



**Ministry of Health & Family Welfare,**
**Government of India**
**New Delhi**
**2009**

# Facility Based Integrated Mangement of Neonatal and Childhood Illness (F-IMNCI) Facilitators Guide (Facility Based Care)

**World Health Organization**

**Unicef**

# Facility Based Care

# Facilitators Guide

# CONTENTS

Day: 9
9.1 Recap of Day 8
9.2 Module reading
9.3 Demonstration
9.4 Exercise: 1 Individual work followed by individual feedback
9.5 Module reading
9.6 Drill on mode of feeding
9.7 Module reading
9.8 Video
9.9 Exercise: 2 Individual work followed by individual feedback
9.10 Module reading
9.11 Exercise: 3
9.12 Case studies
9.13 Clinical session

**SECTION-B:FACILITY BASED CARE SICK CHILD GUIDE**

## DAY: 10

10.0 Facility based care of sick child
10.1 Module reading
10.2 Module reading
10.3 Group discussion
10.4 Module reading
10.5 Exercise: 1 Individual work followed by individual feedback
10.6 Module reading
10.7 Module reading
10.8 Exercise: 2 Individual work followed by individual feedback
10.9 Module reading
10.10 Exercise: 3 Individual work followed by individual feedback
10.11 Clinical session

## DAY: 11

11.1 Module reading
11.2 Module reading
11.3 Module reading
11.4 Demonstration
11.5 Exercise: 4 Individual work followed by individual feedback
11.6 Practical session
11.7 Case study
11.8 Clinical session
11.9 Group work
11.10 Feedback from group work
11.11 Feedback from evaluation
11.12 Valediction and certificate distribution
**Annexure: 1**
**Annexure: 2**

# INTRODUCTION

This Facility based care IMNCI training focuses on providing appropriate inpatient management of the major causes of Neonatal and Childhood mortality such as asphyxia, sepsis, low birth weight in neonates and pneumonia, diarrhoea, malaria, meningitis, severe malnutrition in children.

The interventions in the training manuals are based on the latest available scientific evidence and the manuals will be updated as new information is acquired. The guidelines in the manuals are consistent and support the IMNCI (Integrated Management of Neonatal and Childhood Illness) training materials for outpatient management of sick children. Young infants (up to 2 months) and Children (2months up to 5 years) referred with severe classifications based on IMNCI strategy are assessed and investigated based on guidelines given in the manual for making a more precise diagnosis. The manuals also complement standard more comprehensive pediatric textbooks, which should be consulted for management of complications or rare conditions.

The facilitator guide has three modules. Module 1 deals with ETAT, Module 2 with Young Infant and Module 3 with Sick children aged 2 months to 5 years of age.

Module 1 describes ETAT (Emergency Triage Assessment and Treatment). Module 2 deals with management of problems in neonates and young infants from birth up to 2 months of age. These include Care at birth including neonatal resuscitation, Management of sick newborns and young infants including neonatal sepsis, Jaundice and other bacterial infections and Management of low birth weight and imparting clinical skills along with use of equipment.

Module 3 provides guidance for the management of problems in children aged 2 months up to 5 years of age. These include Case management of children presenting with cough or difficult breathing, diarrhea, fever, severe malnutrition in a hospital and children with severe anemia.

## Practical Session Box

| | |
|---|---|
| • Resuscitation Mannequin<br>• Materials for stabilizing the neck: Towel, infusion bottles, tape<br>• Oropharyngeal airways- several sizes<br>• Self-inflating bags of different sizes<br>• Face mask of different sizes<br>• Nasal catheter<br>• Nasal prongs<br>• Head Box<br>• Suction catheter<br>• Oxygen and equipment<br>• Suction apparatus<br>• Feeding tube<br>• IV canula/Scalp vein<br>• Syringes of different sizes including tuberculin<br>• Dextrostix | • Umbilical cord stump<br>• Blood sample for testing blood sugar<br>• IV bottles, IV set - child and pediatric<br>• Spirit swab<br>• Nebuliser<br>• MDI- salbutamol<br>• Plastic bottle or cup for making spacer<br>• Stethoscopes<br>• Drugs:<br>- Dextrose (10&25 %)<br>- Adrenaline injection<br>- Diazepam injection<br>- Salbutamol respiratory solution |

## Checklist of instructional materials needed in each small group

| Item Needed | Number Needed |
|---|---|
| Facilitator Guide for Modules | 1 for each facilitator |
| Set of modules, | 1 set for each facilitator and 1 set for each participant |
| Videotape | (Course Director will inform you where your small group will view the video.) |
| Set of Case Management Charts<br>(Large version -- to display on the wall)<br>Flow diagram ETAT | 1 set for each small group |
| Set of Facilitator Aids (if available) | 1 set for each small group |
| Case Recording Forms (for exercises in module) | 5 for each participant plus some extras |
| Group Checklist of Clinical Signs Observed | 1 per group |

## Schedule for Facility IMNCI training programme*

| Day | Time | Activity |
|---|---|---|
| **1** | 0900-1300 Hrs<br><br><br>1300-1400 Hrs<br>1400-1030 Hrs | Inauguration and introduction<br>Introduction and Assess and classify sick young infant till Bacterial infections<br>Lunch<br>Assess and classify sick young infant till feeding problem. |
| **2** | 0900-1300 Hrs<br><br><br>1300-1400 Hrs<br>1400-1730 Hrs | **Clinical Session-** Assess and classify sick young infant till Feeding problem (Weighing and recording temperature)<br>Lunch<br>Assess and classify sick young infant and complete Identify Treatment<br>Start: Treat the young infant and counsel the mother |
| **3** | 0900-1200 Hrs<br><br>1300-1400 Hrs<br>1400-1700 Hrs | **Clinical Session-** Assess, classify and identify treatment of sick young infant (KMC, Breast Feeding) Post Natal ward<br>Lunch<br>Complete: Treat the young infant and counsel the mother |
| **4** | 0900-1300 Hrs<br><br>1300-1400 Hrs<br>1400-1700 Hrs | **Clinical Session-** Assess, classify and treat sick young infant, Counsel the mother<br>Lunch<br>**Assess and classify sick child till fever.** |
| **5** | 0900-1300 Hrs<br>1300-1400 Hrs<br>1400-1700 Hrs | **Clinical Session-** Assess and classify sick child<br>Lunch<br>Complete Assess and classify sick child , identify treatment and treat the child |
| **6** | 0900-1300 Hrs<br><br>1300-1400 Hrs<br>1400-1700 Hrs | **Clinical Session** - Assess and classify sick child identify treatment<br><br>Lunch<br>Counsel the mother and follow up (Focus on Communication skills) |
| **7** | 0900-100 Hrs<br><br>1200-1300 Hrs<br>1300-1345 Hrs<br>1345-1700 Hrs | **Clinical Session** - Assess and classify sick child, treatment and counsel the mother<br>Introduction to Facility based Care<br>Lunch<br>Complete ETAT module |
| **8** | 0900-1300 Hrs<br><br>1300-1400 Hrs<br>1400-1700 Hrs | Complete care at birth including Resuscitation and Start care in post natal ward<br>Lunch<br>**Clinical Session** – ETAT, Skills (I/V, Umbilical cannulation, Wrapping the baby, Hand washing, Blood Sugar estimation) and Visit to labour room.<br>Equipment Demo: Radiant warmer, phototherapy |

| | | |
|---|---|---|
| **9** | 0900-1300 Hrs<br><br>1300-1400 Hrs<br><br>1400-1700 Hrs | Complete LBW, Sick young infant and Neonatal Transport<br><br>Lunch<br><br>**Clinical Session** – Case studies. Ward Rounds of sick young infant |
| **10** | 0900-1300 Hrs<br><br>1300-1400 Hrs<br><br>1400-1700 Hrs | Start management of older child with cough/difficult breathing, and Complete till fever<br><br>Lunch<br><br>**Clinical Session** –Clinical cases (sick child) ; Demo of $O_2$ therapy and Nebulization |
| **11** | 0900-1300 Hrs<br><br>1300-1400 Hrs<br><br>1400-1700 Hrs | Complete Severe Acute Malnutrition and Severe Anaemia<br><br>Lunch<br><br>**Clinical Session** – Assessment of malnutrition, preparing special diets, and clinical cases (sick child) |

*** Facility based care starts from afternoon of day-7**

## DAY: 7

| PROCEDURES | FEEDBACK |
|---|---|
| 1. Introduce facility based care | Group discussion |
| 2. Introduce Module 1 | --------- |
| 3. Participants read Introduction-Module 1 | Individual |
| 4. Demonstration: Chart 1 | Group |
| 5. Participants read ETAT till Exercise 1 | Individual |
| 6. Demonstration: Triaging sick young infant and child: Chart 2 | Group |
| 7. Participants do Exercise1 | Individual |
| 8. Module reading Temperature | Individual |
| 9. Participants read check and treat hypoglycaemia | Individual |
| 10. Calculating glucose infusion | Group |
| 11. Participants read Airway and Breathing | Individual |
| 12. Practical demonstration | Group |
| 13. Participants read oxygen administration | Individual |
| 14. Participants read Circulation | Individual |
| 15. Participants do Exercise2 | Individual |
| 16. Participants read Coma and convulsions | Individual |
| 17. Participants do Exercise3 | Individual |
| 18. Participants read Dehydration | Individual |
| 19. Video | Group |
| 20. Drill | Group |
| 21. Summarize | Group |

## PREPARATION FOR DAY 7

1. Modules 1 of Facility based care
2. Enlarged charts
3. Manikin
4. Video CD
5. Practical session box

## Methodology

Methodology used for imparting training is by following adult learning principles through use of:

- Self reading of module
- Individual case exercise
- Group discussion
- Demonstrations: Video, Mannequin etc
- Role play
- Drill
- Hands on training

Almost 50% time is spent on building skills through clinical sessions and equipment usage session.

## 7.1 Introduction to Facility Based Care

Facilitator should tell participants that this part of the training focuses on providing appropriate inpatient management of the major causes of Neonatal and Childhood mortality such as asphyxia, sepsis, low birth weight in neonates and pneumonia, diarrhoea, malaria, meningitis, and severe malnutrition in children.

