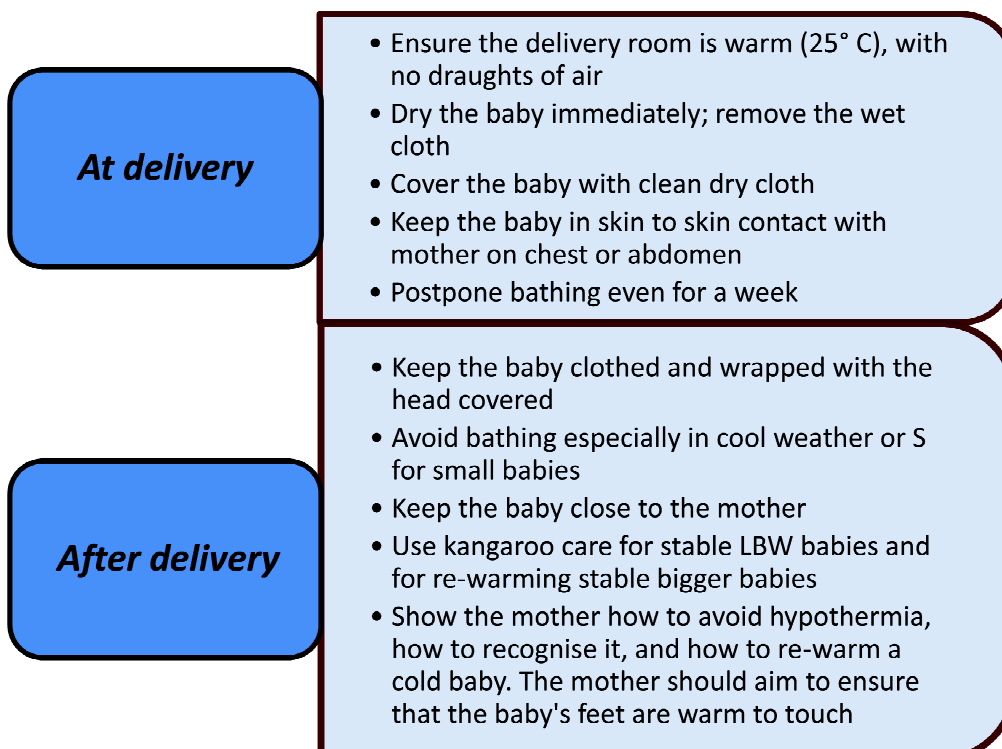
Following steps are important for providing routine care to newborn at birth.

Ensuring Warmth: Maintain ‘Warm Chain’

A baby’s skin temperature falls within seconds of being born. If the temperature continues to fall, the baby will become ill and may even die. This is why a baby **MUST** be dried immediately after birth and delivered onto a warm towel or piece of cloth, and loosely wrapped before being placed naked between the mother’s breasts or over abdomen.

Keeping the baby between the mother’s breasts ensures that the baby’s temperature is kept at the correct level for as long as the skin contact continues. This first **skin-to-skin** contact should last uninterrupted for at least **one hour after birth or until after the first breastfeed**. The mother and baby should be covered with a warm and dry cloth, especially if the room temperature is lower than 25°C. You should maintain warm chain, it means that the temperature maintenance should be a continuous process starting from the time of delivery and continued till the baby is discharged from the hospital. The components of warm chain are summarised below. (Fig. 1.1)

WARM CHAIN



Maintaining Normal Breathing

You should ensure to assess breathing of baby at the time of drying. If the baby is crying vigorously or breathing adequately (chest is rising smoothly at a rate of 40 to 60 times per minute), then no intervention is needed. However, if the baby is not breathing or is gasping, then baby may need initial steps of resuscitation, positive pressure ventilation etc. These steps are explained in Practical Course BNSL-043, Block 6, Unit 1.

Initiating Breastfeeding

The breastfeeding is initiated within half an hour to one hour after birth. During the initial skin-to-skin contact position after birth, the baby should be kept between the mother's breasts. This would ensure early initiation of breastfeeding. Initially, the baby normally rests and would be asleep. This rest period may vary from a few minutes to 30 or 40 minutes (**remember each baby is different and this period might vary**) before the baby shows signs of wanting to breastfeed. After this period, the baby will usually open his/her mouth and start to move the head from side to side; he may also begin to dribble. These signs indicate that the baby is ready to breastfeed. Baby may also try reaching the breast by making directed movements - called 'Breast Crawl' The mother should be helped in feeding the baby once the baby shows these signs. You should keep both the mother and the baby in a comfortable position. The baby will be put next to the mother's breasts with his mouth opposite to the nipple and areola. The baby should attach to the breast by itself when it is ready. When the baby is breastfeeding, attachment and positioning should be checked and help the mother to breastfeed her baby accurately and adequately. If in the initial first feeding session baby does not latch, don't give any liquid other than breast milk (or colostrum) even if baby doesn't feed. Most of the babies are ready to take feed with in 30 minutes to one hour. The procedure of counselling and support for breastfeeding are explained in Unit 3, Block 2, (BNS-041) and (BNSL-043), Block 6, Unit 4.

Prevention of Infections: Maintain 'Clean Chain'

Babies are secure when they are in mothers' womb. However after birth, they have to be protected from the adverse environment of the surroundings. Cleanliness at delivery reduces the risk of infection for the mother and baby, especially neonatal sepsis and tetanus. Cleanliness requires mothers, families, and health professionals to avoid harmful traditional practices, and prepare necessary materials. Hand washing is the single most important step to be emphasised to both family members and health care workers.

Similar to warm chain, 'Clean chain' has to be followed both at the time of delivery and then till the time of discharge to protect the infant from infections. The components of clean chain are summarised below in Fig. 1.2.

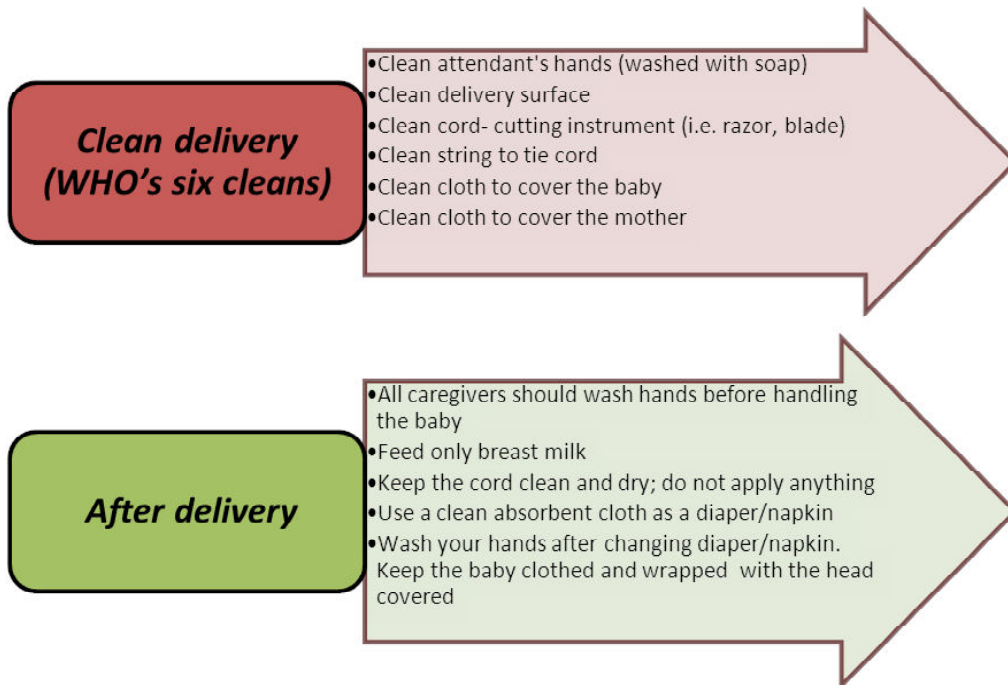


Fig. 1.2: Clean Chain

Cord and Eye Care

We will begin with cord care

Cord care

The umbilical cord can be clamped-cut and tied (according to local custom) while the baby is on the mother's abdomen or on a warm, clean and dry surface. The steps of clamping, cutting the cord and its care after cutting are given below:

Care of the umbilical cord

- Put the baby on mother's abdomen or chest or on a warm, clean and dry surface close to the mother.
- Change gloves; if not possible, wash gloved hands.
- Put ties (using a sterile tie) tightly around cord at 2 cm and 5 cm from the abdomen.
- Cut between the ties with a sterile instrument (e.g. Blade).
- Remove blood or meconium by wiping with clean cloth.
- Observe for oozing blood. If blood oozes, place a second tie between the skin and first tie.
- Do not apply any Substance to the Stump.
- Leave stump exposed and nothing should be applied or placed on it.
- If stump is soiled, wash it with clean water and dry with a clean cloth.

Eye Care

Eye care is given to protect a baby's eyes from infection. In areas where sexually transmitted diseases are common, eye care is needed soon after delivery because infections such as gonorrhoea can be passed to the baby during the birthing process which can result in blindness. Both eyes should be gently wiped with separate sterile swabs soaked in warm sterile water from medial to lateral side.

Eye drops (whenever indicated) or ointment should be given. This can be done after the baby has been dried or when he is being held by his mother. After instilling the eye drops, care should be taken so that the drug is not washed away.

Weigh the Baby

Weighing helps identify babies at a higher risk of death.

- 2500 grams may require special care to prevent low body temperature
- 2000 grams should receive prolonged skin-to-skin
- 1500 grams will need referral

Examine the Baby

A complete examination should be performed within 60 minutes after birth. The details of examination are given in Unit 2 of this block.

- Count the number of breaths during one minute.
- Observe the movement of the limbs when awake, their position when not moving and their tone.
- Observe the skin colour.
- Inspect the following body areas for abnormalities: head, face, mouth and palate, chest, abdomen, genitalia, anus, limbs and skin.

A well baby should have following characteristics

- Normal temperature, warm to touch, pink with Weight > 2.5 kg
- Breathe easily at 40–60 breathes/minute
- Move arms and legs equally when active and rest with limbs flexed

Explain to mother the examination findings to allay her concern. Document in Case record and ask her to inform you in case any other concerns develop subsequently.

Give Vitamin K

Vitamin K will protect babies from serious bleeding.

Give vitamin K by intramuscular (IM) injection 1.0 mg for every newborn (0.5 mg for <1000 gms). Encourage mothers to breastfeed their baby during the injection for comfort.

Monitoring the Baby

During the first hour after delivery, the baby and the mother should be monitored every 15 minutes. Both of them should remain in the delivery room for the first hour to facilitate monitoring.

The three most important parameters that you need to monitor are as follows

- a) **Breathing**
- b) **Temperature** or warmth and
- c) **Colour**

You should monitor these three parameters every 15 minutes in the first hour after birth of the baby.

Check Your Progress 1

i) List the steps of warm chain at delivery and after delivery.

.....

ii) Write the dose of vitamin K in new born.

.....

iii) Write the components of clean chain (six clean) at delivery and after delivery.

.....

1.3 ROUTINE CARE OF BABY AFTER DELIVERY

A postnatal room should be kept warm with “no draughts of air” from open doors or windows. A temperature of atleast 25°C is required to keep a baby warm. Often, a radiant heater, blower or other devices for providing warmth are necessary to maintain the appropriate room temperature especially in winter months. A mother and her baby should be kept together from birth (in bed or very near to each other). This helps the mother to get to know her baby and form an early close loving relationship (bonding); she can also respond quickly when her baby wants to feed, which helps establish breastfeeding.

1.3.1 Postnatal Environment

- Ensure that the room is warm with air currents (at least 25°C)
- Keep mother and baby close together in same room and same bed
- Provide bed nets to sleep

1.3.2 Breastfeeding

- Support exclusive breastfeeding **on demand** day and night at least 8 times.
- Ask the mother to **get help** if there is a breastfeeding difficulty.
- **Assess** breastfeeding in every baby **before** planning for **discharge**.
- If the mother reports a breastfeeding difficulty, assess breastfeeding and help her with attachment and positioning.
- **DO NOT** discharge the baby if breastfeeding is not established.

1.3.3 Warmth

You have to provide warmth to the newborn baby at the time of birth to prevent hypothermia due to heat loss. The newborn loses heat by four ways i.e. evaporation, conduction, radiation and convection. (Fig. 1.3)

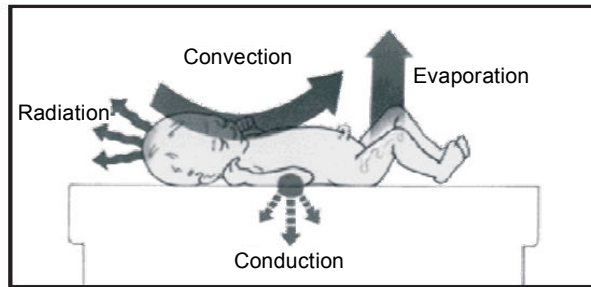


Fig. 1.3 : Ways of heat loss in new born.

At the time of birth you should prevent heat loss by drying, wrapping, skin to skin contact and breastfeeding as shown in Fig. 1.4 a, b, c.



a) Drying



b) Wrapping



c) Skin to skin contact and breastfeeding

Fig. 1.4 (a-c) : Preventing Heat loss at birth

The essential steps in preventing heat loss and maintaining the normal temperature in a newborn baby are given in Table 1.1.

Table 1.1: Preventing heat loss in New Born.

<p>Evaporation: It involves the loss of heat when a liquid is converted to a vapour i.e. when amniotic fluid evaporates from the skin, the heat is lost through moisture.</p> <p>How to prevent:</p> <ul style="list-style-type: none"> • Keep infant dry • Remove wet nappies • Minimise exposure during baths 	<p>Fig. 1.5: Drying at birth</p>
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Conduction: It involves the loss of body heat to cooler objects which come in direct contact with baby's skin i.e. when the baby is placed naked on a cooler surface, such as table, weighing scales, cold bed/sheets.

How to prevent:

- Put the baby on pre warmed sheet
- Cover weighing scales
- with warm towel or blanket

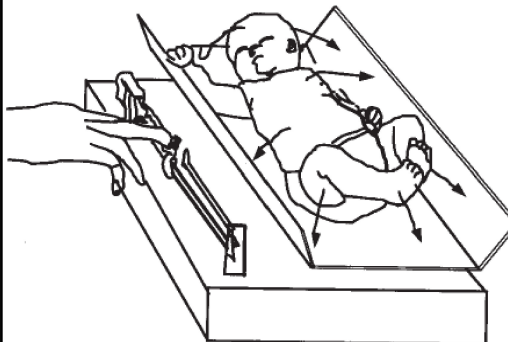


Fig. 1.6 : Weighing at birth

Convection: It involves the flow of heat from body surface to cooler surrounding air or to air circulating over body surface. When the baby is exposed to cool surrounding air or to a draught from open doors and windows or a fan. Heat is lost by moving air currents e.g., infant who is adequately warmed but placed under the fan, near open window especially in winter months. Opening of doors and windows replaces warm air around infant with cold air.

How to prevent:

- Do not expose the infant to increased air flow e.g., under fan, near windows, ventilator, near door which is frequently being opened.
- Keep the infant adequately clothed including hands and feet.
- Transport the infant in a well protected cane basket/, crib.
- Restrict the entry of people in the room where infant is kept.
- Do not keep infant's cot very close to the walls and, window.

Radiation: It involves loss of Infant's body heat to cooler object that are not directly in contact with him i.e. when the baby cot is placed near cool objects, walls, tables, cabinets, ventilating units without actually being in contact with them.

How to prevent: Fig 1.7

- Keep baby cot away from cold, outside walls, almirah
- Maintain room temperature at 25°C
- Cover the baby if stable

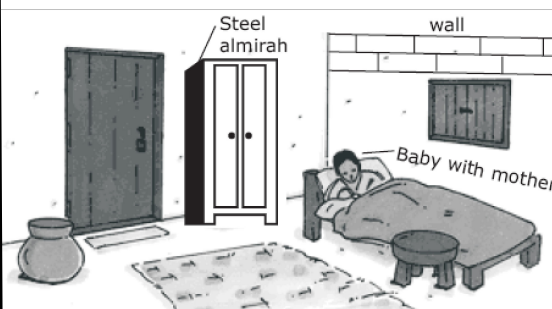


Fig. 1.7: Baby inside room

1.3.4 Cord Care

Keep the cord healthy by providing daily care.

- Wash hands before and after cord care.
- Put NOTHING on the stump.
- Fold nappy (diaper) below the level of the stump.
- Keep cord stump loosely covered with clean clothes.

- If stump is soiled, wash it with clean water and soap. Dry it thoroughly with clean cloth.
- Look for signs of infection (daily)
 - Pus discharge from the cord stump
 - Redness around the cord especially if there is swelling
 - High temperature (more than 37.5°C) or other signs of infection
- Explain to the mother that she should seek care if the umbilicus is red or draining pus or blood.

1.3.5 Maintain Hygiene

Provide day to day care to ensure hygiene.

- Wash the face, neck, and underarms of the baby daily.
- Bathing the baby can be postponed till a week. In case of small babies, bathe only after the baby reaches a weight of 2000g.
- If bath is given ensure following :
 - Room is warm and there is no draught while changing clothes, washing and bathing
 - Use warm water for bathing
 - Thoroughly dry the baby, dress and cover after bath
- Take extra precautions if the baby is small
- Wash the buttocks when soiled and dry thoroughly.
- Use cloth diaper on baby's bottom to collect stool. Wash hands after disposing stool.
- Do not apply 'Kajal' on eyes.

1.3.6 Identify Danger Signs

It is important that you as a health workers are able to recognise the signs and symptoms which indicate that the baby is not well ('DANGER SIGNS') and help the mother and care giver to recognise danger signs. Early recognition of the danger signs will help in identifying those babies who need urgent care and treatment.

- Not feeding well
- No movement
- Fast breathing (more than 60 breaths per minute)
- Moderate or severe chest in-drawing
- Jaundice on day 1 or palms or sole stained yellow any age
- Abnormal movements
- Fever (temperature >37.5°C)
- Temperature <35.5°C or not rising after re-warming

Check Your Progress 2

i) List the steps of routine care after birth.

.....
.....

ii) List the danger signs of the newborn.

.....
.....

1.4 TRANSPORT OF NEWBORN BABY

If there is any danger sign as discussed in foregoing section baby will require to be shifted to NICU in District hospital for prolonged ventilator support under aseptic environment. Call for well equipped advanced cardiac ambulance or the available source of Transport. Ensure that baby is stabilised and I V lines are fixed well. Mother may also accompany the baby during transport.

**ENSURE THAT TRAINED COLLEAGUE ACCOMPANIES THE
BABY IN THE AMBULANCE.**

Transportation process is initiated well in time, the moment you know that baby is not doing well. Last minute efforts should be avoided to save time. Ideally the cardiac ambulance is always ready at the standby in many places

1.5 COMMON ACCIDENTS AND MISHAPS IN LABOUR ROOM

Less confidence, loss of self control in emergency, overconfidence and lethargy attitude leads to many mishaps and accidents in labour room. These are listed below.

Baby is dropped or slipped while receiving immediately after birth. This happens due to poor grip and utter carelessness.

Aspiration of amniotic fluid if suction is not done adequately. This happens when one is in a 'hurry' or less experienced.

The bleeding cord which is noticed sometimes quite late when bradycardia sets in. This happens due to loose tie or the whartons jelly has squeezed off (inexperienced hands).

1.6 DOS AND DON'TS

You should be able to follow the do's and don'ts as given below:

DO'S

There are certain steps which should never be missed.

- High risk cases should be identified well before the labour starts.

- You should be ready to receive apneic baby in the apparently normal antenatal case.
- Wipe the oral cavity of the baby as soon as the head is delivered.
- Keep the baby dry always.
- Tie the cord at two places and tight enough.
- Look for the number and placement of umbilical vein (one, at the top position and bigger in diameter) and umbilical artery (two in number, placed lower to vein one on either side or smaller in diameter) in the umbilical cord. This is the clue for possible internal congenital anomaly.
- Place the identification tag as soon as breathing is established.
- Do the neonatal assessment follow the order of breathing, Heart Rate and colour.
- Initiate breastfeeding as soon as possible.
- Ensure asepsis through out the resuscitation.

DON'TS –

There are certain things which should never be done by you.

- Don't leave the door and windows of the labour room open.
- Do not do nasal suction before oral suction.
- Do not apply any thing on the cord stump.
- Do not ambu bag the baby if suspecting diaphragmatic hernia.
- Do not give tactile stimulation more than twice.
- Do not waste single second in the assessment and resuscitation.

Check Your Progress 3

- i) List the few common accident and mishaps in labour room.

.....
.....

1.7 LET US SUM UP

In this unit you have learnt about the immediate care of newborn baby at the time of birth and routine care after birth in a normal baby which includes keeping the airway patent, preventing heat loss, providing warmth to the baby, breast feeding and care of cord, skin and eyes. You have also learnt about common mishaps in labour room. Transport of newborn and do's and don'ts has also been discussed at the end. You should always remember to monitor three important parameters i.e. breathing, temperature and colour.

1.8 MODEL ANSWERS

Check Your Progress 1

- i) **At Delivery**

- Ensure the delivery room is warm (25° C), with no draughts of air

- Dry the baby immediately and remove the wet cloth
- Cover the baby with clean dry cloth
- Keep the baby in skin to skin contact with mother on chest or abdomen
- Postpone bathing/sponging for at least 6 hours or next day

After Delivery

- Keep the baby clothed and wrapped with the head covered
 - Avoid bathing especially in cool weather or for small babies
 - Keep the baby close to the mother
 - Use kangaroo care for stable LBW babies and for re-warming stable bigger babies
 - Show the mother how to avoid hypothermia, how to recognise it, and how to re-warm a cold baby. The mother should aim to ensure that the baby's feet are warm to touch.
- ii) Vitamin K injection 1.0 mg (IM) for every newborn and (0.5 mg for <1000 gms).
- iii) Clean Chain at Delivery
- Clean attendant's hands (washed with soap)
 - Clean delivery surface
 - Clean cord- cutting instrument (i.e. razor, blade)
 - Clean string to tie cord
 - Clean cloth to cover the baby
 - Clean cloth to cover the mother

After Delivery

- All caregivers should wash hands before handling the baby
- Feed only breast milk
- Keep the cord clean and dry; do not apply anything
- Use a clean absorbent cloth as a diaper/napkin
- Wash your hands after changing diaper/napkin. Keep the baby clothed and wrapped with the head covered

Check Your Progress 2

- i) A postnatal room should be kept warm with “no draughts of air” from open doors or windows. A temperature of atleast 25°C is required to keep a baby warm. Often, a radiant heater, blower or other devices for providing warmth are necessary to maintain the appropriate room temperature especially in winter months. A mother and her baby should be kept together from birth (in bed or very near to each other). This helps the mother to get to know her baby and form an early close loving relationship (bonding); she can also respond quickly when her baby wants to feed, which helps establish breastfeeding.

- ii) • Not feeding well
- No movement
 - Fast breathing (more than 60 breaths per minute)
 - Moderate or severe chest in-drawing
 - Jaundice on day 1 or palms or sole stained yellow any age
 - Abnormal movements
 - Fever (temperature $>37.5^{\circ}\text{C}$)
 - Temperature $<35.5^{\circ}\text{C}$ or not rising after re-warming

Check Your Progress 3

- i) Less confidence, loss of self control in emergency, overconfidence lethargy attitude leads to many mishaps and accidents in labour room. For example to count few-

Baby is dropped or slipped while receiving immediately after birth, This happens due to poor grip and utter carelessness.

Suctioning is not done adequately and baby aspirates amniotic fluid. This happens when one is in 'hurry' or less experienced.

The cord is bleeding which is noticed sometimes quite late when bradycardia sets in. This happens due to loose tie or the whartons jelly has squeezed off (again inexperienced hand).

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UNIT 2 MANAGEMENT OF COMMON NEONATAL AND CHILD HEALTH PROBLEMS

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2.11 Let Us Sum Up

2.12 Model Answers

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2.0 INTRODUCTION

New born baby is a special group of babies who require skilled care to prevent mortality and morbidity. Children in their younger age are very susceptible to get ill, mostly with infectious diseases. Most of these illnesses can be managed by primary health care not only in the sub-centers or PHCs, but also in the home itself. But most important part is early identification of the illness after understanding the clinical feature of the disease. When a child presents to a health care provider, the most important step is the triage, that is to say, which child has to be referred and who can be treated. A child is not a miniature adult. Therefore, health care providers need to understand the special needs of children. As children differ from adults, many times, parents get worried for what is normal for a child. Therefore, it is also important for health care providers to understand what is normal in a child.

For management of common childhood illnesses, Integrated Management of Neonatal & Childhood Illnesses (IMNCI) is covered in Unit 3 briefly. This unit will focus on a short practical description of triage, in spite of being covered in IMNCI. The management of benign neonatal conditions. At the end we will cover the management of other common childhood diseases not included under IMNCI such as various skin infections such as scabies, pediculosis, pityriasis versicolor, staphylococcal and streptococcal infection and Managing Ear, Eye and Throat problems, Worm infections, Febrile seizure, Poisoning, Injuries and accident and Insect and animal bite.

2.1 OBJECTIVES

After completing this unit, you should able to:

- explain triage and screening of children as Triage;
- list common neonatal and child hood problems;
- discuss sign and symptoms of common neonatal and childhood problems;
- describe management of various childhood problems; and
- list the preventive measures to prevent various accidents, injuries and poisoning in children.

2.2 TRIAGE

The word “triage” came from a French word “ trier”, which means to separate or select. Triage is the process of rapidly screening sick children soon after their arrival in hospital, in order to identify the cases with:

- Emergency signs, who require immediate emergency treatment;

- Priority signs, who should be given priority in the queue so that they can be assessed and treated without delay; and
- Non-urgent cases, who have neither emergency nor priority signs.

Triage helps in rational allocation of limited resources, when demand exceeds availability.

Emergency signs include following:

- obstructed or absent breathing
- severe respiratory distress
- central cyanosis (blueness of the wholebody)
- signs of shock (cold hands, capillary refill time longer than 3 s, high heart rate with weak pulse, and low or unmeasurable blood pressure)
- coma (or seriously reduced level of consciousness)
- convulsions
- signs of severe dehydration in a child with diarrhoea (lethargy, sunken eyes, very slow return after pinching the skin or any two of these).

Children with these signs require immediate emergency treatment to avert death.

Priority signs include:

- Tiny infant (< 2 months)
- Very high body temperature
- Trauma or urgent surgical condition
- Severe pallor
- History of poisoning
- Severe pain
- Respiratory distress
- Restless, continuously irritable or lethargic
- Malnutrition : visible severe wasting
- Oedema of feet or face
- Burns (major)

The priority signs identify children who are at higher risk of dying. These children should be assessed without unnecessary delay. If a child has one or more emergency signs, one should not spend time looking for priority signs.

Ideal time for doing triage:

- As soon as the sick child arrives in the health clinic/ the health staff visits the home
- It should be done before any administrative procedures like registration and all are carried out.

Place for carrying out the triage:

- Triage can be carried out anywhere- from the health clinic/sub-centre to the home of the child

Examination for birth defects

It is important that each newborn baby is examined comprehensively for presence of birth defects soon after birth (maximum within the first 48 hours). For this purpose, a full physical examination need to be conducted from head to toe. This has been discussed in BNSL-043, Block 6 Unit 2 “Assessment of Newborn”

<p>Check Your Progress 1</p> <p>i) List priority signs that requires immediate treatment to avert death.</p> <p>.....</p> <p>.....</p> <p>ii) Write time and place for carrying out triage.</p> <p>.....</p> <p>.....</p>
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2.3 COMMON NEONATAL PROBLEMS

Parents observe their babies carefully and are often worried about minor physical peculiarities and problems, which may not be of serious consequences. Therefore, parents must be adequately informed and appropriately advised regarding minor neonatal and childhood problems to prevent undue anxiety.

2.3.1 Meconium Passage

More than 90% of the neonates pass meconium by 24 hours of age. If meconium is not passed by 24 hrs and/or has associated vomiting and/or abdominal distension, anal patency should be checked by passing a nasogastric tube into the anal canal. In case, resistance is felt in passage of nasogastric tube, the baby should be referred to higher center for investigation for anorectal anomalies and intestinal obstruction. It should be remembered that some babies might have passed urine and/or stool in labour room immediately after delivery but mother might not be aware.

2.3.2 Urine Passage

More than 90% of the newborns void by 24 hours of age and almost all void by 48 hrs. Common causes of delay in voiding are perinatal asphyxia, limited fluid intake due to poor feeding, increased fluid losses due to radiant warmers and increased environmental temperature. If there is failure to pass urine for 48 hrs, the baby needs to be referred to higher facility for further investigation and management.

2.3.3 Regurgitation of Milk

Most of the neonates take out small amount of curdled milk soon after feed.

Child is usually active and vomitus is never yellow or green coloured and baby looks healthy. The mother needs to be reassured that it is not pathological and usually occurs among normal babies. Burping after feed may help babies with this problem.

2.3.4 Transitional Stools

Transitional stools are the loose, yellow-green watery stools passed on the second or third day of life. They typically appear when mother's milk starts to come in and increased amounts of lactose are secreted in the breast milk. Thus they are a good sign that mother's milk is starting to come in. The greenish hue is caused by the presence of meconium, the tarry fetal stool which is first passed after birth. The frequency of stools is increased up to 10-15 in a days and usually decreases by 10 days of life. Transitional stools require no treatment, only assurance to the family members.

2.3.5 Toxic Erythema of the Newborn

This is a common and benign self-limited disorder of the newborn requiring no treatment. It is also known as Erythema toxicum or Erythema toxicum neonatorum (Fig. 2.1). It affects almost half of all full-term newborn infants, but is less common in infants born prematurely. Most cases of toxic erythema of the newborn begin in the first few days after birth, although sometimes the onset can be as late as two weeks of age. The toxic erythema presents as combinations of erythematous macules (flat red patches), papules and pustules. The eruption waxes and wanes over several days. The erythema often begins on the face and spreads to the trunk and limbs. Palms and soles are usually not affected. Rash disappears spontaneously in 1–3 days. It requires no treatment, only assurance to the family members.

Although toxic erythema of the newborn is a benign condition requiring no treatment, other conditions with similar presentation (e.g. skin infections and prickly heat) should be excluded.



Fig. 2.1: Toxic Erythema of the newborn

2.3.6 Vaginal Discharge and Bleeding

Due to the effects of maternal hormones, most newborn girls will have a mucous discharge from the vagina sometimes vaginal bleeding that last for a few days. The bleeding is a form of withdrawal bleeding that occurs as the estrogen passed to the infant by the mother begins to disappear. This is normal and does not require any treatment. Only reassurance to the parents is required.

