Ministry of Health & Family Welfare

Government of India
New Delhi
2009

Facility Based IMNCI (F-IMNCI) Facilitators Guide

World Health Organization

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CONTENTS

SECTION A: FACILITY BASED CARE - ETAT

Introduction 1

Day 1 5

1.0 Introduce Facility Based Care 6
1.1 Introduce Module 1 6
1.2 Participants read: Introduction-Module 1 6
1.3 Demonstration: Chart 1 6
1.4 Participants read: ETAT, till Exercise 1 7
1.5 Demonstration: Triaging Sick Young Infant and Child (Chart 2) 7
1.6 Participants do Exercise1 7
1.7 Module reading 7
1.8 Demonstration - Chart 3 7
1.9 Module reading 7
1.10 Demonstration: Airway Management, Bag & mask ventilation & Chest compression 7
1.11 Participants read: Oxygen Administration 8
1.12 Participants read: Circulation 9
1.13 Demonstration - Chart 4 & 5 9
1.14 Participants do: Exercise 2 9
1.15 Participants read: Coma and Convulsions 10
1.16 Participants do: Exercise3 10
1.17 Participants read: Dehydration 10
1.18 Video 10
1.19 Drill 11
1.20 Summarization 11

SECTION B: FACILITY BASED CARE OF SICK YOUNG INFANT

Day 2 12

2.0 Recap of Day 1 13
2.1 Module reading 13
2.2 Discussion on Hypothermia 13
2.3 Clinical session 13
2.4 Module reading 21
2.5 Demonstration 21
2.6 Module reading 21
2.7 Demonstration 21

2.8 Practice by participants 21
2.9 Module reading 21
2.10 Demonstration 22
2.11 Practice by participants 22
2.12 Module reading 22
2.13 Module reading 22
2.14 Group discussion 22

Day 3 23
3.0 Recap of Day 2 24
3.1 Module reading 24
3.2 Group discussion 24
3.3 Module reading 24
3.4 Group discussion 24
3.5 Module reading 24
3.6 Demonstration 24
3.7 Participants do Exercise 4 24
3.8 Module reading 25
3.9 Drill on mode of feeding 25
3.10 Module reading 25
3.11 Video 26
3.12 Participants do Exercise 5 26
3.13 Module reading 26
3.14 Participants do Exercise 6 26
3.15 Case studies 27
3.16 Clinical session 28
3.17 Practical session 28

SECTION C: FACILITY BASED CARE OF SICK CHILD

Day 4 30
4.0 Introduce Facility based care of sick child 31
4.1 Module reading 31
4.2 Module reading 31
4.3 Group discussion 31
4.4 Module reading 31
4.5 Participants do Exercise 7 31
4.6 Module reading 32
4.7 Module reading 32
4.8 Participants do Exercise 8 32
4.9 Module reading 32
4.10 Participants do Exercise 9 33
4.11 Clinical session 34
4.12 Practical session 34

Day 5 37

5.0 Module reading 38
5.1 Module reading 38
5.2 Module reading 38
5.3 Participants do Exercise 10 39
5.4 Case study 40
5.5 Drill 40
5.6 Clinical session 40
5.7 Practical session 40
5.8 Group work 41
5.9 Feedback evaluation 41
5.10 Valediction and certificate distribution 41

Annexure 1: Participants check list 42

Annexure 2: Evaluation questionnaire for participants 43

Annexure 3: Check list for monitoring clinical sessions 45

Annexure 4: F-IMNCI training report 48

Annexure 5: Skill sets scoring tool (Facilitators) 54

Annexure 6: Skill sets scoring tool (Course directors/observer) 55

Annexure 7: Clinical session recording forms 56

Annexure 8: Navjaat Shishu Suraksha Karyakram 62

INTRODUCTION

This facility-based-care IMNCI (Integrated Management of Neonatal and Childhood Illness) training focuses on providing appropriate inpatient management of major causes of neonatal and childhood mortality such as asphyxia, sepsis, and low birth weight in neonates; and pneumonia, diarrhoea, malaria, meningitis, and severe acute malnutrition in children.

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

The Participants Manual has three modules as given below:

1. Module 1 deals with ETAT (Emergency Triage Assessment and Treatment)
2. 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 and neonatal resuscitation, management of sick newborns and young infants including for neonatal sepsis, jaundice and other bacterial infections, management of low birth weight babies, and imparting clinical skills along with use of equipment.
3. Module 3 provides guidance for the management of problems in children aged 2 months up to 5 years. These include case management of children in a hospital presenting with cough or difficult breathing, diarrhoea, fever, severe malnutrition, and severe anaemia.

The training methodology used is based on the adult learning principles through use of:

- Self-reading of module
- Individual case exercises
- Group discussion
- Demonstrations through video, manikin, etc
- Role play
- Drill
- Hands-on training

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

Practical session list

- Resuscitation manikin
- Materials for stabilizing the neck: towel, tape
- Oro-pharyngeal airways - several sizes
- Self-inflating bags of different sizes
- Face mask of different sizes
- Nasal catheter
- Nasal prongs
- Head box
- Suction catheter
- Oxygen and equipment
- Pulse Oximeter
- Suction apparatus
- Feeding tube
- I/V cannula/Scalp vein
- Syringes of different sizes including tuberculin
- Glucometer
- Umbilical cord stump
- Blood sample for testing blood sugar
- I/V bottles, I/V set – child and paediatric
- Nebuliser
- MDI & spacer
- Plastic bottle or cup for making spacer
- Stethoscopes
- Drugs:
  - Dextrose (10% & 25%)
  - Adrenaline injection
  - Diazepam injection
  - Salbutamol respiratory solution
- Bone narrow needle for intraosseous line
- Graduated jar (500ml) & measuring spoons
  2.5 ml - 10ml

Checklist of instructional materials needed in each small group

Item needed	Number needed
Facilitator Guide for modules	1 for each facilitator
Set of participants manual	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 wall charts (large version – to display on the wall)	1 set for each small group
Set of facilitator aids (if available)	1 set for each small group
Case recording forms	5 for each participant plus some extras
Group checklist of clinical signs observed	1 per group