In this session the facilitator should highlight the linkage between IMNCI (that participants have already completed) and referral to facilities of children classified in pink boxes of IMNCI besides those coming directly to these facilities or those born there. Also introduce the concept of change from classification of illness in IMNCI to diagnosis when children are admitted in facilities.

**Lead a discussion** on how sick young infants and children are received in the participant's facilities and assessed for care and what infrastructure is available for emergency care of these children.
Focus on:

1. Job responsibilities and duty hours
2. Functional equipment available
3. Staff and other support available
4. Where babies are referred and why?
5. What skills they wish to learn.

## 7.2 Introduction to Training Module 1

Introduce the learner's Training Module. Tell the participants that this module will teach them the process of triaging the patients and giving appropriate emergency treatments.

## 7.3 Module reading

Participants read introduction and learning objectives

## 7.4 Demonstration

Demonstrate using Chart 1 the process of management of sick child and young infant in the hospital.

| Emphasize triaging as an important step and how it can help them in their work scenario |
|---|

## 7.5 Module reading

Participants read Emergency triage and treatment (upto Exercise 1)

## 7.6 Demonstration

**Material needed**: Enlarged Chart 2: Flow diagram **for Triaging Sick Young Infant and Child**

Demonstrate flow diagram **for Triaging Sick Young Infant and Child and** Review the concept of triage using TABCD concept

## 7.7 Exercise 1: Individual work followed by individual feedback

Compare the participant's answers to the answer sheet and discuss any differences between them.

## Answers - Exercise – 1

*Ans 1:* 2,4,5,6,1,8,7,3

*Ans.2: First we will assess for emergency signs on the TABCD concept. On the basis of lethargy and very slow skin pinch, this baby will be categorized as Emergency Case*

*Ans.3: First we will assess for emergency signs on the TABCD concept. If there are no emergency signs, we will look for priority signs. On the basis of diarrhea with blood in stool, this baby will be categorized as Priority case.*

*Ans 4:* Assess airway, child has central cyanosis. So manage in emergency room. Exclude head & neck trauma.

## 7.8 Module reading

Participants read Temperature (section 3.0)
Discuss chart 3 and emphasize the importance of monitoring the temperature of sick babies.

## 7.9 Module reading

Participants read section 4.0 (check & treat hypoglycemia)
Discuss chart 4.

## 7.10 Group Work

Calculating glucose infusion rate for treating hypoglycemia. Demonstrate how to calculate the D10 and D25 amounts using the example. Let participants practice calculating the amounts by giving some more examples.

## 7.11 Module reading

Participants read Airway and breathing (section 5.0)

When all the participants have read section 5.0, lead a brief discussion about the assessment of airway and breathing and signs of severe respiratory distress.
Chart 6 gives the essential steps of providing basic life support.

## 7.12 Practical demonstration

Facilitator demonstrates the following on a manikin

**Positioning to improve the airway**

- Infants-neutral position
- Children-sniffing position
- Jaw thrust without head tilt

**Demonstrate chest compression**
Tell the participants that the technique of chest compressions in infants and children between 1-5 years is different. Explain the differences.

Let participant's practice the skills in the classroom.

(Bag & mask ventilation will be demonstrated and practiced during newborn resuscitation demonstration)

## 7.13 Module reading

Participants read Giving oxygen (section 6.0)

Lead a discussion using chart7on the indications of giving oxygen in situations with limited oxygen supply. Discuss the criteria for deciding about the duration of oxygen therapy and stress that pulse oximetry is ideal but clinical criteria can also be used. Lead a discussion on the advantages and

disadvantages of giving oxygen by various techniques and why nasal catheter and nasal prongs are more suitable. Also mention the importance of frequently cleaning the nasal catheter and prongs.

## 7.14 Module reading

Participants read Circulation (section 7.0) upto exercise 2

Discuss charts 8 and 9.

## 7.15 Exercise 2: Individual work followed by Individual feedback

Compare the participant's answers to the answer sheet and discuss any differences between them.

## Answers - Exercise – 2.

1. Based on TABCD steps, she is in shock. Give IV 20 ml/kg bolus, start oxygen & monitor.

2. Child has shock as emergency sign. Priority signs are visible severe wasting and respiratory distress. Manage as shock in a child with severe malnutrition .

3 a) Temperature, Oxygen, airway and breathing are to be maintained.

- Infuse fluid bolus of 40 ml normal saline over 20-30 min.
- If no/partial improvement, repeat 40 ml of normal saline over 20-30 min.
- Maintain euglycemia

b) Now start vasopressor support with Dopamine @ 10 mcg/kg/min as follows:

- In this baby weighing 2 kg, to give Dopamine @ 10 mcg/kg/min, amount of Dopamine required.

  = 10 mcg/kg/min X 2 kg = 20 mcg/min = 20 X 60 mcg/hr
  = 1200 mcg/hr = 1200 X 24 mcg/day = 28800 mcg/day
  = 28 mg Dopamine over 24 hrs

- Since 1 ml of Dopamine contains 40 mg, so add 0.7 ml of Dopamine in 24 ml of fluid and give @ 1 ml/hr by infusion pump.

## 7.16 Module reading

Participants read section 8.0 (Coma and convulsions)

Summarize and discuss chart 10 and 11.

## 7.17 Exercise 3: Individual work followed by individual feedback

Compare the participant's answers to the answer sheet and discuss any differences between them.

## Answers - Exercise - 3

1. Give anticonvulsant, rectal diazepam.Check blood sugar. Manage airway, high fever and give oxygen. When convulsion stops, put in recovery position.

2. Give anticonvulsants. Manage airway, clear secretions and give oxygen. Check blood sugar. Put in recovery position and complete assessment.

3.

- Maintain temperature, airway, breathing
- Start oxygen if seizures continue
- Secure IV access
- Give IV 10% calcium gluconate 6ml with 6 ml of distilled water/water for injection slowly with heart rate monitoring
- If seizures continue, give 60 mg phenobarbitone IV over 20 min
- If no control, give 30 mg phenobarbitone IV over 10 min
- If no control, repeat 30 mg phenorbarbitone IV over 10 min
- If still no control, give 60 mg phenytoin IV over 20 min.

## 7.18 Module reading

Participants read Dehydration section 9.0

Summarize and discuss chart 12.

## 7.19 Video

Show participants the video on emergency signs and oxygen delivery.

## 7.20 Conducting Drills

Each participant is asked a question in turn and you should praise the participant for a correct answer. If a participant gives an incorrect answer, ask the next participant to answer. If you feel one or more participants do not understand, pause to explain. Then resume the drill. To keep the drill lively, encourage participants to be prepared to answer as quickly as they can.

**DRILL 1A: Emergency and triage**

| Tell participant | Findings | Correct response |
|---|---|---|
| Mother running in, baby in arms | | Assess A and B |
| T stable, assess A and B | Gasping | Go to emergency |
| T stable, assess A and B | Central cyanosis | Go to emergency |
| T stable, assess A and B | Severe respiratory distress | Go to emergency |
| A and B stable, assess C | Warm hand | Assess consciousness |
| A and B stable, assess C | Cold hand | Assess capillary refill |
| A and B stable, assess C | Capillary refill fast | Assess consciousness |
| A and B stable, assess C | Capillary refill slow | Check pulse |
| A and B stable, circulation stable | Alert child | Ask for diarrhea |
| A and B stable, circulation stable | Convulsing child | Go to emergency |
| A and B stable, circulation stable | Lethargy | Assess for diarrhea dehydration |
| A and B stable, circulation stable | Unconscious child | Go to emergency |
| A and B and C stable | No diarrhea | Assess priority signs |
| A and B and C and D | Child is very hot | Priority patient |
| A and B and C and D stable | No priority signs | Child waits in queue |

**DRILL 1B: Oral drill on flow of triage assessment**

| If you assess | And you find (the signs below), what should you | Correct response |
|---|---|---|
| Breathing | Breathing is adequate | Assess circulation |
| Circulation | Warm hand | Assess consciousness |
| Circulation | Cold hand | Assess capillary refill |
| Circulation | Capillary refill is quick | Assess consciousness |
| Circulation | Weak and fast pulse | Assess consciousness |
| Consciousness | Alert, not convulsing | Ask for diarrhea |
| Consciousness | Child is convulsing | Check for head or neck trauma, and then treat for convulsions, and then quickly continue assessment |
| Consciousness | Lethargy (no other neurological signs present) | Assess for diarrhoea and severe dehydration |

## 7.21 Summarize the module

## DAY: 8

| PROCEDURES | FEEDBACK |
|---|---|
| 1. Recap | ---------- |
| 2. Participants Read Introduction & Care at birth (Module 2-section 1) | Individual |
| 3. Discussion on Hypothermia | Group |
| 4. Participants read initial steps of resuscitation | Individual |
| 5. Demonstration of Initial steps of resuscitation | Group |
| 6. Participants read PPV | Individual |
| 7. Demonstration of bag & mask ventilation | Group |
| 8. Participants practice Initial steps and Bag and Mask ventilation | Group |
| 9. Participants read Chest compression | Individual |
| 10. Demonstration of chest compression | Group |
| 11. Participants practice chest compression | Group |
| 12. Participants Read till where babies go after resuscitation | Individual |
| 13. Group discussion: Resuscitation of newborns | Group |
| 14. Participants read Care of newborn in postnatal ward | Individual |
| 15. Group discussion | Group |
| 16. Clinical & Practical session including visit to labour room | Group |

PREPARATION FOR DAY 8

1. Manikin
2. Bag and masks of all sizes
3. Suction machine and suction catheters
4. Oxygen cylinder/ Oxygen concentrator
5. Thermometer
6. Umbilical stump
7. Umbilical catheters
8. Radiant warmer
9. Phototherapy unit
10. Glucometer with dextrostix
11. IV canulas
12. Baby weighing scale

## 8.1 Recap of day 7

## 8.2 Module reading

Introduce module 2 and tell the participants that it covers Care at birth, Care of a newborn in the postnatal ward, Management of a sick young infant and providing special care for LBW .In addition various skills such as plan C for diarrhea, Breast feeding position and Expression of breast milk and using equipments in addition to skills needed for managing young infants are provided as annexures.