2.3.7 Breast Engorgement

Full term babies of both sexes may develop engorgement of breasts on the third

or fourth day of life. A white or creamy white liquid may also ooze from the nipples. It is due to transplacentally acquired maternal hormones. It normally lasts less than a week. Family members should be advised not to compress or manipulate the breasts, as this may cause infection.

2.3.8 Neonatal Jaundice

Jaundice is a yellow discolouration of the skin and eyes caused by hyperbilirubinemia (elevated serum bilirubin concentration) Fig. 2.2. Jaundice during the neonatal period is caused by lysis of red blood cells. The serum bilirubin level required to cause jaundice varies with skin tone and body region, but jaundice usually becomes visible on the sclera at a level of 2 to 3 mg/dL (34 to 51 $\mu\text{mol/L}$) and on the face at about 4 to 5 mg/dL (68 to 86 $\mu\text{mol/L}$). With increasing bilirubin levels, jaundice seems to advance in a head-to-foot direction, appearing at the umbilicus at about 15 mg/dL (258 $\mu\text{mol/L}$) and at the feet at about 20 mg/dL (340 $\mu\text{mol/L}$).

Slightly more than half of all neonates become visibly jaundiced in the first week of life. Total serum bilirubin peaks at age 3–5 d (later in Asian infants). In more than 90% of all the neonates, jaundice is physiological and does not need any specific therapy. Physiological jaundice typically appears between 24 to 72 hours of age, reaches its peak on 4th – 5th day of life and usually disappears before 14 days of life.

About 5–10% of newborn babies develop pathological jaundice or hyperbilirubinemia. It should be considered a medical emergency as it may cause bilirubin encephalopathy or kernicterus when unconjugated bilirubin exceeds 15–20 mg/dl. However, in preterm or low-birth weight babies, a lower level of unconjugated bilirubin is considered a medical emergency. Pathological jaundice is recognised by any of the following criteria – jaundice appearing within 24 hours of age, if the palms or soles are yellow, or persistence of jaundice beyond 2 weeks of age.



Fig. 2.2: Neonatal jaundice reaching up to the sole

2.3.9 Perianal Rashes

Due to contact with the wet napkins soaked in urine, an erythematous rash may develop in the diaper or buttock area Fig. 2.3. This is due to prolonged contact

with irritants such as moisture, chemical substances, and friction. Urine ammonia, formed from the breakdown of urea by fecal bacteria, is irritating to sensitive infant skin. Skin damaged by infrequent diaper changes and constant urine and faeces contact is prone to damage from ammonia in urine. Bouts of diarrhoea may quickly cause rashes in most children. Diaper rash begins with erythema in the perianal region. Left untreated, the area can quickly excoriate and progress to macules and papules, which form erosions and crust.



Fig : 2.3 Perianal rash

2.3.10 Caput Succedaneum

“Caput succedaneum” refers to swelling, or oedema, of an infant’s scalp that appears as a lump or bump on their head shortly after delivery (Fig. 2.4). This condition is harmless and is due to pressure put on the infant’s head during delivery. It doesn’t indicate damage to the brain or the bones of the cranium. In caput succedaneum, the skin of the scalp is swollen and soft. Pressing on it may result in a dimple in the flesh. The swelling may be on one side or may extend over the midline of the scalp. Caput succedaneum is benign in nature and disappears within a few days.



Fig. 2.4: Caput succedaneum

2.3.11 Cephalhematoma

Cephalohematoma is a traumatic subperiosteal haematoma that occurs underneath the skin, in the periosteum of the infant’s skull bone (Fig. 2.5). Cephalhematoma is characterised by a fluctuant swelling which is limited by suture lines.

Cephalhematoma may be associated with anaemia due to loss of blood into the subperiosteal space and later on may result in jaundice, when lysis of red blood cells begin.



Fig. 2.5: Cephalohematoma

Check Your Progress 2

i) List common neonatal problem.

.....
.....

ii) How will you differentiate Caput succedaneum from Cephalhematoma?

.....
.....

iii) When a child with neonatal jaundice does require referral to higher facility?

.....
.....

We shall now discuss about problems of children in following sections as given below.

2.4 MANAGING SKIN INFECTIONS

In a tropical country like India, infectious skin diseases are very common to occur, more so among the children. Parasitic infestations like Pediculosis, Scabies, Cutaneous larva migrans, superficial fungal infections like Pityriasis versicolor, dermatophyte infections, bacterial infections like superficial staphylococcal and streptococcal infections, viral infections like Herpes simplex, varicella zoster, Eczema are all very common to occur among the children, among which we will be discussing the commoner skin infections, which can be managed in the sub-center level only.

2.4.1 Scabies

A mite, *Sarcoptes scabiei hominis*, which burrows superficially into the skin and

is transmitted by person-to-person contact, causes scabies (Fig. 2.6). The finger webs of the hands, wrists, axillae, nipples, buttock and genitalia and face of the children are more vulnerable. Involvement of the head and neck can occur in the infants and in immune-compromised children

Clinical features and diagnosis

Intense itching, particularly at night, heralds the development of localised, erythematous, excoriated lesions which appears about 6–8 weeks after the initial infestation. A presumptive diagnosis can be made on the basis of the clinical findings and a history of itching, particularly at night.



Fig. 2.6 : Scabies in a child

Prevention and management

All person in the household should be treated to prevent infestation or re-infestation. Benzyl benzoate is an inexpensive scabicide. It should be applied to all the skin surfaces, from the scalp to the soles of the feet and care should be taken to avoid contact with the eyes and should not go inside the mouth. It is not necessary to bath before application; however, clothing and bedding should be washed or left outside exposed to the air for 72 hours to prevent re-infestation. A 25% lotion applied once daily at night on 2 consecutive days is commonly used. This is often followed by a single application at night 3 days later. Permethrin, 5% cream, is equally effective and less of an irritant, but more expensive.

2.4.2 Pediculosis

Head, body and pubic lice are blood-sucking ecto-parasites. They are usually transmitted directly by person-to-person contact, but they may also be transmitted indirectly, via the clothing, towels and beddings of the infested persons. Overcrowding and lack of proper hygienic condition are the other important causes of its occurrence.

Clinical features and diagnosis

Pediculosis is characterised by intense pruritus, which results in excoriations from scratching, hive-like lesions and dermatitis and often in secondary bacterial infestations. Close inspection of the skin reveals both the characteristic red punctate from the bites and the species responsible.

Prevention and management

Control depends largely on the public education and improving housing. Infested individuals should be treated promptly and followed up to detect recurrences. Contacts should also be treated at the same time. Routine inspections for the head lice should be conducted in schools atleast annually and more often in epidemic areas. In institutions (e.g. boarding schools, hospital), particular attention should be paid to the cleanliness of hair brushes, combs and clothing.

Head lice infestation can be treated with topical preparations of permethrin, lindane, malathion or benzyl benzoate. Permethrin preparations should be applied to wet hair and left for 10 minutes before rinsing. Lindane and malathion preparation should be massaged into the scalp and left for at least 12 hours, while benzyl benzoate lotion should be left for 24 hours before rinsing. Household contacts should be treated at the same time and all coms and brushes should be soaked in a lotion of any of the above mentioned preparations for atleast 2 hours.

Body lice infestations are effectively treated with powdered preparations of lindane. Clothes should be dusted at the same time and subsequently washed in boiling water.

2.4.3 Pityriasis (Tinea) Versicolor

Pityriasis (tinea) versicolor, which occurs in hot, humid tropical regions as ours, and appears with greatest frequency in the children and young adults (Fig 2.7). It is caused by normally commensal yeast, *Malassezia furfur*.

Clinical features and diagnosis

Slowly spreading white or yellow-brown scaly plaques interspersed with depigmented areas appear on the trunk, buttocks, and limbs and also in the face. The active lesions, when left untreated, may leave hypo-pigmented patches.



Fig. 2.7: Pityriasis versicolor

Prevention and management

Application of sodium thiosulfate, 25% lotion, twice daily for 4 weeks should be started promptly. This is usually helpful, although areas of de-pigmentation remain long after completion of successful treatment. However, relapses are common, probably because much of the infected area may appear normal and be left untreated. Better results have been reported with topical application of selenium sulfide. A thin layer of undiluted 2.5% detergent based suspension should be

applied at bedtime to the trunk, groin, upper limbs and axillae and rinsed off after 5–15 minutes. Treatment should be repeated after 3 and 6 days.

2.4.4 Staphylococcal and Streptococcal Infections

Staphylococcal and streptococcal infections of the skin are very common where the climate is hot and humid and where standards of the hygiene are compromised, and among immunodeficient patients. While lesions often develop on previously healthy skin, pre-existing eczematous lesions and other dermatoses such as insect bite and scabies lesions can also become infected.

The different disease caused by Staphylococcal and streptococcal are as follows:

- Impetigo
- Ecthyma
- Cellulites
- Erysipelas
- Folliculities
- Furunculosis

Impetigo is a highly contagious superficial pyoderma caused by staphylococci, streptococci or a combination of both organisms. It is particularly common in the infants and small children, but rare among adults. It is characterised by the formation of vesicular lesions, which become pustular and rupture, leaving crusted lesions (Fig. 2.8). These lesions heal without scarring. The bullae may be localised or disseminated. Pruritus is common and the infected area is often extended by scratching. Glomerulonephritis may occur as a complication of a severe impetigo caused by streptococcus pyogenes.

Poor sanitation is partially responsible for the occurrence of impetigo in developing countries. Both mothers and teachers should be aware of the fact that cuts and abrasions provide an entry point for the bacteria that cause impetigo.

Ecthyma is a variant of impetigo. The lesions, which extend deeper into the dermis, heal with scarring. The lesions often occur on the legs of the children and the infection is usually secondary to insect bites.

Cellulites and erysipelas are streptococcal infections of the subcutaneous tissues, which usually result from the contamination of minor wounds. Both the conditions are characterised by acute localised inflammation and oedema. The lesions are more superficial in erysipelas than cellulites.

Folliculites and furunculosis, which result from the infection of the hair follicles, are usually caused by staphylococcus (Fig. 2.9).



Fig. 2.8 : Impetigo



Fig. 2.9 : Folliculitis

Prevention and management

Washing minor skin abrasions with soap and water and applying a topical antiseptic may prevent impetigo. These materials should therefore be made available at the community level. Mild localised superficial infections can often be treated effectively with topical antiseptics like gentian violet, brilliant green, chlorhexidine, povidone iodine or thiomersal. The skin should be kept clean by washing frequently and drying after washing. Superficial crusts should be gently removed with soap and water.

Widespread superficial and deep-seated infections associated with fever or infection in immune-compromised children need to be referred to higher centers for further management, as they may require admission and systemic antibiotics.

2.4.5 Herpes Simplex

Human herpes virus is carried asymptotically by many children in almost every community. Some patients develop characteristic recurrent vesicular lesions, usually in or around the mouth and to a variable extent on the face. The lesions are small, cause only slight discomfort and resolve within a few days without scarring. (Fig. 2.10)

Prevention and management

Mild infections with herpes virus 1 are self limiting and usually require no treatment. Newborn infants, immune-compromised children and patients with atopic eczema should be treated with systemic acyclovir.



Fig. 2.10: Skin lesions in herpes simplex

2.4.6 Varicella Zoster (Chicken pox)

In general, primary childhood infections with human herpes virus 3 present as varicella (chicken pox), which is characterised by the appearance of erythematous papules following a short prodromal period of malaise, fever and localised pain. Vesicles subsequently appear over several days, leaving dried crusts (Fig. 2.11). Secondary infections are common. Reactivation of latent virus in children and adults results in shingles, a limited but painful infection of one or more sensory nerve roots.

Prevention and management

Primary varicella infection in the healthy child is a rather benign disease that

requires symptomatic therapy only. Pruritus can be treated with calamine lotion or and/or oral antihistamines.



Fig. 2.11: Skin lesions in herpes zoster

Children and adults with extensive lesions may be referred to a higher facility for further management. For them, antiviral drug, Acyclovir can be of value in serious infections.

Check Your Progress 3

- i) List clinical features of following skin infection
 - a) Scabies
 - b) Pityriasis
 - c) Staphylococcal
 - d) Herpes simplex
 - e) Varicella
- ii) How will you treat scabies in a 2 years old child?

.....
.....

2.5 MANAGING EAR, EYE AND THROAT PROBLEMS

Let us begin with Ear infections.

2.5.1 Middle Ear Infection

Children suffer from a number of ear problems, but most commonly we come across ear discharge, ear pain, both of which are due to middle ear infections.

Babies and young children are prone to middle ear infections, called otitis media. Pus or fluid builds up in the ear canal behind the ear drum, which causes pain and mild deafness. Sometimes, the ear drum bursts (perforation of tympanic membrane), releasing the fluid and making the child feel better

Symptoms

Four out of five children will get a middle ear infection atleast once. Some of the symptoms of middle ear infection include:

- Earache
- Headache
- Fever
- Discharge from the ear
- Mild deafness
- Difficulties in sleeping
- Perforation of tympanic membrane

Prevention of middle ear infection:

- Exposure to other children increases a baby's odds of catching a cold.
- Breastfeeding offers better immunity than bottle-feeding.

Propping up a bottle with the child lying down should be avoided as milk may enter the Eustachian tube and increase the risk of ear infection.

Treatment: History of atleast 2 weeks of persistent ear discharge should alert primary health workers to the problem. As the condition may result in complication, it would be advisable to refer children with ear discharge to a higher facility.

In case, immediate referral is not possible, daily instillation of topical antiseptics or topical antibiotics after meticulous aural toilet for atleast 2 weeks appears as the most cost-effective treatment for the short-term resolution of otorrhoea. Topical quinolones are particularly effective in resolving otorrhoea. There is no evidence that the addition of oral antibiotics confers increased benefit.

A discharging ear with headache, fever, dizziness and other danger signs should be considered an emergency and the child should be referred to a higher facility immediately. Children with a recurrently discharging ear or with hearing loss may benefit from specialised management.

2.5.2 Eye Infection Conductivities

There are a number of eye diseases that occur among the children, but among all those problems, what we come across very often is conductivities.

Paediatric acute bacterial conjunctivitis is a microbial infection involving the bulbar/palpebral conjunctiva of the eye. This infection is usually self-limited, and is most frequently observed among infants, toddlers, and preschool-aged children. Bacterial conjunctivitis accounts for up to 1% of all consultations in primary care. The most common causative pathogens are *Haemophilus influenzae*, *Streptococcus pneumoniae*, and, occasionally, *Streptococcus pyogenes*.

The child generally presents with redness of eyes, increased watering, stickiness of eyelids after getting up from sleep, itching, blurred vision or pain in the eye.

In most of the cases, its contagious and spreads from one child to the other.

Acute conjunctivitis is primarily diagnosed clinically, and treatment is nearly always empiric. The recommended management strategy is to delay antibiotic use and promote supportive care, such as frequent eye cleansing with sterile water and cotton balls, warm water compresses, proper hand and eyelid hygiene, and temporary use of artificial tears for comfort. If the symptoms of conjunctivitis do not begin to improve within 2 days of proper supportive management, the recommendation is to then begin a topical antibiotic. Parents should be told to avoid taking the child outdoors and avoid watching television. Children with conjunctivitis are required to avoid school or day care settings until symptoms subside so as to prevent the spread to other children.

2.5.3 Throat Infection Pharyngitis and Tonsillitis

This is an infection of the throat and tonsils. Most sore throats are due to viral infections and should NOT be treated with antibiotics as they subside within 3–5 days. However, it is important to diagnose streptococcal pharyngitis since it may give rise to abscesses in the throat (retropharyngeal and peritonsillar abscess) as well as complications that involve organs like the kidneys and the heart. Streptococcal throat infections require treatment with antibiotics in order to reduce the complications noted above.

The symptoms include fever, difficulty in swallowing, sore throat and running nose or cough. Throat examination may reveal reddened throat, enlarged and reddened tonsils, palpable tonsillar lymph glands (at the angle of the mandible). Signs specific to streptococcal pharyngitis are: painful enlarged tonsillar lymph glands, absence of signs suggesting viral nasopharyngitis (running nose, cough, red eyes), whitish exudate at the back of the throat as well as whitish tonsillar exudate and sustained high grade fever .

Management mainly depends on antibiotic therapy, for which the child will have to be referred to the hospital. But conservatively, what could be done is to ask the mother to help the child take steam inhalation, gargle with luke warm water with a pinch of salt mixed in it. Some home remedies made up of honey, tulsi and ginger sometimes work wonderfully.

2.5.4 Foreign Body in Ear, Nose and Throat

Small children, mostly less than 5 years , who do not understand much, are of a tendency to put any small thing, whatever they get in their hand to put inside their nose, ears or mouth. Foreign bodies range from small bead, pellete, marbel ball, coins, plastic toys to peanuts, seeds, beans, small pencils and many more.

These can be very dangerous sometimes, depending upon what has been inserted inside. If it's a sharp object, and the child has put it inside his ear, it may perforate the tympanic membrane. Similarly, in cases of insertion of any seed like groundnut and all, it will absorb the moisture from the secretions inside the cavity and will swell up aggravating the chances of its coming out.

Unless and until, proper instruments and facilities are available, its better to keep the foreign body untouched, without trying any attempts for its removal.

Rather utilisation of this time for calling an ambulance would have been more helpful.

Foreign bodies stuck in the larynx or the air pipe may cause choking and if interventions are not done immediately, it may result in grave causality.

Check Your Progress 4

i) List common symptoms of middle ear infection.

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ii) List common signs and symptoms of following:

a) Conjunctivitis

b) Middle ear infections

c) Symptoms of Pharyngitis

d) Foreign body in larynx

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2.6 WORM INFESTATION

Worm infestation, is any macroparasitic disease of humans in which a part of the body is infected with parasitic worms, known as helminths. Mostly pinworm and round worms are commonly infested helminths in the children, although, there are cases of tapeworm, hookworm etc that too infest the child. The worms usually only involve the intestinal tract but sometimes they may invade other organs. The type and severity of symptoms is determined by the type of worm and the part of the body infected.

Common symptoms may be abdominal pain, diarrhoea, fever, anorexia, bloating of abdomen. Diagnosis can be made after the microscopic examination of the stool sample, which will show ova, cyst or adult worm.

Albendazole single dose (200 mg/ 400 mg) is the treatment of choice. Several states implement a deworming programme, where prophylactic Albendazole tablet/suspension are given to children twice in a year.

2.7 FEBRILE SEIZURE

Febrile seizures are convulsions that occur in a child who is between three months and six years of age and has a temperature greater than 100.4°F (38°C). The majority of febrile seizures occur in children between 12 and 18 months of age.

Febrile seizures occur in 2 to 4 per cent of children younger than five years old. They can be frightening to watch, but do not cause brain damage or affect intelligence. Having a febrile seizure does not mean that a child has epilepsy; epilepsy is defined as having two or more seizures without fever present.

Febrile seizures usually occur on the first day of illness, and in some cases, the seizure is the first clue that the child is ill. Most seizures occur when the temperature is higher than 102.2°F (39°C).

The risk of recurrent febrile seizures is higher for children who:

- Are young (less than 15 months)
- Have frequent fevers
- Have a parent or sibling who had febrile seizures or epilepsy
- Have a short time between the onset of fever and the seizure
- Had a low degree of fever before their seizure

A child who has a febrile seizure should be referred to a higher facility as soon as possible to determine the cause of the fever and to manage seizure.

Parents who witness their child’s febrile seizure should place the child on their side. But, they should not try to stop their movement or convulsions. Do not put anything in the child’s mouth. After the seizures are over and till the child reaches the higher facility, measures should be taken to decrease the body temperature by giving bath to the child. Some children may require testing to ensure that the fever is not related to meningitis, a serious infection of the lining of the brain.

Parents of a child who is at risk of having a recurrent febrile seizure can be taught to give treatment at home for seizures that last longer than five minutes. Parents should speak with their healthcare provider for help in deciding when to treat a child’s fever. A detailed discussion of fever in children is available separately.

Check Your Progress 5

- i) List the risk factors for recurrent febrile seizures in children.

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2.8 POISONING

Poisoning in children in India is usually caused by ingestion of agricultural manures, pesticides and plants. Other common causes of poisoning include ingestion of household products including kerosene oil, drugs, chemicals like mosquito repellents etc. Majority of the poisons are being ingested by the children at home and include products that are familiar and visually appealing due to glossy packaging. Non toxic household items shampoo, ink, nail polish are also being consumed by them.

The most important part for the health worker is to identify the cases of poisoning early. The identification of poisoning requires a high index of suspicion since the history of ingestion of a chemical is uncommon. All children who present as poisoning cases should quickly be assessed for emergency signs (airway, breathing, circulation and level of consciousness), as some poisons depress breathing, cause shock or induce coma. Ingested poisons must be removed from the stomach.

Not necessarily, the child will ingest the poison always. There may be cases of contact of poison with eyes or skin, or inhalation of poison. In this section, you will read about primary management in cases of poisoning before referring the child to the first referral unit (FRU).

2.8.1 Ingestion of Poisonous Substance

Gastric lavage and decontamination (if the child is brought early) are extremely beneficial for handling some of the cases of ingested poisons. If facilities are not available, immediate transfer of the child to a higher facility should be arranged. Where facilities are available, quick history should be taken to know the nature of poison ingested. A few basic procedures can be done before referring to the FRU, which are as follows:

Poisoning with corrosive compounds

Sodium hydroxide, potassium hydroxide, acids, bleaches or disinfectants are considered as corrosive compounds.

Do not induce vomiting when corrosives have been ingested, as this may cause further damage to the mouth, throat, airway, lungs, oesophagus and stomach. Give milk or water as soon as possible to dilute the corrosive agent. Then give the child nothing by mouth. Arrange to shift the child immediately to a higher facility.

Poisoning with petroleum compounds

Kerosene, turpentine substitutes, petrol are considered as corrosive compounds. Do not induce vomiting, as inhalation can cause respiratory distress with hypoxaemia due to pulmonary oedema and lipoid pneumonia. Ingestion can cause encephalopathy. If available, administer supplementary oxygen if the child has respiratory distress, is cyanosed or has oxygen saturation below 90%.

Poisoning with organophosphorous and carbamate compounds

Most of the pesticides like malathion, parathion, tetra ethyl pyrophosphate, mevinphos (Phosdrin) are organo phosphorous compounds; methiocarb, carbaryl are the carbamates.

These compounds can be absorbed through the skin, ingested or inhaled. The child may complain of vomiting, diarrhoea, blurred vision or weakness. The signs are those of excess parasympathetic activation: excessive bronchial secretion, salivation, sweating, lachrymation, slow pulse, small pupils, convulsions, muscle weakness or twitching, then paralysis and loss of bladder control, pulmonary oedema and respiratory depression.

Before referring the child to FRU, remove the poison by irrigating eye if the eyes are suspected to be involved and wash the skin, if the poison fell on skin.

2.8.2 Skin Contamination by Poisonous Substance

Remove all clothing and personal effects, and thoroughly clean all exposed areas with copious amounts of tepid water. Use soap and water for oily substances. Attending staff should take care to protect themselves from secondary contamination by wearing gloves and aprons. Removed clothing and personal

effects should be stored safely in a see-through plastic bag that can be sealed, for later cleansing or disposal.

2.8.3 Eye Contamination by Poisonous Substances

Rinse the eye for 10–15 min with clean running water or normal saline, taking care that the run-off does not enter the other eye if the child is lying on the side, when it can run into the inner canthus and out the outer canthus. The use of anaesthetic eye drops will assist irrigation. Evert the eyelids and ensure that all surfaces are rinsed. When possible, the eye should be thoroughly examined for signs of corneal damage. If there is significant conjunctival or corneal damage, the child should be referred urgently to a higher centre.

2.8.4 Inhalation of Poisonous Substance

Remove the child from the source of exposure. Urgently call for help. If available, administer supplementary oxygen if the child has respiratory distress, or is cyanosed. The child should be referred immediately to a higher facility.

2.8.5 Health Education for Prevention of Poisoning

- Teach the parents to keep drugs and poisons in proper containers and out of reach of children.
- Advise parents on first aid if poisoning occurs again.
- Do not induce vomiting if the child has swallowed kerosene, petrol or petrol-based products, if the child’s mouth and throat have been burnt or if the child is drowsy. If the child swallowed bleach or another corrosive, give milk or water to drink as soon as possible.
- Take the child to a health facility as soon as possible, together with information about the substance concerned, e.g. the container, label, sample of tablets, berries.

Check Your Progress 6

i) List the common causes of poisoning.

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ii) Explain preventive measures that parent should take to prevent poisoning among child.

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2.9 INJURIES AND ACCIDENTS

Injuries and accidents are a leading cause of death in children who survive beyond their first birthday and represent a major epidemic of non communicable disease throughout the globe. WHO estimate suggests that over 10% of those killed due to any type of accident are the children. Most accidents occur in the age group of

2–5 years, mostly among the boys. India has among the highest rates of road traffic accidents in the world. Burn injuries are the second only to motor vehicle accidents as the cause of the accidental death in children 1–4 years of age.

Injuries are of three categories: injuries at home, sports injury and road traffic injury. Intentional injuries such as homicide and suicide are rare in children.

The common causes of injuries are – burn injury, scalding, cuts, electrocution, drowning, road traffic accidents, fire injuries.

2.9.1 Primary Assessment and Management of Injuries and Accidents:

Severe multiple injuries or major trauma are life-threatening problems that children may present with to hospital. Multiple organs and limbs may be affected, and the cumulative effects of these injuries may cause rapid deterioration of the child's condition. Management requires urgent recognition of the life-threatening injuries.

Basic techniques of emergency triage and assessment are most critical in the first hour of the patient's arrival at hospital. When there is more than one life-threatening state, simultaneous treatment of injuries is essential and requires effective teamwork.

Talking of managing injuries and accidents, much cannot be done in the sub-centre level, unless supporting staff and proper infrastructures are being made available. Injury control operates in 3 phases:

- Prevention of injury
- Minimisation of damage
- Post injury care

At primary health care level, it is important to make efforts for prevention of injuries – through health education and regular counselling.

Primary assessment and management

The initial rapid assessment should identify life-threatening injuries such as:

- airway obstruction
- chest injuries with breathing difficulty
- severe external or internal haemorrhage
- head and cervical spine injuries
- abdominal injuries

The primary assessment should be systematic. If there is a risk of neck injury, try to avoid moving the neck, and stabilise as appropriate. Expose the child's whole body to look for injuries. Start with assessment and stabilisation of the airway, assess breathing, circulation and level of consciousness, and stop any haemorrhage. The systematic approach should comprise assessment of:

- airway patency
- breathing adequacy
- circulation and control of haemorrhage

- central nervous system (assess coma scale), cervical spine immobilisation
- exposure of the whole body and looking for injuries.

Note all the key organ systems and body areas injured during the primary assessment, and provide emergency treatment. Resuscitate the patient as appropriate; give oxygen by bag or mask if necessary; stop any haemorrhage; Start IV fluids if available. Document all procedures undertaken refer immediately to a higher facility.

2.9.2 Management of a Case of Burn

Scald burns secondary to household accidents accounts for 70% of all thermal injuries in infants, toddlers and preschool children.

Burns have higher mortality in children than adults as because they have:

- Thinner and more sensitive skin
- Markedly increased ratio of body surface area to body mass
- Limited physiological reserves
- Significant metabolic and systemic disturbances
- Immature immune system
- Increased fluids requirement

Before referring the child to higher center for specific treatment in the form of fluid replacement etc. the following steps can be undertaken by the field health staff.

While approaching the child with fire, a blanket or coat should be kept in between the rescuer and the burning child. Flames may be extinguished using water, blanket or by rolling the victim on the ground. The victim is kept lying in the flat position away from the source of heat.

In case of minor burns or scalds, one should pour cold water, apply cold water soaks or submerge the burned portion immediately in cold water, continuing till the pain disappears. Application of any ointments, grease, soda, oil, powder, butter or herbs is best avoided. Blistered skin should not be ruptured; it should instead be covered with a clean cloth. Charred cloth is removed only if it comes out easily. The wound is covered with clean sheets of sterile dressing and the patient is wrapped in blanket or foil.

Minor burns can be treated using topical ointments of 0.5% silver sulphadiazine (Silverex). Its application is painless, it has a soothing effect and restricts fluid and heat loss from the burn surface. If the child can drink orally, enough fluids should be supplemented.

In cases of major burn injury, the child needs to be immediately transferred to higher facility.

2.9.3 Management of a Case of Drowning

Initial assessment should include ensuring adequate airway patency, breathing, circulation and consciousness (the 'ABCs'). Check if there are any injuries, especially after diving or an accidental fall. Facial, head and cervical spine injuries

are common. Before preparing for transfer to the FRU, stabilise the child by the following ways:

- Give oxygen and ensure adequate oxygenation (if available)
- Remove all wet clothes.
- Use a nasogastric tube to remove swallowed water and debris from the stomach, and when necessary bronchoscopy to remove foreign material, such as aspirated debris or vomitus plugs, from the airway.
- Warm the child externally if the core temperature is $< 32^{\circ}\text{C}$ by covering the body with blanket and warm clothes. If facilities are available, radiant warmers can also be used. If the core temperature is $> 32^{\circ}\text{C}$, ask the mother to hold the baby in her lap, cover him with warm blanket, start breastfeeding or feed warm milk while transferring the child.

2.9.4 Management of a Case of Electrocution

- Provide emergency care by ensuring airway patency, breathing and circulatory support. If available, provide oxygen, especially for children with severe hypoxia, facial or oral burns, loss of consciousness or inability to protect the airway, or respiratory distress.
- Assess for traumatic injuries such as pneumothorax, peritonitis or pelvic fractures.
- Call for an ambulance for quick referral.
- Begin normal saline or Ringer’s lactate fluid resuscitation, and titrate to urine output of atleast 2 ml/kg per hour in any patient with significant burns or myoglobinuria.
- Give tetanus vaccine as indicated, and provide wound care before referral.

Check Your Progress 7

i) List the common causes of injuries.

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ii) The systematic approaches for assessment.

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iii) Write pre-referral stabilisation of child in case of drowning of electrocution.

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2.10 INSECT AND ANIMAL BITE

Insect and animal bites are common among children and should be prevented and treated promptly.

2.10.1 Management of a Case of Snake Bite

Snake bite should be considered in any case of severe pain or swelling of a limb or in any unexplained illness presenting with bleeding or abnormal neurological signs. Some cobras spit venom into the eyes of victims, causing pain and inflammation.