Agenda for Facility based care training programme (11 days)		
Day	**Time**	**Activity**
1	0900-1300 Hrs 1300-1400 Hrs 1400-1730 Hrs	**Inauguration and training introduction:** **Introduction:** *Assess and classify sick young infant till Bacterial infections* **Lunch** *Assess and classify sick young infant till Feeding problem*
2	0900-1300 Hrs 1300-1400 Hrs 1400-1730 Hrs	**Clinical session:** *Assess and classify sick young infant till Feeding problem (Weighing and recording temperature)* **Lunch** *Assess and classify sick young infant (continued) and identify treatment* *Treat the young infant and counsel the mother*
3	0900-1200 Hrs 1300-1400 Hrs 1400-1700 Hrs	**Clinical session:** *Assess, classify and identify treatment of sick young infant (KMC, breastfeeding) in postnatal ward* **Lunch** *Treat the young infant and counsel the mother*
4	0900-1300 Hrs 1300-1400 Hrs 1400-1700 Hrs	**Clinical Session:** *Assess, classify and treat sick young infant, and counsel the mother* **Lunch** *Assess and classify sick child till fever*
5	0900-1300 Hrs 1300-1400 Hrs 1400-1700 Hrs	**Clinical session:** *Assess and classify sick child* **Lunch** *Assess and classify sick child, identify treatment and treat the child*
6	0900-1300 Hrs 1300-1400 Hrs 1400-1700 Hrs	**Clinical session:** *Assess and classify sick child, identify treatment* **Lunch** *Counsel the mother and follow-up (Focus on communication skills)*
7	0900-1200 Hrs 1200-1300 Hrs 1300-1345 Hrs 1345-1700 Hrs	**Clinical session:** *Assess and classify sick child, treatment and counsel the mother* *Introduction to facility based care* **Lunch** *ETAT module*
8	0900-1000 Hrs 1000-1300 Hrs 1300-1400 Hrs 1400-1700 Hrs	*Care at birth* **Clinical & Practical session:** *ETAT, skills (I/V, umbilical cannulation, wrapping the baby, handwashing, blood sugar estimation), and visit to Labor room* *Equipment demo: Radiant warmer, phototherapy* **Lunch** *NN Resuscitation, Care in postnatal ward*
9	0900-1300 Hrs 1300-1400 Hrs 1400-1500 Hrs 1500-1700 hrs	*LBW, sick young infant, and neonatal transport* **Lunch** **Case studies** **Clinical & Practical session:** *Rounds of sick young infant ward & postnatal ward, Expression of brest milk & mode of feeding*
10	0900-1300 Hrs 1300-1400 Hrs 1400-1700 Hrs	*Management of older child with cough/difficult breathing, and fever* **Lunch** **Clinical & Practical session:** *Clinical cases (sick child); Demo of oxygen therapy, Aerosol therapy, Rectal diazepam & Intraosseous line*
11	0900-1300 Hrs 1300-1400 Hrs 1400-1500 Hrs 1600-1700 Hrs	*Severe anaemia and severe acute malnutrition* **Lunch** **Clinical & Practical sessionsession:** *Assessment of severe acute malnutrition, preparing special diets Clinical cases (SAM)* *Feedback & Valediction*
*** Facility based care starts from afternoon of Day 7**		

Agenda for Facility based care training programme (5 days)		
Day	**Time**	**Activity**
1	0900-1030 Hrs	**Inauguration and training introduction:**
	1030-1300 Hrs	*Introduction to facility based care*
	1300-1345 Hrs	**Lunch**
	1345-1700 Hrs	*ETAT module*
2	0900-1000 Hrs	*Care at birth,*
	1000-1300 Hrs	**Clinical session:** *ETAT, skills (I/V, umbilical cannulation, Intra verses wrapping the baby, handwashing, blood sugar estimation), and visit to Labor room*
		Equipment demo: *Radiant warmer, phototherapy*
	1300-1400 Hrs	**Lunch**
	1400-1700 Hrs	*Resuscitation, Care in postnatal ward*
3	0900-1300 Hrs	*LBW, sick young infant, and neonatal transport*
	1300-1400 Hrs	**Lunch**
	1400-1500 Hrs	**Case studies**
	1500-1700 Hrs	**Clinical & Practical session:** *Rounds of sick young infant ward & postnatal ward, Expression of brest milk & mode of feeding*
4	0900-1300 Hrs	*Management of older child with cough/difficult breathing, and fever*
	1300-1400 Hrs	**Lunch**
	1400-1700 Hrs	**Clinical & Practical session:** *Clinical cases (sick child); Demo of oxygen therapy, Aerosol therapy, Rectal diazepam & Intraosseous line*
5	0900-1300 Hrs	*Severe anaemia and severe acute malnutrition*
	1300-1400 Hrs	**Lunch**
	1400-1600 Hrs	**Clinical & Practical sessionsession:** *Assessment of severe acute malnutrition, preparing special diets Clinical cases (SAM)*
	1600-1700 Hrs	*Feedback & Valediction*

DAY 1

Procedure		Feedback
1.0	Introduce *Facility based care*	Group discussion
1.1	Introduce *Module 1*	---------
1.2	Participants read *Introduction: Module 1*	Individual
1.3	Demonstration: *Chart 1*	Group
1.4	Participants read *ETAT till Exercise 1*	Individual
1.5	Demonstration: *Triaging sick young infant and child (Chart 2)*	Group
1.6	Participants do *Exercise1*	Individual
1.7	Module reading	Individual
1.8	Demonstration: *Chart 3*	Group
1.9	Module reading	Individual
1.10	Practical demonstration	Group
1.11	Participants read *Oxygen administration*	Individual
1.12	Participants read *Circulation*	Individual
1.13	Demonstration: *Chart 4 & 5*	Group
1.14	Participants do *Exercise 2*	Individual
1.15	Participants read *Coma and convulsions*	Individual
1.16	Participants do *Exercise 3*	Individual
1.17	Participants read *Dehydration*	Individual
1.18	Video	Group
1.19	Drill	Group
1.20	Summarize	Group

Preparation for Day 1
1. Participants manual 2. Enlarged charts 3. Manikin 4. Video CD 5. Practical session box

1.0 Introduction to Facility Based Care

In this session, 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 acute malnutrition in children.

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

Lead a discussion on how sick young infants and children are received in participants facilities, assessed for care, and infrastructure 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? Whether there is any system of triaging and providing emergency care at their center?
5. What are the skills required to be improved for in-patient management of sick young infants & children at their center?

1.1 Introduction to training module 1

Introduce learner's Training Module 1. Tell participants that this module will teach them the process of triaging patients and offering appropriate emergency treatment. Emphasize the importance of triaging and emergency treatment in reducing mortality. In a hospital setting immediate treatment in very sick children often gets delayed due to lack of triaging. Children with emergency signs are most likely to survive if their emergency signs are picked up quickly & treatment started even before taking a detailed history. Triage helps in quickly sorting out patients with emergency signs, priority signs or patients who can wait.

Facilitator should emphasize that health facility which is receiving referrals must have equipments necessary for the management of emergency cases. It is a good practice that the physicians check the readiness by checking daily the availability of radiant warmer, self inflating bag, masks of various sizes, IV Fluids, Drugs (glucose, calcium, anticonvulsant, dopamine, adrenaline etc), and source of oxygen and devices for oxygen delivery. They should also ensure functionality of the equipments.

1.2 Module reading

Participants read *Introduction and Learning Objectives.*

1.3 Demonstration

Take participants to wall charts and demonstrate the process of management of sick child and young infant in the hospital using chart-1. Emphasize that in the health facility identifying emergency signs and providing emergency treatment is the first step in the management of sick children. Once the child is stabilized a detailed assessment for reaching a diagnosis should follow. In-patient treatment includes giving specific treatment as well as supportive care. The parameters for monitoring of sick children will vary depending on the underlying illness. Emphasize the need for communication with parents about the condition and prognosis of the child at each step.

1.4 Module reading

Participants read Emergency Triage and Treatment (up to Exercise 1).

1.5 Demonstration

Material needed: Enlarged Chart 2 featuring a flow diagram for **Triaging Sick Young Infant and Child.**

Demonstrate flow diagram and review concept of triage using the concept of ABCD (Airway, Breathing, Circulation, Coma& Convulsion, and Dehydration). In addition emphasize the implications of identifying trauma, hypothermia and severe acute malnutrition. Identification of severe acute malnutrition during triaging may be based on visible severe wasting & bilateral pedal edema. Explain the participants that signs of circulatory failure may be present due to underlying problems especially hypoglycaemia / hypothermia. In children with severe acute malnutrition with signs of circulatory failure, IV fluids should be only started, if child is lethargic or unconscious.

1.6 Exercise 1: Individual work followed by individual feedback

Compare participants' answers against answer sheet and discuss differences if any.

Answers: Exercise 1

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

Ans 2 : First we assess for emergency signs based on the ABCD concept. On the basis of lethargy and very slow skin pinch, child has severe dehydration. This baby will be categorized as 'Emergency Case'.