Ask the participants to read Care at birth (section 1) till group discussion.
**Emphasize** about no routine suction, and about drying and skin to skin contact for preventing hypothermia

## 8.3 Group Discussion

FOCUS ON REASONS OF HYPOTHERMIA AND METHODS OF PREVENTION

The objective of the group discussion is to identify the practices being followed by the participants during the delivery in their health facilities. In order to initiate discussion on the subject, ask the participants to enumerate the steps they follow in the labor room at the time of delivery and record these steps on the flip chart. Conclude the discussion by telling the participants that maintaining labor room temperature, drying the infant and placing the baby on mother's abdomen for skin-to-skin contact/ under radiant warmer are important to prevent hypothermia at birth.

## 8.4 Module reading

Participants read Neonatal resuscitation 1.3 (Initial steps)

## 8.5 Demonstration

Facilitator demonstrates initial steps and leads a Group discussion focusing on sequence of initial steps. Demonstrate warming the baby (placing under radiant warmer, positioning the baby with shoulder roll, suctioning oropharynx, drying the baby and tactile stimulus.

## 8.6 Module reading

Participants read 1.3.9 (PPV)

## 8.7 Demonstration

Facilitator demonstrates the Bag and mask equipment and Bag and mask procedure. First explain all parts of the resuscitation bag - show how to open the parts and re-assemble the bag. Then demonstrate how to check the bag is functioning. Then demonstrate the technique of bag and mask ventilation.

## 8.8 Practice by participants.

The participants practice the skills of initial steps and bag and mask ventilation under supervision of facilitator.

Material needed

- MANNEQUIN
- Mucous extractor
- Suction catheter
- Feeding tube, shoulder roll (1 small towel), 2 sheets to dry, face mask for free flow
- Bag and mask (2 sizes of mask)
- Oxygen reservoir
- Oxygen connecting tubes

## 8.9 Module reading

Participants read section 1.3.10 (chest compression)

## 8.10 Demonstration

Facilitator demonstrates chest compression

## 8.11 Practice by participants

The participants practice the skills of chest compression under supervision of facilitator

Material needed

- MANNEQUIN
- Mucous extractor
- Suction catheter
- Feeding tube, shoulder roll (1 small towel), 2 sheets to dry, face mask for free flow
- Bag and mask (2 sizes of mask)
- Oxygen reservoir
- Oxygen connecting tubes

## 8.12. Module reading

Participants Read upto where do babies go from labor room

## 8.13 Group discussion.

Have a blown up chart……..Review of chart of resuscitation

## 8.14 Module reading

Participants read Section 2 (Care of newborn in post natal ward) till Group discussion

## 8.15 Group discussion

Conduct a group discussion on care of newborn in postnatal ward focusing on environment temperature of postnatal ward and breast feeding problems.

## 8.16 Clinical session

The clinical session will have four areas through which each group will rotate. The clinical areas are:

1. Emergency room to practice ETAT
2. Labour room
3. Skills area
4. Equipment demonstration area

Each area will have one facilitator who will conduct sessions for all groups as they rotate. Participants will be at each area for about 45 minutes.

## ETAT

The facilitator demonstrates on a case the process of triage and assessing a sick child. The facilitator assigns cases to participants. Participants should practice doing the steps relevant to the session's objectives with ***as many children as possible.*** Observe each participant working with his assigned patient. Make sure he is doing the clinical skills correctly. Provide specific feedback and guidance as often as necessary. Remark on things that are done well and give additional guidance when improvement is needed.

**Objective:** Emergency room for ETAT for children (Young infant and older child)

## Labor room

Session objectives: - Planning a newborn corner in labor room
- Learning hand washing
- Learning to wrap a baby
- Learning to use and maintain suction machine

Conducting this session: The facilitator explains to the participants the objectives of this session.

**Hand Washing**. First demonstrate to participants the correct procedure for handwashing as outlined below and make participants practice handwashing.

Steps of Hand washing:

- Wet hands up to elbow
- Apply soap
- Rub hands, first palms & fingers
- Then back of hands
- Follow by rubbing of thumbs
- Finally rub finger tips in the palms

- Lastly rub the wrists & forearm up to the elbow
- Keep elbows dependant & wash in the same order

(1) The palms and fingers

(2) The back of hands

(3) Wash fingers & kunckles

(4) The thumbs

(5) The finger tips

(6) The wrists & arms upto elbows

**Planning a newborn corner**: Next take participants to the newborn corner. Discuss with participants that newborn corner should be located in that part of the labor room which is away from draughts and windows. Highlight that the material that should be available at a newborn corner should include:

- Radiant warmer
- Resuscitation equipment (bag and mask, laryngoscope, ET tubes, drugs-adrenaline, normal saline, IV catheter, syringes and needles)
- Suction equipment (suction machine or mucous extractor)
- Oxygen source
- Cord ties
- Weight machine
- Gloves

***Note***: Discuss what is available for newborn care at birth in the participant's facilities if time is available

**Use of suction machine:** Demonstrate use of suction machine to participants

Objective: Upon completion of this section the participant should

- Know the parts of a suction machine
- Know how to use a suction machine and
- Know its sterilization

Parts:

- Suction Catheter
- Suction tubing
- Suction bottles

Working:

- Connect to main

- Switch on the unit and occlude distal end to check the pressure. Ensure it does not exceed 100cm of water
- Take disposable suction catheter
- Connect to suction tubing
- Perform suction gently
- Switch off the suction machine

Cleaning & disinfection:

- Wash suction bottle with soap & bottle
- Change bottle solution every day

Dos & Don'ts:

- Suction gently
- Do not do vigorous & deep suction
- Use only disposable suction catheters
- Check adequacy of suction pressure

Troubleshooting:

- Check fuse
- Check cord
- Check earthing
- Check for leakages in the bottle/tubing

Side effects & dangers:

- Local trauma
- Bradycardia
- Apnea
- Infection

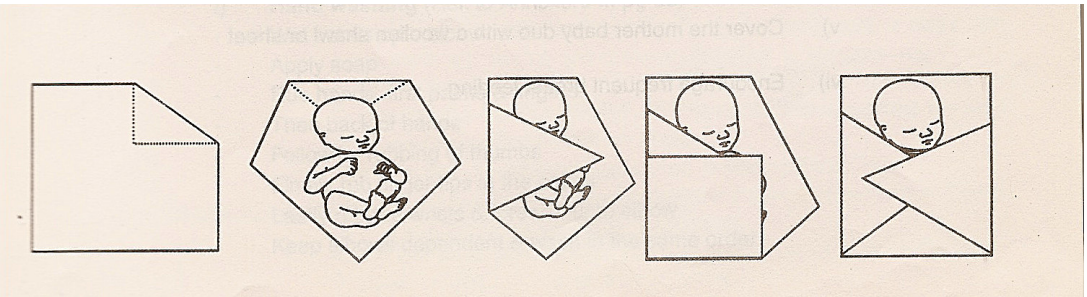
Maintenance:

- Check for adequacy of suction pressure
- Change tubing if leaky or broken

**Demonstrate wrapping and covering a baby**. Facilitator should emphasize that wrapping a baby soon after birth and thereafter is important for maintaining the baby's temperature. Demonstrate as outlined below on manikin or a baby if available.

**Steps for wrapping and covering the baby**

- Wrap the baby using a sheet, spread the sheet
- Fold one corner on itself- place the baby's head on the infolded corner so as to cover the head till the hairline on forehead
- Cover over the right shoulder and tuck on left side
- Fold from the foot end and tuck beneath the chin
- Finally cover the left shoulder and tuck on the right side



## Equipment Demonstration

Session Objectives: Understand use and maintenance of
- Radiant warmer
- Phototherapy

Conducting session: The facilitator collects the participants around the equipment to be demonstrated and outlines the sessional objectives. The facilitator then demonstrates the use of Radiant warmer and phototherapy sequentially.

**RADIANT WARMER**

Upon completion of this section the participant should

1. Know the parts of a warmer
2. Be able to demonstrate the working of the warmer.
3. Know the dangers associated with its usage and should be able to manage minor equipments trouble shooting.

PARTS :

- Bassinet
- Heating Quartz rod/Ceremic rod
- Skin probe
- Air probe
- Control panel (skin temperature- Set/Actual, air temperature)
- Heater output
- Alarms

WORKING:

i) Connect to mains
ii) For prewarming keep heater output to maximum.
iii) Place baby
iv) Connect probe by placing on midway between xiphisternum and umbilicus.
v) Select the mode; if servo set the skin temperature to be set between 36.5$^{o}$C – 37.5$^{o}$C. If the temperature is below, it will automatically increase. If manual, read temperature on display and adjust heater output
   - If below 36$^{0}$C- High (75 – 100)
   - If between 36-36.5$^{0}$C-Medium (25% – 75%)
   - If between 36.5-37.5$^{0}$C-Low (25% - 50%)

- If >37.5$^0$C-Remove baby/Switch off warmer.

vii) Measure temperature 1/ 2 hourly X 2 hours & then 2 hourly.

CLEANING & DISINFECTION

- Soap/detergent} once daily. Don't wet mop the electrical fittings.
- Clean the probe with spirit before each use .