Diagnosis

- General signs include shock, vomiting and headache. Examine bite for signs such as local necrosis, bleeding or tender local lymph node enlargement.
- Specific signs depend on the venom and its effects. These include:
 - shock (rapid and feeble pulse rate, decreased Blood pressure, decreased body temperature, decreased urine output etc)
 - local swelling that may gradually extend up the bitten limb
 - bleeding: external from gums, wounds or sores; internal, especially intracranial
 - signs of neurotoxicity: respiratory difficulty or paralysis, ptosis (drooping down of upper eye lids), bulbar palsy (difficulty in swallowing and talking), limb weakness
 - signs of muscle breakdown: muscle pains and black urine
 - check Hb (when possible, blood clotting should be assessed)

Management includes first aid, before transferring to FRU for anti snake venom and treatment of shock.

- Splint the limb to reduce movement and absorption of venom. If the bite is likely to have been by a snake with neurotoxic venom, apply a firm bandage to the affected limb, from fingers or toes to near the site of the bite.
- Clean the wound.
- If any of the above signs are present, transport the child to a hospital that has antivenom as soon as possible. If the snake has been killed, take it with the child to hospital.
- Avoid cutting the wound or applying a tourniquet.

2.10.2 Management of a Case of Scorpion/Honey Bee Bite

Scorpion / honey bee stings can be very painful for days. Systemic effects of venom are much commoner in children than adults. Signs of envenoming can develop within minutes and are due to autonomic nervous system activation. They include:

- shock

- high or low blood pressure
- fast and/or irregular pulse
- nausea, vomiting, abdominal pain
- breathing difficulty (due to heart failure) or respiratory failure
- muscle twitches and spasms.

Give oral paracetamol and transport to hospital as soon as possible.

2.10.3 Management of a Case of a Bite by a Dog /Cat/Wild Animal

Rabies, also known as hydrophobia is an acute, highly fatal viral disease of the central nervous system, caused by Lyssavirus type 1. It is primarily a zoonotic disease of warm-blooded animals, particularly carnivorous such as dogs, cats, jackals and wolves. It is transmitted to man usually by bites or licks of rabid animals. Although all age groups are susceptible, rabies is most common in children aged less than 15 years; on an average, 40 per cent of post-exposure immunisation is given to children aged 5–14 years.

Whenever we get a case of dog bite or bite by a wild animal, we should be very careful and prompt in treatment so as to prevent occurrence of rabies. Before referring the child to FRU for a vaccination, first aid should be undertaken which include local treatment of the wound, which is done by the following way:

Prompt and adequate local treatment of all bite wounds and scratches is the first requisite and is of utmost importance. The purpose of local treatment is to remove as much virus as possible from the site of inoculation before it can be absorbed on nerve endings. Local treatment of wounds is of maximal value when applied immediately after exposure (within minutes if possible) but it should not be neglected if several hours or days have elapsed. Animal experiments have shown that local wound treatment can reduce the chances of developing rabies by up to 80%. The local treatment comprises the following measures:

- **Cleaning of wound:** Immediate flushing and washing the wound(s), scratches and the adjoining areas with plenty of soap and water, preferably under a running tap, for at least 15 minutes is of paramount importance in the prevention of human rabies. If soap is not available, simple flushing of the wounds with plenty of water should be done as first-aid. In case of punctured wounds, catheters, should be used to irrigate the wounds. This procedure is now standard worldwide. It does minimise the risk of contracting rabies.
- **Chemical treatment:** Whatever residual virus remains in the wound(s), after cleansing, should be inactivated by irrigation with virucidal agents alcohol (400–700 ml/litre), tincture or 0.01% aqueous solution of iodine or povidone iodine.
- **Bite wounds should not be immediately sutured** to prevent additional trauma, which may help spread the virus into deeper tissues. If suturing is necessary, it should be done 24–48 hours later, applying minimum possible stitches, under the cover of rabies immunoglobulin locally.
- **Antibiotics and anti-tetanus measure:** The application of antibiotics and anti-tetanus procedures when indicated should follow the local treatment recommended above.

Check Your Progress 8

i) Write primary management which should be done in a case of snake bite before referring the victim to a higher facility.

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ii) Write local treatment of the wound in case of a dog bite.

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2.11 LET US SUM UP

In India Children are susceptible to got various types of illness specially infectious disease. Most of this illness can be managed at subs centre and with proper counselling and follow up at home. When a parents come to your centre with sick child, your immediate responsibility is tranquilize which means that you should able to identify that whether the child needs immediate referral or can be treated at subcentre. In this unit you have learnt about triaging, common managing neonatal problem and child health problems which included, managing skin infection, eye, ear, throat, worm infection, febrile seizure, poisoning, injuries and accidents and insect and animal bites.

2.12 MODEL ANSWERS

Check Your Progress 1

i) Priority signs include:

- Tiny infant (< 2 months)
- Very high body temperature
- Trauma or urgent surgical condition
- Severe pallor
- History of poisoning
- Severe pain
- Respiratory distress
- Restless, continuously irritable or lethargic
- Malnutrition : visible severe wasting
- Oedema of feet or face
- Burns (major)

ii) Place for carrying out the triage: Triage can be carried out anywhere- from the health clinic/sub-centre to the home of the child.

Check Your Progress 2

- i) Common neonatal problem
 - Meconium passage
 - Urine passage
 - Regurgitation of milk
 - Transitional stools:
 - Toxic erythema of the newborn
 - Vaginal discharge and bleeding:
 - Breast engorgement
 - Neonatal Jaundice
 - Perianal rashes
 - Caput succedaneum
 - Cephalhematoma
- ii) “Caput succedaneum” refers to swelling, or oedema, of an infant’s scalp that appears as a lump or bump on their head shortly after delivery. This condition is harmless and is due to pressure put on the infant’s head during delivery. It doesn’t indicate damage to the brain or the bones of the cranium.

Cephalohematoma is a traumatic subperiosteal haematoma that occurs underneath the skin, in the periosteum of the infant’s skull bone. Cephalhematoma is characterised by a fluctuant swelling which is limited by suture lines. Cephalhematoma may be associated with anaemia due to loss of blood into the subperiosteal space and later on may result in jaundice, when lysis of red blood cells begin.

- iii) It should be considered a medical emergency as it may cause bilirubin encephalopathy or kernicterus when unconjugated bilirubin exceeds 15–20 mg/dl. However, in preterm or low-birth weight babies, a lower level of unconjugated bilirubin is considered a medical emergency.

Check Your Progress 3

- i) a) **Scabies**

Clinical features and diagnosis

A mite, *Sarcoptes scabiei hominis*, which burrows superficially into the skin and is transmitted by person-to-person contact, causes scabies. The finger webs of the hands, wrists, axillae, nipples, buttock and genitalia and face of the children are more vulnerable. Involvement of the head and neck can occur in the infants and in immune-compromised children. Intense itching, particularly at night, heralds the development of localised, erythematous, excoriated lesions which appears about 6-8 weeks after the initial infestation.

- b) **Pityriasis (tinea) versicolor**

Clinical features and diagnosis

Pityriasis (tinea) versicolor, which occurs in hot, humid tropical regions as ours, and appears with greatest frequency in the children and young adults, is caused by normally commensal yeast, *Malassezia furfur*. Slowly spreading white or yellow-brown scaly plaques interspersed with depigmented areas appear on the trunk, buttocks, and limbs and also in the

face. The active lesions, when left untreated, may leave hypo-pigmented patches.

c) **Staphylococcal**

Clinical features and diagnosis

Staphylococcal infections of the skin are very common where the climate is hot and humid, where standards of the hygiene are compromised, and among immunodeficient patients. While lesions often develop on previously healthy skin, pre-existing eczematous lesions and other dermatoses such as insect bite and scabies lesions can also become infected.

d) **Herpes simplex**

Clinical features and diagnosis

Human herpes virus is carried asymptotically by many children in almost every community. Some patients develop characteristic recurrent vesicular lesions, usually in or around the mouth and to a variable extent on the face. The lesions are small, cause only slight discomfort and resolve within a few days without scarring.

e) **Varicella zoster (Chicken pox)**

Clinical features and diagnosis

In general, primary childhood infections with human herpes virus 3 present as varicella (chicken pox), which is characterised by the appearance of erythematous papules following a short prodromal period of malaise, fever and localised pain. Vesicles subsequently appear over several days, leaving dried crusts. Secondary infections are common. Reactivation of latent virus in children and adults results in shingles, a limited but painful infection of one or more sensory nerve roots.

- ii) All person in the household should be treated to prevent infestation or re-infestation. Benzyl benzoate is an inexpensive scabicide. It should be applied to all the skin surfaces, from the scalp to the soles of the feet and care should be taken to avoid contact with the eyes and should not go inside the mouth. It is not necessary to bath before application; however, clothing and bedding should be washed or left outside exposed to the air for 72 hours to prevent re-infestation. A 25% lotion applied once daily at night on 2 consecutive days is commonly used. This is often followed by a single application at night 3 days later. Permethrin, 5% cream, is equally effective and less of an irritant, but more expensive.

Check Your Progress 4

- i) **Symptoms:** Four out of five children will get a middle ear infection at least once. Some of the symptoms of middle ear infection include:

Earache

Headache

Fever

Discharge from the ear

Mild deafness

Difficulties in sleeping

Perforation of tympanic membrane

- ii) a) The child generally presents with redness of eyes, increased watering, stickiness of eyelids after getting up from sleep, itching, blurred vision or pain in the eye.

- b) Earache
Headache
Fever
Discharge from the ear
Mild deafness
Difficulties in sleeping
Perforation of tympanic membrane
- c) The symptoms include fever, difficulty in swallowing, sore throat and running nose or cough. Throat examination may reveal reddened throat, enlarged and reddened tonsils, palpable tonsillar lymph glands (at the angle of the mandible). Signs specific to streptococcal pharyngitis are: painful enlarged tonsillar lymph glands, absence of signs suggesting viral nasopharyngitis (running nose, cough, red eyes), whitish exudate at the back of the throat as well as whitish tonsillar exudate and sustained high grade fever .
- d) Foreign bodies stuck in the larynx or the air pipe may cause choking and if interventions are not done immediately, it may result in grave causality.

Check Your Progress 5

- i) The risk of recurrent febrile seizures is higher for children who:
 - Are young (less than 15 months)
 - Have frequent fevers
 - Have a parent or sibling who had febrile seizures or epilepsy
 - Have a short time between the onset of fever and the seizure
 - Had a low degree of fever before their seizure

Check Your Progress 6

- i) Poisoning in children in India is usually caused by ingestion of agricultural manures, pesticides and plants. Other common causes of poisoning include ingestion of household products including kerosene oil, drugs, chemicals like mosquito repellents etc. Majority of the poisons are being ingested by the children at home and include products that are familiar and visually appealing due to glossy packaging. Non toxic household items shampoo, ink, nail polish are also being consumed by them.
- ii)
 - Teach the parents to keep drugs and poisons in proper containers and out of reach of children.
 - Advise parents on first aid if poisoning occurs again.
 - Do not induce vomiting if the child has swallowed kerosene, petrol or petrol- based products, if the child's mouth and throat have been burnt or if the child is drowsy. If the child swallowed bleach or another corrosive, give milk or water to drink as soon as possible.
 - Take the child to a health facility as soon as possible, together with information about the substance concerned, e.g. the container, label, sample of tablets, berries.

Check Your Progress 7

- i) The common causes of injuries are - burn injury, scalding, cuts, electrocution, drowning, road traffic accidents, fire injuries.

- ii) The systematic approach should comprise assessment of:
- airway patency
 - breathing adequacy
 - circulation and control of haemorrhage
 - central nervous system (assess coma scale), cervical spine immobilisation
 - exposure of the whole body and looking for injuries.
- iii) • Give oxygen and ensure adequate oxygenation (if available)
- Remove all wet clothes.
 - Use a nasogastric tube to remove swallowed water and debris from the stomach, and when necessary bronchoscopy to remove foreign material, such as aspirated debris or vomitus plugs, from the airway.
 - Warm the child externally if the core temperature is $> 32^{\circ}\text{C}$ by covering the body with blanket and warm clothes. If facilities are available, radiant warmers can also be used. If the core temperature is $< 32^{\circ}\text{C}$, ask the mother to hold the baby in her lap, cover him with warm blanket, start breastfeeding or feed warm milk while transferring the child.
- iv) • Provide emergency care by ensuring airway patency, breathing and circulatory support. If available, provide oxygen, especially for children with severe hypoxia, facial or oral burns, loss of consciousness or inability to protect the airway, or respiratory distress.

Check Your Progress 8

- i) Management includes first aid, before transferring to FRU for anti snake venom and treatment of shock.
- Splint the limb to reduce movement and absorption of venom. If the bite is likely to have been by a snake with neurotoxic venom, apply a firm bandage to the affected limb, from fingers or toes to near the site of the bite.
 - Clean the wound.
 - If any of the above signs are present, transport the child to a hospital that has antivenom as soon as possible. If the snake has been killed, take it with the child to hospital.
 - Avoid cutting the wound or applying a tourniquet.
- ii) The local treatment comprises the following measures:
- Cleaning of wound: Immediate flushing and washing the wound(s), scratches and the adjoining areas with plenty of soap and water, preferably under a running tap, for atleast 15 minutes is of paramount importance in the prevention of human rabies. If soap is not available, simple flushing of the wounds with plenty of water should be done as first-aid. In case of punctured wounds, catheters, should be used to irrigate the wounds. This procedure is now standard worldwide. It does minimise the risk of contracting rabies.

- Chemical treatment: Whatever residual virus remains in the wound(s), after cleansing, should be inactivated by irrigation with virucidal agents alcohol (400-700 ml/litre), tincture or 0.01% aqueous solution of iodine or povidone iodine.
- Bite wounds should not be immediately sutured to prevent additional trauma, which may help spread the virus into deeper tissues. If suturing is necessary, it should be done 24–48 hours later, applying minimum possible stitches, under the cover of rabies immunoglobulin locally.
- Antibiotics and anti-tetanus measure: The application of antibiotics and anti-tetanus procedures when indicated should follow the local treatment recommended above.

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UNIT 3 INTEGRATED MANAGEMENT OF NEONATAL AND CHILDHOOD ILLNESS

Structure

- 3.0 Introduction
- 3.1 Objectives
- 3.2 Assess and Classify the Sick Young Infant
 - 3.2.1 Assess and Classify Possible Bacterial Infection
 - 3.2.2 Assess and Classify Jaundice
 - 3.2.3 Assess and Classify Diarrhoea
 - 3.2.4 Assess and Classify Feeding Problems and Malnutrition
 - 3.2.5 Assess Immunization Status
 - 3.2.6 Assess Other Problems
- 3.3 Identify Treatment and Treat the Sick Young Infant
 - 3.3.1 Identify Treatment for Possible Bacterial Infection
 - 3.3.2 Identify Treatment for Diarrhoea
 - 3.3.3 Identify Treatment for Feeding Problems
 - 3.3.4 Treat the Sick Young Infant
 - 3.3.5 Treat Local Infections at Home
- 3.4 Assess and Classify the Sick Child
 - 3.4.1 Assess General Danger Signs
 - 3.4.2 Assess and Classify Cough or Difficult Breathing
 - 3.4.3 Assess and Classify Diarrhoea
 - 3.4.4 Assess and Classify Fever
 - 3.4.5 Assess and Classify Ear Problem
 - 3.4.6 Assess and Classify Malnutrition
 - 3.4.7 Assess and Classify Anaemia
 - 3.4.8 Assess Immunization, Prophylactic Vitamin A & Iron-Folic Acid
 - 3.4.9 Assess Child Feeding
- 3.5 Identify Treatment and Treat the sick child
 - 3.5.1 Identify Treatment for Pneumonia (Cough or Difficult Breathing)
 - 3.5.2 Identify Treatment for Diarrhoea and Dehydration
 - 3.5.3 Identify Treatment for Fever
 - 3.5.4 Identify Treatment for Ear Problem
 - 3.5.5 Identify Treatment for Malnutrition and Anaemia
 - 3.5.6 Treat the Sick Child
- 3.6 Let Us Sum Up
- 3.7 Model Answers

3.0 INTRODUCTION

Every year many children die before their fifth birthday in developing countries of the world. A large number of deaths can be prevented by early identification and timely care. For early identification and prompt care, you as a Mid Level

Health Care Provider must learn to assess, classify & treat various infections/ illnesses that are common among young infants and children so that you are able to assess, identify, classify and treat these illnesses. Hence, this unit presents the IMNCI approach for Assessment, Classification, Identification and Treatment of illnesses in Sick Young Infant and young child. While going through the Unit, you will appreciate the various guidelines for identifying and treating common illness of young infant and child in the community.

3.1 OBJECTIVES

After completing this unit, you should be able to:

- assess various signs and sickness in young infant and child;
- classify illness in a sick young infant and child based on signs and symptoms;
- identify treatment for various problems in young infant and child; and
- treat Young Infant and Child.

3.2 ASSESS AND CLASSIFY THE SICK YOUNG INFANT

Assessment involves “asking”, “looking at”, “listening” and “feeling (using your hands)” to identify sickness of the young infant. All these skills of asking, looking and feeling will help you to assess the problems of young infant. You have to record the assessment in the recording sheet.

You should start assessment by asking questions to collect the information related to name, age, record weight and temperature of the young infant.

Ask the mother about the problems that the young infant is having. Ask if she has brought the infant to the clinic for the first time, that means is it her initial visit or follow-up visit? If it is follow-up visit then you have to reassess the problem of the infant for which he has been treated earlier.

Let us now start by discussing the various common illness which need to be assessed and identified in the sick young infant.

3.2.1 Assess and Classify Possible Bacterial Infection

Assess Possible Bacterial Infection

You have to assess the young infant for Possible Bacterial Infection as given in Table 3.1 below:

Table 3.1 : Assessment of Young Infant for Possible Bacterial Infection

Ask	Look, Listen & Feel:
Has the infant had convulsions?	<ul style="list-style-type: none"> • Count the breaths in one minute Repeat the count if elevated. • Look for severe chest indrawing. • Look for nasal flaring. • Look and listen for grunting. • Look and feel for bulging fontanel. <div style="text-align: right; margin-top: 10px;">Young infant must be calm</div>

- Look for pus draining from the ear.
- Look at the umbilicus. Is it red or draining pus?·
- Look for skin pustules. Are there 10 or more skin pustules or a (Fig 3.1).
- Measure axillary temperature (if not possible feel for fever or low body temperature). (Fig 3.2)
- See if the young infant is lethargic or unconscious.
- Look at the young infant's movements. Are they less than normal?
- Look for Jaundice. Are the palms & soles yellow?



Fig. 3.1 : Skin Pustules



Fig. 3.2: Checking temperature through axillary route

Classify Possible Bacterial Infection

Once you have assessed the sick young infant, you have to classify the young infant for Possible Serious Bacterial Infection and Local Bacterial Infection according to signs and symptoms given below in Table 3.2.

Table 3.2: Classification of Possible Bacterial Infection

Signs	Classify as
<ul style="list-style-type: none"> • Convulsions or • Fast breathing (60 breaths per minutes or more) or • Severe chest indrawing or • Nasal flaring or • Grunting or • Bulging Fontanel or • 10 or more skin pustules or a big boil or • If axillary temperature 37.5°C or above (or feels hot to touch) or temperature less than 33.5°C (or feels cold to touch) or • Lethargic or unconscious or • Look at the young infnat's movements Are they less than normal movements? • Look of Jaundice. Are the palms and soles yellow? 	<p>POSSIBLE SERIOUS BACTERIAL INFECTION</p>
<ul style="list-style-type: none"> • Umbilicus red or draining pus or • Pus draining from the ear or • Skin pustules less than 10 	<p>LOCAL BACTERIAL INFECTION</p>

Table 3.2 shows that there are two classifications for possible bacterial infections, i.e., **Possible Serious Bacterial Infection**, and **Local Bacterial Infection**.

Possible Serious Bacterial Infection

You can classify a young infant as having Possible Serious Bacterial Infection, if he/she has anyone or more than one sign listed in red row of Table 3.2. A young infant with any one or more than one sign in this column may have a serious disease and may be at a high risk of dying. The infant may have Pneumonia, Sepsis or Meningitis. It is difficult to distinguish among these infections in young infants and therefore only one classification is given.

Local Bacterial Infection

You can classify young infant as having Local Bacterial Infection if he/she has anyone of the following two signs:

- Red umbilicus or draining pus, or
- Pus draning from ear or
- Skin pustules less than 10.

3.2.2 Assess and Classify Jaundice

After going through the possible serious and local bacterial infection and their signs, let us now discuss about jaundice in detail.

Assess Jaundice

In addition if the sick young infant has Jaundice, assess for the same by inspecting the palms and soles for yellowish colouration.

Classify Jaundice (in the Manner given below as per Table 3.3 and 3.4)

A sick young infant can have two possible classifications for Jaundice as follows:

Table 3.3: Assessment of Severe Jaundice in sick young infant

Yellow palms and soles or	Severe Jaundice
Age <24 hours or	
Age 14 days or more	

Table 3.4: Assessment of Jaundice in Sick young infant

Palms and soles not yellow and	Jaundice
Age 1-13 days	

3.2.3 Assess and Classify Diarrhoea

Assess Diarrhoea

After you have checked the young infant for possible bacterial infection and jaundice, assess the young infant for diarrhoea as given in Table 3.5.

Table 3.5: Assessment of Diarrhoea

If Yes,	Look & Feel:
ASK: <ul style="list-style-type: none"> • For how long? _____ days • Is there blood in the stool? 	<ul style="list-style-type: none"> • Look at the young infant's general condition. Is the infant: <ul style="list-style-type: none"> • Lethargic or unconscious? • Restless and irritable? • Look for sunken eyes • Pinch the skin of the abdomen (Fig. 3.3). Does it go back <ul style="list-style-type: none"> • Very slowly (longer than 2 seconds)? • Slowly?
THEN ASK: DOES THE YOUNG INFANT HAVE DIARRHOEA?*	
*What is diarrhoea in a young infant? If the stools have changed from usual pattern and are many and watery. The normally frequent or loose stools of a breastfed baby are not diarrhoea	

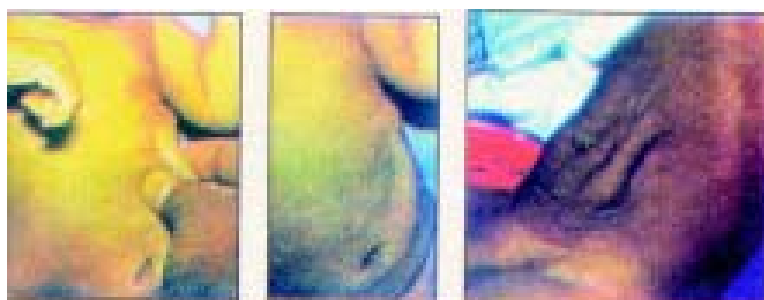


Fig. 3.3: Skin Pinch to assess dehydration

Diarrhoea in young infant is present if the stools have changed from usual pattern and are many and watery (more water than fecal matter). The breastfed babies normally have frequent loose stools but are not watery. This is not diarrhoea.

Classify Diarrhoea

Once you have assessed the young infant for diarrhoea, you have to classify dehydration and dysentery as given in Table 3.6.

Table 3.6: Classification of Diarrhoea

Signs	Classify As
Two of the following signs: <ul style="list-style-type: none"> • Lethargic or unconscious • Sunken eyes • Skin pinch goes back very slowly. 	SEVERE DEHYDRATION
Two of the following signs: <ul style="list-style-type: none"> • Restless, irritable • Sunken eyes • Skin pinch goes back slowly • Not enough signs to classify as some or severe dehydration. 	SOME DEHYDRATION NO DEHYDRATION
<ul style="list-style-type: none"> • Diarrhoea lasting 14 days or more 	SEVERE PERSISTENT DIARRHOEA
<ul style="list-style-type: none"> • Blood in the stool 	SEVERE DYSENTRY

Severe Dehydration

If the infant shows any two of the following signs, then sick young infant is classified as having Severe Dehydration:

- Lethargic or unconscious
- Sunken eyes
- Skin pinch goes back very slowly

Some Dehydration

If the infant has any two of the following signs then sick young infant is classified as having some Dehydration:

- Restless, irritable
- Sunken eyes
- Skin pinch goes back slowly

No Dehydration

If an infant is not showing enough signs to classify as severe or some dehydration, then classify the sick young infant as having No Dehydration.

Compare the signs that you have identified in young infant with the signs listed in each row and choose the classification.

Severe Persistent Diarrhoea

We also classify young infant based on duration of diarrhoea

Persistent diarrhoea is an episode of diarrhoea lasting for more than 14 days with or without blood. All young infants with diarrhoea should also be assessed for severe persistent diarrhoea. All young infants with severe persistent diarrhoea should be referred to the hospital. One rule that we need to keep in mind is that treatment of dehydration can be initiated first, unless there is another severe classification.

Severe Dysentery

If infant is passing stool with blood then child is classified as having Severe Dysentery.

3.2.4 Assess Feeding Problems and Malnutrition

You should check sick young infant for feeding problems also. In order to assess the feeding problem you have to **ask** mother following **questions** listed on the left side of the Table 3.7.

Table 3.7: Assessment for Feeding Problem

CHECK FOR FEEDING PROBLEM AND MALNUTRITION	
<ul style="list-style-type: none"> • Is there Any difficulty feeding? Yes, _____, No _____ • Is the infant breastfed? • How many times in 24 hours? _____ times • Does the infant usually receive any other foods or drinks? Yes _____ No _____ If yes, how often? • What do you use to feed the infant? • Does the mother have pain while breastfeeding? 	<p>LOOK & FEEL:</p> <p>ASSESS BREASTFEEDING IF THERE IS ANY DIFFICULTY IN FEEDING (feeding less than 8 times in 24 hours, taking any other food or drink or infant is low weight for age) and has NO INDICATION FOR URGENT REFERRAL.</p> <p>Ask the mother to put her Infant to the breast. Observe the breastfeed for 4 minutes.</p> <ul style="list-style-type: none"> • Is the infant able to attach well? <i>no attachment at all, not well attached, good attachment</i> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p style="text-align: center;">TO CHECK ATTACHMENT, LOOK FOR</p> <ul style="list-style-type: none"> • Chin touching breast Yes _____ No _____ • Mouth wide open Yes _____ No _____ • Lower lip turned outward Yes _____ No _____ • More areola visible above than below the mouth Yes No _____ No _____ <p style="text-align: center;">(All these signs should be present if the attachment is good)</p> </div> <ul style="list-style-type: none"> • Is the infant suckling effectively (i.e., slow deep sucks, sometimes pausing)? <i>not suckling at all</i> <i>not suckling effectively, suckling effectively</i> Clear a blocked nose if it interferes with breastfeeding. • Look for ulcers or white patches in the mouth (thrush). • If yes, look and feel for: <ul style="list-style-type: none"> • Sore nipples • Engorged breasts or breast abscess

As you have seen in Table 3.7 that there are **four** questions which will help you to assess feeding problems. These are as follows:

Assess Breastfeeding

You have to first decide whether to assess the infant's breastfeeding or not.

- If the infant is not breastfed at all, do not assess breastfeeding
- If the infant has a serious problem requiring urgent referral to a hospital, do not assess breastfeeding.

ASK: Has the infant been breastfed in the previous hour?

If the mother has not fed the infant in previous hour then ask her to put her infant to breast. Observe whole breastfeeding if possible, or observe for atleast for 4 minutes.

LOOK: if the infant is able to attach

While observing the infant for **good attachment** (Fig. 3.4), you should look for following four signs:

- Chin touching breast (or very close)
- Mouth wide open
- Lower lip turned outward
- More areola visible above than below the mouth.



Infant Well Attached

Infant not Well Attached

Fig. 3.4: Attachment

If all of these four signs are present, the infant has **good attachment**. If attachment is not good, you may see the following signs:

- Chin is **not** touching breast,
- Mouth is **not** wide open, lips are pushed forward,
- Lower **lip** is turned in, or
- **More areola** (or equal amount) **visible below** infant's mouth.

Record your assessment/observation in Recording Form/Sheet by encircling the sign present- **no attachment at all, not well attached or good attachment**.

Now LOOK: if the infant is suckling effectively i.e. slow deep sucks, sometimes pausing

The infant is **suckling effectively**, if he suckles with slow deep sucks and sometimes pauses. You may see or hear the infant swallowing. If you can observe how the breastfeeding finishes, look for signs that the infant is satisfied. If satisfied, the infant releases the breast spontaneously i.e. the mother does not cause the infant to stop breastfeeding in any way. The infant appears relaxed, sleepy, and loses interest in the breast.

An infant is **not suckling effectively**, if he is taking only rapid, shallow sucks. You may also see indrawing of the cheeks. You do not see or hear **swallowing**. The infant is not **satisfied** at the end of the feed, and may be restless. He may cry or try to suckle again, or continue to breastfeed for a long time.

An infant who is **not suckling at all** is not able to suck breast milk into his mouth and swallow. Therefore, **he is not able** to breastfeed at all.

You may at times observe that in spite of **good positioning** and **good attachment** the infant is not suckling at all or not **able to suck** breast milk into his mouth. This means that the infant is **not able to breastfeed** at all. In such a case check the nose, and clean it, if blocked.

Classify Feeding Problems

The following Table 3.8 explains how to classify the feeding problems.

Table 3.8: Classify for Feeding Problems

Signs	Classify As
<ul style="list-style-type: none"> • Not able to feed or • No attachment at all or • Not sucking at all or • Very low weight for age 	NOT ABLE TO FEED - POSSIBLE SERIOUS BACTERIAL INFECTION or SEVERE MALNUTRITION
<ul style="list-style-type: none"> • Not well attached to breast or Not sucking effectively or • Less than 8 breast feeds in 24 hours or • Receives other foods or drinks or • Thrush (ulcers or white patches in mouth) or • Low weight for age or • Breast or nipple problems 	FEEDING PROBLEM OR LOW WEIGHT
<ul style="list-style-type: none"> • Not other signs of inadequate feeding 	NO FEEDING PROBLEM

Table 3.8 shows that there are three possible classifications of feeding problems as given below:

Not Able to Feed - Possible Serious Bacterial Infection

If the infant is not able to feed or not attached at all, or not suckling at all, the infant may be classified as having **Not Able to Feed - Possible Serious Bacterial Infection**.

Feeding Problem

When the infant is not well attached or not suckling effectively or is receiving breastfeed less than 8 times in 24 hours, or is receiving other foods or drinks, or is having nose block, thrush (ulcers or white patches in the mouth), or there is nipple or breast problem, then the infant is having some feeding problem. Classify the infant as having Feeding Problem.