Ans 3 : First we will assess for emergency signs on the ABCD concept. Since there are no emergency signs, we will look for priority signs. On the basis of age less than two months (tiny baby), this baby will be categorized as 'Priority case'.

Ans 4 : First we will assess for emergency signs on the ABCD concept. This child has central cyanosis and Coma as emergency signs.

1.7 Module reading

Participants read section 3 up to 3.1.4.

Discuss signs of severe respiratory distress and emphasize that presence of any of these signs indicate severe hypoxia and need for immediate administration of oxygen.
Participants read up to section 3.1.7.

1.8 Demonstration

Take participants to chart 3 and discuss the essential steps of providing basic life support. It is essential that for managing children who are not breathing or gasping immediate help should be sought as it requires a team of health providers. These skills are life saving and it is essential that all health personals are trained to provide basic life support.

1.9 Module reading

Participants complete reading chest compression (section 3.1.7).

1.10 Demonstration: Airway management, Bag & mask ventilation and Chest compression

Facilitator demonstrates steps of airway management on the manikin. It is important to straighten the airway and raise the base of the tongue which may be blocking the airway. For the straightening the airway, padding is required under the shoulder in infants less than 1 year and under the occiput in older children.

For lifting the base of the tongue, manoeuvres; head-tilt and chin-lift (child without suspected trauma) and jaw thrust (child with suspected trauma) are used.

Let the participants practise individually under the supervision of the facilitator.

Facilitator explains that if the child does not start breathing after the above manoeuvres, bag and mask ventilation should be immediately started.

Explain the steps of bag and mask ventilation:

a. Selecting correct size of the mask
b. Opening the airway
c. Make a tight seal between mask and face
d. Deliver effective ventilation
e. Assess effectiveness of ventilation

Let the participants practise individually under the supervision of the facilitator.

Demonstrate chest compression

Tell participants that the technique of chest compression in infants and children between 1 and 5 years is different. Explain the differences as specified in the participant's module.

For children more than 1 year, facilitator should ensure that the provider is keeping his arm straight at elbow and it is vertically placed over the chest. In these children, to avoid excessive force, chest compression with one hand is preferred. Force must be applied from the shoulders.

Let participants practice the skills of chest compression on the manikin. At the end of the session, a pair of participants should practice the complete process of Basic Life Support (BLS). During this practice session, the facilitators should assess and score the participants' performance as per the checklist.

1.11 Module reading

Participants read section 3.1.8 and 3.1.9.

Lead a discussion on the indications of giving oxygen in respiratory distress, and signs of severe distress. You may discuss the indications for oxygen use in situations with limited oxygen supply as per the box below. Discuss the use of pulse oximetry in deciding about the duration of oxygen therapy. In clinical sessions, you would demonstrate the use of pulse oximeter.

If limited oxygen supply, give priority to children who have:

- Have central cyanosis, or
- Are unable to drink (where this is due to respiratory distress).

If oxygen supply is adequate, give to children with any of the following:

- Severe lower chest wall indrawing
- Respiratory rate of 70/min or above

Lead a discussion on advantages and disadvantages of giving oxygen by various techniques and the preferred techniques in emergency settings. Also mention the importance of frequently cleaning the nasal catheter and prongs. You would subsequently demonstrate the various techniques of giving oxygen on day-4 clinical session.

1.12 Module reading

Participants read *Circulation* (Section 3.2) up to Exercise 2.

Discuss with the participants the method of assessing for capillary refill time. Emphasize that in shock the peripheral pulses are first to become weak. If in addition the central pulses are also weak it indicates further deterioration in cardiac output and is an ominous sign. These signs appear late in septic shock. In children with suspected sepsis close monitoring should be done to detect signs of shock early.

Discuss with the participants about when to start dopamine, calculating the amount of dopamine and rate of infusion Example:

How to give Dopamine

- For giving 1 mcg/kg/minute of dopamine
- Amount of dopamine(mg) to be added = Weight in kg x6
- To convert this dose into amount to ml of dopamine divide by 40
- Add this amount of dopamine (ml) to make 100 ml of total fluid
- 1 ml/hour of this fluid gives 1 mcg/kg/minute
- To give 10 mcg/kg/minute give 10 ml/hour or 10 microdrops/minute (as 60 microdrops = 1ml)

Example: Giving 10mcg/kg/minute for a 10 kg child

- Amount of dopamine(mg) to be added = 10 x6 =60 mg
- To convert this dose into amount to ml of dopamine: 60/40 =1.5 ml
- Add 1.5 ml of dopamine to 98.5 ml to make 100 ml of total fluid
- 10 ml/hour of this fluid gives 10 mcg/kg/minute or 10 microdrops/minute

Tell the participants to remember to deduct this fluid volume fro the total daily maintenance fluid requirements.

1.13 Demonstration: Take the participants to wall Chart 4. Emphasize the difference in rate of infusion between young infants and sick child. Remind that in case of blood loss, blood transfusion is required. Look for signs of improvement after each fluid bolus.

Now demonstrate chart 5. Emphasize that choice of fluid is half normal saline with 5% dextrose or Ringer's lactate. Also the rate of fluid administration is slower (15ml/kg over 1 hour). Emphasize the need for monitoring pulse and breathing rate more frequently.

1.14 Exercise 2: Individual activity followed by individual feedback

Compare participants' answers against answer sheet and discuss differences if any.

Answers: Exercise 2

1. *Based on ABCD, infant is in shock (cold hands, capillary refill time> 3 sec, fast and weak pulse), which is an emergency sign. Give IV 20 ml/kg Ringer's lactate or normal saline, start oxygen and keep the baby warm.*
2. *Infant has shock, as emergency sign (CRT> 3 seconds, Weak & fast pulse).This child has visible severe wasting and is lethargic. Manage as "shock in a child with severe malnutrition."*
   Ensure warmth, give oxygen, insert IV line, and give 25ml of 10% Dextrose, 75 ml of half normal saline with 5 % dextrose over 1 hour.
3. *a) -* *Ensure warmth, give oxygen, insert IV line*
   - *Infuse fluid bolus of 40 ml normal saline over 20-30 min.*
   - *If no/partial improvement, repeat 40 ml of NS 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, give Dopamine @ 10 mcg/kg/min. Amount of Dopamine should be as per the calculation below:*
  - *Amount of dopamine to be added = 2 X 6 = 12mg*
  - *Convert this amount to ml of dopamine = 12÷40 = 0.3ml*
  - *Add 0.3ml of dopamne to make 100ml of total fulid*
  - *10ml /Hr of this fluid gives 10 mcg/kg/min or 10 micro drops /min*

1.15 Module reading

Participants read section Coma and Convulsions (Section 3.3).

Discuss with the participants need of treating metabolic causes of convulsion such as hypoglycemia and hypocalcaemia. Emphasize that diazepam should not be used in young infants less than 2 weeks as it can displace bilirubin.

Explain to the participants that diazepam preparation for IV use can also be given per rectal route. Emphasize that both phenytoin and phenobarbitone need to be diluted and given slowly.

1.16 Exercise 3: Individual activity followed by individual feedback

Compare participants' answers against the answer sheet and discuss differences if any.