DOS & DONTS :

i) Check temperature ½ hourly/2 hourly
ii) Ensure warm feet
iii) Ensure probe is connected
iv) Do not leave baby unattended.
v) Ensure sidewalls are fastened up
vi) Ensure adequate clothing in case of electricity failure

RESPONSE TO ALARM:

- Power failure
- Probe displacement
- System failure
- Overheating/Underheating

TROUBLE SHOOTING

i) If the power doesn't come check the electricity power followed by plug then cord and fuse
iii) Heater not working
  - If baby's temperature is more than room temperature.
  - Quartz rod not working
  - Call engineer

SIDE EFFECTS & DANGERS

· Increased insensible water loss
· Fluid intake must be tailored to meet demands
· Hyperthermia
· Hypothermia

MAINTENACE

i) Annual maintenance Contract

**(Highlight that for effective functioning of the warmer room temperature is between 28$^o$C – 30$^o$C)**

**PHOTOTHERAPY UNIT**

Upon completion of this section the participant should

1. Know the parts of a phototherapy unit.
2. Be able of understand the functioning and demonstrate the working of a phototherapy unit
3. Be able to place a baby under phototherapy unit

PARTS:

Tubes - Number - six (6)
- Color - White (2) & blue (4)
- Watt -20
- Irradiance - 4-8uw/cm2/nm
- Wavelength-420-460nm
- Distance -45 cms

WORKING:

i) Connect to mains.
ii) Switch on the unit & check that all tubelights are working
iii) Place baby naked only with the napkin on
iv) Cover the eyes
v) Change position frequently
vi) Increase fluid intake
- Breast feed frequently and for longer duration.
- Spoon/Gavage/IV - by 20 ml/kg/day

vii) Provide continuous phototherapy

CLEANING:

i) Soap/Detergent
ii)Don't wet mop the electrical fittings.

DOS & DONTS:

i) Cover eyes
ii) Check temperature- 2-3 hourly to prevent hypo/hyperthermia
iii) Check weight daily
iv) Frequent breast feeding/increasing allowance for fluid
v) Reassess frequently

TROUBLE SHOOTING

i If the power doesn't come check the electricity power followed by plug then cord and fuse
ii Check the choke if individual tube is not working
iii If the equipment still not working call engineer

INEFFECTIVE PHOTOTHERAPY

i) Baby covered
ii) All tubes not working
iii) Flickering light
iv) Tube ends have black circles

SIDE EFFECTS AND DANGERS

i) Hyperthermia/Hypothermia
ii) Increased insensible water loss

MAINTENANCE

i) Change tubes - if ends black or every three months. Keep full set of tubes for change if required
ii) Check flux (if possible)
ii) Annual Maintenance contract
iii) Keep full set of tubes for change if required.

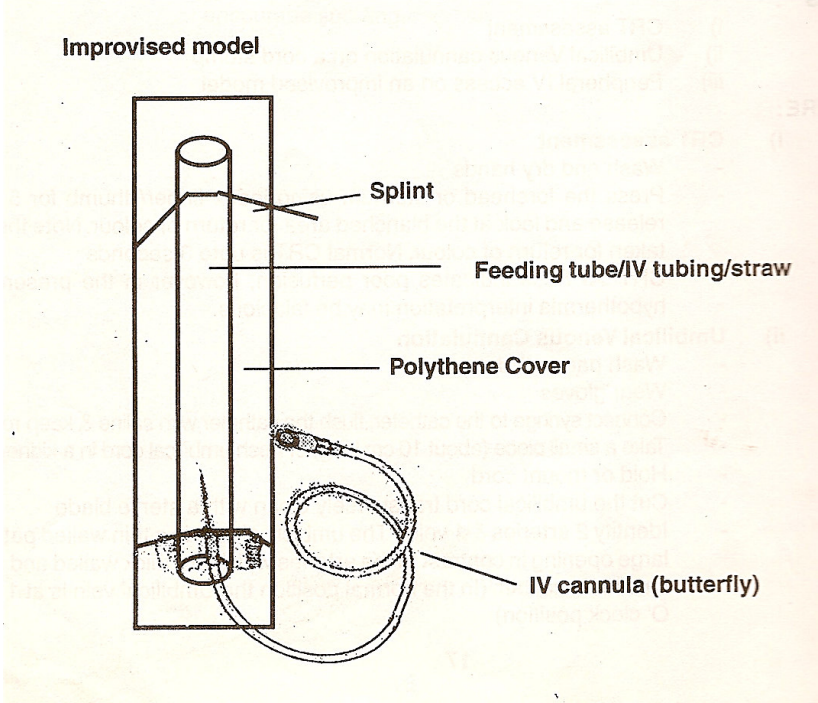
## Skills area

Session objectives: - Learn insertion of umbilical venous cannula
- Learning placement of peripheral IV access
- Learning to estimate blood sugar using locally available glucometer

Conducting this session: The facilitator explains to the participants the objectives of this session. For each procedure the facilitator demonstrates the skill to be learnt and then each participant practices the skill.

## IV Access

The diagram below outlines how to prepare practice model for this session




Steps of placing IV access

- Select the vein (dorsum of hand/foot)
- Wash hands & dry
- Wear gloves
- Prepare skin- spirit, betadine, spirit, let dry between applications
- Hold the limb proximally to make the vein prominent
- Pierce the skin distal to the intended site of puncture
- Insert needle into the vein (feeling of give way)
- Ensure free flow; thread the needle further up into the vein
- Secure the scalp vein needle by adhesive tape
- Secure splint
- Inject fluid/ medications
- Check distal limb for adequacy of circulation

## Umbilical Venous Cannulation

For conducting this session you need 2-3 umbilical cords (which you can obtain from the labor room of the hospital where you are conducting training). You also need umbilical cannula (4/5 FG), 5-10 ml syringes, normal saline and gloves for each participant.

Steps of umbilical cannulation

- Wash hands & dry.
- Wear gloves
- Connect syringe to the catheter, flush the catheter with saline & keep ready

- Take a small piece (about 10 cm long) of fresh umbilical cord in a kidney tray
- Hold or mount cord
- Cut the umbilical Cord transversely with a sterile blade.
- Identify 2 arteries & 1 vein – the umbilical Vein is a thin walled patulous large opening in contrast to the arteries, which are thick walled, and much smaller in caliber. (In the normal position the Umbilical Vein is at 11-12 'O' clock position)
- Insert the saline filled catheter gently into the vein (Back flow of blood can be appreciated in a live baby by pulling at the plunger)
- In actual situation the length of the catheter to be inserted is usually 1-2 cm below the skin till there is a free flow of blood.
- Inject the drug or volume
- Pinch the catheter & remove.
- Press the cord to prevent bleeding.

## Blood glucose estimation

- Equipment needed for estimating blood sugar -a) soap to wash hands - b) alcohol for skin preparation c) test strips d) glucometer and e) 26 gauge needle or lancets
- Operationalise the glucometer by inserting the code card available with test strip pack into the glucometer slot.
- Heel is commonly used site for performing estimation
- Make sure heel is not cold. Warm by rubbing, if required.
- Prepare the site with 70% isopropyl alcohol/spirit, using a scrubbing/ circular motion.
- Do not use povidine / betadine, as specimen contamination may elevate some results.
- Allow spirit to dry. Failure to allow spirit to dry may cause contamination of the specimen and give fallacious results.
- Hold test strip by the strip handle. Don't touch contact points on the test strip. Insert the test strip into the glucometer.
- Make a needle stick puncture on the postero-lateral aspect of the heel. Avoid the middle portion of the heel and avoid making deep punctures.
- Allow a drop of blood to form and allow it to be drawn into the
- reaction zone of the test strip through capillary action. (Test strip should be inside the glucometer)
- Test results are displayed in the meter display window after 30 seconds
- A blood sugar value of less than 45 mg/dl is defined as hypoglycemia.

## Note: Follow the detailed instructions on specific glucometer

## DAY: 9

| PROCEDURES | FEEDBACK |
|---|---|
| 1. Recap | ----------l |
| 2. Participants read management of Sick young infant till Exercise 1 | Individual |
| 3. Demonstration on use of monitoring checklist | Group |
| 4. Participants do Exercise 1 | Individual |
| 5. Participants read LBW till Drill on feeding | Individual |
| 6. Drill on mode of feeding | Group |
| 7. Participants read LBW till Exercise 2 | Individual |
| 8. Video on feeding | Video Group |
| 9. Participants do exercise 2 | Individual |
| 10. Participants read neonatal transport | Individuals |
| 14. Participants do exercise 3. | Individual |
| 15. Case studies | Group |
| 16. Clinical session | Group |

## PREPARATION FOR DAY 9

1. Case recording forms
2. Video CD
3. Thermometer
4. Clinical cases: Newborns in Postnatal ward & sick young infants

## 9.1 Recap Day 8

## 9.2 Module Reading

Participants read management of sick newborn (section 3) upto Exercise 1

## 9.3 Demonstration

Introduce Monitoring Check List and demonstrate its use in sick newborns

## 9.4 Exercise 1: Individual work followed by individual feed back.

Compare your answers to that of the participant

*Ans.1:*

- *Check for emergency signs and provide emergency care*
- *Provide warmth to prevent hypothermia*
- *Check blood sugar and treat if hypoglycemia detected*

*Ans.2: Signs that make meningitis suspected are:*

- *Drowsiness, lethargy or unconscious*
- *Persistent irritability*
- *High pitched cry*
- *Apenic episodes*
- *Convulsion*
- *Bulging fontanell*

*Ans.3: Principles of management of Tetanus Neonatorum*

- *Tetanus immunoglobulin 500 mg IM*
- *Antibiotic: Inj Crystalline Penicillin 100,000 U/kg/day 12 hrly IV*
- *Control of spasms: Inj Diazepam 0.1-0.2 mg/kg/dose IV every 3-6 hours*
- *Control of airway*
- *Fluids and nutrition*

*Ans.4: The essential investigation in a jaundiced infant:*

- *Serum bilirubin*
- *Hemoglobin or PCV*
- *Blood type of baby and mother and combs test*

*Ans.5: 3 kg baby, Day 7*

*Fluid required = 120 ml/kg X 3 kg = 360 ml over 24 hrs*

*EBM given = 5 ml 3 hrly = 5 X 8 = 40 ml over 24 hrs*

*So IVF required in 24 hrs = 360 – 40 = 320 ml*

*IV fluid orders: 105 ml Isolyte - P over 8 hrs 13-14 drops/min*

## 9.5. Module reading:

Ask the participant to read management of LBW babies (section 4) till the drill on mode of feeding

## 9.6 Drill on mode of feeding

Ask the participants, the initial mode of feeding on Day 1, depending on the weight of newborn

2.2 kg – Breast feeding

1.5 kg – Gavage feeding

1.1 kg – IV fluids, try gavage if not sick

1.9 kg – Breast feeding, if unsatisfactory, give katori – spoon feeds.