No Feeding Problem

If a young infant has no other sign of inadequate feeding. This infant is classified as having No Feeding Problem. Praise the mother for feeding the infant well when infant is not showing any sign of inadequate feeding.

3.2.5 Assess Immunization Status

If any immunization is due, advise the mother to get the infant immunized at the earliest. The information on immunization status of an infant is best obtained from the Immunization Card.

When the Immunization Card is not available, ask mother about the immunisation of the infant as per Table 3.9.

Table 3.9: Assessment of Immunization Status

THEN CHECK THE YOUNG INFANT’S IMMUNISATION STATUS

Immunization Schedule:	Age	Vaccine
	Birth	BCG OPV-0
	6 Weeks	DPT-1, OPV-1+, Hepatitis B-1*

*Hepatitis B to be given wherever included in the immunization schedule

This shows that a young infant should have one dose of BCG at birth. Two doses of OPV (OPV-0 and OPV-1) and one dose of DPT-1 and Hepatitis B-1 are given at the age 6 weeks.

Check Your Progress 1

- i) List the signs you will look for possible bacterial infection in a young infant?
.....
.....
.....
- ii) How many doses of DPT, OPV and Hepatitis-B vaccine should be given to the young infant (birth up to 2 months)?
.....
.....
.....
.....

3.2.6 Assess Other Problems

Assess other problems mentioned by mother or observed by you, if you think that infant has severe problem or you don't know how to treat the condition, refer immediately.

Thus, in the above subsections you learnt about assessment and classification of various problems in sick young infant. Let us now proceed to identification and treatment of these problems in the sick young infant.

3.3 IDENTIFY TREATMENT AND TREAT THE SICK YOUNG INFANT

Treatment of the sick young infant is based on identifying treatment for each classification. The “Identify Treatment” column in the chart will help you to decide whether the infant needs referral, treatment with medicines or home care and lists the treatments for all the classifications that the young infant has. If sick young infant has more than one classification, you should strike out wherever there are duplicate instructions in “Identify Treatment” column. For example, if the young infant has a Possible Serious Bacterial Infection i.e. classification in red box and also has another severe classification such as Severe Dehydration, strike out **Refer URGENTLY to hospital** from the treatments listed in one of the two boxes of “Identify Treatment” column.

- If sick young infant has classification in RED Box, he/she should be referred to hospital after giving appropriate pre-referral treatments listed in the “Identify Treatment” column.
- If sick young infant has classification in YELLOW Box, he/she should be provided all the treatments listed in the “Identify Treatment” column.
- If a sick young infant has classification in GREEN Box, the mother of the infant should be advised to give home care.
- If a sick young infant has more than one classification, treatment required for all classifications must be identified.

3.3.1 Identify Treatment for Possible Bacterial Infection

Refer Table 3.10 below to identify the treatment of the sick young infant and determine if the young infant needs urgent referral.

Table 3.10 : Identify treatment for Possible Bacterial Infection

Signs	Classify as	Identify Treatment
<ul style="list-style-type: none"> • Convulsions or • Fast breathing (60 breaths per-minute or more) or • Severe chest indrawing or • Nasal flaring or • Grunting or • Bulging Fontanel or 	Possible Serious Bacterial Infection	<ul style="list-style-type: none"> • Give first dose of intramuscular ampicillin (100 mg/kg) and gentamycin (3 mg/kg) • Treat to prevent low blood sugar • Warm the young infant by skin to skin contact if temperature is less than 36.3°C (or feels cold to touch) while arranging referral

<ul style="list-style-type: none"> • 10 or more skin pustules or a big boil or • If axillary temperature 37.5°C or above (or feels hot to touch) or temperature less than 33.5°C (or feels cold to touch) or • Lethargic or unconscious or • Look at the young infants' movements. Are they less than normal movements? • Look for Jaundice. Are the palms and soles yellow? 		<ul style="list-style-type: none"> • Advise mother to keep the young infant warm on the way to the hospital. • Refer urgently to the hospital
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Signs	Classify as	Identify Treatment
<ul style="list-style-type: none"> • Umbilicus red or draining pus or • Pus draining from the ear or • Skin pustules less than 10 	Local Bacterial Infection	<ul style="list-style-type: none"> • Give oral cotrimoxazole or amoxicillin for 3 days (1/2 paediatric tablet twice daily for an infant up to 1 month and 1 tablet for an infant of 1-2 months) • Teach mother to apply 0.3% Gention Violet paint twice daily. • Follow-up in 2 days.
<ul style="list-style-type: none"> • Yellow palms and soles or • Age <24 hours or • Age 14 days or more 	Severe Jaundice	<ul style="list-style-type: none"> • Treat to prevent low blood sugar • Warm the infant by skin to skin contact if temperature is less than 36.3°C (or feel cold to touch) • Refer urgently to the hospital.
<ul style="list-style-type: none"> • Palms and soles not yellow and • Age 1-13 days 	Jaundice	<ul style="list-style-type: none"> • Advise mother to give home care for the young infant • Advise mother when to return immediately • Follow up in 2 days.
<ul style="list-style-type: none"> • Temperature between 33.5 to 36.4° C • Umbilicus red or draining pus or • Pus draining from the ear or 	Severe Low Body Temperature	<ul style="list-style-type: none"> • Warm the young infant using skin to skin contact for one hour and REASSESS • Treat to prevent low blood sugar.

Possible Serious Bacterial Infection

You have seen in Table 3.10, that a young infant classified as having POSSIBLE SERIOUS BACTERIAL INFECTION (the classification in Red Box) needs urgent referral. You should refer the infant without delay and give urgent pre-referral treatment.

You have to give first dose of intramuscular antibiotics or oral antibiotic such as cotrimoxazole if injectible antibiotics are not available. Ensure that the baby is kept warm on the way to hospital. Prevent hypoglycemia with breast milk/animal milk with added sugar/sugar water.

Remember all infants with severe classification are to be referred to the hospital after completing the assessment and administration of necessary pre-referral treatment.

Local Bacterial Infection

If the young infant is classified as having LOCAL BACTERIAL INFECTION, i.e. classification in Yellow Box (umbilical infection, skin pustules <10), you have to treat the infant by giving full course of cotrimoxazole at home. The recommended dose of cotrimoxazole according to age and weight is given in Table 3.14.

Treat young infant for jaundice and low body temperature as per Table 3.10

3.3.2 Identify Treatment for Diarrhoea

Identifying Treatment of diarrhoea, dehydration and dysentery is as per guidelines given in Table 3.11.

Table 3.11 : Identify Treatment for Diarrhoea

Signs	Classify as	Identify Treatment
<p>Two of the following signs:</p> <ul style="list-style-type: none"> • Lethargic or unconscious • Sunken eyes • Skin pinch goes back very slowly. 	<p>Severe Dehydration</p>	<p>If the young infant has low weight, dehydration or another severe classification</p> <ul style="list-style-type: none"> • Give first dose of intramuscular ampicillin (100 mg/kg) and gentamycin (3 mg/kg) if the young infant has low weight, dehydration or another severe classification • Advise mother to continue breast-feeding and how to keep the young infant warm on the way to the hospital. • Refer urgently to the hospital with mother giving frequent sips of ORS on the way. OR <p>If infant does not have low weight or any other severe classification.</p> <ul style="list-style-type: none"> • Give fluid for severe dehydration (Plan C) and then refer to hospital after rehydration. • If infant does not have low weight or any other severe classification: <ul style="list-style-type: none"> • Give fluid for severe dehydration (Plan C) and then refer to hospital after rehydration
<p>Two of the following signs:</p> <ul style="list-style-type: none"> • Restless, irritable • Sunken eyes • Skin pinch goes back slowly 	<p>Some Dehydration</p>	<p>If the young infant has low weight, dehydration or another severe classification:</p> <ul style="list-style-type: none"> • Give first dose of intramuscular ampicillin (100 mg/kg) and gentamycin (5 mg/kg) if the young infant has low weight, dehydration or another severe classification • Advise mother to continue breast-feeding and how to keep the young infant warm on the way to the hospital. • Refer urgently to the hospital with mother giving frequent sips of ORS on the way.

Signs	Classify as	Identify Treatment
<ul style="list-style-type: none"> Not enough signs to classify as some or severe dehydration. 	No Dehydration	<ul style="list-style-type: none"> Give fluid to treat diarrhoea at home (Plan A) Advise home care Follow up in 2 days if not improving.
<ul style="list-style-type: none"> Diarrhoea lasting 14 days or more 	Severe Persistent Diarrhoea	<ul style="list-style-type: none"> Give first dose of intramuscular ampicillin (100 mg/kg) and gentamycin (5 mg/kg) if the young infant has low weight, dehydration or another severe classification Treat to prevent low blood sugar Warm the young infant by skin to skin contact if temperature is less than 36.5°C (or feels cold to touch) while arranging referral. Advise mother to keep the young infant warm on the way to the hospital. Refer URGENTLY to the hospital.
<ul style="list-style-type: none"> Blood in the stool 	Severe Dysentery	<ul style="list-style-type: none"> Give first dose of intramuscular ampicillin (100 mg/kg) and gentamycin (5 mg/kg) if the young infant has low weight, dehydration or another severe classification. Treat to prevent low blood sugar. Warm the young infant by skin to skin contact if temperature is less than 36.5°C (or feels cold to touch) while arranging referral. Advise mother to keep the young infant warm on the way to the hospital. Refer URGENTLY to the hospital.

3.3.3 Identify Treatment for Feeding Problems

Treatment of feeding problems is given in Table 3.12.

As per Table 3.12, a young infant classified as having **Not Able to Feed- Possible Serious Bacterial Infection** (classification in Red Box) needs urgent referral. You should refer urgently and advise mother to give skin to skin contact if he/she feels cold to touch.

Feeding Problem

If the young infant has been classified as having feeding problem, you should teach the mother correct positioning and attachment (Refer Table 3.12 for details).

Also advise the mother to take care of baby and follow up in two days.

No Feeding Problem

If the young infant has been classified as having no feeding problem, advise the mother to care for her baby and help her practice feeding her infant well.

Table 3.12 : Identify Treatment for Feeding Problems

Signs	Classify as	Identify Treatment
<ul style="list-style-type: none"> • Not able to feed or • No attachment at all or • Not sucking at all or • Very low weight for age 	<p>NOT ABLE TO FEED - POSSIBLE SERIOUS BACTERIAL INFECTION or LOW WEIGHT FOR AGE</p>	<ul style="list-style-type: none"> • Give first dose of intramuscular ampicillin (100 mg/kg) and gentamycin (5 mg/kg) if the young infant has low weight, dehydration or another severe classification. • Treat to prevent low blood sugar • Advise mother to continue breast-feeding and how to keep the young infant warm on the way to the hospital. • Refer urgently to the hospital
<ul style="list-style-type: none"> • Not well attached to breast or Not sucking effectively or • Less than 8 breast feeds in 24 hours or • Receives other foods or drinks or • Thrush (ulcers or white patches in mouth) or • Low weight for age or • Breast or nipple problems 	<p>FEEDING PROBLEM OR LOW WEIGHT</p>	<ul style="list-style-type: none"> • If not well attached or not sucking effectively, teach correct positioning and attachment • If breastfeeding less than 8 times in 24 hours, advise to increase frequency of feeding • If receiving other foods or drinks counsel mother about breastfeeding more, reducing other foods or drinks and using a cup and spoon. • If thrush, teach the mother to apply 0.25% Gention Violet paint twice daily • If breast or nipple problem teach the mother to treat breast or nipple problems • Advise mother to give home care (Breastfeed infant exclusively, keep infant warm, apply nothing to cord, ask mother to wash hands and explain danger signs in the infant) • Follow-up in 2 days in case of any feeding problem or thrush • Follow up in 14 days in case of low weight for age.
<ul style="list-style-type: none"> • Not other signs of inadequate feeding 	<p>NO FEEDING PROBLEM</p>	<ul style="list-style-type: none"> • Advise mother to give home care • Praise the mother for feeding the infant well • Advise mother when to return immediately.

3.3.4 Treat the Sick Young Infant

You may have to give one or more of the following treatments before the young infant is sent to the hospital.

- Antibiotics

- Breast milk or sugar water
- Warm the sick young infant with low body temperature by skin to skin contact and keep the young infant warm on the way to the hospital.

When giving intramuscular antibiotics:

- Explain to the mother why the drug is given.
- Determine the dose of gentamicin and ampicillin.
- Use a sterile needle and sterile syringe.
- Measure the dose accurately.
- Give the drug as intramuscular injection.

1) **Giving Antibiotics**

If you identify/classify a young infant as having possible serious bacterial infection, you have to give the first dose of two intramuscular antibiotics such as ampicillin and gentamicin to young infants with POSSIBLE SERIOUS BACTERIAL INFECTION. Young infants with POSSIBLE SERIOUS BACTERIAL INFECTION are often infected with a broader range of bacteria than older infants and children. The combination of gentamicin and ampicillin is effective against this broader range of bacteria. See Table 3.13 for intramuscular antibiotics.

- Give first dose of intramuscular antibiotics.
- Give first dose of both ampicillin and gentamicin intramuscularly.

Table 3.13: Intramuscular Antibiotics

GENTAMICIN Dose: 3 mg per kg		AMPICILLIN Dose: 100 mg per kg (Vial of 500 mg mixed with 2.1 ml of sterile water for injection to give 500 mg/2.5 ml or 200 mg/1 ml)
Weight	Undiluted 2 ml vial containing 20 mg = 2 ml at 10 mg/ml OR Add 6 ml sterile water to 2 ml containing 80 mg* = 8 ml at 10 mg/ml	
1 kg	0.5ml*	0.5ml
2 kg	1.0 ml*	1.0ml
3 kg	1.5 ml*	1.5ml
4 kg	2.0ml*	2.0ml
5 kg	2.5ml*	2.5ml

Avoid using undiluted 40 mg/ml gentamicin Ampicillin and gentamicin not to be mixed. Referral is the best option for a young infant with classification of POSSIBLE SERIOUS BACTERIAL INFECTION. If referral is not possible give oral amoxicillin every 8 hourly and intramuscular gentamicin once daily.

Remember:

These drugs have to be given on advice and prescription of a doctor.

Using Gentamicin

Before giving gentamicin intramuscularly you must read the vial of gentamicin to determine its strength. Check whether it should be used undiluted or diluted with sterile water. When ready to use, the strength should be 10 mg/ml.

Choose the dose of the antibiotics from the row of the table, which is closest to the infants weight.

Using Ampicillin

Before giving ampicillin intramuscularly you have to mix it with sterile water. You must read the vial of ampicillin to determine its strength and then mix with sterile water. Mix a vial of 500 mg powder in 2.1 ml of sterile water to give 200 mg/ml ampicillin.

If you have a vial with a different amount of gentamicin or ampicillin or if you use a different amount of sterile water than described here, the dosage table on the TREAT THE YOUNG INFANT AND COUNSEL THE MOTHER chart will not be correct. In that situation, carefully follow the manufacturer's directions for adding water and recalculate the doses.

2) Treat the young infant to prevent low blood sugar

a) If the infant is able to breastfeed:

- Ask the mother to breastfeed the infant.

b) If the infant is not able to breastfeed but is able to swallow:

- Give 20–50 ml (10 ml/kg) expressed breastmilk or locally appropriate animal milk (with added sugar) before departure. If neither of these is available, give 20–50 ml. (10 ml/kg) sugar water.
- To make sugar water: dissolve 4 level teaspoons of sugar (20 grams) in a 200 ml cup of clean water.

c) If the infant is not able to swallow:

- Give 20–50 ml (10 ml/kg) of expressed breastmilk or locally appropriate animal milk (with added sugar) or sugar water by nasogastric tube.

d) If the infant cannot swallow and you know how to use a nasogastric (NG) tube, give him 10 ml/kg of milk (expressed breastmilk or dairy/locally appropriate animal milk) or sugar water by NG tube.

3) Warm the young infant skin to skin (kangaroo mother care)

- Provide privacy to the mother. If mother is not available, skin to skin contact may be provided by the father or any other adult.
- Request the mother to sit or recline comfortably.
- Undress the baby gently, except for cap, nappy and socks.

- Place the baby prone on mother's chest in an upright and extended posture between her breast, in skin to skin contact.
- Turn baby's head to one side to keep airways clear.
- Cover the baby with mother's blouse, 'pallu' or gown; wrap the baby-mother duo with an added blanket or shawl.
- Breastfeed the baby frequently.
- If possible, warm the room ($>25^{\circ}\text{C}$) with a heating device, like electrical room heater or angeethi.

If mother is not available, skin to skin contact may be provided by the father or any other adult. Skin to skin contact is the most practical, preferred method of warming a hypothermic young infant in a primary health care facility. If not possible, dress and wrap the young infant ensuring that head, hands and feet are also well covered. Hold the young infant close to the caregiver's body, in a room warmed by a heating device to a temperature of $30\text{-}33^{\circ}\text{C}$. Alternatively, if an overhead radiant warmer is available, place the baby under the warmer.

- **REASSESS after 1 hour**

- Look, listen and feel for signs of possible bacterial infection, and
- Measure axillary temperature by placing the thermometer in the axilla for five minutes (or feel for low body temperature).
- If any signs of possible serious bacterial infection OR temperature still below 36.5°C (or feels cold to touch):
 - Refer **URGENTLY** to hospital after giving pre-referral treatments for possible serious bacterial infection
- If no sign of possible serious Bacterial infection and temperature 36.5°C or more (or is not cold to touch):
 - Advise how to keep the infant warm at home.
 - Advise mother to give home care.
 - Advise mother when to return immediately.
- Skin to skin contact is the most practical, preferred method of warming a hypothermic infant in a primary health care facility. If not possible:
 - Clothe the baby in 3-4 layers, cover head with a cap and body with a blanket or a shawl; hold baby close to caregiver's body, OR
 - Place the baby under overhead radiant warmer, if available.

(Avoid direct heat from a room heater and use of hot water rubber bottle hot brick to warm the baby because of danger of accidental burns).

4) Treat Local Infections at Home

A) Treatment with Oral Drugs

You have to give oral cotrimoxazole or amoxicillin for LOCAL BACTERIAL INFECTION and SEVERE DEHYDRATION.

You have to give full course of cotrimoxazole or ampicillin to infant with LOCAL BACTERIAL INFECTION at home. You should give cotrimoxazole by mouth every morning and every night, (two times daily) for five days and give the accurate dose of the drug. The dosage of drugs is given in Table 3.14.

Table 3.14 : Dose of Antibiotics

	COTRIMOXAZOLE (trimethoprim + sulphamethoxazole) Give two times daily for 5 days		AMOXYCILLIN Give three times daily for 5 days	
Age and Weight	Adult Tablet single strength (80 mg trimethoprim +400 mg sulphamethoxazole)	Paediatric Tablet (20 mg trimethoprim +100 mg sulphamethoxazole)	Tablet 250 mg	Syrup 125 mg in 5 ml
Birth up to 1 month (<3 kg)		½*		1.25 ml
1 month up to 2 months (3-4 kg)	¼	1	¼	2.5 ml

Table 3.14 shows that the dosage of cotrimoxazole in infants (from birth to one month) is half-paediatric tablet twice a day for five days and for the infant between the age of one month up to two months, the dose of cotrimoxazole is one paediatric tablet twice a days for five days.

Remember:

Do not give cotrimoxazole to infants less than one month of age and those who are premature or jaundiced.

You have to advise the mother to give tablet cotrimoxazole two times every day for five days.

Sometimes you may not have cotrimoxazole (paediatric) tablets but you may have only cotrimoxazole (adult) tablets. In such situation you should give ¼th tablet (adult tablet) of cotrimoxazole to the infant from birth up to one month in place of one paediatric tablet. Remember that ½ tablet of cotrimoxazole (adult tablet) is equal to one paediatric tablet.

If you use Amoxicillin you have to give amoxicillin three times daily for five days. Give 1.25 ml. amoxicillin syrup to an infant, birth up to one month (<3 kg

weight) and ¼ tablet of amoxicillin or 2.5 ml of amoxicillin syrup to infant one month up to two months (3–4 kg weight).

- Give cotrimoxazole by mouth every morning and every evening for five days.
- Give amoxicillin by mouth three times daily for five days.
- Tell the mother the reasons for giving the drug to the infant.
- Demonstrate how to measure a dose.
- Demonstrate to the mother how to administer oral cotrimoxazole at home and take return demonstration to ensure that the mother is able to give the drug at home
- Ask the mother checking questions to make sure that she has understood all the steps of preparing the medicine for giving it to the young infant.

B) **Treatment of Local Infections at Home** : Refer Table 3.15 for Treatment of Local Infections at home. The Local Infections are usually of Umbilical cord, Thrush and Ear.

Table 3.15 : Treatment for Local Infections at home

Treat Skin Pustules or Umbilical Infections	To Treat Thrush (Ulcers or White Patches in Mouth)	Dry the Ear by Wicking
<p>Apply gention violet paint twice daily.</p> <p>The mother should:</p> <ul style="list-style-type: none"> • Wash hands. • Gently wash off pus and crusts with soap and water. • Dry the area. • Apply 0.3% of Gention Violet paint on the umbilicus and the area of skin pustules and teach the mother how to apply Gention Violet paint. • Wash hands. 	<p>Tell the mother to do the treatment twice daily.</p> <p>The mother should:</p> <ul style="list-style-type: none"> • Wash hands . • Wash mouth with clean soft cloth wrapped around the finger and wet with salt water. • Apply Gention Violet paint (0.23g) in oral cavity and teach the mother how to apply it at home. • Explain the mother to give these local treatments twice each day. • Wash hands. 	<ul style="list-style-type: none"> • Dry the ear atleast 3 times daily. • Roll clean cloth or a strong tissue paper into a wick. • Place the wick in the young infant’s ear. • Remove the wick when wet. • Replace the wick with a clean one and repeat these steps until the ear is dry.

- Explain to the mother what the treatment is and why it should be given.
- Describe the treatment steps listed in the Table 3.15.
- Watch the mother as she gives the first treatment in the clinic.
- Tell her, how often to give the treatment at home and for how long.
- Give mother a small bottle to gention violet.
- Check the mother’s understanding before she leaves the clinic .

Some treatments for local infections cause discomfort. Infants often resist having their eyes, ears or mouth treated. Therefore, it is important to hold the infant still. This will prevent the infant from interfering with the treatment.

Tilt the infant's head, back when treating mouth ulcers. Tilt the infant's head to the side when wicking the ear. Do not attempt to hold the infant still until immediately before treatment.

For umbilical or skin infection or thrush, the mother cleans the infected area and then applies gentian violet twice each day. 0.25 per cent gentian violet must be used in the mouth.

Explain and demonstrate the treatment to the mother. Then watch her and guide her as needed while she gives the treatment. Advise her to return for follow-up in two days, or sooner if the infection worsens. Explain her that she should stop using gentian violet after five days. Ask her checking questions to be sure that she knows to give the treatment twice daily and when to return.

If the mother will treat skin pustules or umbilical infection, give her a bottle of full strength (0.5 per cent) gentian violet. If the mother will treat thrush, give her a bottle of half-strength (0.23 per cent) gentian violet.

If the young infant has an ear discharge, dry the ear by wicking.

Observe the mother as she practices. Give feedback. When she is finished, give her the following information:

- Wick the ear three times daily.
- Use this treatment for as many days as it takes, until the wick no longer gets wet when put in the ear and no pus drains from the ear.
- Do not place anything (oil, fluid, or other substance) in the ear between wicking treatments. No water should get in the ear.
- **Ask checking questions**, such as:
“What materials will you use to make the wick at home?” “How many times per day will you dry the ear with a wick?” “What else will you put in your infant's ear?”

If the mother thinks she will have problems wicking the ear, help her solve them.

C) **Treat Diarrhoea at Home: Plan A**

A young infant with diarrhoea having No Dehydration does not need referral. This infant should be treated at home by taking following measures as per Plan A (Treat Diarrhoea at Home).

- Give extra fluids by way of continuing breastfeeding more frequently and for longer time at each breastfeed. If the infant is exclusively breastfed, it is important not to introduce a food-based fluid. Additional fluids that may be given to a young infant are ORS solution and clean, preferably boiled water to the infant after each watery stool. If a young infant is given ORS solution at home, tell the mother to give five teaspoons of ORS followed by two teaspoons of clean preferably boiled water after each watery stools to the infant.

- Teach the mother preparation of ORS.
- Advise the mother to offer breastfeed, and then give the ORS solution. Remind the mother to stop giving ORS solution after the diarrhoea has stopped.

Plan B Treat Some Dehydration: A young infant who has some dehydration needs ORS solution as described in Plan B.

- Plan B: Treat some dehydration with ORS
- Give recommended amount of ORS in the clinic
- Determine amount of ORS to be given during first 4 hours

Age	Up to 4 months	4 months to 12 months
Weight	< 6 kg	6-<10 kg
In ml	200-400	400-700

Use the infant’s age when the weight is not known. The approximate amount of ORS for an infant can be calculated by multiplying child’s weight with 75.

- Give more ORS if infant wants more ORS
- For infants less than 6 months who are not breastfed also give 100-200 ml clean water during this period.
- Give ORS in small sips. Wait for 10 minutes if infant vomits and then restart.
- **Reassess after 4 hours** and change the plan according to the condition of infant. Plan A can be started.
- Tell mother how to prepare ORS before she leaves the facility.
- Explain her 3 rules of home treatment
 - 1) Give extra fluid
 - 2) Continue feeding
 - 3) When to return
- Teach mother how to keep young infant warm at home with low weight or low body temperature
 - Do not bathe young infant with low weight or low body temperature; instead sponge with luke warm water to clean the infant
 - Provide day and night skin to skin contact (KMC) as much as possible
 - Maintain the room temperature between 25-28°C
 - Make baby and mother lie together in a bed
 - Cover mother and baby adequately with additional quilt, blanket or shawl especially in cold weather.

D) Treat/Counsel the Mother about Feeding Problems

If the young infant is classified as having feeding problem you have to counsel the mother.

- Teach the mother to treat nipple and breast problems as given below in Table 3.16.

- Teach the mother correct positioning and attachment for breastfeeding.
- Teach the mother to express breast milk and feed with cup and spoon.
- If mother complains of inadequate milk output, encourage mothers to increase breastfeeding frequency, drink plenty of fluids, eat a normal diet. If the infant is passing urine 5–6 times a day and weight for age is normal, assure mother of adequacy of her lactation.
- If the mother does not breastfeed at all, a breastfeeding counsellor may be able to help her to overcome difficulties and begin breastfeeding again.
- Advise mother who does not breastfeed about choosing and correctly preparing diary/locally appropriate animal milk. Also advise her to feed the young infant with a cup, and not from a feeding bottle.

Table 3.16: Treating nipple and breast problems

- If the nipple is sore, apply breast milk for soothing effect and ensure correct positioning and attachment of the baby. If the mother continues to have discomfort, feed expressed breast milk with katori and spoon.
- If the breasts are engorged, let the baby continue to suck if possible. If the baby cannot suckle effectively, help the mother to express milk and then put the young infant to the breast. Putting a warm compress on the breast may help.
- If mother’s breast has developed abscess, advise her to feed from the other breast and refer to a surgeon. If the young infant wants more milk, feed undiluted animal milk with added sugar by cup and spoon.

During the first few weeks after birth, breast and nipple problems can be important causes feeding problems and poor growth in young infant. Some of the common problems are flat or inverted nipples, sore nipples or breast abscess in the mother.

Check Your Progress 2

1) List the treatment required for a young infant with Severe Dehydration and Possible Serious Bacterial Infection.

.....

2) Fill in the blanks:

i) You have to teach mother for..... and
 during breastfeeding.

ii) Local infections in young infant are treated at home by applying

.....

3.4 ASSESS AND CLASSIFY THE SICK CHILD

In the previous section we learnt about sick infant and management of their illness. Let us now learn about the assessment and classification of illnesses in case of a Sick Child.

3.4.1 Assess General Danger Signs

You should assess all sick children for general danger signs. Danger signs indicate serious illness. General danger signs are given below:

- the child is not able to drink or breastfeed
- the child vomits everything
- the child has had convulsions
- the child is lethargic or unconscious

In order to assess the general danger signs, you have to ask the following questions to the mother/caregiver as given in Table 3.17 below:

Table 3.17: Check for General Danger Signs

CHECK FOR GENERAL DANGER SIGNS

Ask:	Look:	
<ul style="list-style-type: none"> • Is the child able to drink or breastfeed? • Does the child vomit everything? • Has the child had convulsions? 	<ul style="list-style-type: none"> • See if the child is lethargic or unconscious. 	<ul style="list-style-type: none"> • Not able to drink or breastfeed Or • Vomits everything Or • Convulsions Or • Lethargic or unconscious
<p>A child with general danger sign needs URGENT attention; complete the assessment and any pre-referral treatment immediately so that referral is not delayed.</p>		

You have seen in Table 3.17 above that you have to ask the following questions to the mother/ caregiver:

ASK: Is the child able to drink or breastfeed?

If mother says “**Yes**” to the above question, you have to ask next question and if she answers “**No**” then ask the mother to offer water or breastmilk to the child and see if he/she is able to drink. A very sick child may just refuse to take feed and may be too sick to drink or breastfeed (Fig. 3.5).

A breastfed child may have difficulty in sucking when child’s nose is blocked. If the nose is blocked, clear it. If the child can breastfeed after his nose is cleared, the child does not have the danger sign “not able to drink or breastfeed”.

ASK: Does the child vomit everything?

A child, who vomits everything and is **not able** to hold down food, fluids or oral medication has the sign “**vomits everything**”.

A child who vomits several times but **can hold** down some fluids, does not have this general danger sign “**vomits everything**”.

ASK: *Has the child had convulsions?*

Ask the mother, if child had convulsions (jerky movements) during the current illness. You may also actually observe a convulsion when the child is with you in the clinic. You should use local term for convulsions.

After asking the above questions, you have to look for lethargy or unconsciousness.

LOOK: *If the child is lethargic or unconscious*

You can observe lethargy or unconsciousness by talking and shaking the child or by clapping our hand.

A **lethargic child** is not awake and alert and is sleeping when he should be awake. A child who stares blankly and does not appear to notice what is happening around him is also lethargic.

An **unconscious child** does not awaken at all and does not respond to touch, loud noise or pain.

Record the presence of any general danger sign by putting a tick mark (✓) against Yes or No.



Fig. 3.5: Sick Child

3.4.2 Assess and Classify Cough or Difficult Breathing

Assess Cough or Difficult Breathing

Assessment of cough or difficult breathing includes asking questions, looking, listening and feeling for the related signs. The questions and related signs are given in Table 3.18.