Answers – Exercise 3

1. *Give anticonvulsant, 1.2 ml (6 mg) rectal or 0.6ml (3.0 mg) IV Diazepam. Check blood-sugar. Manage fever. When convulsion stops, put in recovery position.*
   Emergency sign present in form of severe respiratory distress (RR>70/min) & convulsion
2. *Manage airway, clear secretions, and give oxygen. Check blood-sugar. Give anticonvulsants (0.6 ml IV / 1.25 ml rectal Diazepam). Put in recovery position and complete assessment.*
3.
   - *Maintain airway, and breathing.*
   - *Start oxygen if seizures continue.*
   - *Secure I/V access.*
   - *Give I/V 10% calcium gluconate 6 ml diluted with 6 ml of distilled water or water for injection slowly with heart rate monitoring.*
   - *If seizures continue, give 60 mg phenobarbitone diluted in 20 ml of 5% dextrose over 20 min.*
   - *If no control, give 30 mg phenobarbitone I/V over 10 min.*
   - *If no control, repeat 30 mg phenorbarbitone I/V over 10 min.*
   - *If still no control, give 60 mg phenytoin diluted in Normal Saline I/V over 20 min.*

1.17 Module reading

Participants read section Dehydration (Section 3.4)

Emphasize that signs of dehydration in Severe Acute Malnutrition are not reliable.Tell the participants that they will learn treatment of dehydration in children with Severe Acute Malnutrition section.

Emphasize that children receiving Plan-C should be assessed every 15-30 minutes for their hydration status.

1.18 Video

Show participants video on emergency signs and oxygen delivery. Assemble all the participants for video demonstration and ensure that all can see the projection. Tell them to see the video film and ask you to stop if they have any difficulty or query.

Tell the participants that they would be shown video clips of some important emergency signs namely cyanosis, severe respiratory distress, very fast breathing, severe chest indrawing, grunting, lethargy & unconsciousness,.

They will also see video on convulsions, assessment of coma and indications and method of oxygen delivery in health facilities.

In the end summarize the signs demonstrated and answer any questions raised by the participants.

1.19 Conducting drills

Ask each participant a question in turn. Praise participants who give the correct answer. If a participant gives an incorrect answer, ask another participant. If one or more participants cannot answer, pause to explain. Then resume 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
On assessment of A and B	Gasping	Go to emergency
On assessment of A and B	Central cyanosis	Go to emergency
On assessment of 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 diarrhoea
A and B stable, circulation stable	Convulsing child	Go to emergency
A and B stable, circulation stable	Lethargy	Assess for diarrhoea dehydration
A and B stable, circulation stable	Unconscious child	Go to emergency
A and B and C stable	No diarrhoea	Assess priority signs
A and B and C and D stable	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	**Findings**	**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 diarrhoea
Consciousness	Child is convulsing	Check for head or neck trauma, treat for convulsions, and then quickly continue assessment
Consciousness	Lethargy (no other neurological signs present)	Assess for diarrhoea and severe dehydration

1.20 Summarize module

DAY 2

	Procedure	Feedback
2.0	Recap	
2.1	Participants read *Introduction and care at birth* (Module 2 up to Section 4.4)	Individual
2.1	Discussion on hypothermia	Group
2.3	Clinical and practical session (ETAT) visit to labor room & equipment demonstration	Group
2.4	Participants read *Initial steps of resuscitation*	Individual
2.5	Demonstration of *Initial steps of resuscitation*	Group
2.6	Participants read *Positive Pressure Ventilation (PPV), section 4.4.6*	Individual
2.7	Demonstration of Bag&Mask ventilation	Group
2.8	Participants practise initial steps and Bag&Mask ventilation	Group
2.9	Participants read *Chest compression*	Individual
2.10	Demonstration of chest compression	Group
2.11	Participants practise chest compression	Group
2.12	Participants read *till Where do babies go from delivey room?*	Individual
2.13	Participants read *Care of newborn in postnatal ward*	Individual
2.14	Group discussion	Group

Preparation for Day 2

1. Manikin
2. Bag & Mask 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. I/V cannula
12. Baby weighing scale

2.0 Recap of Day 1

2.1 Module reading

Introduce Module 2 and tell participants that it covers care at birth, care of a newborn in the postnatal ward, management of sick young infants, and providing special care for LBW. In addition, it describes various skills such as on plan C for diarrhoea, breastfeeding position and expression of breast milk, and appropriate use of equipments. These are provided as annexure.

Ask participants to read section *Care at birth* (section 4) till *group discussion.*

Emphasize that around 90% of babies only need routine care at birth. There is no need for routine suction. Drying the baby and skin-to-skin contact (placing baby on mother's abdomen) is important step for preventing hypothermia. Skin- to–skin contact also helps in early initiation for breastfeeding. In babies who do not need resuscitation, cord should be clamped after 1-3 minutes (after cord pulsations stop). Babies delivered in health facilities should also be routinely given Inj. Vit K to prevent hemorrhagic disease of the newborn.

2.2 Group discussion

Focus on reasons for hypothermia and prevention methods.

The objective of the group discussion is to identify practices being followed by participants during a delivery in their health facilities. In order to initiate discussion on the subject, ask participants to enumerate the steps they follow in the labor room at the time of delivery and to record these steps on a flip chart. Conclude the discussion by telling 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 actions to prevent hypothermia at birth.

2.3 Clinical session

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

1. Emergency room to practise 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

Facilitator uses a case to demonstrate the process of triage and assessing a sick child. Facilitator assigns cases to participants to practise the steps relevant to the session's objectives with a**s many children as possible.** Observe participants individually working with their assigned patients. Make sure they are 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 the labor room.

- Learning hand washing
- Learning to wrap a baby.
- Learning to use and maintain suction machine.

Facilitator explains to participants the objectives of this session.

HAND WASHING: First demonstrate to participants the correct procedure for hand washing as outlined below and then make them practice hand washing.

Hand washing steps:

- Wet hands up to elbow.
- Apply soap.
- Rub hands, first palms and fingers.
- Then back of hands.
- Follow by rubbing of thumbs.
- Finally rub finger tips in the palms.
- Lastly rub wrists and forearm up to the elbow.
- Keep elbows dependant and 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 available at a newborn corner should include:

- Radiant warmer.
- Resuscitation equipment (Bag&Mask, laryngoscope, ET tubes, drugs-adrenaline, normal saline, I/V catheter, syringes and needles).
- Suction equipment (suction machine or mucous extractor).
- Oxygen source.
- Cord ties.
- Weighing machine.
- Gloves.

Note: If time is available, discuss what is available for newborn care at birth in participants facilities.

SUCTION MACHINE:

Demonstrate use of suction machine to participants.

Objective:

Upon completion of this section, participants should:

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

Parts:

- Suction catheter.
- Suction tubing.
- Suction bottles.

Working:

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

Cleaning and disinfection:

- Wash suction bottle with soap and water.
- Change bottle solution every day.

Dos and Don'ts:

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

Troubleshooting:

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

Side effects and risks:

- Local trauma.
- Bradycardia.
- Apnea.
- Infection.

Maintenance:

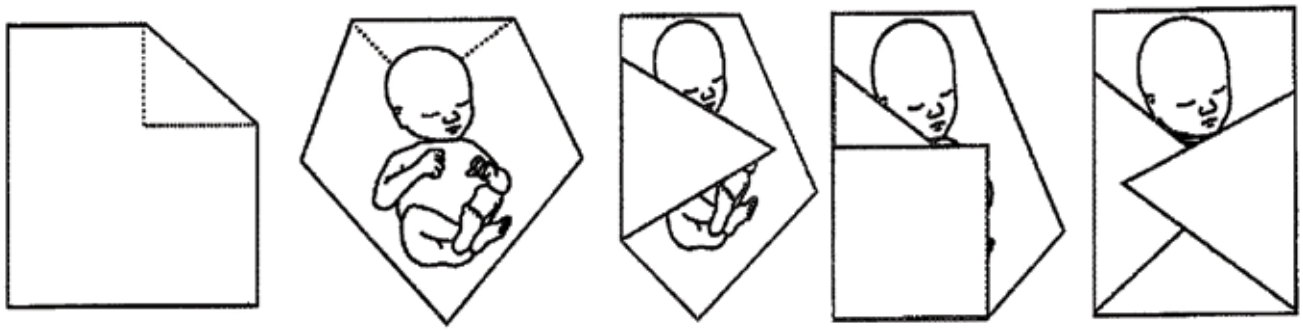
- Check for adequacy of suction pressure.
- Change tubing if leaky or broken.