1.3 kg – Gavage feeding

900 gm – IV fluids

## 9.7 Module reading

Ask the participant to read till Exercise 2

**9.8 Video** on expression of breast milk, gavage and paladai/cup feeding

## To show the video exercise

1. Tell participants that they will watch a demonstration of how to feed a LBW baby

2. Ask if participants have any questions before you start the video. When there are no additional questions, start the video.
3. Show the video. Follow the instructions given in the video. Pause the video and give explanations or discuss what the participants are seeing.
4. At the end of the video, lead a short discussion. If the participants are not clear, rewind the video and show the relevant portions again.

➢

## 9.9 Exercise 2: Individual work followed by individual feedback.

Ans.1: A neonate who weight less than 2500 gm is a low birth weight baby. In India, over 30 percent infants born are LBW.

Ans.2: Preterm babies have distinct physical features that help in their reorganization:

1. In preterm, the deep skin creases are present only on the anterior one-third of the sole.
2. The external ear or pinna is soft and does not recoil back promptly on being folded.
3. In males, the scrotum does not have rugosity and tests are not descended into the scrotum. In female infants, the labia are widely separated with prominent clitoris.
4. The back of preterm babies has abundant growth of fine hair called lanugo

Ans.3: Problems of SFD LBW neonates:

- Fetal distress, meconium passage in utero and birth asphyxia
- Hypothermia
- Hypoglycemia
- Neonatal sepsis
- Malformations

Ans.4: Fluid requirement of a 1500 gm baby on D6 of life = 110 ml/kg X 1.5 kg = 165 ml over 24 hrs

Ans.5: Initiate feeding in 1400 gm 32 week gestation baby with katori spoon.

## 9.10 Module reading:

Ask participants to read Neonatal transport (section 5) till exercise 3.

## 9.11 Exercise 3

Ask the participants to write their answers in the module and compare their answers with the given answer sheet.

Ans.1: Indications of transfer to tertiary care centre:

- Babies needing mechanical ventilation
- Shock not responding to fluid challenge or vasopressors.
- Jaundice needing exchange transfusion
- Major congenital malformations e.g. Tracheo-esophageal fistula, diaphragmatic hernia, meningomyelocele etc.
- Refractory seizures
- Abdominal distension with bilious vomiting.

Ans.2: Components of organization of neonatal transport:

- Communication
- Assessment and stabilization
- Providing care during transport
- Family support

## 9.12 Case Studies (Individual work followed by group discussion)

Ask the participants to do the case studies in annexure7 and then conduct a group discussion.

**Case Study 1.**

1. - Place the baby under a radiant warmer
   - Dry the baby, remove wet linen and re-wrap in dry linen
   - position the baby
   - Check heart rate and color

2. Initiate breast feeding in labor room and room-in baby with mother

3. - Check temperature to ensure baby is warm
   - Check cord for bleeding
   - Ensure baby is feeding
   - ask mother for any problems

4. Reassure mother that milk output is normally less in the first few days and all she needs to do is breast feed baby frequently both day and night.

5. Passage of meconium and urine, temperature, presence of jaundice, fast breathing. Chest indrawing, cyanosis, umbilical redness, skin

pustules, activity

**Case study 2**

1. Hypothermia. Place baby under radiant warmer and start rewarming

2. Start milk feeding by gavage @ 60ml/kg/d 3 hrly (12ml milk 3 hrly)

3. Give EBM by cup and spoon feeding 3 hrly @ 120ml/kg/day (19-20ml/feed)

4. Breast feed before each cup/spoon feed is given, ensure both breast are completely emptied, drink plenty of warm fluids.

5. Discharge when on breast and/or cup-spoon feeding, gaining weight for 3 days, maintaining temperature and no danger signs.

6. Counsel on breast feeding, keeping baby warm, feeding supplements of vitamins and minerals, seeking help if danger signs appear

7. Check for hypothermia, assess for signs of illness, assess feeding. Appropriate action based on assessment.

**Case Study 3**

1. Has respiratory distress and low temperature. Possibly bacterial sepsis with pneumonia

2. Provide warmth, Start IV fluids, Give inj vitamin K, start oxygen, start antibiotics (ampicillin and gentamycin)

**Case Study 4**

1. Bacterial sepsis with possible meningitis (due to convulsions)

2. Provide warmth, Start IV fluids, Give inj vitamin K, start antibiotics (ampicillin or cephalosporin and gentamycin). If convulsions recur give phenobarbitone if no response to glucose and calcium. Also decompress stomach by NG suction

## 9.13. Clinical session

The clinical session will be held in Postnatal ward and sick young infant ward. In the postnatal ward demonstrate how to check the babies and then allow the participants to practice using postnatal check list.
For the sick young infant clinical session,the facilitator should select three types of cases – LBW, sepsis, respiratory distress. You need 5 cases for this session. First introduce the young infant recording form. Then demonstrate on a case the assessment of a sick young infant (including. TABCFMFMCF). The facilitator assigns cases to participants. Participants should practice doing the steps relevant to the session's objectives with ***as many children as possible.*** Observe each participant working with his assigned patient. Make sure he is

doing the clinical skills correctly. Provide specific feedback and guidance as often as necessary. Remark on things that are done well and give additional guidance when improvement is needed.

## Practical Sesssion:

### a. Manual expression of breast milk:

Expression of breast milk is usually required for feeding infants who do not suck effectively but are able to swallow effectively (as in the case of low birth weight babies) or when there are breast or nipple problems. The expressed breast milk is usually fed with a cup and spoon.

- The mother is made to sit comfortably and massage all quandrants of her breast
- The mother holds the cup near her breast with one hand
- With the other hand, the mother is asked to place her thumb above and her first finger below the nipple and areola.
- Then she is asked to push her thumb and finger slightly inwards towards the chest wall and then press the nipple between the thumb and finger.
- She must repeatedly press and release. This repeated action would allow to milk to drip out.
- She must repeat this action also from the sides of the areola to make sure that milk is expressed from all quadrants.
- Expression must be continued for 3-5 minutes until the milk flow slows down.
- The mother must perform the expression form both breasts and it may take her about 15-20 minutes to express both breasts completely.

### b. Gavage feeding:

- Take 6 fr or 8 fr feeding catheter depending on the gestation and weight.
- Holding the tip of the tube against the child's nose, measure the distance from the nose to the ear lobe, then to the xiphisternum (epigastrium). Mark the tube at this point.
- Hold the child firmly. Lubricate the tip of the catheter with water and pass it directly into one nostril, pushing it slowly in. It should pass easily down into the stomach without resistance.
- When the measured distance is reached, fix the tube with tape at the nose.
- Aspirate a small amount of stomach contents with a syringe to confirm that the tube is in place. If no aspirate is obtained, inject air down the tube and listen over the abdomen with a stethoscope.
- If there is any doubt about the location of the tube, withdraw it and start again.

- When the tube is in place, fix a 10-ml syringe (without the plunger) to the end of the tube, and pour desired amount of milk, allowing it to flow by gravity, follow by 2-3 ml water to rinse the tube & close end after removing syringe barrel.
- If oxygen therapy is to be given by nasopharyngeal catheter at the same time, pass both tubes down the same nostril and try to keep the other nostril patent by wiping away crusts and secretions or pass the feeding tube through the mouth.
- Check residue at next feeding session & proceed to feed.

**c. Cup (Katori) spoon feeding:**

- Take baby in the lap and in semi-upright position with head well supported
- Stimulate the angle of the mouth and rest the spoon with 1-2 ml of milk at the angle of the mouth
- Pour the milk slowly into the open mouth & watch for swallowing. Gently stroke behind the ear or on the sole
- Continue feeding in this manner till the desired amount has been fed
- Burp the baby

Place in right lateral position with head supported a little higher than the rest of the body

# Check list: Management of the newborn in Postnatal Wards

Name:_____ Date and time of Birth_____Birth Weight:_____Temperature____ ℃

ASK: Does the mother or infant have any problem? _____
**ASSESS** (Circle all signs present)

| **CHECK FOR FEEDING PROBLEM** | **D1** | **D2** | |
|---|---|---|---|
| ASK THE MOTHER<br>• Have you started breast feeding the baby?<br>• Is there any difficulty in feeding the baby?<br>• Do you have any pain while breast feeding?<br>If yes, then look for:<br>Flat or inverted nipples, or sore nipples<br>Engorged breasts or breast abscess<br>• Have you given any other foods or drinks to the baby?<br>If Yes, what and how ? | | | |
| **CHECK FOR DANGER SIGNS**<br>• Count the breaths in one minute._____breaths per minute<br>Repeat if elevated _____ Fast breathing?<br>• Look for severe chest indrawing.<br>• Look and listen for grunting.<br>• Look and feel for bulging fontanelle.<br>• Look at the umbilicus. Is it red or draining pus?<br>• Look for skin pustules. Are there 10 or more pustules or a big boil?<br>• Measure axillary temperature (if not possible, feel for fever or low body temperature):<br>Normal (36.5-37.4° C)<br>Mild hypothermia (36.0-36.4 ° C/ cold feet)<br>Moderate hypothermia (32.0 ° C – 36.0 ° C, cold feet and abdomen)<br>Seevere hypothermia (< 32 ° C)<br>Fever (> 37.5 ° C/ feels hot)<br>• See if young infant is lethargic or unconscious<br>• Look at young infant's movements. Less than normal? (Lethrgic, not responding, irritable, not accepting feed)<br>• Look for jaundice. Are the palms and soles yellow?<br>• Has the infant had convulsions? | | | |
| **ASSESS BREASTFEEDING:**<br>• Has the infant breastfed in the previous hour?<br>If infant has not fed in the previous hour, ask the mother to put her infant to the breast. Observe the breastfeed for 4 minutes.<br>• Is the infant able to attach? To check attachment, look for:<br>- Chin touching breast Yes ___ No ___<br>- Mouth wide open Yes __ No ___<br>- Lower lip turned outward Yes __ No ___<br>- More areola above than below the mouth Yes __ No ___<br>*no attachment at all not well attached good attachment*<br>• Is the infant suckling effectively (that is, slow deep sucks, sometimes pausing)?<br>*not suckling at all not suckling effectively suckling effectively*<br>If not sucking well, then look for:<br>• ulcers or white patches in the mouth (thrush). | | | |
| **HAS THE YOUNG INFANT RECIEVED**<br>➢ Vitamin K<br>➢ BCG ,OPV 0 , HEP-B 1 | | | |