Table 3.18 : Assess Cough or Difficult Breathing

Then Ask About Main Symptoms: Does the Child Have Cough Or Difficult				
IF YES, ASK:	-For How long?	LOOK:	-Count the breaths in one minute. -Look for chest indrawing.	} Child Must be calm

- Ask the mother, does the child have cough or difficult breathing?
- Ask the mother for **how long the child has had cough?** (Duration of cough or number of days the child is having cough).
- **LOOK for chest indrawing**
- **Assess for stridor**

A child with cough of difficult breathing is assessed for:

- How long the child has had cough or difficult breathing
- Fast breathing
- Chest indrawing
- Stridor in a calm child.

Ask the mother, does the child have cough or difficult breathing?

A mother may describe difficult breathing as “fast”, “noisy” or “interrupted”.

Remember:

If the mother **answers “No”** to the above question do not **assess** for cough or difficult breathing and you should go to the next sign or problem i.e., **assess diarrhoea.**

If the mother says **“Yes”** then assess the child further for cough or difficult breathing.

Ask the mother for how long the child has had cough? (Duration of cough or number of days the child is having cough).

A child who has had cough or difficult breathing for more than 30 day has a chronic cough and needs to be referred to hospital for further assessment.

Count the breaths for one minute. You must count breathing for one full minute in quiet and calm child to decide whether the child has fast breathing or normal breathing. If the child is crying, quieten the child and if the child is sleeping; do not disturb the child. Explain to the, mother that the child needs to be quiet while you are counting breathing.

After counting the breathing rate for one minute you should decide whether child has fast or normal breathing rate.

If the child is:	Fast breathing is:
2 months up to 12 months	50 breaths per minute or more
12 months up to 5 years	40 breaths per minute or more

If the breathing rate of a child in the age group of 2 months up to 12 months is 50 per minute or more, the child has the sign of fast breathing. Similarly, a child in the age group of 12 up to 5 years has fast breathing if the breathing rate is 40 per minute or more.

LOOK for chest indrawing

As you know in the normal breathing the whole chest wall (upper and lower) and the abdomen moves OUT when the child breathes IN.

If the lower chest wall goes IN when the child breathes IN, it Indicates that the child has chest Indrawing.

If only the soft tissue between the ribs go in when the child breathes IN (intercostal indrawing/retraction), the child does not have the sign chest indrawing.

Chest indrawing in a child with cough or difficult breathing is a specific danger sign of Severe Pneumonia and child should be referred to hospital immediately.

Assess for stridor

Stridor is a harsh noise made when child breaths IN. It occurs due to swelling of the larynx, trachea or epiglottis. Look and listen for stridor when the child breaths IN by bringing ear close to mouth.

Once you have assessed the cough or difficult breathing, you have to classify the cough or difficult breathing as given below.

Classify Cough or Difficult Breathing

You have to classify the illness of the child according to “Classify As” column of the Chart on the basis of your signs. Refer Table 3.19 for classifying illness i.e. cough or difficult breathing.

Table 3.19 : Classification of Cough or Difficult Breathing

Signs	Classify as
• Any general danger sign or	SEVERE PNEUMONIA OR
• Chest indrawing or	VERYSEVERE DISEASE
• Fast breathing	PNEUMONIA
• No sign of pneumonia or very severe disease	NO PNEUMONIA: COUGH or COLD

Look at the “Classify As” column of Table 3.19. You will find that there are three possible classifications for a child with cough or difficult breathing. They are:

- Severe Pneumonia or Very Severe Disease
- Pneumonia
- No Pneumonia: Cough or Cold

Let us now explain each one of them.

Severe Pneumonia or Very Severe Disease

A child with cough or difficult breathing is classified as having Severe Pneumonia or Very Severe Disease if the child has any general danger sign or chest indrawing or stridor.

Pneumonia: Cough or cold

If a child with cough or difficult breathing who has no danger sign and no chest indrawing but has only fast breathing, then the child is classified as having Pneumonia.

No Pneumonia: Cough or cold

No Sign of Pneumonia or severe disease

3.4.3 Assess and Classify Diarrhoea

Assess Diarrhoea

You have to assess a child with diarrhoea by asking the questions and by looking and feeling the signs listed in the Table 3.20.

Table 3.2: Assess Diarrhoea

DOES THE CHILD HAVE DIARRHOEA?		Yes	No
IF YES,			
ASK:	LOOK AND FEEL:		
<ul style="list-style-type: none"> • For how long? • Is there blood in the stool? 	<ul style="list-style-type: none"> • Look at the child's general condition. Is the child: <ul style="list-style-type: none"> • Lethargic or unconscious? • Restless and Irritable? • Look for sunken eyes. • Offer the child fluid to drink. • Is the child: <ul style="list-style-type: none"> • Not able to drink or drinking poorly? • Drinking eagerly, thirsty? • Pinch the skin of the abdomen. Does it go back: <ul style="list-style-type: none"> • Very slowly (longer than 2 seconds)? • Slowly? 		

Classify Diarrhoea

After you have assessed the child for diarrhoea, signs of dehydration, persistent diarrhoea dysentery. You have to classify the dehydration as follows (Table 3.21)

Table 3.21 : Classification of Diarrhoea

Signs	Classify as
Two of the following signs: <ul style="list-style-type: none"> • Lethargic or unconscious. • Sunken eyes. • Not able to drink or drinking poorly. • Skin pinch goes back very slowly. 	SEVERE DEHYDRATION
Two of the following signs: <ul style="list-style-type: none"> • Restless, irritable. • Sunken eyes. • Drinks eagerly, thirsty. • Skin pinch goes back slowly. 	SOME DEHYDRATION
Not enough signs to classify as some or severe dehydration. Classification of some persistent diarrhoea	NO DEHYDRATION
Dehydration present	Severe Persistent Diarrhoea
No dehydration	Persistent Diarrhoea
Blood in the stool	DYSENTERY

If you look at the Classify As column of the Table 3.22, you will find that there are three possible classifications of dehydration:

- Severe Dehydration
- Some Dehydration
- No Dehydration

Let us further explain each one of them:

Severe Dehydration

You can classify a child as having Severe Dehydration, if he has any two of the following signs:

- Lethargic or unconscious
- Sunken eyes
- Not able to drink or drinking poorly
- Skin pinch goes back very slowly

Some Dehydration

You can classify the child as having Some Dehydration, if the child has any two of the following signs:

- Restless, irritable
- Sunken eyes
- Drinks eagerly, thirsty
- Skin pinch goes back slowly

No Dehydration

You can classify the child as having No Dehydration if there are not enough signs to classify as some or severe dehydration.

You also have to classify Severe Persistent Diarrhoea and Dysentery.

Severe Persistent Diarrhoea

Classify the child as having Severe Persistent Diarrhoea, if the child has diarrhoea of 14 days or more duration with dehydration. If there is no dehydration it is classified as Persistent Diarrhoea.

Dysentery

Classify the child as having Dysentery, if the child is having blood in the stool.

Remember:

- Classify all cases of diarrhoea for dehydration. In addition also classify as severe persistent diarrhoea if duration is 14 days or more and dysentery if there is blood in stool.
- Children with signs of severe dehydration should be referred to hospital.
- Children with severe persistent diarrhoea should be referred to hospital.
- Children with dysentery should be treated with medicine at home.
- Children with some dehydration should be rehydrated with ORS.
- Children who are not dehydrated and have diarrhoea of less than 14 days duration should be managed at home.

3.4.4 Assess and Classify Fever

Assess Fever

You should ask following questions to assess the signs of fever in a child (Table 3.22):

Table 3.22 : Assess Fever

DOES THE CHILD HAVE FEVER? (BY HISTORY OR FEELS HOT TO TOUCH OR TEMPERATURE IS 37.5°C OR ABOVE)	
<p>IF YES:</p> <p>THEN ASK:</p> <p>Fever for how long?</p> <p>If more than 7 days has fever been present every day?</p>	<p>LOOK AND FEEL:</p> <p>Look or feel for stiff neck</p>
<p>*These temperatures are based on axillary temperature. Rectal temperature readings are approximately 0.5°C higher.</p>	

ASK: Does the child have fever?

First you have to ask the mother if the child has fever. If she says yes then put the thermometer in the armpit of the child for 3–5 minutes, this will help you to know the degree of fever i.e. how high is the fever of the sick child. If you do not have thermometer, place the back of your hand in the armpit or on the tummy of the child to decide if the child feels hot to touch.

Decide malaria risk

Decide malaria risk as high or low depending upon the National Anti-Malaria Programme in the country.

<p>Remember:</p> <p>Fever is present if the mother is sure that her child has had fever or if you have determined that the child feels hot to touch or if the temperature measured by the thermometer is 37.5°C or more. (The temperature should be measured in the armpit).</p>

ASK: For how long? If more than 7 days, has fever been present every day?

You have to ask the mother how long the child has had fever. If the mother answers that fever has been present everyday for more than 7 days, refer this child for further assessment.

Feel for Bulging Fontanel

Feel for bulging fontanel the way you assessed in young infants, if it is open. The anterior fontanel remains opened till 18 months of age.

LOOK or FEEL for stiff neck

A child with fever and stiff neck may have meningitis. A child with meningitis needs urgent treatment with injectable antibiotics and referral to a hospital.

While you talk with the mother during the assessment, look to see if the child

moves and bends his neck easily as he looks around. If the child is moving and bending his neck, he does not have a stiff neck.

If you did not see any movement, or if you are not sure, draw the child's attention to his umbilicus or toes. For example, you can shine a flashlight on his toes or umbilicus or tickle his toes to encourage the child to look down. Then, you should look to see if the child can bend his neck when he looks down at his umbilicus or toes.

Runny Nose

Look for runny nose. A child with fever and runny nose from low malaria risk area does not require any antimalarial drugs. The fever in the child could be due to common cold.

Measles

Children with fever should be assessed for signs of current ulcers or previous measles (within the last three months). Look for signs of measles such as generalised rash, cough or running nose or red eyes.

If child had measles now or within last 3 months, look for mouth ulcers (whether deep and extensive), pus draining from eyes or clouding of cornea.

Remember:

- The child does not have history of fever, does not feel hot or temperature is less than 37.5°C. Do not assess the child further for signs related to fever. Ask about the next main symptom i.e. malnutrition.
- Most of the fever due to viral illnesses go away within a few days.
- A fever, which has been present, every day for more than 7 days can mean that the child has a more severe disease such as typhoid fever. Refer this child for further assessment.

Classify Fever

After you have assessed the child for fever, then you have to classify the fever based on the signs you have identified, as given in Table 3.2 below:

Table 3.23: Classification of Fever (in high Malaria risk)

Signs	Classify as
Any general danger sign or Stiff neck or Bulging Fontanel	VERY SEVERE FEBRILE DISEASE
Fever (by history or feels hot or temperature 37.5°C or above)	MALARIA

Table 3.24 : Classification of fever (in low malaria risk)

Any general danger sign or Stiff neck or Bulging fontanel	VERY SEVER FEBRILE DISEASE
No runny nose and No measles and No other cause of fever	MALARIA
Runny nose or Measles present or Other causes of fever present	FEVER- MALARIA UNLIKELY

Any general danger sign or Clouding of cornea Deep or extensive mouth ulcers	SEVERE COMPLICATED MEASLES
Pus draining from eye or Mouth Ulcers	MEASLES WITH EYE OR MOUTH COMPLICATIONS
Measles now or within the last 3months	MEASLES

If you look at the Classify as column of the Table 3.24 above, you will find that there are two possible classification for a child with fever.

- Very Severe Febrile Disease
- Malaria

Let us further explain this.

Very Severe Febrile Disease

If the child with fever has any general danger sign or stiff neck, classify the child as having Very Severe Febrile Disease. You should refer this child urgently to hospital.

Malaria

If the child gives history of fever or feels hot to touch or axillary temperature measures 37.5°C or above and has no general danger sign or stiff neck, classify this child as having Malaria.

In low malaria risk, Child with fever or history of fever and no general danger signs or stiff neck or bulging fontanel is classified as Very Severe Febrile Disease. A child with fever no runny nose or measles or no other cause of fever is classified as Malaria, while a child with fever, runny nose or measles or other cause of fever such as pneumonia, stridor, diarrhoea, ear infection or malnutrition is classified as Fever- Malaria Unlikely (Table 3.24).

In case of measles now or within last 3 months can be classified as Severe Complicated measles or Measles with Eye or Mouth Complications or Measles depending upon the signs seen in the child given in Table 3.24.

3.4.5 Assess and Classify Ear Problem

Assess Ear Problems

Assess sick child for ear problem.

A sick child can have ear pain due to which child may cry or become irritable. He may rub his ear frequently.

Look and Feel

Look and feel for tender swelling behind the ear. Both tenderness and swelling can be felt behind the ear.

Ear Discharge

When a mother reports that child has ear pain, health worker should check ear for any pus discharge.

Classify Ear Problems

Based on presence of clinical signs sick child with ear pain is classified as given in Table 3.25.

Table 3.25: Assess ear problems

Sign	Classify as
<ul style="list-style-type: none"> • Tender swelling behind the ear 	Mastoiditis
<ul style="list-style-type: none"> • Pus is seen draining from the ear and discharge is reported for less than 14 days or • Ear pain 	Acute Ear Infection
<ul style="list-style-type: none"> • Pus is seen draining from the ear and discharge is reported for 14 days or more 	Chronic Ear Infection
<ul style="list-style-type: none"> • No ear pain and no ear discharge seen draining from the ear 	No Ear Infection

3.4.6 Assess and Classify Malnutrition

Assess Malnutrition

You can identify most cases of malnutrition by checking for following signs as given in Table 3.26.

Table 3.26: Assess Malnutrition

Malnutrition THEN CHECK
<p style="text-align: center;">FOR MALNUTRITION</p> <p>LOOK AND FEEL:</p> <ul style="list-style-type: none"> • Look for visible severe wasting. • Look for oedema of both feet. • Determine grade of malnutrition by plotting weight for age.

LOOK for visible severe wasting

A child with visible severe wasting looks very thin, has no fat, and looks like skin and bones. You need to identify these children because they need urgent treatment and referral to a hospital.

To look for visible severe wasting, remove the child's clothes. Look for severe wasting of the muscles of the shoulders, arms, buttocks and legs. Look at the child from the side to see if the fat of the buttocks is missing. When wasting is extreme, there are many folds of skin on the buttocks and thigh.

The face of a child with visible severe wasting may still look normal. The child's abdomen may be large or distended.

Classify Malnutrition

You need to Classify Malnutrition as per Table 3.27.

Table 3.27: Classify Malnutrition

Signs	Classify as
Visible severe wasting or	Severe Malnutrition
Oedema of both feet Very low weight for age	VERY LOW WEIGHT
Not very low weight for age and no signs of severe malnutrition.	NOT VERY LOW WEIGHT



Fig. 3.6: Visible Severe Wasting: Face View



Fig. 3.7: Visible Severe Wasting: Back View



Fig. 3.8: Visible Severe Wasting: Side View

If you look at the Classify As column of Table 3.27, you will find that there are three possible classifications for a child with malnutrition. They are:

- Severe Malnutrition
- Very Low Weight
- Not Very Low Weight

Severe Malnutrition

If the child has visible severe wasting or oedema of both feet as given in Table 3.27, then classify the child as having Severe Malnutrition.

Very Low Weight

If the child has malnutrition grade 2, 3 or 4, classify the child as having Very Low Weight.

Not Very Low Weight

If the child is normal weight for its age or there is malnutrition grade 1, then classify the child as having Not Very Low Weight.

Remember:

- A child with severe malnutrition has a serious problem and should be urgently referred to hospital.
- Children with very low weight should be assessed and counselled for feeding.
- All children less than 2 years of age and should be assessed and counselled for feeding.

3.4.7 Assess and Classify Anaemia

Assess Anaemia

You have to check all sick children for signs suggesting anaemia as given in Table 3.28, You can identify most cases of anemia by checking for **palmar pallor**.

Table 3.28: Check for Anaemia

THEN CHECK FOR ANAEMIA
<p>LOOK AND FEEL:</p> <p>Look for palmar pallor. Is it:</p> <ul style="list-style-type: none"> • Severe palmar pallor? • Some palmar pallor? • No palmar pallor?

Table 3.28 shows that you have to Look for palmar pallor and assess, is it severe palmar pallor or some palmar pallor or no palmar pallor?

Let us see what is palmar pallor.

Palmar Pallor

Pallor is unusual paleness of the skin. If the skin looks pale, it is a sign of anaemia. You can assess the palmar pallor by comparing the colour of the child's palm

with your own palm and with the palms of other children . If the skin of the palm is pale the child has some pallor. If the skin of the palm is very pale or so pale that it looks white, the child has severe palmar pallor.

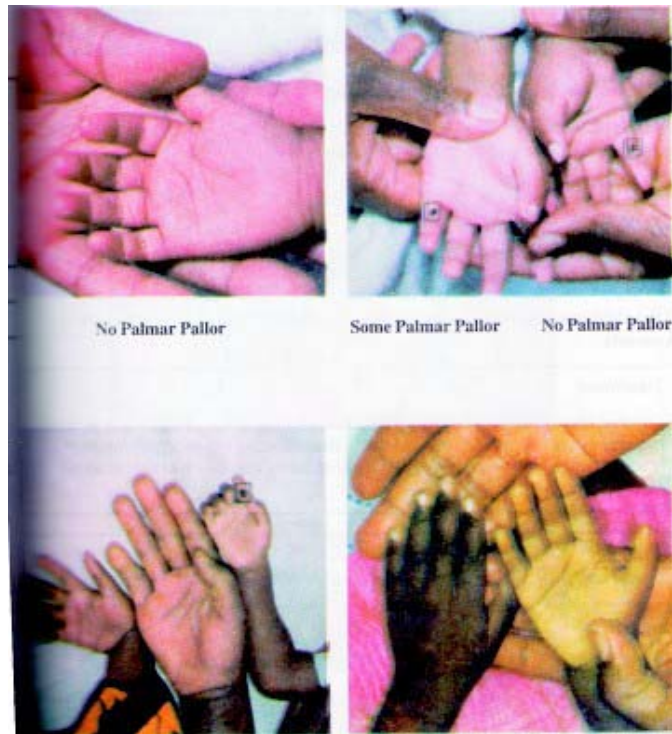


Fig. 3.9: Comparing the palm of the child to check palmar pallor

Classify Anaemia

Classify Anemia as per Table 3.29.

Table 3.29: Classification of Anaemia

Signs	Classify as
Severe palmar pallor	SEVERE ANAEMIA
Some palmar pallor	ANAEMIA
No palmar pallor.	NO ANAEMIA

If you look at the Classify As column of Table 3.29, you will find that there are three possible classification for a child with Anaemia:

- Severe Anaemia
- Anaemia
- No Anaemia

Severe Anaemia

If the child has severe palmar pallor, then classify the child as having Severe Anaemia.

Remember:
A child with severe anaemia should be referred to hospital.

Anaemia

If the child has some palmar pallor, classify the child as having Anaemia.

No Anaemia

If the child has no palmar pallor, then classify the child as having No Anaemia.

3.4.8 Assess Immunization, Prophylactic Vitamin A and Iron-Folic Acid

1 Immunization Status

THEN CHECK THE CHILD'S IMMUNIZATION STATUS	
IMMUNIZATION SCHEDULE	
Age	Vaccine
Birth	BCG + OPV - O
6 Weeks	OPT-1+ OPV-1 +HepB-1*
10 weeks	OPT-2+ OPV-2 +HepB-2*
14 weeks	OPT-3+ OPV-3 +HepB-3*
9 months	Measles OPT
16-18 months	+ OPV
60 months	DPT

*Hepatitis B, if included in the immunization Schedule.

- Immunize all children as per schedule.

There are only three situations at present which are contraindications to immunization:

- Do not give BCG to child known to have AIDS, however asymptomatic HIV positive baby can be given BCG vaccination.
- Do not give DPT-2 or DPT T-3 to a child who has had convulsions after last first dose of DPT or shock within 3 days of the most recent dose.
- Do not give DPT to a child with recurrent convulsions or any active neurological disease of the central nervous system.

Remember:

If a child is going to be URGENTLY referred, do not immunize the child before referral. This will delay referral.

- ASK the mother to show the immunization card, if she has brought it alongwith her.
- Compare the child's immunization record with the national immunization schedule. Decide whether the child has had all the immunizations recommended for the child's age.
- Check all immunisations the child has already received and tick mark the immunization record of child. Write the date of the immunization the child received most recently. Circle any immunizations the child needs today.

If the mother says that she does NOT have an Immunisation Card with her:

- ASK the mother to tell you what immunisations the child has received.
- Use your judgement to decide if the mother has given a reliable report. If you have any doubt, immunise the child. Give the child OPV, DPT and measles vaccine according the child's age.
- Give an Immunisation Card to the mother and ask her to bring it with her each time brings the child to the clinic.

Tick mark (√) are received immunisation and encircle immunisation needed today.

2 Prophylactic Vitamin A Supplementation Status

- **THEN CHECK THE CHILD'S VITAMIN A SUPPLEMENTATION STATUS**

PROPHYLACTIC VITAMIN A

Give a single dose of vitamin A:

100,000 IU (1ml) at 9 months with measles immunisation 200,000 IU (2 ml) at 16-18 months with OPT Booster 200,000 IU (2 ml) at 24 months

200,000 IU (2 ml) at 30 months

200,000 IU (2 ml) at 36 months

3 Iron-Folic Acid Supplementation Status

Iron-Folic Acid Supplementation Status

THEN CHECK THE CHILD'S IRON-FOLIC ACID SUPPLEMENTATION STATUS

PROPHYLACTIC IFA

Give one tablet of Paediatric IFA (20 mg elamucural iron and 100 mg folic acid)/ 5 ml of IFA syrup or 1ml of IFA drops.

For a total of 100 days in a year after the child has recovered from acute illness, **if:**

- The child is 6 months of age or older, and
- Has not received Paediatric IFA Tablet for 100 days in last one year.

3.4.9 Assess Child Feeding

- If child has no other severe classification give fluid for severe dehydration (Plan C)
- If the child has another severe classification, refer urgently to hospital.
- Advise mother to continue breastfeeding
- If child is 2 year or older and there is cholera in your area give amoxicilline for cholera.

Check Your Progress 3

- i) If the child reaches out for the cup or spoon when you offer him water. It indicates which of the following signs:
 - a) Drinking eagerly
 - b) Drinking poorly
 - c) Not able to drink
 - d) All of the above.
- ii) List the three possible classifications of dehydration in a child with diarrhoea.
 - a)
 - b)
 - c)
 - d)
 - e)
- iii) If the child moves and bends his neck easily as he looks around, it indicates the child does not haveneck.
- iv) List down two possible classification of fever in a child.
 - a)
 - b)
- v) Enumerate three classifications for a child with Malnutrition.
 - a)
 - b)
 - c)

3.5 IDENTIFY TREATMENT AND TREAT SICK CHILD

3.5.1 Identify Treatment for Pneumonia (Cough or Difficult Breathing)

The treatment for cough or difficult breathing is given in Table 3.30. You have seen in that if a child is classified as having Severe Pneumonia or Very Severe Disease (classification in red box), you should refer him/her urgently and give first dose of injectable chloramphenicol (oral amoxicillin/ cotrimoxazole if injection is not available) as described in red column of Table 3.30.

If a child is having Pneumonia (classification in yellow box), you should identify and give the correct treatment as given in “Identify Treatment” column of Table 3.30.

If the child is classified as having No Pneumonia: Cough or Cold (classification in green box), you should advise mother about home care, for cough or cold as Table 3.30.

Table 3.30 : Identify Treatment for Cough or Difficult Breathing

Signs	Classify as	Identify Treatment
<ul style="list-style-type: none"> Any general danger sign or Chest indrawing or Stridor in calm child 	Severe Pneumonia or Very Severe Disease	<ul style="list-style-type: none"> Give first dose of injectable chloramphenicol (40 mg/kg), if not possible give oral amoxicillin/cotrimoxazole Refer URGENTLY to hospital
<ul style="list-style-type: none"> Fast breathing 	Pneumonia	<ul style="list-style-type: none"> Give cotrimoxazole for 5 day. (2 pediatric tables twice daily for a child between 2 months to 12 months, and 3 tablets twice daily for a child 12 months up to 5 years Advise mother when to return immediately Follow up in 2 days
<ul style="list-style-type: none"> No sign of pneumonia or very sever disease 	No Pneumonia : Cough or Cold	<ul style="list-style-type: none"> Advise home care for cough or cold with safe home remedy, if child is 6 months or older if coughing for more than 30 days, refer for assessment Advise mother when to return immediately Follow up in 5 days

3.5.2 Identify Treatment for Diarrhoea and Dehydratrion

After you have assessed a child is having **Diarrhoea** then you have to identify treatment for dehydration, persistent diarrhoea and dysentery as given in Table 3.31.

Table 3.31: Identify Treatment of Diarrhoea and Dehydration

Signs	Classify as	Identify Treatment
Two of the following signs: <ul style="list-style-type: none"> Lethargic or unconscious. Sunken eyes. Not able to drink or drinking poorly. Skin pinch goes back very slowly. 	Classify as severe Dehydration	<ul style="list-style-type: none"> If child has no other sever classification. Give fluid for severe dehydration (plan C) If the child has another severe classification, refer urgently to hospital. Advise mother to continue breastfeeding, If child is 2 years or Older and there is cholera in your area give doxycycline for cholera.
Two of the following signs: <ul style="list-style-type: none"> Restless, irritable. Sunken eyes. Drinks eagerly, thirsty. 	Some Dehydration	<ul style="list-style-type: none"> Give fluid and food for some dehydration (Plan B) Follow-up in 5 days if not improving Advise mother when to return immediately

Signs	Classify as	Identify Treatment
<ul style="list-style-type: none"> • Skin pinch goes back slowly. 		<ul style="list-style-type: none"> • If child has another severe classification, refer child urgently to hospital
Not enough signs to classify as some or severe dehydration. Classification of some persistent diarrhoea	No Dehydration	<ul style="list-style-type: none"> • Give fluid and food to treat diarrhoea at home (Plan A) • Follow-up in 5 days if not persistent diarrhoea • Advise mother when to return immediately
Dehydration Present	Severe Persistent Diarrhoea	<ul style="list-style-type: none"> • Treat dehydration before referral unless the child has another severe classification • Refer to hospital
No Dehydration	Persistent Diarrhoea	<ul style="list-style-type: none"> • Advise mother on feeding a child with PERSISTENT DIARRHOEA
Blood in the stool	Dysentery	<ul style="list-style-type: none"> • Give single dose of Vitamin A • Give Zinc Sulphate 20 mg daily for 14 days Follow up in 5 days. • Give cotrimoxazole for 5 days (2 Paediatric tablets twice daily for a child 2 months up to 12 months and 3 tablets twice daily for a child 12 months up to 5 years) • Follow-up in 2 days

In Table 3.31, you have seen that if a child is classified as having Severe Dehydration (classification in red box), he needs extra fluids quickly by intravenous route.

Refer this child urgently to the nearest clinic or hospital, where IV or NG treatment facility is available.

A child with Some Dehydration (classification in yellow box), needs extra fluid and food, so you have to treat the child with ORS (Plan B).

A child who is classified as having No Dehydration (classification in green box), needs extra fluids to prevent dehydration as per Plan A. You need to explain the mother about three rules for home treatments i.e., give extra fluid, continue feeding and when to return.

3.5.3 Identify Treatment for Fever

If you assessed and classified a child as having Fever you have to identify and give treatment to child for fever. Treatment of fever as per classification is given in Table 3.32.

Table 3.32 : Identify Treatment of Fever

Signs	Classify as	Identify Treatment
Any general danger sign or Stiff neck or Bulging Fontanel	Very Severe Febrile Disease	<p>Give first dose of quinine intramuscularly after making a blood smear</p> <p>Give first dose of Inj Cholarmphenicol 40 mg/kg (if not possible give oral amoxicillin)</p> <p>Treat the child to prevent low blood sugar</p> <p>Give one dose of paracetamol tablet if temperature is more than or equal to 38.5°C</p> <p>Refer URGENTLY to hospital</p>
Fever (by history or feels hot or temperature 37.5°C or above)	Malaria	<p>Give oral antimalarials for high malaria risk area after making a blood smear</p> <p>Give one dose of paracetamol in clinic for high fever (temp. 38.5°C or above)</p> <p>Advise mother when to return immediately</p> <p>Follow-up in 2 days if fever persists</p> <p>If fever is present everyday for more than 7 days, refer for assessment.</p>
Any general danger sign or Stiff neck or Bulging fontanel	Very Severe Febrile Disease	<p>Give first dose of quinine intra muscularly after making a blood smear</p> <p>Give first dose of Inj Cholarmphenicol 40 mg/kg (if not possible give oral amoxicillin) Treat the child to prevent low blood sugar</p> <p>Give one dose of paracetamol tablet if temperature is more than or equal to 38.5°C</p> <p>Refer URGENTLY to hospital</p> <p>Give oral antimalarials for low malaria risk area after making a blood smear</p>
No runny nose and No measles and No other cause of fever	Malaria	<p>Give one dose of paracetamol in clinic for high fever (temp. 38.5°C or above)</p> <p>Advise mother when to return immediately</p> <p>Follow-up in 2 days if fever persists</p> <p>If fever is present everyday for more than 7 days, refer for assessment.</p>
Runny nose or Measles present or Other causes of fever present	Fever- Malaria Unlikely	<p>Give one dose of paracetamol in clinic for high fever (temp. 38.5°C or above)</p> <p>Advise mother when to return immediately</p> <p>Follow-up in 2 days if fever persists. If fever is present everyday for more than 7 days, refer for assessment.</p>

Signs	Classify as	Identify Treatment
Any general danger sign or Clouding of cornea Deep or extensive mouth ulcers	Severe Complicated Measles	Give first dose of Vitamin A Give first dose of Inj Cholarmphenicol 40 mg/kg (if not possible give oral amoxicillin) If clouding of the cornea or pus draining from the eye, apply tetracycline eye ointment Refer URGENTLY to hospital
<ul style="list-style-type: none"> • Pus draining from eye or • Mouth Ulcers 	Measles with Eye or Mouth Complications	<ul style="list-style-type: none"> • Give first dose of Vitamin A • If pus draining from the eye, apply tetracycline eye ointment • If mouth ulcers, treat with gentian violet • Follow-up in 2 days
<ul style="list-style-type: none"> • Measles now or within the last 3 months 	Measles	<ul style="list-style-type: none"> • Give first dose of Vitamin A

Note: You need not refer to Signs column at this point.