WRAPPING AND COVERING BABY

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

Steps for wrapping and covering baby (see illustration)

- Wrap baby using a sheet.
- Spread sheet.
- Fold one corner on itself.
- Place baby's head on the infolded corner so as to cover head the 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

Facilitator collects participants around the equipment to be demonstrated and outlines the session objectives. Facilitator then demonstrates the use of radiant warmer and phototherapy sequentially.

RADIANT WARMER

Upon completion of this section, participants should:

- Know the parts of a radiant warmer.
- Be able to demonstrate the working of the warmer.
- Know the dangers associated with its usage and should be able to manage troubleshooting of minor equipments.

Parts:

- Bassinet
- Heating quartz rod/ceremic rod
- Skin probe
- Air probe
- Control panel (skin temperature – set/actual air temperature)

- Heater output
- Alarms

Working

- Connect to mains.
- For pre-warming keep heater output to maximum.
- Place baby.
- Connect probe by placing on midway between xiphisternum and umbilicus.
- Select mode; if servo set the skin temperature to be set between 36.50C and 37.50C. If temperature is lower, it will automatically increase. If manual, read temperature on display and adjust heater output:
  - If below 36^0C – High (75%–100%)
  - If between 36 and 36.5^0C – Medium (25%–75%)
  - If between 36.5 and 37.5^0C – Low (25%–50%)
  - If >37.5^0C – Remove baby/Switch off warmer.
- Measure temperature ½-hourly x 2 hours and then 2-hourly.

Cleaning and Disinfection

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

Dos and Don'ts

- Check temperature ½-hourly/2-hourly.
- Ensure warm feet.
- Ensure probe is connected.
- Do not leave baby unattended.
- Ensure sidewalls are fastened.
- Ensure adequate clothing in case of electricity failure.

Response to alarm

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

Troubleshooting

- If power is not restored, check power supply, then plug, then power cord, and finally fuse.
- Heater not working:
  - If baby's temperature is more than room temperature.
  - Quartz rod not working.
  - Call engineer.

Side-effects and dangers

- Increased insensible water loss.
- Fluid intake must be tailored to meet demand.
- Hyperthermia.
- Hypothermia.

Maintenance

- Annual Maintenance Contract
  (Highlight that for effective functioning of warmer, room temperature should be between 280C and 300C.)

PHOTOTHERAPY UNIT

Upon completion of this section, participants should:

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

Parts:

- Fluorescent Tubes: Number – six (6)
- Color – White (2) & Blue (4)
- Watt – 20
- Irradiance – 4-8 uw/cm2/nm
- Wavelength – 420-460 nm
- Distance – 45 cm

Working:

- Connect to mains.
- Switch on the unit and check that all fluorescent tubes are working.
- Place baby naked only with the napkin on.
- Cover baby's eyes.
- Change position frequently.
- Increase fluid intake.
  - Get baby to breastfeed frequently and for longer durations each time.
  - Spoon/Gavage/I/V – by 20 ml/kg/day.
- Provide continuous phototherapy

Cleaning:

- Use soap/detergent.
- Don't wet mop electrical fittings.

Dos and Don'ts:

- Cover baby's eyes.
- Check temperature – 2-3-hourly to prevent hypo/hyperthermia.
- Check weight of baby daily.
- Encourage frequent breastfeeding/increasing allowance for fluid.
- Reassess frequently.

Troubleshooting

- If power is not restored, check power supply followed by checking plug and then cord and fuse.
- Check the choke of each fluorescent tube that is not working.
- If equipment still does not work, call technician.

Ineffective phototherapy:

- Baby covered.
- All fluorescent tubes are not working.
- Flickering light in fluorescent tubes.
- Fluorescent tube ends are blackened or have circles.

Side-effects and dangers:

- Hyperthermia/Hypothermia
- Increased insensible water loss

Maintenance:

- Change fluorescent tubes if ends are black or every three months.
- Check flux (if possible).
- Annual Maintenance Contract.
- Keep stock of spare fluorescent tubes to change if required.

SKILLS AREA

Session objectives:

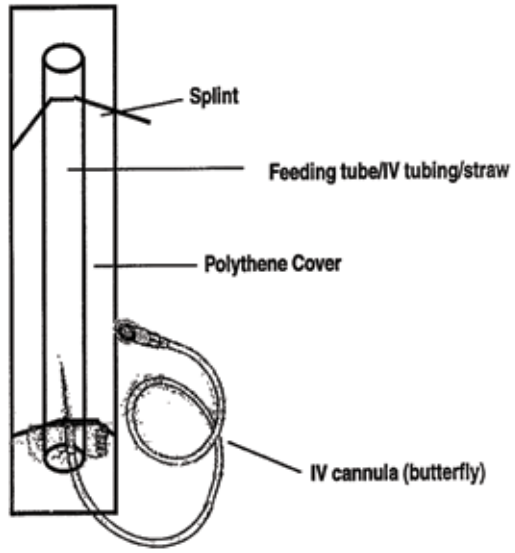
- Learning insertion of umbilical venous cannula.
- Learning placement of peripheral I/V access.
- Learning to estimate blood-sugar using locally available glucometer.

Facilitator explains to participants the objectives of this session. For each procedure, facilitator demonstrates the skill to be learnt, after which each participant practises the skill.

I/V ACCESS

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

Improvised model



Steps in placing I/V access

- Select vein (dorsum of hand/foot).
- Wash hands and dry.

- Wear gloves.
- Prepare skin – use spirit–betadine–spirit, let dry between applications.
- Hold limb proximally to make vein prominent.
- Pierce skin distal to the intended site of puncture.
- Insert needle into vein (there should be feeling of give way).
- Ensure free flow; thread needle further up into vein.
- Secure scalp of vein needle by adhesive tape.
- Secure splint.
- Inject fluid/medication.
- Check distal limb for adequacy of circulation.

UMBILICAL VENOUS CANNULATION

Note: *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 in umbilical cannulation

- Wash hands and dry.
- Wear gloves.
- Connect syringe to the catheter, flush the catheter with saline, and keep ready.
- Take a small piece of fresh umbilical cord (about 10 cm long) in a kidney tray.
- Hold or mount cord.
- Cut umbilical cord transversely with a sterile blade.
- Identify two arteries and one vein – the umbilical vein is a thin-walled patulous large opening in contrast to arteries, which are thick-walled, and much smaller in calibre. (In the normal position the umbilical vein is at 11-12 'O' clock position).
- Insert 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 situations, 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 drug or volume.
- Pinch catheter and remove.
- Press cord to prevent bleeding.

BLOOD-GLUCOSE ESTIMATION

- Equipment needed for estimating blood-sugar:
  - Soap to wash hands.
  - Alcohol for skin preparation.
  - Test strips.
  - 26-gauge needle or lancets.
- Operationalize 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 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 test strip into glucometer.

- Make a needle-stick puncture on the postero-lateral aspect of the heel. Avoid middle portion of the heel and avoid making deep punctures.
- Allow a drop of blood to form and 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 Hypoglycaemia.