**ASSESS OTHER PROBLEMS:**

## Proforma for Assessment of Sick Neonate

Name _____ Age _____ (days) Sex_____ MRD_____

Address _____

DOB _____ TOB _____ am / pm Birth Weight _____ gms

**History**

**Antenatal History**

Leaking PV: Present / Absent Duration _____(hrs) Chorioamnionitis: Present / Absent

PIH: Yes / No Medications
_____

Pedal Edema: Present / Absent
Gestational Diabetes Yes / No

Maternal Immunization _____

Any other illness:
_____

Place of Delivery: Institution / Home

Type of Delivery _____ normal Vaginal/Foreceps/Cesarean/

Presentation: Normal/breech / other

Conducted by: _____

Condition of Baby at Birth: Normal / Depressed

Need of Resuscitation: Y/N

Details of Resuscitation _____

**Baby's History**

- Poor suck / not able to feed ☐
- Lethargy / decreased movement ☐
- Seizure ☐
- Diarrhea ☐
- Jaundice ☐
- Bleeding ☐
- Vomiting ☐
- Passage of meconium ☐
- Passage of urine ☐

**Examination**

**Vitals** Temp RR
HR CRT

Resp Distress: Nasal flaring/ grunting/ apnea/ cyanosis

Anterior Fontanelle: normal/ bulging

Pustules: less than 10, more than 10 or big boils

Umbilical Discharge/ Redness: Present/ Absent

Ear Discharge: Present/ Absent

Pallor: Present / Absent

Jaundice: Present / Absent Till: Face / Chest / Abdomen / Hands & Feet

Abdominal distension: Present/ Absent

Activity: lethargy/ restless/ decreased body movement

Abnormal movement: seizure/ jitteriness

**Systemic Examination:**

CVS _____

Resp _____

Abdomen_____

**Provisional Diagnosis**

_____

Plan of Management:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Monitoring

## Day 10

| PROCEDURES | FEEDBACK |
|---|---|
| 1. Participants read Module 3 from 1.0-1.5 | Individual |
| 2. Discuss pneumonia management | Group |
| 3. Participants read 1.6 & 1.7 | Individual |
| 4. Discuss management of asthma | Group |
| 5. Participants read 1.8 | Individual |
| 6. Discuss stridor | Group |
| 7. Participants do Exercise 1 | Individual |
| 8. Participants read 2.0-2.2 | Individual |
| 9. Discuss management of diarrhea | Group |
| 10. Participants Read persistent diarrhea (2.3) | Individual |
| 11. Participants do Exercise 2 | Individual |
| 12. Participants read Management of fever (3.0) | Individual |
| 13. Discuss management of fever | Group |
| 14. Participants do Exercise 3 | Individual |
| 15. Clinical session | Group |

## PREPARATION FOR DAY 10

1. Case Recording Forms
2. Module on Facility based Care of sick children
3. Enlarged wall charts
4. Nebuliser
5. MDI
6. Plastic bottle/cup for preparing spacer
7. Stethoscopes
8. Nebuliser salbutamol solution
7. Chicken bone or Manikin limb for Intraosseous line
8. Clinical cases: Sick children having fever, diarrhea, pneumonia, asthma, meningitis, malaria

## 10.0 Facility Based Care of Sick Child

Tell the participants that over the next 2 days they will learn the management of a sick child admitted to a health facility.

## 10.1 Module reading

Participants read Management of cough (1.0) upto 1.6 (child presenting with wheeze)

**Discuss** with the participants the essential points in history an examination of children presenting with cough or difficult breathing and the possibilities with points in favor and against each possibility.

**Briefly discuss** the classification of severity of pneumonia and the management of each category. Discuss the recommended antibiotics for severe and very severe pneumonia cases. Also highlight the right indications for giving oxygen, IV fluids and the monitoring of admitted cases. Tell the participants when to consider possibility of TB and refer to RNTCP guidelines in annexure for management.

## 10.2 Module reading

Participants read 1.6 and 1.7 (Asthma)

## 10.3 Group discussion:

Lead a discussion on the diagnostic possibilities in a child with wheeze. Ask from the participants how they manage children with wheeze. Briefly discuss the initial steps in management of cases with wheezing- Nebuliser or MDI with spacer and the criteria for hospitalization. Then discuss the management in the admitted cases and especially discuss the role of aminophylline. Highlight the need for close monitoring and use of oxygen in admitted cases.

## 10.4. Module reading

Participants read 1.8 upto Exercise 1.
**Lead a discussion** on the possibilities in children presenting with stridor and the management of croup

## 10.5 Exercise 1: Individual work followed by individual feedback

Compare the participant's answers to the answer sheet and discuss any differences.

## Answers - Exercise-1: Cough or difficult breathing

1. (a) She has severe respiratory distress and central cyanosis.
Maintain airway, give oxygen, make sure child is warm.

(b) H/o choking or sudden onset of symptoms, HIV
Look for raised JVP and severe palmar pallor
Examine chest for tracheal shift
Percussion
Auscultation of chest and CVS
Enlarged liver

(c) Pneumonia, effusion/empyema, pneumothorax, Cardiac failure, malaria, pneumocystis pneumonia.
Pulse oximetery, chest X-ray

(d) Pneumothorax (staphylococcal)

2. (a) She has severe respiratory distress and needs emergency care.
Manage airway, give oxygen, make sure child is warm, rapid acting bronchodilator.

(b) Previous episodes of wheeze, Response to bronchodilators, personal or family history of asthma

(c) Bronchiolitis.
Antibiotics, oxygen, supportive care.

## 10.6 Module reading

Participants read Case management of children presenting with Diarrhea 2.0 up to 2.3 (severe persistent diarrhea)

Tell the participants that they are already skilled in treating acute diarrhoea. Most of cases are treated on out patient basis, however some children might have diarrhoea in the hospital/ facility, the treatment principles remain the same. Point out the role of zinc in diarrhea management.

Highlight about the dangers of using antidiarrhoeals and indiscriminate use of antimicrobials during diarrhea.

Discuss the management of dysentery in children. Highlight the importance of using drugs based on the local sensitivity patterns.

## 10.7 Module reading

Participants read 2.3 (severe Persistent Diarrhea) upto Exercise 2
Lead a discussion on the management of persistent diarrhea and the indications for hospitalization. Highlight the importance of screening for infections in these children and the role of antimicrobials. Stress the importance of multivitamins, minerals and the special diets in their management. Diets of persistent diarrhea are given in annexure

## 10.8 Exercise 2: Individual work followed by individual feedback

Compare the participant's answers to the answer sheet and discuss any differences.

## Answers

1. (a) No

   (b) Explain side effects of antidiarrhoeals.

   (c) Give dietary advice recommended for persistent diarrhoea. Give ORS and zinc or multivitamin – mineral mixture. Screen for intestinal and non-intestinal infections. Follow up after 5 days.

## 10.9 Module reading

Participants read 3.0 (management of children presenting with febrile illnesses) upto exercise 3.

Discuss the approach to a case presenting with fever and the diagnostic possibilities in a child presenting with fever with localizing signs, without localized signs and with rash. (given in annexure)

Lead a discussion of managing cases of severe complicated malaria cases, quinine therapy. Discuss problems faced in managing these cases and how to monitor these cases in the wards.

Lead a discussion of managing cases of meningitis, antibiotic therapy. Discuss problems faced in managing these cases and how to monitor these cases in the wards.

Lead a discussion of managing cases of severe dengue. Discuss problems faced in managing these cases and how to monitor these cases in the wards. Explain the fluid therapy for cases with or without shock. Also highlight very limited role of blood and platelet transfusions in these cases.

Discuss with participants the need for reporting notifiable diseases to heath authorities. Discuss the conditions that would need further workup and referral.

## 10.10 Exercise 3: Individual work followed by individual feedback

### Answers -

1. (a) She has coma as emergency sign and high fever as priority sign.

   Manage airway, position, give IV glucose

   (b) H/O skin rash, headache, stiff neck, ear pain, look for stiff neck, skin rash, discharge from ear, splenomegaly

   (c) Meningitis, cerebral malaria, viral meningitis

   (d) LP, smear for MP, blood glucose

   (e) Cerebral malaria. Emergency measures: To be taken within the first hour

   Check for hypoglycaemia and correct (chart 12)

   Treat convulsions (chart 11)

   If the child is unconscious, minimize the risk of aspiration pneumonia by inserting a nasogastric tube and removing the gastric contents

   **Antimalarial treatment:**

   IV Quinine: Give a loading dose of 20 mg/kg of quinine dihydrochloride in 10 ml/kg of IV fluid, Normal saline or 5% dextrose over 4 hours repeat 10 mg/kg every 8 hourly till the child can take orally. Then give quinine and clindamycin orally to complete 7 days of treatment. Give single gametocidal dose of primaquine (0.75 mg/kg) to prevent transmission in the community. It is essential that quinine is given only if there is close nursing supervision of the infusion and control of the infusion rate.

   Supportive care

## 10.11 Clinical Session

The facilitator demonstrates on a case the process of triage and assessing a sick child. The facilitator assigns cases to participants. Participants should practice doing the steps relevant to the session's objectives with ***as many children as possible.*** Observe each participant working with his assigned patient. Make sure he is doing the clinical skills correctly. Provide specific feedback and guidance as often as necessary. Remark on things that are done well and give additional guidance when improvement is needed.