If a child is classified as having Very Severe Febrile Disease (classification in red box) you should refer the child urgently. You have to give pre-referral treatment as given in Table 3.32. This includes giving first dose of cotrimoxazole, first dose of antimalarial as per National Antimalaria Programme (NAMP) guidelines after making a smear and one dose of paracetamol in clinic for high fever. A child who is classified as having Malaria (classification in yellow box) is treated with oral antimalarial as per National Anti Malarial Programme (AMP) guidelines i.e. Chloroquine or Sulfadoxine + Pyrimethamine.

If the child feels hot to touch or if the temperature measured by thermometer is 38.5°C or more, you have to give one dose of paracetamol by mouth in the clinic. The dose of paracetamol is given in Table 3.33 and then advise the mother to continue every 6 hours until fever is relieved.

Table 3.33 : Dose of Paracetamol

Age of the Child	Paracetamol (500 mg tablet)
2 months up to 3 years	¼
3 years up to 5 years	¼

Also advise the mother to bring the child for follow-up in 2 days if fever persists.

Remember:

- If fever persists every day for more than 7 days refer the child for additional assessment, as it could be typhoid fever.
- Give paracetamol to the child with high fever if axillary temperature is 38.5°C or more.
- Advise the mother to return for follow-up in two days if the fever persists.

3.5.4 Identify Treatment for Ear Problem

A sick child with ear problem should be treated as the treatment given in Table 3.34.

Table 3.34: Identify treatment for Ear Problem

Signs	Classify as	Identify Treatment
Tender swelling behind the ear	Mastoiditis	Give first dose of injectable chloramphenicol (if not possible give oral amoxicillin) Give first dose of paracetamol for pain Refer to hospital urgently
Pus is seen draining from the ear and discharge is reported for less than 14 days or Ear pain Pus is seen draining from the ear and discharge is reported for 14 days or more.	Acute Ear Infection Chronic Ear Infection	Give cotrimoxazole for 5 days Give paracetamol for pain Dry the ear by wicking Follow up in five days
No ear pain and no ear discharge seen draining from the ear	No Ear Infection	No additional treatment

3.5.5 Identify Treatment for Malnutrition and Anaemia

The treatment for the three classifications of child with malnutrition is listed in Table 3.35 as given below:

Table 3.35: Treatment for Malnutrition

Signs	Classify as	Identify Treatment
<ul style="list-style-type: none"> Visible severe wasting or Oedema of both feet 	Severe Malnutrition	<ul style="list-style-type: none"> Give single dose of vitamin A Prevent low blood sugar by breast milk, other milk/water with sugar (4 TSF sugar per cup) Keep the child warm Refer URGETNLY to hospital
<ul style="list-style-type: none"> Very low weight for age 	Very low weight	<ul style="list-style-type: none"> Asses and counsel for feeding Advise mother when to return immediately Follow-up in 30 days (if feeding problem, follow-up in 5 days)
<ul style="list-style-type: none"> Not very low weight for age and no signs of severe malnutrition 	Not very low weight	<ul style="list-style-type: none"> If child is less than 2 year old, assess and counsel for feeding If feeding problem, follow-up in 5 days Advise mother when to return immediately

If the child is classified as having **Severe Malnutrition** (classification in red box), these children need urgent referral to hospital where their treatment can be carefully monitored. Before the child leaves for hospital, you should give the child a dose of vitamin A, prevent low blood sugar and keep the child warm.

If the child has been classified as having **Very Low Weight** (classification in yellow box), then assess and counsel for feeding and follow-up in 14 days (if feeding problem, follow-up in 5 days).

If the child has been classified as having **Not Very Low Weight** (classification in green box), then assess and counsel the child for feeding if the child is less than 2 year old. If child has feeding problem, follow up in 5 days.

Treatment of Anaemia according to classification is given in Table 3.36 below:

Table 3.36 : Identify Treatment for Anaemia

Signs	Classify as	Identify Treatment
• Severe palmar pallor	Severe Anaemia	• Refer to hospital URGENTLY
• Some palmar pallor	Anaemia	• Give Iron Folic Acid therapy for 14 days • Assess and counsel for feeding • Follow-up in 5 days in case of feeding problem otherwise in 14 days
• No palmar pallor	No Anaemia	• Give prophylactic iron folic acid if the child 6 months or older

- If child is classified as having SEVERE ANAEMIA (classification in red box), you have to refer the child to hospital.
- If the child has ANAEMIA (classification in yellow box), give iron, folic acid therapy for 14 days.
- If the child has NO ANAEMIA (classification in green box), give prophylactic iron folic acid if the child is 6 months or older.

Remember:





If a child with some pallor is receiving the antimalarial, Sulfadoxine - Pyrimethamine (Fansidar), do not give iron/folate tablets until a follow-up visit in 2 weeks. If the iron syrup at your clinic does not contain folate, you can give the child iron syrup with Sulfadoxine - Pyrimethamine.

3.5.6 Treat the Sick Child

1) Treat Pneumonia and Dysentery with Cotrimoxazole

A child with cough or difficult breathing who has no general danger sign/s, **no chest indrawing** but has fast breathing (i.e. pneumonia) should be treated with cotrimoxazole. Similarly, a child with dysentery needs cotrimoxazole. You should give cotrimoxazole by mouth every morning and every night for five days. The dose of cotrimoxazole according to age is summarised in Table 3.37.

Table 3.37 : Dose of Cotrimoxazole

Age	Cotrimoxazole (Paediatric) (20 mg Trimethoprim+ 100 mg Sulphamethoxazole)	Morning	Evening
Birth up to 1 month	½ tablet (2 times daily) (morning and evening)		
1 month up to 2 months	1 tablet (2 times daily) (morning and evening)		

You have to give 2 tables of cotrimoxazole twice daily for five days to a sick child in the age **group of 2 months to 12 months**.

2) Treat Diarrhoea and Dehydration with Oral Rehydration Salt (ORS) Solution

ORS is the best treatment for children suffering from diarrhoea with dehydration.

You should treat the child with diarrhoea of less than 14 days duration who has signs of some dehydration under your supervision with ORS for 4 hours. For this, keep the mother and child under observation, either at the health center or at the home of the child. You must demonstrate the mother a correct method of preparing and administering the right amount/volume of ORS.

Ask the mother to give one teaspoon of the ORS solution to the child. This should be repeated every 1–2 minutes. (An older child who can drink it in sips should be given one sip every 1–2 minutes.)

If the child vomits the ORS tell the mother to wait for 10 minutes and resume giving the ORS but this time more slowly than before. In case of breastfed babies continue to give breast milk in between ORS. Any ORS, which is left over after 24 hours, should be thrown away.

Give more fluids than what the child usually drinks.

Use the following Table to determine the amount of ORS that should be given to the child in 4 hours:

Table 3.38 : Amount of ORS to be Given during First-4 Hours

<i>Plan B: Treat Some Dehydration with ORS</i> Give in clinic recommended amount of ORS over 4-hour period.> DETERMINE AMOUNT OF ORS TO GIVE DURING FIRST 24 HOURS				
Age	Up to 4 months	4 months up to 12 months	12 months upto 2 years	2 years up to 5 years
Weight	< 6 kg	6-<10 kg	10-<12 kg	12-19 kg
In ml	200-400	400-700	700-900	900-1400
No. of Cups				
Use the child's age only when you do not know the weight. The approximate amount of ORS required (in ml) can also be calculated by multiplying the child's weight (in kg) times 75.				

- If the child wants more ORS than shown, give more.
 - For infants under 6 months who are not breastfed, also give 100-200 ml clean water during this period.
- > **SHOW THE MOTHER HOW TO GIVE ORS SOLUTION:**
- Give frequent small sips from a cup.
 - If the child vomits, wait for 10 minutes. Then continue, but more slowly.
 - Continue breastfeeding whenever the child wants.
- > **AFTER 4 HOURS:**
- Reassess the child and classify the child for dehydration.
 - Select the appropriate plan to continue treatment.
 - Begin feeding the child in clinic.
- > **IF THE MOTHER MUST LEAVE BEFORE COMPLETING TREATMENT:**
- Show her how to prepare ORS solution at home.
 - Show her how much ORS to give to finish 4-hour treatment at home.
 - Give her enough ORS packets to complete rehydration. Also give her 2 packets as recommended in Plan A.
 - Explain the 3 Rules of Home Treatment:
 - 1) GIVE EXTRA FLUID
 - 2) CONTINUE FEEDING
 - 3) WHEN TO RETURN

3) Treat High Fever with Paracetamol

High fever due to whatever the cause should be treated with paracetamol. If the axillary temperature is 38.5°C or above, or if the child feels hot to touch, or the mother says that the child feels hot to touch, give paracetamol. The dose of paracetamol is given in the following table 3.39. Paracetamol should be repeated every 6 hours but only if the fever is high. If fever persists for seven days or more, refer the child to hospital.

Table 3.39 : Treat High Fever with Paracetamol

Age of the Child	Paracetamol (500 mg tablet)
2 months up to 3 years	¼
3 months up to 5 years	¼

4) Treat Anaemia with Iron and Folic Acid

Treat some pallor with iron. The dose of iron is given in Table 3.40. Do not give iron with tea since this reduces the absorption of the medicine and makes it less effective. Also advise mother to feed the child according to the Age Specific Feeding Recommendations.

Table 3.40: Treat Anaemia with Iron and Folic Acid

Give Iron Folic Acid Therapy

> Give one dose daily for 14 days.

Age or Weight	If a Paediatric Tablet
2 months up to 4 months (4 - <6 kg)	
4 months up to 24 months (6 - <12 kg)	1 tablet
2 years up to 5 years (12-19 kg)	2 tablets

Give 1 tablet of Iron to children in the age group of 4 months up to 24 months. Give 2 tablets of iron to children in the age group of 2 years up to 5 years.

Teach the mother how to give tablet to the child. Refer Practical 18 for important points to be explained to mother while giving iron to the child. Give Iron tablets for 14 days and ask mother to rerun for follow-up at that time.

Explain the mother that the tablet must be crushed into a powder before giving to the child.

Show her how to mix the crushed tablet with a small amount of breast milk or clean drinking water or porridge or banana or some other food that the child eats.

- Ask the mother to give the medicine to the child in your presence.
- Ask the mother checking questions to make sure that she has understood all the steps of preparing the medicine for giving it to the child.
- You must check the child again after 2 days.
- Inform the mother that the stools of the child will become black. This is not a cause of worry.

Check Your Progress 4

- i) Select the correct dose of oral drugs time schedule in the following cases:
- a) A six months old child needs the first dose of an antibiotic for severe pneumonia.
-
-
- b) A two-year-old child needs an antibiotic for pneumonia.
-
-
- ii) A four-year-old child, who has diarrhoea, but no general danger sign and no severe or some dehydration is classified as having Diarrhoea with No Dehydration. He is treated according to Plan A.

a) What are the three rules of home treatment of diarrhoea?

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b) What fluids you will advise the mother to give?

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c) What should mother do if child vomits the fluid?

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3.6 LET US SUM UP

In this unit, you have learnt to assess and classify young infant for various illness and to identify treatment and treat young infant for Bacterial Infection, Diarrhoea and feeding problems. You also learnt to assess, classify and identify treatment and treat various illnesses of the child such as Severe Pneumonia or Very Severe Disease, Pneumonia, Severe Dehydration, Dysentery, Severe Febrile Disease, Malnutrition and Anaemia. You have also learnt to give pre-referral treatment, administer oral drugs and ORS. Hope this unit would have given you an insight into the assessment and treatment of various problems of young infant and child.

3.7 MODEL ANSWERS

Check Your Progress 1

- i) • Count the breaths in one minute. Repeat the count if elevated.
- Look for severe chest indrawing.
 - Look for nasal flaring.
 - Look and listen for grunting.
 - Look and feel for bulging fontanel.
 - Look for pus draining from the ear.
 - Look at the umbilicus. Is it red or draining pus?
 - Look for skin pustules. Are there 10 or more skin pustules or a big boil?
 - Measure axillary temperature (if not possible feel for fever or low body temperature).
 - See if the young infant is lethargic or unconscious.
 - Look at the young infant's movements. Are they less than normal?
 - Look for jaundice. Are the palms & soles yellow?

- ii) Two doses of OPV, one dose of DPT (DPT-1) and one dose of Hepatitis-B vaccine (Hepatitis B-1)

Check Your Progress 2

- 1) 1) Severe Dehydration
- Give one dose of injection ampicillin and gentamycin or first dose of cotrimoxazole
 - Refer urgently to hospital
 - Advise mother to give sips of ORS
 - Advise mother to continue breastfeeding
- 2) Possible Serious Bacterial Infection
- Give one dose of injection ampicillin and injection gentamycin or 1st dose of cotrimoxazole
 - Refer urgently
 - Keep the young infant warm
 - Continue breastfeeding.
- 2) i) Correct positioning, attachment
- ii) 0.5% of gentian violet paint

Check Your Progress 3

- i) a)
- ii) a) Severe Dehydration d) Severe persistent diarrhoea
- b) Some Dehydration e) Persistent diarrhoea
- c) No Dehydration f) Dysentery
- iii) a) Stiff
- iv) a) Very Severe Febrile Disease b) Malaria
- v) Severe Malnutrition
- Very Low Weight
- Not Very Low Weight

Check Your Progress 4

- i) a) 2 tablets 2 times daily for five days.
- b) 3 tablets 2 times daily for five days.
- ii) a) The three rules of home treatment are:
- Give extra fluid
 - Continue feeding
 - When to return
- b) Advise the mother to give ORS solution or clean water other food based fluids can be soup, rice water and Yogurt drinks.
- c) If the child vomits, wait 10 minutes then continue, but more slowly. Continue giving extra fluid until the diarrhoea stops.

UNIT 4 INTRODUCTION TO RASHTRIYA BAL SWASTHYIA KARYAKARAM

Structure

- 4.0 Introduction
- 4.1 Objectives
- 4.2 Concept of Rashtriya Bal Swasthya Karyakaram
- 4.3 Aim and Benefits of the Child Health Screening and Early Intervention Services'
- 4.4 Target Group under Child Health Screening and Intervention Services
- 4.5 Magnitude of the Problem
 - 4.5.1 Birth Defects
 - 4.5.2 Deficiencies
 - 4.5.3 Diseases
 - 4.5.4 Developmental Delays and Disabilities
- 4.6 Health Conditions to be Screened
- 4.7 Implementation Mechanisms
 - 4.7.1 Newborn
 - 4.7.2 Children 6 Weeks to 6 Years
 - 4.7.3 Children 6 Years to 18 Years
- 4.8 District Early Intervention Centre
 - 4.8.1 Purposes of District Early Intervention Center
 - 4.8.2 District Early Intervention Center Team Composition
- 4.9 Training and Institutional Collaboration
- 4.10 Reporting and Monitoring
- 4.11 Let Us Sum Up
- 4.12 Model Answers
- 4.13 References

4.0 INTRODUCTION

In Unit 1 and 2 you have learnt about essential new born care in Unit 1 and common problem of new born and children in Unit 2. In order to improve the health of mother and children the Government of India launches various programmes and schemes from time to time to prevent and reduce maternal, newborn and childhood mortality and morbidity. Rashtriya Bal Swasthya Karyakaram (RBSK) is one of the such initiative. In this unit you will learn about the concept, aims and benefits of Rashtriya Bal Swasthya Karyakaram (RBSK), target group under child health screening and magnitude of the problems. You will also learn about the health conditions to be screened and Implementation Mechanisms under Rashtriya Bal Swasthya Karyakaram (RBSK). District early Intervention Centre (DEIC), Training and Institutional Collaboration and Reporting and Monitoring also covered in this unit.

4.1 OBJECTIVES

After completing this unit, you should be able to:

- explain the concept of Rashtriya Bal Swasthya Karyakaram ;
- list the benefits of the ‘Child Health Screening and Early Intervention Services’ ;
- enumerate the Target Group under Child Health Screening and Intervention Services ;
- discuss the magnitude of the Problem among children ;
- list the Health conditions to be screened under RBSK ;
- explain the Implementation Mechanisms of RBSK ;
- discuss the role of District Early Intervention Center in RBSK ; and
- explain the Reporting and Monitoring system under RBSK.

4.2 CONCEPT OF RASHTRIYA BAL SWASTHYIA KARYAKRAM

For ensuring healthy, dynamic future for all children and negating the impact of adversities on the development, Ministry of Health and Family Welfare, Government of India under NRHM launched Rashtriya Bal Swasthya Karyakaram (RBSK) in 2013. Under RBSK, health screening of children, a known intervention of the School Health Programme is expanded to cover all children from birth to 18 years of age. It is estimated that about 270 million children in the age group from birth to eighteen years including the newborn babies and those attending aanganwadi centres and government schools will be benefitted by this programme in a phased manner.

4.3 AIMS AND BENEFITS OF THE ‘CHILD HEALTH SCREENING AND EARLY INTERVENTION SERVICES’

It aims to improve the quality of life with special focus on improving cognition and survival outcome for ‘at risk’ children. It has a systemic approach of prevention, early identification and management of 30 health conditions distributed under 4Ds: Defects at birth, Diseases in children, Deficiency conditions and Developmental Delays including Disabilities prevalent in children from birth to 18 years.

Benefits of the ‘Child Health Screening and Early Intervention Services’ are as follows :

- Timely intervention halts the condition to deteriorate.
- It reduces the out-of-pocket (OOP) expenditure of the poor and the marginalised population in the country.
- It will also provide country-wide epidemiological Data on the 4 Ds (i.e., Defects at birth, Diseases, Deficiencies and Developmental Delays including Disabilities).
- Such a data is expected to hold relevance for future planning of area specific services.

4.4 TARGET GROUP UNDER CHILD HEALTH SCREENING AND INTERVENTION SERVICES

The target group include following :

- Children of 0-6 years of age in rural areas and urban slums
- Children enrolled in classes 1st to 12th in Government and Government aided Schools

Table 4.1: Age group estimated coverage of child

Categories	Age Group	Estimated Coverage
Babies born at public health facilities and home	Birth to 6 weeks	2 crores
Preschool children in rural areas and urban slums	6 weeks to 6 years	8 crores
Children enrolled in classes 1st to 12th in Government and Government aided schools	6 to 18 years	17 crores

Check Your Progress 1

- 1) What are the benefits of the 'Child Health Screening and Early Intervention Services'?

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4.5 MAGNITUDE OF THE PROBLEM

We shall focus on magnitude of problem under birth defects, deficiencies, diseases and developmental delays and disabilities as given below.

4.5.1 Birth Defects

Out of total births, globally about 6% (7.9 million) of children are born annually with a serious birth defect of genetic or partially genetic origin. Atleast 3.3 million children under-five years of age die from birth defects every year and another 3.2 million of those who survive may be disabled for life. More than 90 per cent of all infants with serious birth defects are born in low and middle income countries. In India out of total 26 million babies born annually, about 1.7 million babies are born with birth defects. The study conducted by National Neonatology Forum, reports that the congenital malformations are the second commonest cause (9.9%) of mortality among stillbirths and the fourth commonest cause (9.6%) of neonatal mortality and that accounted for 4 per cent of under-five mortality.

4.5.2 Deficiencies

In India, almost half of children under age 5 years (48%) are chronically malnourished. More than 47 million children under 5 years are stunted. About 43 per cent of children under age 5 years are underweight for their age. Over 6 per cent of children less than -5 years of age suffer from Severe Acute Malnutrition (SAM). Anaemia prevalence is as high as 70 per cent amongst under-5 children largely due to iron deficiency. During pre-school years, children continue to suffer from adverse effects of anaemia, malnutrition and developmental disabilities, which ultimately affects their performance in the school.

4.5.3 Diseases

Reports of different surveys indicate that in India the prevalence of dental caries among school children varies between 50–60 %. Rheumatic heart disease is reported at 1.5 per thousand among school children in the age group of 5–9 years and 0.13 to 1.1 per thousand among children aged 10–14 years. The prevalence of reactive air way disease including asthma among children is reported to be 4.75 %.

4.5.4 Developmental Delays and Disabilities

Globally, 200 million children do not reach their developmental potential in first 5 years because of poverty, poor health, nutrition, lack of early stimulation. Poverty and childhood stunting indicators are closely associated with poor cognitive and educational performance in children and failure to reach optimum developmental potential. Approx. 20% of babies discharged from health facilities are found to suffer from developmental delays or disabilities at a later age as reported by Special Newborn Care Units (SNCU) Technical Reports.

4.6 HEALTH CONDITIONS TO BE SCREENED

The following 30 selected health conditions are covered under RBSK for Screening, early detection and free management as given in Table 4.2 and Table 4.3.

Table 4.2: Birth defects and deficiencies

Birth Defects	Deficiencies
<ul style="list-style-type: none"> • Neural Tube Defects • Downs Syndrome • Cleft Lip and Palate • Talipes (CTEV) • Development dysplasia of Hip • Congenital Cataract • Congenital deafness • Congenital Heart disease • Retinopathy of Prematurity 	<ul style="list-style-type: none"> • Anaemia especially Severe Anaemia • Vitamin A Deficiency (Bitot spot) • Vitamin D Deficiency (Rickets) • Severe Acute Malnutrition • Goitre • Childhood Diseases

Table 4.3: Developmental delays and disability

Developmental Delays	Disabilities
<ul style="list-style-type: none"> • Skin conditions (Scabies, Fungal Infection and Eczema) • Otitis Media • Rheumatic Heart Disease • Reactive Airway Disease • Dental Caries • Convulsive Disorders 	<ul style="list-style-type: none"> • Vision Impairment • Hearing Impairment • Neuro-Motor Impairment • Motor Delay • Cognitive Delay • Language Delay • Behaviour Disorder (Autism) Learning Disorder • Attention Deficit Hyperactivity Disorder Congenital Hypothyroidism, Sickle Cell Anaemia, Beta Thalassemia (Optional)

Check Your Progress 2

Mention the Health conditions to be covered under RBSK .

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4.7 IMPLEMENTATION MECHANISMS

According to the GOI guidelines the following mechanism is used to reach all the target groups of children for health screening:

4.7.1 Newborn

This include following mechanism.

i) Facility based newborn screening at public health facilities, by existing health manpower.

This includes screening of birth defects in institutional deliveries at public health facilities, especially at the designated delivery points by ANMs, Medical officers / Gynaecologists. Existing health service providers at all designated delivery points will be trained to detect, register, report and refer birth defects to the District Early Intervention Centers (DEIC) in District Hospitals.

ii) Community based newborn screening (age 0–6 weeks) for birth defects during home visits.

Accredited Social Health Activists (ASHAs) during their home visits for newborn care are required to screen the babies born at home and the institutions till 6 weeks of age. They need to make six visits in case of institutional deliveries on day 3, 7,14,21,28 and 42. Seven visits are required in case of home deliveries

on day 1, 3, 7, 14, 21, 28 and 42. In addition, ASHA is also responsible for the following.

Responsibilities of ASHA

- Identification of birth defects among 0–6 weeks old babies
- Providing help to mothers for early stimulation of children of 0–6 weeks
- Explaining the screening programme to parents/caregivers of children upto 6 years and mobilise them to attend the screening camps by the dedicated mobile health team at local Anganwadi Centers.
- Helping parents in referral services, if required.

ASHAs are trained with simple tools for detecting gross birth defects. For performing the above tasks, she is equipped with a tool kit consisting of a pictorial reference book having self-explanatory pictures for identification of birth defects. Suitable performance based incentive is also to be provided to ASHAs.

4.7.2 Children 6 Weeks to 6 Years

Children in the age groups 6 weeks to 6 years of age will be examined in the Anganwadi Centers by the dedicated Mobile Health Teams.

4.7.3 Children 6 Years to 18 Years

Children between the age group of 6 to 18 years are screened at Government and Government aided school by dedicated Mobile Health Teams. At least three dedicated Mobile Health Teams in each Block are engaged to conduct screening of children. Villages within the jurisdiction of the Block are distributed amongst the mobile health teams. The number of teams may vary depending on the number of Anganwadi Centers, difficult to reach areas and children enrolled in the schools. The screening of children in the Anganwadi Centers is to be conducted at least twice a year and at least once a year for school children.

i) Composition of Mobile health Team

Now let us see what the composition of mobile health teams is. The mobile health team consists of the following members. (Table 4.4)

Table 4.4: Mobile Health Team

Member	Number
Medical officers (AYUSH) 1 male & 1 female atleast with a bachelor degree from an approved institution	2
ANM/Staff Nurse	1
Pharmacist with proficiency in computer for data management	1

In case a Pharmacist is not available, other paramedics such as lab Technician or Ophthalmic Assistant with proficiency in computer for data management may be considered.

For implementation of the health screening process, vehicles are hired for movement of the teams to Anganwadi Centers, Government and Government aided schools. A

tool kit with essential equipment for screening of children is also provided to the Mobile Health Team members.

ii) **Roles and Responsibilities of Mobile Health Team**

- Preparation of a calendar of visit schedule in consultation with other team members and by involving representatives from WCD and Education departments at the block level.
- Screening children at level of Anganwadi center and at Government & Government aided schools.
- Conducting anthropometry measurement of children, record findings in the screening tool cum referral card & enter observations in register for record and follow up.
- Maintaining inventory of drugs.
- Maintaining quality of referrals and emphasise importance of early screening and timely intervention to the parents/caregiver.
- Generating monthly reports and update Mobile Health Team registers.

iii) **Composition of Tool Kit for Mobile Health Team**

The tool kit for mobile health team includes age appropriate equipments for screening the developmental delays & for anthropometric measurements.

Equipments for Screening Including developmental Delays:

For 6 weeks to 6 years

- Bell, rattle-to attract infant's attention and check the response to sound
- Torch-: for examination of eyes and ears one inch cubes- to check transfer of objects and different type of grasps
- Small bottle with raisins- for checking pincer grasp
- Squeaky toys
- Coloured wool, crayons-for naming colours etc.

For 6 to 18 years

- Vision charts- measures the Visual Acuity in children and adolescent, reference charts.
- BP apparatus with age appropriate cuff size of atleast 2 sizes –paediatric (13–20 cm) and small adult (26–35 cm) for measuring blood pressure.
- Manual and a card specific to each age with age appropriate developmental check list to record milestones to identify developmental delays (6 weeks–9 years).

Equipments for Anthropometry: Age appropriate Equipments are used such as

- Weighing scale (mechanical newborn weighing scale , standing weighing scale)
- Height measuring – Stadiometers for measuring height in older children while standing / Infantometers for measuring length in young infants (lying down).
- Mid arm circumference tape/ bangle- for assessing nutritional status and identification of SAM.

- Non stretchable measuring tape for head circumference- to assess development of the brain.

Check Your Progress 3

List the roles and responsibility of mobile health team.

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4.8 DISTRICT EARLY INTERVENTION CENTER

The early intervention centers have been established at the District Hospital level across the country as District Early Intervention Centers (DEIC) for the following purposes.

4.8.1 Purposes of District Early Intervention Center

- Providing referral services to referred children
- Visiting all newborns delivered at the District Hospital for screening
- Ensuring that every child born sick or preterm or with low birth weight or any birth defect is followed up at the District Early Intervention Center
- Follow up and record maintenance of all the referrals for developmental delay.
- Screening the children for inborn errors of metabolism and other disorders at the District level
- Ensuring linkage with tertiary care facilities through agreed MOU.

District Early Intervention Center has a team consisting of Pediatrician, Medical officer, Staff Nurses, Paramedics for providing services including referral. This team promptly responds to and manages all issues related to developmental delays, hearing defects, vision impairment, neuro-motor disorders, speech and language delay, autism and cognitive impairment. Children and students presumptively diagnosed to have a disease/ deficiency /disability/ defect and who require confirmatory tests or further examinations are referred to the designated tertiary level public sector health facilities through the DEICs. The funds are provided under NHM for management at the tertiary level at the rates fixed by State Governments in consultation with Ministry of Health & Family Welfare.

4.8.2 District Early Intervention Center Team

The composition of district early intervention centre team are given in Table 4.5.

Table 4.5: Intervention Center Team Composition

Professionals	Number
Medical Professionals (Paediatrician -1, Medical Officer 1, Dental Doctor -1)	3
Physiotherapist	1
Audiologist & Speech Therapist	1
Psychologist	1
Optometrist	1
Early Interventionist cum Special Educator cum Social Worker	1
Lab Technician	2
Dental Technician	1
Manager	1
Data Entry Operator	1

4.9 TRAINING AND INSTITUTIONAL COLLABORATION

A ‘cascading training approach’ is adopted in order to ensure free flow of skills and knowledge at all levels and to maximise skill distribution. Standardised training modules have been developed to impart training. Based on the number of Block level teams required for the programme, an estimate of the training load is made for each year and appropriate budgets is included in the State’s Annual Programme Implementation Plan (PIP) under the ‘trainings head’. Cost of translation and printing of modules and formats and supportive supervision through the Regional Collaborating Center, is also included in the annual PIP.

The following collaborative centers in different regions of the country (Table 4.6) are identified to

- Coordinate, mentor, provide supportive supervision and train health workers of various cadres,
- Review data from blocks and health facilities to estimate the incidence/prevalence of various health conditions in the states, and
- Support them in establishing data base of children screened and diagnosed with specific disease, disorders, and disabilities that require long term follow up and treatment.

Table 4.6: Institutes Medical Colleges Hospitals and States/UTs

1) AIIMS	Delhi
2) Chandigarh, PGIMER	Jammu and Kashmir, Punjab, Haryana, Chandigarh, Himachal Pradesh, Rajasthan, Uttarakhand
3) SGPGI, Lucknow	Uttar Pradesh, Bihar
4) IPGMER, Kolkata	West Bengal and all North East States
5) KEM, Mumbai	Maharashtra, Goa
6) CDC, Trivandrum	Kerala
7) NIMH, Hyderabad	Andhra Pradesh
8) AYJNIHH, Mumbai	Maharashtra
9) AIISH, Mysore	Karnataka
10) MAMC, New Delhi	Delhi, Jharkhand
11) KSCH, New Delhi	Delhi, Odisha
13) CMC, Vellore	Tamil Nadu, A and Nicobar, Puducherry
14) ICH, Chennai	Tamil Nadu, Dadar and Nagar Haveli
15) Shankar Netralaya, Chennai	Tamil Nadu, Daman and Diu, Lakshadweep
16) LVPEI, Hyderabad	Andhra Pradesh
17) DIEC, Hoshangabad	Madhya Pradesh, Chhattisgarh

4.10 REPORTING AND MONITORING

Programme monitoring is done by the identified nodal office at the State, District and Block level. The Block is the focal point of activity for all Child Health Screening and Early Intervention Services activities. The block programme manager assists the CHC Medical Officer in programme supervision and monitoring. The 'Child Health Screening Card' is filled up by the Block Health Teams for every child screened during the visit. The health care providers at all delivery points screen the newborns and fill the same card, if referral is required.