Note: *Follow detailed instructions on specific glucometer.*
Remeber to emphasize on biomedical waste seggregation

2.4 Module reading

Participants read section on Neonatal resuscitation (Section 4.4.3, initial steps). Take all the participants to the wall chart 6 and explain the neonatal resuscitation algorithm highlighting the importance of the first golden minute.

2.5 Demonstration

Facilitator demonstrates all the initial steps in the proper sequence. Demonstrate warming the baby (placing under radiant warmer), positioning the baby with shoulder roll, suctioning oropharynx, drying the baby, and tactile stimulus. Highlight that these steps should be done in proper sequence and within 30 seconds. Suctioning and drying are enough stimuli for inducing respiration. Tactile stimulus may be needed if baby still does not start breathing.

2.6 Module reading

Participants read section on *Positive Pressure Ventilation* (Section 4.4.6).

2.7 Demonstration

Facilitator demonstrates the Bag & Mask equipment and Bag & Mask ventilation. Ask the participants to open annexure 5 and see bag and mask description. First explain all parts of the resuscitation bag. Show how to open the parts and to re-assemble the bag. Then demonstrate how to check if the bag is functioning. Follow this with a demonstration on the technique of Bag & Mask ventilation.

2.8 Practice by participants

Participants practise skills of initial steps and Bag & Mask ventilation under supervision of facilitator.

Material needed:

- Manikin
- Mucous extractor
- Suction catheter
- Feeding tube,
- Shoulder roll (1 small towel)
- 2 sheets to dry
- Face mask for free flow
- Bag (500 ml) and mask (2 sizes of mask)
- Oxygen reservoir
- Oxygen connecting tubes

2.9 Module reading

Participants read section on *Chest compression* (Section 4.4.7).

2.10 Demonstration

Facilitator demonstrates chest compression.

2.11 Practice by participants

Participants practise skills of chest compression under supervision of facilitator.

After the participants have learned all the steps of resuscitation, ask the participants to demonstrate all the steps in pairs, while the facilitator observes the individual skills and correct sequence of all the steps. Record the participant performance in the facilitator checklist.

2.12 Module reading

Participants read till *where do babies go from Labour room*?

Discussion on observation care

Lead a discussion on where babies go from labour room by emphasizing that immediate referral is required for babies with birth weight <1500 gm, with major congenital malformation, severe respiratory distress and those requiring extensive resuscitation.

There is a certain category of babies who do not require referral but need to be observed which can be either done in a special observation area or with the mother. Stable babies with birth weight between 1500-1800 gm can be with the mother and observed 4-6 hourly. Babies with fast breathing and those who have received IPPV need closer observation initially till they settle down. All those not requiring referral or observation should be roomed in with the mother.

2.13 Module reading

Participants read section on *Care of newborn in postnatal ward* (Section 5).

2.14 Group discussion

Conduct a group discussion on care of newborn in postnatal ward, focusing on the environment/temperature in the postnatal ward, breastfeeding problems and prevention of infection.

DAY 3

Procedure		Feedback
3.0	Recap	
3.1	Participants read section *Management of sick young infant* through section 6.2	Individual
3.2	Group discussion on hypoglycaemia management	Group
3.3	Participants read through section 6.5.2	Individual
3.4	Group discussion on Jaundice management	Group
3.5	Participants read till Exercise 4	Individual
3.6	Demonstration on use of monitoring checklist	Group
3.7	Participants do Exercise 4	Individual
3.8	Participants read *LBW* till *Drill on feeding*	Individual
3.9	Drill on *Mode of feeding*	Group
3.10	Participants read *LBW* till Exercise 5	Individual
3.11	Video on *feeding*	Video Group
3.12	Participants do Exercise 5	Individual
3.13	Participants read *Neonatal transport*	Individual
3.14	Participants do Exercise 6	Individual
3.15	Case studies	Group
3.16	Clinical session	Group
3.17	Practical session	Group

Preparation for Day 3

1. Case recording forms
2. Video CD
3. Thermometer
4. Clinical cases: Newborn babies in postnatal ward and sick young infants
5. Feeding tubes for gavage feeding
6. Cup and spoon
7. Breast model or mother for demonstration of manual expression of breast milk

3.0 Recap Day 2

3.1 Module reading

Participants read about Management of sick newborn (Section 6) through section 6.2.

3.2 Group disussion

Facilitator should lead a discussion on common causes of hypoglycaemia and its management. He should demonstrate calculation of glucose infusion rate on a Flip-chart.

Discuss Table 6 and emphasize that in situations where baby requires higher GIR like 8 mg/kg/min or 10 mg/kg/min, normal saline is not added to avoid potential contamination related to multiple mixing. Moreover, treatment of hypoglycaemia takes precedence over consideration for electrolyte maintenance.

3.3 Module reading

Participants read about Management of sick newborn (Section 6) up to section 6.6.Lead a discussion on common systemic bacterial infections in young infants highlighting the non-specific signs and having a high index of suspicion in infants with risk factors.

Emphasize need for giving Intravenous antibiotics in Meningitis.

3.4 Group disussion

Lead a group discussion on clinical assessment of jaundice by extent of skin staining and treatment of pathological jaundice. Emphasize the need for early referral in children in infants who need exchange transfusion and those with cholestatic jaundice.

Demonstrate use of AAP guidelines for deciding when to initiate phototherapy in newborns.

3.5 Module reading

Participants read about Management of sick newborn up to exercise-4

3.6 Demonstration

Introduce Monitoring Checklist and demonstrate its use in sick newborn babies.

3.7 Exercise 4: Individual activity followed by individual feedback.

Facilitators compare participants' answers against those given in the answer sheet.

Ans 1a:

- *This baby has emergency signs – Shock.*

Ans 1b:

- *Most likely diagnosis is Meningitis - presence of lethargy, poor feeding and bulging fontanelle. Baby also has shock and hypothermia.*

Ans 1c:

- *Blood sugar*
- *Lumbar Puncture & CSF examination when haemodynamically stable*

- *Sepsis screen*
- *Blood culture if facility available.*

Ans 1d : Steps of treatment

- *Check blood sugar: if a facility doesn't exist, give 2ml/kg 10% dextrose*
- *Provide warmth- (radiant warmer)*
- *Give oxygen*
- *Provide treatment for Emergency signs- Shock. Give normal saline 20 ml/kg over 30 minutes, reassess if there is no repose, give the second bolus. Start Dopamine, if the baby does not respond to second bolus.*
- *Give antibiotics- Inj Ampicillin (100 mg/kg/dose 12 hrly) or Inj Cefotaxime (50 mg/kg /dose 12 hrly) & Inj Gentamicin (5 mg/kg/dose 24 hrly)*
- *Give Vitamin K 1 mg intramuscularly if not received earlier*
- *Give IV maintenance fluid after treatment of shock*

Ans 2 a:

- *Hemoglobin or PCV.*
- *Blood group of baby and mother*

Ans 2b:

No intervention is required at present.

(In a term baby without any risk factors Phototherapy is started at 17.5 mg/dl), Keep under observation. Repeat serum bilirubin after 6-12 hrs for deciding further treatment.

Ans 3: 3-kg baby, Day 7:

- *Fluid required = 150 ml/kg x 3 kg = 450 ml over 24 hrs.*
- *EBM given = 5 ml 3 hrly = 5 x 8 = 40 ml over 24 hrs.*
- *So IVF required in 24 hrs = 450 – 40 = 410 ml.*
- *I/V fluid orders: 135 ml Isolyte-P over 8 hrs, 17 drops/min.*

3.8 Module reading

Ask participants to read Management of LBW babies (Section 7) till the drill on mode of feeding. Discuss with the participants problem of LBW babies in India. Emphasize that more than two third of these LBW babies are Small for Date babies. Highlight importance of keeping LBW babies warm in the hospital and at home.