**Objective:** Assessment and management of a sick child

**Case Recording Form** **Date**

Name---------- Age---------- Sex---------- Wt-------Temp ----------

**ASK**: What are the infant's problems?

| **ASSESS (Circle all signs present)** | **Emergency Treatments**<br>• Check for head/neck trauma before treating child – do not move neck if cervical spine injury possible<br>• EMERGENCY SIGNS: (If any sign positive : give treatment(s), call for help, draw blood for emergency laboratory investigations (glucose, malaria smear, Hb) |
|---|---|
| TEMPERATURE<br>• Cold to touch (< 35.5$^{O}$C) | • Rewarm (Rapidly if temp< 32 $^{O}$C))<br>• Check and correct hypoglycemia |
| AIRWAY AND BREATHING<br>• Not breathing at all or gasping or<br>• Central cyanosis or<br>• Severe respiratory distress (Unable to drink, Respiratory rate ≥ 70 / minute, Severe lower chest indrawing , Grunting, Head nodding, Apnoeic spells ) | |
| CIRCULATION<br>Cold hands with :<br>• Capillary refill longer than 3 seconds, and<br>• Weak and fast pulse<br>**IF POSITIVE** *Check for severe malnutrition* | |
| COMA CONVULSING<br>• Coma( AVPU) or • Convulsing (now) | |
| SEVERE DEHYDRATION (ONLY IN CHILD WITH DIARRHOEA)<br>Diarrhoea plus any two of these :<br>• Lethargy • Sunken eyes • Very slow skin pinch<br>*Check for severe malnutrition* | |

***IF THERE ARE NO EMERGENCY SIGNS LOOK FOR PRIORITY SIGNS:***

***These children need prompt assessment and treatment***

| | |
|---|---|
| • Temperature <36.5 $^{o}$C or > 38.5$^{o}$C<br>• Trauma or other urgent surgical condition<br>• Pallor (severe)<br>• Poisoning<br>• Burns (major) | • Respiratory distress (RR > 60/min)<br>• Bleeding<br>• Restless, continuously irritable, or lethargy<br>• Referral (urgent)<br>• Malnutrition : Visible severe wasting<br>• Oedema of both feet |

- **History**

- **Examination**

**-Temperature -Pulse -Resp. Rate -Weight**

**-Weight for Length/height -Sensorium -Bulging AF**

**-Neck Rigidity -Pallor -Jaundice**

**-Eye- pus/bitots spots/corneal involvement**

**-Skin- depigmentation/desquamation/petichae/purpura/ecchymosis**

**-Generalized lymphadenopathy -Pedal odema**

**Respiratory system-**

**Cardio-vascular system-**

**Abdominal examination-**

**Central nervous system-**

- **Differential diagnosis**

- **Lab Investigations**

- **Management**

## Practical session

### Aerosol Therapy

***Nebuliser:***

- Continuous flow oxygen at 6 to 8 litres per minute can also be used.
- Attach aerosol mask to the top of nebuliser.
- Put the drug and 2-4 ml of normal saline in the nebuliser compartment.
- Treat the child until all the liquid in the nebuliser has been almost used up, which usually occurs in 5-10 minutes.
- Bronchodilators can be effectively given by nebulisation using an electric air compressor.
- Tubing and nebuliser should be washed with detergent and dried prior to reuse.

***MDI with spacers****:*

**USE OF A SPACER**

- Spacer is a way of effectively delivering bronchodilator drugs
- Works as well as nebuliser if correctly used
- No child < 5 years should be given inhaler without spacer
- Release a puff (100 micrograms of Salbutamol) into the spacer chamber after attaching the MDI to the other end of the spacer.
- Allow normal breathing for 3–5 breaths. A slow deep breath is preferred but may not be feasible if the child is not earlier trained.
- Give Salbutamol inhalation by MDI-Spacer 4 puffs (100mcg/puff) at 2-3 min interval.

**Spacers can be made in the following way:**

- Use a plastic cup or a 500 ml drink bottle or similar
- Cut a hole in the base in the same shape/size as the mouthpiece of inhaler
- Spacer devices with a volume of 750 ml are commercially available

**To use an inhaler with a spacer:**

- Remove the inhaler cap. Shake the inhaler well
- Insert mouthpiece of inhaler through the hole in the bottle
- The child should put the opening of the bottle into his mouth
- Press down the inhaler while the child continues to breath normally
- Wait for 3 to 4 breaths and repeat
- For younger children place the cup over the child's mouth and use as a spacer in the same way

## Rectal Diazepam

- Wash hands and put on clean examination gloves.
- Have an assistant remove the baby's napkin and hold the baby on one side, similar to the lying position for lumbar puncture.
- Draw up exact dose of diazepam into the tuberculin syringe.
- Remove the needle from the syringe.
- Lubricate the syringe with a water-based lubricant.
- Gently insert the syringe into the baby's rectum and advance it approximately 4-5 cm.
- Administer the drug slowly over three minutes and then slowly withdraw the syringe.
- Allow the baby to relax from the curled up position.
- If the dose is passed from the rectum within the first five minutes, repeat the dose.
- The majority of absorption will occur between 5 and 15 minutes after administration, so if stool is passed after this, the dose does not need to be repeated.
- Interval before giving another dose (if convulsions don't stop) is 10 minutes.

## Intraosseous line

- You can demonstrate and participants can practice on chicken thigh bone or any other animal bone
- Gather necessary supplies.
- Wash hands and put on clean examination gloves.
- You can use sterile intraosseous needle, bone marrow needle, or 22-gauge needle.
- Identify the insertion site (proximal end of tibia or distal end of femur).
- The site at the proximal end of the tibia is 1 cm below and 1 cm medial to the tibial tuberosity.
- The site at the distal end of the femur is 2 cm above the lateral condyle
- Prepare the skin over the insertion site using a swab or cotton-wool ball soaked in antiseptic solution, and allow to dry.
- Position the baby's leg with the knee bent about 30 degrees and the resting on the table.
- Support the upper tibia with one hand, placed so that the hand is not directly behind the site of insertion.
- Hold the needle (with the attached syringe if using a hypodermic needle) in the other hand at a 90-degree angle to the selected insertion site, angled slightly towards the foot.
- Advance the needle using a firm, twisting motion and moderate, controlled force. Stop immediately when there is a sudden decrease in resistance to the needle, which indicates that the needle has entered the marrow cavity.

- Once the needle is properly positioned, remove the stylet (if a bone marrow or intraosseous needle was used) and attach the syringe.
- Aspirate using the syringe to confirm that the needle is correctly positioned. The aspirate should look like blood.
- Slowly inject 3 ml of IV fluid to check for proper placement of needle:
- Look for swelling (indicating leaking of fluid under the skin) at the front of the leg or in the calf muscle at the back of the leg. If swelling is seen, remove the needle and try again;
- Secure the needle in place using tape, and splint the leg as for a fractured femur ensuring that the elastic bandage does not interfere with the needle or infusion set.
- Inspect the infusion site every hour.

Remove the intraosseous needle as soon as alternative IV access is available, and within eight hours, if possible.

# DAY: 11

| PROCEDURES | FEEDBACK |
|---|---|
| 1. Participants read Anemia | Individual |
| 2. Discuss blood transfusion | Group |
| 3. Participants read Management of severe malnutrition through 5.4 | Individual |
| 4. Discuss 10 steps of management of SAM | Group |
| 5. Participants read from 5.4.1 upto exercise 4 | Individual |
| 6. Demonstration of filling 24hr intake and weight gain chart | Group |
| 7. Participants do Exercise 4 | Individual |
| 8. Practical session: Preparation of special diets | Group |
| 9. Case Study | Individual |
| 10. Clinical session: Recording weight and length/height and assessing sick children | Group |
| 11. Group work: Future planning | Group |
| 12. Feedback Evaluation | ---------- |
| 13. Valediction & Certificate Distribution | ---------- |

## PREPARATION FOR DAY 11

1. Case recording forms
2. Infant and adult weighing machines
3. Infantometer
4. Stadiometer
5. Ingredients and measuring utensils for preparing F-75 and F-100 diets- milk, sugar, vegetable oil, puffed rice, measuring jar
6. Infant and child feeding tubes
7. Clinical cases: Children with severe malnutrition- visible severe wasting, bipedal oedema
8. Participants feedback forms

# DAY-11

## 11.1 Module reading

Participants read 4. (Anemia)

Ask the participants to read management of severe anemia cases. Discus the need for blood transfusion in sick children and monitoring during blood transfusions

## 11.2 Module reading

Participants read 5.0(Severe Malnutrition) upto 5.4.1

Discuss briefly the criteria for hospitalization and discharge. Explain the 10 steps in the management of these cases.

## 11.3 Module reading

Participants read from 5.4.1 (hypoglycemia) upto Exercise 4

Lead a discussion with the participants on each step in the management of severely malnourished case. Highlight that they have already learnt about these steps in the previous modules. However children with acute severe malnutrition need special care regarding warmth, fluids and feeding. Tell the participants about the special diets and that they will be allowed to practice preparing these diets.

## 11.4 Demonstration

Conduct a demonstration on filling the 24-hour intake and daily weight gain chart for severe malnutrition cases. Explain how to fill the 24 hour intake chart. Explain that while filling the weight chart participants can mark the completed weight at admission in front of arrow (example if the child at admission was 5.2 kg then mark at the baseline in front of 0 as 5.0 kg) and correspondingly change the figures above and below the baseline (arrow) to record the weight gain or loss.

## 11.5 Exercise 4:Individual work followed by individual feedback

Compare the participant's answers to the answer sheet and discuss any differences

### Answers -

1. (a) Reena has one priority sign: Irritable
   (b) Yes. <3 z score of median of WHO child growth standard

(c) Dehydration: Give low osmolarity ORS orally or by nasogastric tube 5 ml/kg every 30 minutes for the first 2 hours. Then give 5-10 ml/kg/hour ORS for the next 4-10 hours depending on how much the child wants and the losses.

Start feeding during rehydration (alternate with ORS).

2. (a) He has emergency condition of severe dehydration.

(b) Yes

(c) Give low osmolarity ORS by nasogastric tube 5 ml/kg every 30 minutes for the first 2 hours.