The birth defects detected by ASHAs during home visits are referred to DH/DEIC for further management. All children detected are referred to the District Early Intervention Center for further management at the district or identified tertiary level health institution. A 'Health Camp Register' and a tour diary is maintained by the Mobile Block Health Teams.

The Early Intervention Center at the District level also conducts screenings, manage the cases and maintain a 'DEIC Register'. The Monthly Reporting Form is filled by Mobile Health Teams, staff posted at District Early Intervention Centers, preferably

by healthcare providers at the health facilities where deliveries take place. The same monthly format is used for data compilation by Block Health Manager, District Nodal officer and State Nodal Officer. The State Nodal Officer sends this report on a monthly basis to the Child Health Division of the Ministry of Health and Family Welfare.

4.11 LET US SUM UP

In this unit we discussed about the details of Rsshtriya Bal Swasthya Karyakaram. RBSK is a programme started under the aegis of NRHM in February 2013. It was initiated by MOHFW to reduce child mortality and to improve the overall quality of the life of children. It enables a systematic approach to Child health screening and early intervention. It covers children from birth to 18 years. This programme aims at early detection and management of “4Ds” that are Defects at Birth, Deficiencies, Diseases, Developmental delays including Disabilities. The services aim to cover children of 0–6 years of age in rural areas and urban slums in addition to children enrolled in classes 1st to 12th in Government and Government aided Schools. Child Health Screening and Early Intervention Services under RBSK envisages to cover 30 selected health conditions for Screening, early detection and free management through interventions for newborns, children from 6 weeks to 6 year and 6 yr to 18 yr at facilities like PHC/CHC/DH, by medical officers & nurses, home visits by ASHA, screening by mobile health teams at Angawadis using age appropriate tools and referral to the DEIC if required. The DEIC promptly responds to and manages all cases referred to it related to developmental delays, hearing defects, vision impairment, neuro-motor disorders, speech and language delay, autism and cognitive impairment through the team of health care professionals. Monthly reporting and monitoring is important for evaluation of progress of the programme.

Check Your Progress 4

List the Purposes of District Early Intervention Center DEIC.

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4.12 MODEL ANSWERS

Check Your Progress 1

The benefits of the ‘Child Health Screening and Early Intervention Services’ are given below.

- Timely intervention halts the condition to deteriorate.
- It reduces the out-of-pocket (OOP) expenditure of the poor and the marginalised population in the country.
- It will also provide country-wide epidemiological Data on the 4 Ds (i.e., Defects at birth, Diseases, Deficiencies and Developmental Delays including Disabilities). Such a data is expected to hold relevance for future planning of area specific services.

Check Your Progress 2

The following 30 selected health conditions are covered under RBSK for Screening, early detection and free management.

Birth Defects	Deficiencies
<ul style="list-style-type: none"> • Neural Tube Defects • Downs Syndrome • Cleft Lip and Palate • Talipes (CTEV) • Development dysplasia of Hip • Congenital Cataract • Congenital deafness • Congenital Heart disease • Retinopathy of Prematurity 	<ul style="list-style-type: none"> • Anaemia especially Severe Anaemia • Vitamin A Deficiency (Bitot spot) • Vitamin D Deficiency (Rickets) • Severe Acute Malnutrition • Goitre • Childhood Diseases

Developmental Delays	Disabilities
<ul style="list-style-type: none"> • Skin conditions (Scabies, Fungal Infection and Eczema) • Otitis Media • Rheumatic Heart Disease • Reactive Airway Disease • Dental Caries • Convulsive Disorders 	<ul style="list-style-type: none"> • Vision Impairment • Hearing Impairment • Neuro-Motor Impairment • Motor Delay • Cognitive Delay • Language Delay • Behaviour Disorder (Autism) Learning Disorder • Attention Deficit Hyperactivity Disorder Congenital Hypothyroidism, Sickle Cell Anaemia, Beta Thalassaemia (Optional)

Check Your Progress 3

List the Roles and Responsibilities of Mobile Health Team

- 1) Preparation of a calendar of visit schedule in consultation with other team members and by involving representatives from WCD and Education departments at the block level .
- 2) Screening children at level of Anganwadi center and at Government & Government aided schools.
- 3) Conducting anthropometry measurement of children, record findings in the screening tool cum referral card & enter observations in register for record and follow up.

- 4) Maintaining inventory of drugs.
- 5) Maintaining quality of referrals and emphasise importance of early screening and timely intervention to the parents/caregiver.
- 6) Generating monthly reports and update Mobile Health Team registers.

Check Your Progress 4

Purposes of District Early Intervention Center DEIC

- Providing referral services to referred children
- Visiting all newborns delivered at the District Hospital for screening
- Ensuring that every child born sick or preterm or with low birth weight or any birth defect is followed up at the District Early Intervention Center
- Follow up and record maintenance of all the referrals for developmental delay
- Screening the children for inborn errors of metabolism and other disorders at the District level
- Ensuring linkage with tertiary care facilities through agreed MOU.

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UNIT 5 UNIVERSAL IMMUNISATION PROGRAMME

Structure

- 5.0 Introduction
- 5.1 Objectives
- 5.2 Universal Immunisation Programme
 - 5.2.1 Objectives, Scope and Achievements
 - 5.2.2 Evolution of Immunisation Programme in India
 - 5.2.3 Vaccines under Universal Immunisation Programme
 - 5.2.4 Disease Protected by Vaccination under Universal Immunisation Programme
 - 5.2.5 National Immunisation Schedule
- 5.3 Open Vial Policy of Govt. of India
- 5.4 Mission Indradhanush
- 5.5 Vaccines under Universal Immunisation Programme and Frequently Asked Questions (FAQs)
 - 5.5.1 BCG Vaccine
 - 5.5.2 Diphtheria, Pertussis and Tetanus Vaccine
 - 5.5.3 Tetanus Toxoid Vaccine
 - 5.5.4 Measles Vaccine
 - 5.5.5 Poliomyelitis Vaccine
 - 5.5.6 Hepatitis B Vaccine
 - 5.5.7 Pentavalent Vaccine
 - 5.5.8 Japanese Encephalitis Vaccine
- 5.6 Cold Chain
- 5.7 Adverse Events Following Immunisation
- 5.8 Reasons for Low Immunisation Coverage
- 5.9 Calculating the Beneficiaries per Month for each Vaccine
- 5.10 Injection Safety and Waste Disposal
- 5.11 Let Us Sum Up
- 5.12 Model Answers
- 5.13 References

5.0 INTRODUCTION

Immunisation as you are aware is the process whereby a child is made immune or resistant to an infectious disease by the administration of a vaccine. Immunisation helps protect the child from life threatening disease. It also helps reduce the spread of disease to others. Full immunisation against preventable childhood diseases is the right of every child. With a view to provide this right to every child, the Government of India launched the Universal Immunisation Programme (UIP) in 1985, one of the largest health programs of its kind in the world. The National Vaccine Policy was revised in 2011 with a goal to guide decision making in order to develop a long term plan to strengthen the UIP.

To ensure informed decision making for any modification in UIP schedule or inclusion of new vaccines, there is a National Technical Advisory Group on Immunisation (NTAGI) which comprises of a number of technical experts, national programme leaders and managers, representatives from development partners and professional bodies.

In this unit we shall discuss and review Universal Immunisation Programme, Open Vial Policy, Mission Indradhanush, Cold chain, vaccines and frequently asked questions, adverse effects of immunisation and at the end we shall discuss the reasons of low coverage.

5.1 OBJECTIVES

After completing this unit, you should be able to:

- explain evolution of immunisation programme;
- describe National immunisation schedule;
- explain open vial policy and its rationale;
- discuss Mission Indradhanush and its relevance;
- enlist various vaccines under UIP;
- explain cold chain;
- discuss and recognise various adverse effects following immunisation; and
- explain the reasons of the low coverage.

5.2 UNIVERSAL IMMUNISATION PROGRAMME

We shall focus on Objectives, scope and achievements under Universal Immunisation Programme (UIP) as given below.

5.2.1 Objectives, Scope and Achievements

Let us begin with objectives of UIP.

Objectives

- To rapidly increase immunisation coverage.
- To improve the quality of services.
- To establish a reliable cold chain system to the health facility level.
- Monitoring of performance.
- To achieve self sufficiency in vaccine production.

Scope and eligibility

- India has one of the largest Universal Immunisation Programs (UIP) in the world in terms of the quantities of vaccines used, number of beneficiaries covered, geographical spread and human resources involved.
- Under UIP, all the vaccines are given free of cost to the beneficiaries as per the National Immunisation Schedule.

- All beneficiaries' namely pregnant women and children can get themselves vaccinated at the nearest Government/Private health facility or at an immunisation post (Anganwadi centres/ other identified sites) near to their village/urban locality on fixed days.
- The UIP covers all sections of the society across the country with the same high quality vaccines.

Achievements

The biggest achievement of the immunisation programme is the eradication of small pox.

One more significant milestone is that India is free of Poliomyelitis caused by Wild Polio Virus (WPV) for more than 33 months.

Besides, vaccination has contributed significantly to the decline in the cases and deaths due to the Vaccine Preventable Diseases (VPDs).

5.2.2 Evolution of the Immunisation Programme in India

Let us briefly discuss evolution of immunisation programme

1978: Expanded Programme of immunisation (EPI).

It had limited reach and it was mostly in urban areas.

1985: Universal Immunisation Programme (UIP).

For reduction of mortality and morbidity due to 6 VPD's.

Indigenous vaccine production capacity enhanced.

Cold chain established.

Phased implementation - all districts covered by 1989-90.

Monitoring and evaluation system implemented.

1986: Technology Mission on Immunisation Monitoring under PMO's 20 point programme.

Coverage in infants (0–12 months) monitored.

1992: Child Survival and Safe Motherhood (CSSM)

Included both UIP and Safe motherhood programme.

1997: Reproductive Child Health (RCH 1)

2005: National Rural Health Mission (NRHM)

2013: National Health Mission(NHM)

2014: Mission Indradhanush

5.2.3 Vaccines under Universal Immunisation Programme

Under Universal Immunisation Program, following vaccines are provided:

- BCG (Bacillus Calmette Guerin).

- DPT (Diphtheria, Pertussis and Tetanus Toxoid)
- OPV (Oral Polio Vaccine)
- Measles
- Hepatitis B
- TT (Tetanus Toxoid)
- JE vaccination in selected high disease burden Districts).
- Hib containing Pentavalent vaccine (DPT+HepB+Hib) (In selected States)

5.2.4 Diseases Protected by Vaccination under Universal Immunisation Programme

New born and child is protected from following disease under UIP

- Diphtheria
- Pertussis
- Tetanus
- Polio
- Tuberculosis
- Measles
- Hepatitis B
- Japanese Encephalitis (commonly known as brain fever)
- Meningitis and Pneumonia caused by Haemophilus Influenzae type b

5.2.5 National Immunisation Schedule

Under UIP, Government of India is providing vaccination as given in Table 5.1.

Table 5.1: National immunisation schedule

S. No	Vaccine & its Presentation	Protection	Route	Number of Doses	Vaccination Schedule
1	BCG (Bacillus Calmette Guerin) Lyophilized vaccine	Tuberculosis	Intra dermal	1	At birth (upto 1 year of age, if not given earlier)
2	OPV (Oral Polio Vaccine)-Liquid vaccine	Polio	Oral	5	Birth dose for institutional deliveries, Primary three doses at 6, 10 & 14 week and one booster dose at 16-24 month of age. Given orally
3	Hepatitis B – Liquid Vaccine	Hepatitis B	Intra muscular	4	Birth dose (within 24 hours) for institutional deliveries, Primary three doses at 6, 10 & 14 week.

4	DPT (Diphtheria, Pertussis and Tetanus Toxoid)– Liquid vaccine	Diphtheria, Pertussis and Tetanus	Intra muscular	5	Three doses at 6, 10 & 14 week and two booster dose at 16-24 month and 5-6 years of age
5	Measles - Lyophilized vaccine	Measles	Subcutaneous	2	9-12 months of age and 2nd dose at 16-24 months.
6	Hib (given as pentavalent containing Hib+ DPT+Hep B) (in 8 States) – Liquid vaccine	Hib Pneumonia and Hib meningitis	Intra muscular	3	6, 10 & 14 week of age
7	Japanese Elephantiasis (JE) vaccination (in selected high disease burden Districts) Lyophilized vaccine	Japanese Encephalitis (Brain fever)	Subcutaneous	2	9-12 months of age and 2nd dose at 16-24 months (6 month after vaccination drive)
8	TT (Tetanus Toxoid) – Liquid vaccine	Tetanus	Intra - muscular	2	10 years and 16 years of Age. For pregnant woman, two doses given (one dose if previously vaccinated within 3 Year)
9.	Injectible Polio Vaccine IPV	Polio	I/D	2	6 weeks & 14 weeks (Introduced in some States).
10.	Fractional Injectible Vaccines	Polio	-	2	6 weeks & 10 weeks

In addition following vaccination is provided,

Japanese Encephalitis (JE) in endemic districts across 20 States have been identified. JE vaccination campaign has been completed in 154 Districts covering nearly 108 million children;

Pentavalent vaccine has been introduced in 8 States/UTs i.e. Tamil Nadu, Kerala, Haryana, J&K, Gujarat, Karnataka, Goa and Puducherry. Pentavalent vaccine expansion is planned in 12 States/UTs i.e. Andhra Pradesh, Telangana, Assam, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Punjab, Rajasthan, West Bengal, Delhi, Uttarakhand by December 2014.

New vaccines to be introduced as per National Technical Advisory Group on Immunisation (NTAGI) recommendation

- 1) **Injectable Polio Vaccine (IPV):** National Technical Advisory Group on Immunisation (NTAGI) recommended Injectable Polio Vaccine introduction as an additional dose along with 3rd dose of DPT in the entire country in the first quarter of 2016. Fractional IPV is given at 6 weeks & 10 weeks.
- 2) **Rota virus vaccine:** NTAGI recommended the introduction of rotavirus vaccine in Universal Immunization Programme in a phased manner.
- 3) Rubella vaccine is to be introduced as MR vaccine replacing the measles containing vaccine first dose (MCV1) at 9 months and second dose (MCV2) at 16–24 months.

Check Your Progress 1

- i) a) In 1985 Programme was launched.
 b) Mission Indradhanush was launched in
- ii) Name Vaccines under Universal Immunisation Programme.

- iii) Name the disease protected under Universal Immunisation Programme.

5.3 OPEN VIAL POLICY OF GOVT. OF INDIA

This is applicable to all liquid formulations (OPV, TT, DT, DPT, Hep B and liquid formulation of Penta valent vaccine containing HiB). These vaccines can be used up to 4 weeks (even if they have been opened) if maintained properly and certain conditions are met. They have preservatives, so contamination is prevented.

According to this, opened multidose vials of above vaccines may be reused in subsequent immunisation sessions for up to four weeks in fixed health facilities if all the following conditions are met.

- The expiry date has not passed.
- The vial has been stored under appropriate cold chain conditions (i.e. refrigerated between 2°C and 8°C).
- The vaccine vial septum (where the needle is put in to withdraw doses) has not been submerged in water (to prevent this from happening, well-sealed ice packs should be used in vaccine carriers and water should not be allowed to accumulate where the vials are stored).
- An aseptic technique has been used to withdraw all doses.
- The vaccine vial monitor (VVM), if attached, has not reached the discard point.

It takes into consideration the **Potency** (heat sensitivity) of the vaccine and **safety** (from contamination).

Potency is determined by heat sensitivity and whether or not the vaccine has been reconstituted. The heat sensitivity of freeze dried (lyophilized) vaccines drops substantially when these vaccines are reconstituted. Liquid formulation vaccine viz., OPV, DPT, Hep B etc. remain potent as long as cold chain is maintained.

Safety depends on risk of contamination with a pathogen and bacterio-static or virucidal effect of preservatives in the vial. Risk of contamination is higher in multi-dose than single dose vaccine because vaccine is exposed to risk of contamination every time a dose is withdrawn from the vial.

Remember :

Open vial policy Does not apply to Measles, BCG, MMR, yellow fever, rabies vaccine and JE vaccine. Freeze dried (lyophilized) vaccines do not have preservatives. At the end of session or 6 hours whichever earlier, these vaccines should be discarded.

Check Your Progress 2

i) How is potency and safety of vaccine determined?

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5.4 MISSION INDRADHANUSH

Despite being operational for over 30 years, UIP has been able to fully immunise only 65% children in the first year of their life and the increase in coverage has stagnated in the past 5 years since year 2009 to an average of 1% every year.

To strengthen and invigorate the program and achieve full immunisation coverage for all children at a rapid pace, the Government of India launched Mission Indradhanush in **December 2014**. The ultimate goal of Mission Indradhanush is to ensure full immunisation with all available vaccines for children up to two years and pregnant women.

The Mission is strategically designed to achieving high quality routine immunisation coverage while contributing to strengthening health systems that can be sustained over years to come.

The Government has identified 201 high focus districts across 28 states in the country that have the highest number of partially immunised and unimmunised children. There were total four rounds in the first phase of the mission. The first round of the first phase was started from 7th April, 2015 and continued for more than a week. Next 3 rounds occurred in May, June and July.

In the second phase which started on 7th October, 2015, aim was to achieve full immunisation in 352 Districts which includes 279 mid priority Districts, 33 Districts from the North East states and 40 Districts from phase one where huge number of missed out children were detected. The second, third and fourth rounds of this phase started from 7th November, 7th December 2015 and 7th January 2016.

Mission Indradhanush will target these districts through intensive efforts and special immunisation drives to improve the routine immunisation coverage in the country. The Mission Indradhanush, depicting seven colours of the rainbow, targets to immunise all children against seven vaccine preventable diseases, as given below

- 1) Diphtheria
- 2) Pertussis (*Whooping Cough*)
- 3) Tetanus
- 4) Tuberculosis
- 5) Polio
- 6) Hepatitis B
- 7) Measles.

5.5 VACCINES UNDER UNIVERSAL IMMUNISATION PROGRAMME AND FREQUENTLY ASKED QUESTIONS

We will discuss about various vaccines and frequently asked questions (FAQs) in following sub sections.

5.5.1 BCG Vaccine

- It is a live attenuated, freeze dried bacterial vaccine.
- The dose is 0.05 ml till one month of age.
- After one month, till one year of age the dose is 0.1 ml.
- The diluent is normal saline. Vaccine comes in a ten dose vial, so one ml of diluent is added to the vial to make ten doses. After reconstitution, the vaccine can be used within 3–4 hours, after that left over vaccine has to be discarded.
- Vaccine is given intra-dermal, in left arm, just above the deltoid, with a 26 Gauge needle and 0.1 to 1ml syringe. Only the tip of the needle is inserted in the skin. A correct injection would raise a wheel of > 5mm at the site.
- After the vaccination, the mother/attendant should be told that injection site is not to be touched. There would be a papule at the injection site within 2–3 weeks, which will turn into a nodule by 5–6 weeks. Then it would break into an ulcer, which will heal spontaneously within 6–12 weeks, forming a scar.
- There is no need to revaccinate the child even if there is no scar formation.
- The BCG vaccine is contraindicated in immune-compromised persons (e.g. HIV infection etc.), those on **immune-suppressive** therapy (e.g. corticosteroids etc.), patients suffering from generalised **eczema**, **infective dermatosis** etc. and pregnancy.
- The efficacy of the vaccine is well documented in prevention of severe forms of tuberculosis infection, but there is little impact in reducing the overall risk of infection.

Adverse effects

The Adverse effects following infection (AEFI): include following.

- **Minor reactions:** local pain, swelling and tenderness etc.
- **Rare serious adverse reactions:** see Table No. 5.1

If there is a local abscess formation after vaccination, it should be aspirated if not healing spontaneously. If this does not heal then it should be incised and treated with local application of INH powder.

Do not clean the injection site with anti-septic, as it may affect the vaccine efficacy.

Frequently Asked Questions (FAQ)

Why give BCG vaccine only on the left upper arm?

BCG is given on the left upper arm to maintain uniformity and for helping surveyors in verifying the receipt of the vaccine.

Why do we give 0.05 ml dose of BCG to newborns (below 1 month of age)?

This is because the skin of newborns is thin and an intra-dermal injection of 0.1ml may break the skin or penetrate into the deeper tissue and cause local abscess and enlarged axillary lymph nodes. Dose of 0.05 ml is sufficient to elicit adequate protection.

Why is BCG given only up to one year of age?

Most children acquire natural clinical/ sub-clinical tuberculosis infection by the age of one year. This too protects against severe forms of childhood tuberculosis e.g. TB meningitis and miliary disease.

If no scar appears after administering BCG, should one re-vaccinate the child?

There is no need to revaccinate the child even if there is no scar.

5.5.2 Diphtheria, Pertussis and Tetanus (DPT) Vaccine

- **DPT vaccine is a combined vaccine** which protects against three diseases viz., diphtheria, pertussis and tetanus.
- It comes as a liquid preparation, ready for use, sterile, whitish turbid, uniform suspension of diphtheria toxoid, tetanus toxoid and inactivated whole cell Bordetella pertussis bacilli. These antigens are adsorbed onto Aluminium phosphate (to increase immunogenic effects) and suspended in isotonic solution of sodium chloride. Thiomersal is added as preservative.
- It usually comes in a 5 ml vial, with 10 doses of 0.5 ml each.
- The protective efficacy for diphtheria and tetanus is more than 95% and for pertussis is almost 80%.
- **DPT three doses (1, 2 & 3) are given at:** At 6 weeks, 10 weeks & 14 weeks; 0.5 ml I/M at Antero-lateral side of mid thigh.

- All the children immunised with DPT should be observed for minimum 30 min for any immediate adverse reaction.
- **DPT 1st booster:** is given at 16–24 months;
- **DPT 2nd Booster:** is given 5 years; 0.5 ml. I/M Upper Arm
- The opened vial can be used in subsequent session under open vial policy.
- Vaccine is **contraindicated** in: infants and children having **high fever** or **acute illness**, presence of **neurological disorder**, older children (over 6 years of age) and adult, child who suffered a severe reaction to this vaccine administered earlier. (see Table 5.2 for serious side effects).

The **Adverse effects** following infection (AEFI):

- **Local reactions:** pain, redness and swelling etc.
- **Systemic adverse effects:** fever, chills, general malaise etc.
- For severe adverse effects see Table 5.2. below

Table 5.2: Severe Adverse Effects

Severe Adverse Effects	Interval b/w Vaccination and Onset	Number of Events per Million Doses
<ul style="list-style-type: none"> • Persistent (>3 hours) inconsolable screaming 	0-24 hours	1,000-60,000
<ul style="list-style-type: none"> • Seizures 	0-3 days	570
<ul style="list-style-type: none"> • Hypotonic hypo responsive episode 	0-24 hours	570
<ul style="list-style-type: none"> • Anaphylaxis/shock 	0-1 hour	20
<ul style="list-style-type: none"> • Encephalopathy 	0-3 days	0-1

Frequently Asked Questions (FAQ)

Why DT is replaced by DPT vaccine for children above 2 years of age?

As Pertussis cases were reported in higher age group children and the risk of AEFIs was not found to be more after DPT vaccine as compared to DT vaccine.

If a child could not receive DPT1, 2, 3 and OPV 1, 2, 3 according to the schedule, till what age can the vaccine be given?

The DPT vaccine can be given until 7 years of age and OPV can be given till 5 years of age. If a child has received previous doses but not completed the schedule, do not restart the schedule and instead administer the remaining doses needed to complete the series.

Why should there be a minimum gap of 4 weeks between two doses of DPT?

This is because decreasing the interval between two doses may not obtain optimal antibody production for protection.

Why give the DPT vaccine in the antero-lateral mid thigh and not the gluteal region (buttocks)?

DPT is given in the antero-lateral mid-thigh and not the gluteal region to prevent damage to the sciatic nerve. Moreover, the vaccine deposited in the fat of gluteal region does not invoke the appropriate immune response.

What should one do if the child is found allergic to DPT or develops encephalopathy after DPT?

A child who is allergic to DPT or develops encephalopathy after DPT should be given the DTaP / DT vaccine instead of DPT for the remaining doses, as it is usually the P (whole cell Pertussis) component of the vaccine which causes the allergy/encephalopathy. It may be purchased with locally available resources.

5.5.3 Tetanus Toxoid (TT) Vaccine

It is a purified tetanus toxoid (adsorbed) monovalent vaccine. It contains 5 ml of vaccine, with 10 doses of 0.5 ml each. Efficacy is almost 100%.

Dosage

- **Children:** 10 years & 16 years 0.5 ml I/M Upper Arm (under the NIS)
- Pregnant females: first pregnancy: two doses of TT are given, one month apart (first dose early in pregnancy, second dose 4 weeks apart).
- In subsequent pregnancy within three years of first pregnancy, give just one booster of TT.
- If the subsequent pregnancy occurs after three years, then two doses of TT vaccine are given.
- There are practically no contraindications, but precaution should be observed in those persons giving a history of allergy.

Primary immunisation with TT vaccine

In case a person is unimmunised and comes for vaccination after age of 6 years; 2 doses of TT, 0.5 ml, deep I/M, one month apart are given. Booster is given after one year.

- Than booster of TT is given after the last dose every 10 years.

The **Adverse effects** following infection (AEFI):

- **Local reactions:** pain, redness and swelling etc.
- **Systemic adverse effects:** fever, chills, general malaise etc.
- For **severe adverse effects** see Table 5.3

Frequently Asked Questions (FAQ)

If a girl received all doses of DPT and TT as per the NIS till 16 years of age and she gets pregnant at 20 years, should she get one dose of TT during pregnancy?

Give 2 doses of TT during the pregnancy as per the schedule.

Is TT at 10 years and 16 years is meant only for girls?

No, it is to be given to both boys and girls.

Can TT be given in the first trimester of pregnancy?

Yes, it should be given as soon as pregnancy is diagnosed.

5.5.4 Measles Vaccine

- It is a live attenuated, freeze dried vaccine.
- The vaccine comes in a 5 dose vial, each dose is 0.5 ml. Diluent is distilled water. So 2.5 ml of the diluents is added to the vaccine vial to make 5 doses. Do not use any other liquid as diluents. First dose is given at 9 months of age, given sub-cutaneous at the right arm.
- Second dose is given at 16–24 months.
- The vaccine contains no preservative that is why it is very prone for external contamination after reconstitution. So the vaccine should be utilised within 3–4 hours of reconstitution.
- **Contraindications include:** high grade fever or severe illness, pregnancy, immune-compromised persons (e.g. HIV infection etc.), those on immune-suppressive therapy (e.g. cortico-steroids etc.), history of allergy to vaccine components etc.

The **Adverse effects** following infection (AEFI):

- **Local reactions:** Pain, redness and swelling etc. are not that common.
- **Systemic adverse effects:** Toxic shock syndrome is a serious adverse effect which can occur if the vaccine gets contaminated. The child presents with high fever, diarrhoea and vomiting. The case fatality rate is high and death may occur within 2–3 days. Clustering of cases may be seen if the same vaccine is given to other children.
- For other severe adverse effects see table.

Frequently Asked Questions (FAQ)

Why give the Measles vaccine only on the right upper arm?

The Measles vaccine is given on the right upper arm to maintain uniformity and to help surveyors in verifying the receipt of the vaccine.

If a child has received the Measles vaccine before 9 months of age, is it necessary to repeat the vaccine later?

Yes, the Measles vaccine needs to be administered, according to the National Immunisation Schedule i.e. after the completion of 9 months until 12 months of age and at 16-24 months. If not administered in the ideal age for Measles vaccine, it can be administered until 5 years of age.

What is a measles catch-up campaign?

A measles catch-up campaign is a special campaign to vaccinate all children in a wide age group in a state or a district with one dose of measles vaccine. The catch-up campaign dose is given to all children, both immunised and

unimmunised, who belong to the target age group. The goal of a catch-up campaign is to quickly make the population immune from measles and reduce deaths from measles. A catch-up campaign must immunise nearly 100% of target age group children.

Why 2nd dose of Measles vaccine is introduced in the National Immunisation Programme?

Measles is highly infectious disease causing illness and death due to complications as diarrhoea, pneumonia or brain infection. One dose of measles vaccine at 9 months of age protects 85% of infants. With 2nd dose we aim to protect all the children who remain unprotected after first dose.

If a child comes late for the first dose, then can it get the second dose?

All efforts should be made to immunise the children at the right age i.e. first dose at completed 9 months to 12 months and second dose at 16–24 months. However if a child comes late then give two doses of Measles vaccine at one month interval until 5 years of age.

If a child received one dose of Measles vaccine during an SIA campaign, should it receive the routine dose of Measles vaccine?

Yes, the child should receive routine doses of Measles vaccine according to the Immunisation schedule irrespective of the measles SIA dose.

Why the amount of diluent provided by manufacturers is more than the amount of vaccine doses to be administered?

The manufacturer provides more quantity of diluent than required, e.g. for 5 dose measles vial the diluent is more than 2.5 ml and for 10 dose BCG vial, it is more than 1ml. The reason for this is to take care of the unavoidable vaccine wastage which occurs due to:

- Some dead space in the hub and needle
- Sticking of the vaccine to the inner wall of the vaccine vial and
- Inefficiency of the HWs to draw entire amount of vaccine from the vial. Therefore, it is important to draw the entire amount of diluent from the ampoule and use it to reconstitute the vaccine.

5.5.5 Poliomyelitis Vaccine

Bivalent oral polio vaccine. This live viral vaccine contains types 1 & 3 polio virus (Sanin strains). Earlier trivalent OPV used to be given, but since 25th April 2016, only bivalent OPV is to be used.

- Vaccine comes in a vial of 20 doses (2 ml). Due to variation in pH, the colour of OPV may vary from light yellow to pink.
- Two drops are given orally.
- According to vaccination schedule; Birth dose for institutional deliveries,
- Primary three doses at 6, 10 & 14 week and one booster dose at 16–24 month of age is given orally. Care should be taken not to contaminate multi-dose dropper with saliva.

- Vaccine comes under open vial policy, so if some doses are left after the immunisation session, the remaining doses can be given in the subsequent session if the required conditions are fulfilled.
- Apart from UIP, bOPV is also given on Supplementary Immunisation Activities (SIAs) in children 0–5 years of age to interrupt transmission of polio virus in endemic areas. The routine Immunisation programme should continue unaffected from these SIAs.

The **Adverse effects** following infection (AEFI):

There are no side effects in majority. Very rarely, the vaccine may suffer vaccine associated paralysis.

Persons in close contact with the recently vaccinated child may very rarely be at risk of vaccine associated paralysis.

The vaccine is contraindicated in those with primary immune deficiency disease or suppressed immune responses from medication, leukemia, lymphoma or generalised malignancy.