3.9 Drill on mode of feeding

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

- 2.2 kg – Breastfeeding.
- 1.5 kg – Gavage feeding.
- 1.1 kg – I/V fluids, try gavage if not sick.
- 1.9 kg – Breastfeeding, if unsatisfactory, give bowl-spoon feeds.
- 1.3 kg – Gavage feeding.
- 900 gm – I/V fluids.

3.10 Module reading

Ask participants to read till Exercise 5.

Discuss the difference in the volume of daily increments for intravenous fluids and enteral feeding (Refer to table No. 5 and 13). Inform participants that enteral feeding increments are higher than intravenous fluids because the risk of excess fluid administration is higher with IV therapy.

If the infant is on intravenous fluids and enteral feeding then when the infant's feeding volume reaches 2/3rd of the intravenous fluid for age, the intravenous fluids can be omitted.

3.11 Video on expression of breast milk, paladai/cup feeding.

Before showing the video:
Tell participants that they will watch a demonstration on how to feed an LBW baby. Assemble all the participants for video demonstration and ensure that all can see the projection. Tell them to see the video film and ask you to stop if they have any difficulty or query.

1. Show video. Pause video and explain or discuss what participants are watching. Discuss importance of privacy during manual expression of breast milk. Ask participants importance of baby in mother's lap shown in the video during manual expression of breast milk. Baby's sight & cry stimulates oxytocin reflex. Highlight importance of expressing from all quadrants. Tell participants that if they need to show correct method this should be done on breast model or their own body.
2. Discuss with participants various methods of feeding EBM. Cup, cup-spoon or paladi all may be used. Highlight feeding should be by touching milk to upper lip. Don't pour milk in mouth. Let baby regulate it's requirement.
3. At the end of the video show, lead a short discussion. If participants are not clear, rewind video and show the relevant portions again.

3.12 Exercise 5: Individual feedback followed by individual feedback.

Ans 1a:

Low birth weight baby with hypoglycaemia & low body temperature (mild hypothermia).

Ans 1b:

- *Admit the baby*
- *Keep the baby warm*
- *Give 3 ml IV bolus of 10% of dextrose*
- *Start infusion of glucose so as to provide 6 mg/kg/min*
- *(90 x 1.6 = 144 ml for 24 hrs or 48 ml of 10% dextrose 8 hrly @ 6 microdrops /minute),repeat blood sugar after 30 minutes,*
- *Send sepsis screen and start antibiotics*

Ans 1c:

Give cup or spoon feeding 14 ml 2 hourly. If not accepting spoon feeds, give the same as gavage feeding.
If baby is euglycemic for 6 hrs stop IV glucose.

3.13 Module reading

Ask participants to read about Neonatal transport (Section 8) till Exercise 6.

3.14 Exercise 6

Ask participants to write their answers in the module and give individual feedback

Ans 1: Indications of transfer to neonatal care unit:

- Birth weight less than 1500 gms
- Babies needing mechanical ventilation.
- Shock not responding to fluid challenge or vasopressors.
- Jaundice needing exchange transfusion.
- Major congenital malformations, eg. Tracheo-esophageal fistula, diaphragmatic hernia, meningomyelocele, etc.
- Refractory seizures.
- Abdominal distension with bilious vomiting.

Ans.2: Components of organization of neonatal transport:

- Assess
- Stabilize.
- Writing a note
- Encourage mother to accompany
- Arrange a provider to accompany

3.15 Case studies (Individual activity followed by group discussion)

Ask participants to do the case studies. Follow with a group discussion.

Case study 1

1. Routine care
2. Place the baby on mother's abdomen, dry the baby, wipe the mouth, clamp the cord, examine for major malformations, initiate breast feeding, place and identity label, maintain warmth by covering the baby and mother, Inj Vit K, record the weight.
3. Reassure mother that milk output is normally less in the first few days, and all she needs to do is breastfeed baby frequently both day and night with good attachment & positioning.

Case study 2

1. Hypothermia. Place baby under radiant warmer and start rewarming. Check for blood sugar.
2. Start milk feeding by gavage @ 60ml/kg/d 3 hrly (12 ml milk 3 hrly).
3. Give EBM by cup and spoon feeding 3 hrly @ 120ml/kg/day (23ml/feed).
4. Breastfeed baby before each cup/spoon feed is given, and ensure both breasts 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 breastfeeding, keeping baby warm, feeding supplements of vitamins and minerals, seeking help if danger signs appear, schedule follow-up visits.
7. There is poor weight gain (should have gained 10-15 gm/day approximately 180-240 gm, has gained only 50 g). Assess for sign of illness, hypothermia, and assess feeding. Appropriate action based on assessment.

Case study 3

1. Septicaemia and hypoglycaemia, low birth weight
   - Ensure warmth
   - Give 4 ml IV 10% Dextrose
   - Start I/V Glucose infusion @ 6mg/ kg/ min, 75ml/kg/day (68ml D10 + 7ml D25). Monitor blood glucose
   - Give Inj. Vitamin K (1mg), if not received earlier
   - Send sepsis screen & start antibiotics (ampicillin and gentamycin)

2. Start breast feeds, continue IV fluids – taper IV fluids as baby improves, monitor blood sugar

Case study 4

1. Bacterial sepsis with possible meningitis (due to convulsions)
   - Ensure warmth,
   - Check blood sugar –if normal give maintenance IV fluid, 110ml 8 hrly, if low treat hypoglycaemia
   - Give antibiotics for meningitis (if possible perform lumbar puncture & sepsis screen) (ampicillin 240mg 12 hrly/ cephalosporin 120mg IV 12hrly and gentamycin 12 mg IV 24 hrly).
   - If convulsions recur give phenobarbitone
   - Also decompress stomach by NG suction

3.16 Clinical session

Facilitator Note: The clinical session will be held in the postnatal and sick young infant wards. In the postnatal ward, facilitator demonstrates how to check babies and then allows participants to practise using postnatal checklists.

For the sick young infant clinical session, facilitator should select three types of cases – LBW, sepsis, and respiratory distress. There is a need for 5 cases for this session. First introduce young infant recording form. Then demonstrate on a case the assessment of a sick young infant (including, TABCFMFMCF).

Facilitator assigns cases to participants. Participants should practise the steps relevant to the session's objectives with as many children as possible. Observe participants individually working with their assigned patients. Make sure they are doing the clinical skills correctly. Provide specific feedback and guidance as often as necessary. Comment on exercise that are done well and provide additional guidance where improvement is needed.

3.17 Practical session

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 LBW babies), or when there are breast or nipple problems. The expressed breast milk is usually fed with a spoon from a cup.

- The mother is made to sit comfortably and massage all quadrants 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 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 from both breasts. It may take her about 15-20 minutes to express both breasts completely.

b. Gavage feeding

- Take 6 hr or 8 hr 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 and 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 and proceed to feed.

c. Cup (katori) spoon feeding

- Take baby onto 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 and 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.
- Place in right lateral position with head supported a little higher than the rest of the body.