Then give 5-10 ml/kg/hour ORS for the next 4-10 hours depending on how much the child wants and the losses.

If rehydration is still occurring at 6 hours and 10 hours, give same volume of F-75 feed at these times.

After rehydration initate refeeding with starter F-75.

(d) Give Oral Ciprofloxacin 15 mg/kg/dose two times a day for 3 days or Nalidixic acid 15mg/kg/dose four times a day for 5 days

3. (a) She is having signs of shock.

(b) See chart 10.

4. (a) Rahul has priority sign of visible severe wasting, referral note.

(b) Give the first feed of F-75, if it is quickly available and then continue with 2–hourly feeds.

If the first feed is not quickly available give 50 ml of 10% glucose or sugar solution (4 rounded teaspoon of sugar in 200 ml or one cup of water) orally or by nasogastric tube, followed by the first feed as soon as possible.

Give 2–3-hourly feeds, day and night, at least for the first day.

Give appropriate antibiotics.

(c) < 3 z score

(d) Immediately

(e) Blood sugar, Serum electrolytes (at least sodium, potassium, and calcium whenever possible), Screening for infections

- Total and differential leukocyte count, blood culture (if possible)
- Urine routine examination
- Urine culture
- Chest x-ray

(f) 55 ml/per feed of F-75 diet through NG tube every 2-hrly.

(g) Make a gradual transition from starter to catch-up formula.

Replace the starter F-75 with an equal amount of catch-up F-100 for 2 days.

Give a milk-based formula, such as catch-up F-100 which contains 100 kcal/100 ml and 2.9 g of protein per 100 ml. Modified porridges or complementary foods can be used,

provided they have comparable energy and protein concentrations.

The point when some of the feed remains unconsumed is likely to occur when intakes reach about 200 ml/kg/day.

After a gradual transition, give:

Frequent feeds, unlimited amounts

150–220 kcal/kg/day, 4–6 g of protein/kg/day.

## 11.6 Practical Session

Demonstration & Practice of preparation of F-75 & F-100 diets.

**Tips for correct preparation**

- Wash your hands before measuring ingredients.
- If possible, use a dietary scale that is accurate to at least 5 gm. Small plastic bags can be used as containers for dry ingredients. For measuring oil, choose a small container to reduce the surface to which the oil can stick. Let the oil drain out well when transferring it to the jug.
- If using scoops for measurement, level ingredients to ensure consistent measurement. One must know the corresponding volumes for each ingredients.
- Mix oil well so that it does not separate out.
- If there is change in the type of milk supplied, change to a recipe appropriate for the type of milk available.
- Be careful to add correct amount of water to make 100 ml of formula.

## 11.7 Case study

Compare the answers of the participants.

a.

- Emergency signs: Severe respiratory distress
- Priority signs : Restless and irritable

b.

- Admit/Shift in emergency room
- Manage airway
- Give oxygen
- Make sure child is warm

c.

- Past history of similar episodes, Recurrent wheezing, family history of Asthma, History of contact with tuberculosis, Immunization history, treatment history.
- General physical examination for rash, skin pustules/boil, Eye examination for signs of pus, vitamin A deficiency: dry conjunctiva or cornea, Bitot's spots, Corneal ulceration, Keratomalacia, Ear examination for infection, Mouth ulcers.
- Examination of Respiratory and Cardio-vascular system

d.

- Measles with bronchopneumonia with dysentery with mouth complications with anaemia.

e.

- Haemogram, X-ray chest

f.

- Inj. Ceftriaxone 100 mg /kg IM/IV for 10 days
- Vitamin A 1 lakh IU orally on day 1 and 2.
- Tab. Zinc 20 mg for 14 days
- GV paint 0.25% for mouth application
- Oxygen

g.

- Monitor respiratory rate, pulse rate, chest indrawing, pulse oximetery, daily intake/output
- The child should be checked by nurses at least every 3 hours and by a doctor at least twice a day.

h.

- Chest complications: Pneumothorax/ Empyema
- CNS complications: Encephalitis
- Ear complications: ASOM
- Eye complications: Corneal ulceration/Keratomalacia/Blindness

## 11.8 Clinical Session

**Clinical Practice**

The facilitator demonstrates on a case the process of triage and assessing a sick child.

The facilitator assigns cases to participants. Participants should practice doing the steps relevant to the session's objectives with ***as many children as possible.*** Observe each participant working with his assigned patient. Make sure he is doing the clinical skills correctly. Provide specific feedback and guidance as often as necessary. Remark on things that are done well and give additional guidance when improvement is needed.

**Objective: Assessment and management of a child with severe malnutrition**

Individual case discussion

Teach the participants to calculate weight for height, fill weight chart & fill 24-hr food intake.

## Practical Session

Recording of weight and Length/Height of children

## Weigh the child

- Weigh the child daily, preferably at about the same time each day. One hour before or after a feed.
- Adjust the scale to zero with the cloth in the pan.
- Place the naked child gently in the pan (or in the slings or pants).
- Measure weight to the nearest 0.01 kg.
- Wrap the child immediately to re-warm.

## Measure Length

- Measure length while supine, if length < 85 cm or in children too weak to stand (subtract 0.5 cm if > 85cm).
- Use a measuring board with a headboard and sliding foot piece.
- Measurement will be most accurate if child is naked, if not possible ensure clothes do not get in the way of measurement.
- Work with a partner. One person should stand behind the headboard.
- Position the crown of the head against the headboard, compressing the hair.

- Hold the head with two hands and tilt upwards until the eyes look straight upwards.
- Check that the child lies straight along the centre of the board.
- The other person straightens the knees.
- Place the foot piece firmly against the feet, with toes pointing up.
- Measure length to the last 0.1 cm.

### Measure standing height

- Use a stadiometer.
- Remove the child's socks & shoes.
- Work with a partner.
- Help the child stand with back of the head, shoulder blades, buttocks, calves and heels touching the vertical board.
- Hold the child's knees and ankles to keep the legs straight and feet flat.
- Position the head so that the child is looking straight ahead.
- Place the headboard firmly on top of the head and compress the hair.
- Measure the height to the last completed 0.1 cm.

## 11.9 Group Work

Plan the recommended guidelines for management of sick young infants and children in your own work place. Start the exercise with a discussion on the reasons for not implementing in small hospitals. Divide participants into small group and ask them to do the exercise in their groups, start with a brainstorm on the question:

-**Why?** – Arguments to implement
-**Who?** – Staff categories involved
-**Where?** – Space and accommodation
-**When?** – Timing of care
-**What?** – Equipments and supplies needed

Prepare summary of findings in form of recommendations to hospital administration

## 11.10 Feedback from group work

Ask the individual groups to present their respective plan of action and recommendation and provide feedback

## 11.11 Feedback from evaluation

Present main findings from course evaluation

## 11.12 Valediction and certificate distribution

# Annexure: 1

## Participant's Checklist

### Clinical signs

Record in the box below each sign you observe in a child during demonstration or clinical practice

| | | | |
|---|---|---|---|
| Not breathing or gasping | Obstructed breathing | Central cyanosis | Severe respiratory distress |
| Cold hand | Capillary refill longer than 3 seconds | Weak and fast pulse | |
| Coma | Convulsion | | |
| | Sunken eyes | Very slow skin pinch | |
| Any respiratory distress | Very severe wasting | Oedema of both feet | Severe pallor |
| Sick young infant | Continually irritable and restless | Lethargy | Hot child |
| Poisoning | Burns | Trauma or other surgical condition | |

# Annexure : 2

## Evaluation questionnaire for the participants

1. (a) Do you admit newborn babies? Yes/No
   (b) Do you admit older children? Yes/No
   (c) Do you have deliveries in your facility? Yes/No

2. Which part of the training did you find useful? (Tick appropriate box)
   (a) ETAT Very useful/ Useful/ No use
   (b) Resuscitation of newborn Very useful/Useful/ No use
   (c) Management of sick newborn Very useful/Useful/No use
   (d) Management of diarrhoea Very useful/Useful/No use
   (e) Management of cough/difficult breathing Very useful/ Useful/ No use
   (f) Management of fever Very useful/ Useful/ No use
   (g) Management of malnutrition Very useful/ Useful/ No use

3. Which skill did you find useful? (Tick appropriate box)
   (a) Triaging Very useful/ Useful/ No use
   (b) Oxygen administration Very useful/ Useful/ No use
   (c) Resuscitation of newborn Very useful/ Useful/ No use
   (d) Maintenance of temperature Very useful/ Useful/ No use
   (e) Hand washing Very useful/ Useful/ No use
   (f) Intraosseous access Very useful/ Useful/ No use
   (g) Preparing special diets Very useful/ Useful/ No use
   (h) Nasogastric feeding Very useful/ Useful/ No use

4. Which equipment can you handle after this course?
   (a) Phototherapy Very confident/ Confident/ Not confident
   (b) Radiant warmer Very confident/ Confident/ Not confident
   (c) Weighing scale Very confident/ Confident/ Not confident
   (d) Bag and mask Very confident/ Confident/ Not confident
   (e) Nebuliser & MDI Very confident/ Confident/ Not confident
   (f) Weight/height equipment Very confident/ Confident/ Not confident

5. Did you find the course useful? Very useful/ Useful/ No use

6. Give comments about course in general?

| | | |
|---|---|---|
| (a) | Duration | Too much/ Optimum/ Too little |
| (b) | Theory | Too much/ Optimum/ Too little |
| (c) | Skills imparted | Too much/ Optimum/ Too little |
| (d) | Power-point presentations | Too much/ Optimum/ Too little |
| (e) | Clinical sessions | Too much/ Optimum/ Too little |
| (f) | Case scenarios | Too much/ Optimum/ Too little |

7. After returning to your hospital which skills would you be able to practice definitely?

   (a) Start triaging
   (b) Start newborn corner
   (c) Resuscitate newborns
   (d) Maintain temperature of sick children
   (e) Manage sick newborns
   (f) Manage sick children
   (g) Manage severe malnutrition cases

8. Do you have any other comments or suggestions for improving the content of the course or the way in which it was conducted?