Inactivated (Salk) polio vaccine:

- It is a killed viral vaccine, contains antigens against all the three strains. It induces humoral immunity (there is no local immunity like with OPV).
- Under the NIS, only one dose is at 14 weeks along with third dose of OPV. This single dose is for risk mitigation, as we have started giving only bOPV instead of trivalent OPV.
- Otherwise for immunisation with IPV, total 4 doses are required; 3 doses at 4 to 8 weeks interval, followed by booster after 6–12 months after last dose.
- This vaccine can be given in persons with immunodeficiency disorders, over 50 years of age and in pregnancy. There is no risk of Vaccine derived paralytic polio.

Frequently Asked Questions (FAQ)

Till what age can a child be given OPV?

OPV can be given to children till 5 years of age.

Can OPV and vitamin A be given together with DPT-Booster dose?

Yes.

Can an infant be breastfed immediately after OPV? Yes.

Polio Eradication program in India

There is a remarkable achievement, particularly considering the fact that in 2009 India accounted for nearly half of the total number of polio cases globally and there were an estimated 2 lakh cases of polio every year in the country in the year 1978.

On 25 February 2012, World Health Organization (WHO) removed India from the global list of polio endemic countries. As on date no wild polio virus case has been reported in the country after January 2011 This success can be attributed to the concerted efforts made toward improving both quality and coverage of pulse

polio rounds as under: Political commitment, Assured financial resources, Continuous Innovation, Quality of pulse polio rounds, innovative communication strategy, Effective partnership between Government of India, WHO, UNICEF and States Governments, special focus on Mobile and migrant populations, Rapid Response Teams (RRT) and International Border vaccination.

5.5.6 Hepatitis B Vaccine

- Is a recombinant DNA vaccine, available as monovalent vaccine or as part of penta-valent vaccine.
- Adjuvant is aluminium hydroxide.
- Pediatric dose (upto 10 years of age) is 0.5 ml. Under UIP, for institutional deliveries one dose is given to the neonate at birth, then three doses are given at 6,10 and 14 weeks along with DPT.
- Route of administration is intra-muscular in the antero-lateral aspect of mid/upper thigh.
- The contraindication is history of allergy to the vaccine components; otherwise the vaccine is well tolerated.
- The vaccine comes in a liquid form in a vial containing 10 doses.

Frequently Asked Questions (FAQ)

Can Hepatitis B vaccine be mixed in the same syringe with DPT and given as one injection?

No, DPT and Hepatitis B vaccine (if supplied separately) cannot be mixed or administered through the same syringe.

Until what age can Hepatitis B vaccine be given?

According to the National Immunisation Schedule, Hepatitis B vaccine should be given with the first, second and third doses of DPT till one year of age.

Why give the birth dose of Hepatitis B vaccine only within 24 hours of birth?

The birth dose of Hepatitis B vaccine is effective in preventing peri-natal transmission of Hepatitis B if given within the first 24 hours.

5.5.7 Pentavalent Vaccine

- As the name suggests, the vaccine contains antigens for protection against five diseases i.e. diphtheria, pertussis and tetanus, hepatitis B and Haemophilus Influenza B (HiB) associated pneumonia and meningitis.
- It is given in selected states only. The dose is 0.5 ml, intra-muscular at antero-lateral aspect of mid/upper thigh at 6, 10 and 14 weeks of age. No booster dose is given under UIP.
- It comes as a liquid preparation containing 10 doses.
- Severe reaction to previous dose is a contraindication. Children with moderate or severe acute illness should not be administered pentavalent vaccine.

- During the initial months of pentavalent vaccine introduction, only those children who come for the first dose of DPT are administered pentavalent vaccine.
- Infants who have already received either their first or second doses of DPT & Hep B (i.e., DPT1/HepB 1 or DPT2/HepB 2) will complete the schedule with DPT & Hep B only. This is called '**Phasing in**' of pentavalent vaccine in UIP.
- Children will continue to receive DPT boosters at the age of 16–24 months and 5–6 years of age using DPT vaccine. Similarly, birth dose of HepB using single antigen HepB vaccine will continue and must be provided within 24 hours of birth. Vaccine has not been associated with any serious.
- **Adverse effects.** However, redness, swelling and pain at the site of injection may occur in as many as 25% of those who have been vaccinated. Such reactions usually start within 1 day after immunisation and last for 1–3 days.
- The rate of adverse events following immunisation (AEFI) is not any higher than when DPT vaccine.
- The storing temperature for vaccine is as for all the other vaccines i.e. + 2°C to + 8°C. The vaccine comes under open vial policy.

5.5.8 Japanese Encephalitis Vaccine

- Multi-dose vials with 5 doses, supplied with the diluent vial of 2.5 ml which contains Phosphate Buffer solution.
- The vaccine should be reconstituted with the supplied diluent only. After reconstitution it turns into a transparent orange red or light pink liquid. After reconstituting the time of reconstitution should be noted on the vial.
- The reconstituted vaccine should be used within two hours of reconstitution, beyond which the vaccine should be discarded.
- It is a live attenuated SA-14-14-2 vaccine, to prevent Japanese encephalitis in selected states.
- Under UIP, 2 doses are given subcutaneous at upper arm. First dose at 9 months, second dose at 16-24 months of age. The dose is 0.5 ml, given subcutaneously in the left upper arm.
- **Adverse reactions:** Occasional mild local or systemic reactions. Rare, but serious, neurological adverse events attributed to IMB vaccine have been reported, but no causal relationship has been confirmed.

As occasional allergic reactions to components of the vaccine may occur up to 2 weeks after administration, it is advisable to ensure that the complete course of vaccination is administered well in advance of departure.

Contraindications and precautions:

Contraindications:

High Fever (Vaccination to be done only after advise from a Medical officer), Severe malnourishment, Acute infectious disease, Ear infection, Tuberculosis, Heart, Liver and Kidney problems, Pregnancy, Allergy, Convulsions, Person

treated with any immunosuppressive therapy , Person with a proven or suspected hypersensitivity to Kanamycin or Gentamicin. A hypersensitivity reaction to a previous dose is a contraindication. In principle, the live attenuated vaccine should be avoided in pregnancy unless there is a high risk of exposure to the infection.

Frequently Asked Questions (FAQ)

If a child 16-24 months of age has been immunised with JE vaccine during an SIA, can it receive the JE vaccine again, as part of RI?

No, currently this is a single dose vaccine and should not be repeated.

If a child above 2 years (24 months) of age has not received the JE vaccine through either RI oran SIA, should s/he be given the JE vaccine?

Yes, the child is eligible to receive a dose of the JE vaccine, through RI, till the age of 15 years.

Check Your Progress 3

i) a) BCG is a

b) Dose of BCG till one month is ml.

c) is a combined vaccine.

d) is an attenuated freeze vaccine.

e) Killed viral vaccine is

f) recombinant DNA vaccine is

5.6 COLD CHAIN

It is a system of storing and transporting vaccines at recommended temperature from the manufacture to the point of use. If temperature is not maintained then the potency of the vaccine may be lost.

The key elements of cold chain are:

- **Personnel:** to manage vaccine storage and distribution.
- **Equipment:** to store and transport vaccines and to monitor temperature Fig. 1.5 a-e.
- **Procedures:** to ensure that vaccines are stored and transported at appropriate temperatures.

Walk in Freezer: These are big insulated rooms, (one can actually walk in) to maintain temperature 0 to – 20°C. These are used for storing OPV and frozen ice packs for long term Fig 5.1a.

Deep freezers: For maintaining temperature between –15°C to –25°C; used for making ice packs Fig. 5.1b.

Ice lined refrigerator: They maintain a temperature of + 2°C to +8°C. used to store vaccines at PHC level. Because of ice lining in these, these ILRs can maintain temperature even if there are electricity failures. Fig 5.1c.

Cold boxes: They are insulated boxes of 5–20 liter capacity. They maintain a temperature of + 2° C to +8° C. used for transportation and emergency storage of vaccines and ice packs. Fig 5.1d

Vaccine carriers: With 4 frozen ice packs, it maintain a temperature of + 2°C to +8°C for 12 hours, if not opened frequently. Fig 5.1e.

Ice packs: Plastic containers filled with water. These are frozen in the deep freezers and when placed in non-electrical equipments such as vaccine carriers and cold boxes, they maintain temperature and increase hold over time. Fig. 5.1f.

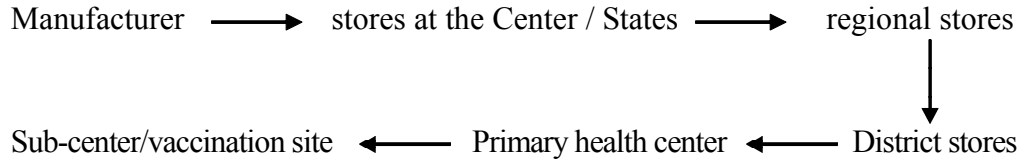
Points to remember

- The optimum temperature to store all the vaccines is + 2°C to + 8°C.
- Store the diluents also at the same temperature.



Fig. 5.1: (a-f) Cold chain

The risk of cold chain failure increases as vaccines move along the cold chain from manufacturer to the vaccination site.



India has built a vast cold chain infrastructure to ensure that only potent and effective vaccines reach millions of beneficiaries across the country. The vaccines are supplied by manufacturers directly to four Government Medical Store Depots (GMSD) at Karnal, Mumbai, Chennai and Kolkata, and State and regional vaccine stores. The GMSDs supply to the States and regional vaccine stores; State and regional vaccine stores supply vaccines to Divisional vaccine stores and district. The vaccines are further supplied to last cold chain points which are usually situated in Primary Health Centers (PHCs) and Community Health Centers.

Transportation of vaccines from States/Regional stores to divisions and districts is done in cold boxes using insulated vaccine vans. Vaccines carriers with icepacks are used to transport vaccines from PHCs to the outreach sessions in the vaccine vans.

The performance and efficiency of the cold chain system at different levels is monitored continuously, through supervisory visits, review meetings. The Government of India procures and supplies all UIP vaccines along with diluents to all States. In addition to vaccines, syringes of different capacities, are also procured centrally and supplied to States. The process involves vaccines and logistics forecasting, scheduling, ensuring supplies as per need, and so on. It is important to ensure that the cold chain system is not over burdened and there are no under supplies. Supplies are made to States on a quarterly basis on receipt of indent. State Vaccine Stores can store vaccines for three months and so can district vaccine stores. PHCs/CHCs send monthly indents to district stores. PHCs can store vaccines for a maximum of one month only.

Thermo-sensitivity of vaccines

Vaccines sensitive to heat in the order of most sensitive to least sensitive areas follows Fig. 5.2:

- BCG (after reconstitution)
- OPV
- Measles
- DPT
- BCG (before reconstitution)
- DT, TT, Hep B, JE

Vaccines sensitive to freezing in the order of most sensitive to least sensitive are:

- Hep B
- DPT
- DT
- TT



Fig. 5.2: Vaccines

The appearance of the vaccine may remain unchanged even after damage, so one should be very careful while maintaining the cold chain.

Vaccine Vial Monitor (VVM): is a heat sensitive material placed on a vaccine vial to register cumulative heat exposure over time. Till the time Inner Square is lighter than outer circle, the vaccine can be used if within expiry date see diagram below Fig. No.5.3.

How to read a VVM

	Inner square is lighter than outer circle. If the expiry date has been passed USE the vaccine
	At a later time, inner square is lighter than circle. If the expiry date has not been passed USE the vaccine
	Discard point: Inner square match colour of outer circle. Do Not use the vaccine inform your supervisor
	Beyond the Discard point: Inner square darker than outer circle Do Not use the vaccine inform your supervisor

Fig. 5.3: Vaccine Vial Monitor

Thermometers: Either dial or stem (alcohol) are used to monitor temperature in cold chain equipments. Recordings of temperature are taken every morning and evening and records are maintained and corrective action is taken if the recorded temperature is outside the recommended range.

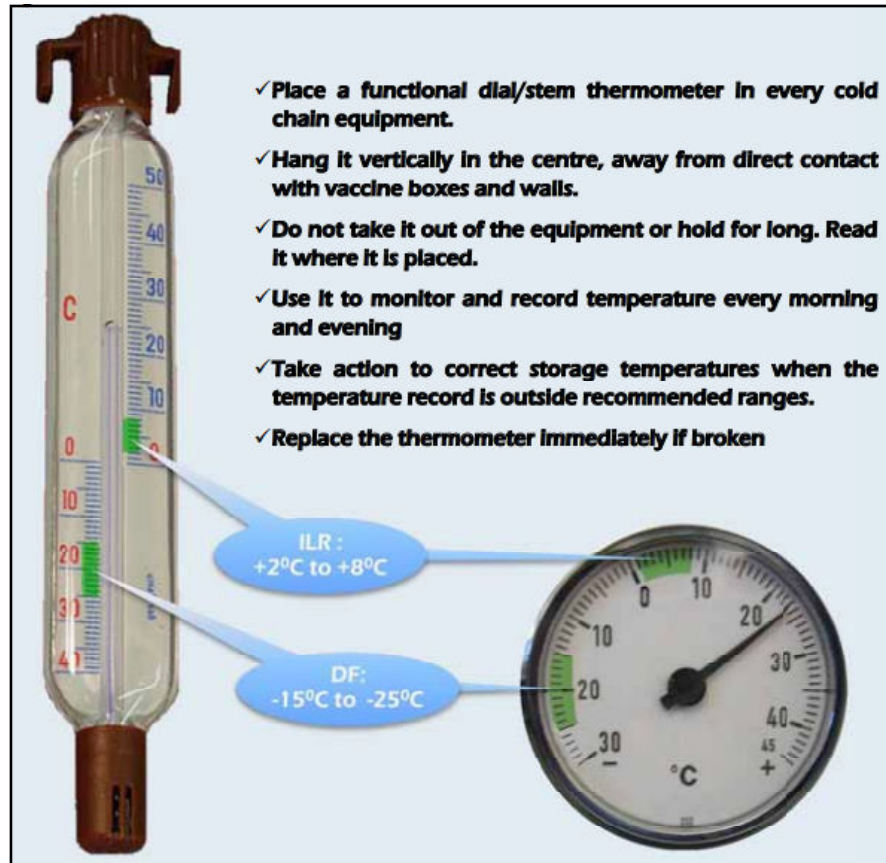


Fig. 5.4: Temperature Monitoring

Check Your Progress 4

1) List key element of cold chain.

.....
.....

2) Explain vaccine vial monitor.

.....
.....

5.7 ADVERSE EVENTS FOLLOWING IMMUNISATION

- **Vaccine reaction:** An event caused or precipitated by the active component or one of the other components of the vaccine. This is due to the inherent properties of the vaccine e.g. Anaphylaxis due to measles vaccine
- **Programme Error:** An event caused by an error in vaccine preparation, handling or administration e. g. Bacterial Abscess due to un-sterile injection
- **Coincidental:** An event that occurs after immunisation but is not caused by the vaccine. This is due to a chance association e.g. Pneumonia 4 days after oral polio vaccine administration
- **Injection Reaction:** Event from anxiety about, or pain from the injection

itself rather than the vaccine e. g. Fainting spell in a teenager after immunization

- **Unknown:** Event's cause cannot be determined
- **Common minor vaccine reactions:**

Local reaction (pain, swelling and/or redness), fever and systemic symptoms.

Fever should be anticipated in nearly half of those vaccinated in the case of DPT or TT. **Summary of Rare serious Adverse Effects, onset interval and rate is given in Table 5.2 below**

Table 5.2: Summary of Rare serious Adverse Effects, of vaccines

Vaccine	Reaction	Interval between Vaccination and Onset	Number of Events per Million Doses
BCG	Suppurative adenitis	2-6 months	10-100
	BCG Osteitis	Up to several years	–
	Disseminated BCG infection	1-12 months	–
Hib	None Known	–	–
Hep B	Anaphylaxis	0-1hour	1-2
Measles/ MMR ^a	Febrile seizures	5-12days	330
	Thrombocytopenia (low platelets)	60 days	30
	Anaphylaxis	0-1	1
OPV	Vaccine-Associated Paralytic Poliomyelitis	4-30 days	Up to 0.4 ^b
Tetanus	Brachial Neuritis	2-28 days	5-10
	Anaphylaxis	0-1hour	1
	Sterile abscess	1-6 weeks	6-10
DPT	Persist (>3 hours) inconsolable screaming	0-48 hours	1,000-60,000
	Seizures	0-3 days	600 ^c
	Hypotonic Hypo Responsive Episode (HHE)	0-24 HOURS	30-990
	Anaphylaxis/ Shock	0-1hour	1-6
Japanese Encephalitis	Serious allergic reaction	0-2 weeks	10-1000
	Neurological event	0-2 weeks	1-2.3

- a Reaction (except anaphylaxis) do not occur if already immune (-90% of those receiving a second dose): Children over six years are unlikely to have febrile seizures.
- b VAPP risk is higher for first dose (12 per 1.4 to 3.4 million doses) compared to 1 per 5.9 millions for subsequent doses and 1 per 6.7 million doses for subsequent contacts
- c Seizures are mostly febrile in origin, and the rate depends on history, family and age, with a much lower risk in infants under the age of 4 months.

Check Your Progress 5

- 1) Explain vaccine reaction.
.....
.....
- 2) List infection reactions.
.....
.....
- 3) Write common minor vaccine reactions.
.....
.....

5.8 REASONS FOR LOW IMMUNISATION COVERAGE

Following are the reasons for low immunisation coverage:

- **Failure to provide immunisation** at planned outreach, sub-center or PHC sites.
- **Dropouts:** Children who receive one or more vaccination, but do not return for subsequent doses.
- **Unreached populations**
- Children whose parents do not know about immunisation or face socio-economic barriers to utilize services.
- **Lack of geographic access:** Children who live too far away from a health center or outreach site to realistically complete a full immunisation schedule.
- **Resistant populations:** Children whose parents do not believe in immunisation services, even though a health center is within reach.
- **Missed Opportunities:** Children who visit the health center for some other reason, but are not screened for immunisation by health workers.

5.9 CALCULATING THE BENEFICIARIES PER MONTH FOR EACH VACCINE

Let us explain this with the help of an example.

For example, if the monthly target for a village is 1 infant and 1 pregnant woman, then the beneficiaries for each vaccine (and injection load) for such a village can be calculated as follows:

- TT = Monthly target of pregnant women x 2 doses (2 injections)
- BCG = Monthly target of infants x 1 dose (1 injection)
- DPT = Monthly target of infants x 5 doses# (5 injections)
- bOPV = Monthly target of infants x 4 doses##
- HepB = Monthly target of infants x 3 doses (3 injections)
- Measles = Monthly target of infants x 2 doses (2 injections)
- JE = Monthly target of infants x 1 dose (1 injection)

Therefore, a total of about 14 injections are required for a target of each infant per month.

Calculate the requirement of vaccine vials per month

- $TT/BCG/DPT/HepB = \frac{\text{Beneficiaries per month} \times 1.33^*}{10}$
- $OPV = \frac{\text{Beneficiaries per month} \times 1.33^*}{20}$
- $\text{Measles/JE} = \frac{\text{Beneficiaries per month} \times 1.33^*}{5}$

Based on the specific needs, add the calculations of beneficiaries for the following doses:

OPV-0 = Monthly target of infants x 1 dose

HepB-Birth = Monthly target of infants x 1 dose.

TT-10 = expected 10 yr old population x 1 dose

TT-16 = expected 16 yr old population x 1 dose

Including 2 booster doses

Including 1 booster dose

* Vaccines = 25% wastage rate or 1.33 WMF (Wastage Multiplication Factor)

0.1 ml auto-disable syringes (ADS) = Beneficiaries for BCG x 1.11*

• 0.5 ml ADS = Beneficiaries for (TT+ DPT+ HepB+ Measles+ JE) x 1.11*

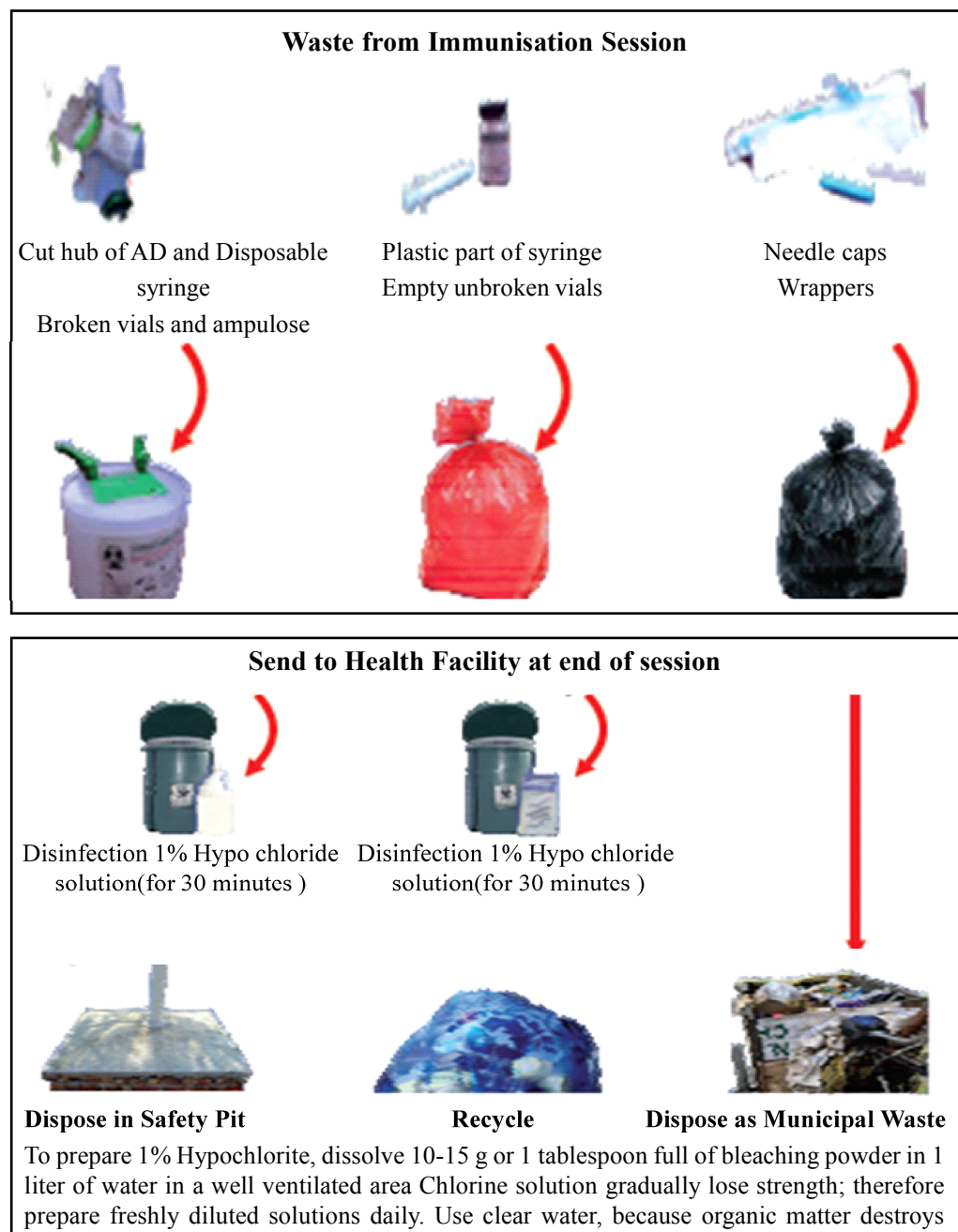
• Reconstitution Syringes = (BCG + Measles+JE vials) x 1.11*

* Syringes = 10% wastage rate or 1.11 WMF (Wastage Multiplication Factor)

5.10 INJECTION SAFETY AND WASTE DISPOSAL

A large number of injection procedures are undertaken in lakhs of vaccination sessions across the country every year. Unsafe injection practices can harm the recipient of the injection, the health worker and the community resulting in potentially life threatening infections such as HIV/AIDS, Hepatitis B and C, etc. To ensure safe injection practices, continuous supply of injection safety equipments (AD syringes, reconstitution syringes, hub cutters and waste disposal bags) is ensured.

Trainings are conducted and supported by job-aids, on job training (supportive supervision). Disposal of immunisation waste is strictly as per Central Pollution Control Board (CPCB) guidelines for biomedical waste disposal. The principles followed are segregation of waste at source (at the session site), transportation to the PHC or CHC, treatment of sharps and potentially bio-hazardous plastic waste, disposal of sharps in sharp pits and treated plastic waste through proper recycling Fig. 5.5. The states are provided funds to procure hub cutters, black and red plastic bags and construction of sharp pits in PHCs and CHCs.



chlorine. Since this bleach solution is also caustic avoid direct contact with skin and eyes. Use plastic containers as metal containers are corroded rapidly and also affect the bleach. 30 Lts (24x 28 inches) Red/Black Plastic Bags (Biodegradable) HDPE/LLDPE/PP made with non-chlorinated polymer material with minimum thickness of 55 micron, with easy to hold collar tie/knot arrangement and preprinted as per requirements of Bio Medical Waste Management Rules.

Fig. 5.5: Waste from Immunisation Session

5.11 LET US SUM UP

In this unit you have learnt about the details of universal immunisation programme, Open Vial Policy, Mission Indradhanush, Cold chain vaccine under Universal Immunisation Programme, adverse effects of immunisation and reasons of low coverage. While conducting immunisation session in the community you will be asked many questions and queries related to immunisation, its side effects, dose normal reaction, action, duration etc. The focus on vaccines under UIP with frequent asked questions will acquaint you with knowledge to answer the queries of community and be vigilant while administration of various vaccines.

5.12 MODEL ANSWERS

Check Your Progress 1

- 1) a) Universal Immunisation Programme
b) 2014
- 2) **Under UIP, following vaccines are provided:**
 - 1) BCG (Bacillus Calmette Guerin)
 - 2) DPT (Diphtheria, Pertussis and Tetanus Toxoid)
 - 3) OPV (Oral Polio Vaccine)
 - 4) Measles
 - 5) Hepatitis B
 - 6) TT (Tetanus Toxoid)
 - 7) JE vaccination in selected high disease burden districts).
 - 8) Hib containing Pentavalent vaccine (DPT+HepB+Hib) (In selected States)
- 3) **Diseases Protected by Vaccination under UIP**
 - 1) Diphtheria
 - 2) Pertussis
 - 3) Tetanus
 - 4) Polio
 - 5) Tuberculosis
 - 6) Measles
 - 7) Hepatitis B.

- 8) Japanese Encephalitis (commonly known as brain fever).
- 9) Meningitis and Pneumonia caused by Haemophilus Influenzae type b

Check Your Progress 2

- 1) **Potency** is determined by heat sensitivity and whether or not the vaccine has been reconstituted.

Safety depends on risk of contamination with a pathogen and bacteriostatic or virucidal effect of preservatives in the vial. Risk of contamination is higher in multi-dose than single dose vaccine because vaccine is exposed to risk of contamination every time a dose is withdrawn from the vial.

Check Your Progress 3

- 1) a) Attenuated Freezed dried bacterial vaccine.
- b) 0.5 ml
- c) DPT
- d) Measles
- e) Salk Vaccine
- f) Hepatitis B.

Check Your Progress 4

- 1) Key elements of cold chain are:
 - **Personnel:** to manage vaccine storage and distribution.
 - **Equipment:** to store and transport vaccines and to monitor temperature
 - **Procedures:** to ensure that vaccines are stored and transported at appropriate temperatures.
- 2) Vaccine Vial Monitor (VVM)



Inner square is lighter than outer circle. **If the expiry date has been passed USE the vaccine**

At a later time, inner square is lighter than circle. **If the expiry date has not been passed USE the vaccine**

Discard point:

Inner square match colour of outer circle. **Do Not use the vaccine inform your supervisor**

Beyond the Discard point:

Inner square darker than outer circle **Do Not use the vaccine inform your supervisor**

Check Your Progress 5

- 1) **Vaccine reaction:** An event caused or precipitated by the active component or one of the other components of the vaccine. This is due to the inherent properties of the vaccine e.g. Anaphylaxis due to measles vaccine
- 2) **Injection Reaction:** Event from anxiety about, or pain from the injection itself rather than the vaccine e. g. Fainting spell in a teenager after immunization.
- 3) **Common, minor vaccine reactions:**
 - Local reaction (pain, swelling and/or redness), fever and systemic symptoms.
 - Fever should be anticipated in nearly half of those vaccinated in the case of DPT or TT.

5.13 REFERENCES

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LCertificate in Community Health for Nurses (BPCCHN)

Theory Course

BNS-042 Primary Health Care in Common Conditions

Block-1 : **Management of Common Conditions and Emergencies including First Aid**

Unit 1 : **Common Conditions – 1 Gastro Intestinal System**

Unit 2 : **Common Conditions – 2 Respiratory System**

Unit 3 : **Common Conditions – 3 Heart, Urinary System and Blood Disorders**

Unit 4 : **Common Conditions – 4 Eye, Ear, Nose and Throat**

Unit 5 : **First Aid in Common Emergency Conditions**

Unit 6 : **Disaster Management**

Block – 2 : **Maternal Health**

Unit 1 : **Introduction to Reproductive Maternal Newborn and Child Health +A Programme**

Unit 2 : **Ante Natal Care**

Unit 3 : **Intranatal care**

Unit 4 : **Early Identification, Management and Referral of Complications**

Unit 5 : **Post Partum Care**

Block – 3 : **Reproductive Health and Adolescent Health**

Unit 1 : **Gynecological Conditions**

Unit 2 : **Family Planning Methods, Spacing Techniques and Counseling**

Unit 3 : **Medical Abortion and MTP Act**

Unit 4 : **Counselling in Reproductive and Sexual Health including problems of Adolescents**

Unit 5 : **Management of Teenage Pregnancies**

Block – 4 : **New Born and Child Health Care**

Unit 1 : **Essential Care of Newborn at Birth**

Unit 2 : **Management of Common Neonatal and Child Health Problems**

Unit 3 : **Integrated Management of Neonatal and Childhood Illness**

Unit 4 : **Introduction to Rashtriya Bal Swasthiya Karyakaram**

Unit 5 : **Universal Immunisation Programme (UIP)**

Block-5 : **Overview of Common Surgical Conditions**

Unit 1 : **Common Surgical Conditions-1**

Unit 2 : **Common Surgical Conditions -2**

Unit 3 : **Congenital Malformations**

Unit-4 : **Screening for Common Cancers**

Block – 6 : **Essential Drugs**

Unit 1 : **Essential Drugs – 1**

Unit 2 : **Essential Drugs – 2**

Unit 3 : **Essential Drugs – 3**