DAY 4

Procedure		Feedback
4.0	Introduce Module 3	–
4.1	Module reading up to section 9.6	Individual
4.2	Participants read section 9.6 & 9.7	Individual
4.3	Group discussion	Group
4.4	Participants read upto Exercise 7	Individual
4.5	Participants do Exercise 7	Individual
4.6	Participants read section 10.0 to 10.2	Individual
4.7	Participants read about *persistent diarrhoea* (10.3)	Individual
4.8	Participants do Exercise 8	Individual
4.9	Participants read about *management of fever* (11.0)	Individual
4.10	Participants do Exercise 9	Individual
4.11	Clinical session	Group
4.12	Practical session	Group

Preparation for Day 4

1. Case Recording Forms
2. Participants manual
3. Enlarged wall charts
4. Nebulizer
5. MDI
6. Plastic bottle/cup for preparing spacer
7. Stethoscopes
8. Nebulizer Salbutamol solution
9. Chicken bone or manikin limb for intraosseous line
10. Pulse oximeter
11. Tuberculin syringe
12. Inj. Diazepam
13. Clinical cases: Sick children having fever, diarrhoea, pneumonia, asthma, meningitis, malaria

4.0 Introduce facility based care of sick child

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

The sick child may be referred to the health facility with one particular complaint but while managing these children, one should keep in mind the broad principles of IMNCI. One should assess for other associated problems and accordingly they should be treated while managing these children, apart from providing the specific treatment his nutritional state and immunization needs should be addressed as well.

4.1 Module reading

Participants read Introduction and *Management of cough* up to 9.6 *(child presenting with wheeze)*

Discuss with participants the essential points in history and examination of children presenting with cough or difficult breathing and the possibilities. Highlight 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, I/V fluids and the monitoring of admitted cases. Tell participants when to consider possibility of TB and refer to the RNTCP guidelines for management as provided in the annexure 7.

4.2 Module reading

Participants read about *Asthma* (Section 9.6 and 9.7)

4.3 Group discussion

Lead a discussion on the diagnostic possibilities in a child with wheeze. Ask participants how they manage wheeze. Discuss advantages of inhalation therapy i.e. direct action, low dose, quicker response and fewer side effects. Then discuss the need to assess severity and that patient with moderate/severe attack or a mild episode with no response/ deterioration required hospitalization. Options of initial therapy may then be discussed. MDI with space and nebulizer are equally good but inj Adrenaline is used when the other two are not available or patients in very severe distress that is unable to inhale well. Non response to initial therapy and step wise addition of Iptratropium, Magnesium sulfate or Aminophylline can then be discussed.

An objective way of assessing severity is given in annexure 9, if participants wish it can be discussed.

4.4 Module reading

Participants read Section up to Exercise 7.

Lead a discussion on the possibilities in children presenting with stridor and the management of croup. Discuss about oxygen delivery in cases of croup.

4.5 Exercise 7: Individual activity followed by individual feedback

Compare participants' answers against the answer sheet and discuss any differences.

Answers: Exercise 7 – Cough or difficult breathing

Answer:

Question 1:

a. *Mild attack of asthma.*

b. Salbutamol 2.5 mg/dose by nebulizer or by MDI 4 puffs (100 microgram/puff) at 2-3 minutes interval. This needs to be repeated every 20 minutes for 3 doses.

Question 2:

a. Very severe pneumonia

b. Staphylococcal aureus.

c.
- *Admit.*
- *Give O2 (maintain SPO2 >92%).*
- *Inj Ampicillin 400 mg 6 hrly plus Inj Genta 60 mg OD plus Inj Cloxacillin 400 mg 6 hrly.*
- *X-ray chest after stabilization.*
- *Supportive care – I/V Pediatric maintenance 250 ml IV 8 hourly, paracetamol ¼ tab.*
- *Monitoring.*

4.6 Module reading

Participants read Case management of children presenting with diarrhea (10.0) up to severe persistent diarrhea (10.3).

Tell participants that they are already skilled in treating acute diarrhoea. Most of the 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 diarrhoea management.

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

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

4.7 Module reading

Participants read about severe persistent diarrhoea (10.3) up to Exercise 8.

Lead a discussion on the management of persistent diarrhoea 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 diarrhoea are given in the annexure 6.

4.8 Exercise 8: Individual work followed by individual feedback

Compare participants' answers against those given in the answer sheet and discuss any differences.

Answers

a. Yes, he has severe persistent diarrhoea.

b.
- *If he has evidence of associated systemic infections.*
- *Develop visible blood in stools.*
- *Stool microscopy shows trophozoites of E.histo and Giardia.*

c. Start feeding with low lactose diet such as milk-rice gruel, khichri or yoghurt (Diet A).

4.9 Module reading

Participants read Management of children presenting with febrile illnesses (11.0) up to Exercise 9.

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.

Lead a discussion on managing cases of severe complicated malaria cases, quinine therapy. Discuss problems faced in managing these cases and their monitoring in the wards. The treatment is started with intra-venous Quinine or parenteral artimisinine derivatives. A child who is started on IV quinine may start accepting orally after 48-72 hours. When child is better treatment should be completed with oral drugs.Tell participants that loading dose is not to be given when IM quinine is given.

Clarify to the participants that clindamicin should be given for total of 7 days even if started after the child has started accepting orally on 2nd or 3rd day of therapy with IV quinine. Clindamycin should be started along with oral quinine but should be continued for 7 days even if course of quinine is over earlier.

Lead a discussion on managing cases of meningitis, antibiotic therapy. Discuss the need for lumbar puncture and CSF examination. Emphasize to start the treatment first in patients with signs of raised intracranial pressure and lumbar puncture can be delayed or the patient may be refered. Discuss problems faced in managing these cases and their monitoring in the wards.

Lead a discussion on managing cases of severe dengue. Discuss problems faced in managing these cases and their monitoring 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 conditions that would need further workup and referral.

4.10 Exercise 9: Individual work followed by individual feedback

Answers

a. *She has coma as emergency sign and high fever as priority sign.*
   Manage airway, position, check and correct hypoglycaemia.
b. *H/O skin rash, headache, ear pain.*
   Look for stiff neck, skin rash, discharge from ear, splenomegaly.
c. *Meningitis, cerebral malaria, viral meningoencephalitis.*
d. *LP, smear for MP and RDT, blood glucose, Hb and complete blood counts.*
e. *Cerebral malaria.*
   Emergency measures to be taken within the first hour:
   Check for hypoglycaemia and correct.
   Treat convulsions, if present.
   Since the child is unconscious, minimize the risk of aspiration pneumonia by inserting a nasogastric tube and removing the gastric contents.

Antimalarial treatment:

I/V Quinine: Give a loading dose of 20 mg/kg of quinine dihydrochloride in 10 ml/kg of I/V 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. Alternative is artemisnin compounds (artemether or artesunate). IV artesunate 2.4 mg/kg on admission followed by 2.4 mg/kg after 12 hr and 24 hr, then once a day for minimum of 3 days. Complete full ACT course after parenteral treatment.

Give appropriate supportive care in all cases and monitor.

4.11 Clinical session

Facilitator assigns cases to participants. Participants should practice doing the steps relevant to the session's objectives with as many children as possible. Observe participants individually working with their assigned patients. Make sure they are doing the clinical skills correctly. Provide specific feedback and guidance as often as necessary. Remark on steps that are done well and give additional guidance when improvement is needed.

Objective: Assessment and management of sick children in facility.

4.12 Practical session

Aerosol Therapy

Nebulizer:

- Continuous flow oxygen at 6 to 8 litres per minute can also be used.
- Attach aerosol mask to the top of nebulizer.
- Put drug and 2-4 ml of normal saline in nebulizer compartment.
- Treat child until all the liquid in the nebulizer has been almost used up, which usually occurs in 5-10 minutes.
- Bronchodilators can be effectively given by nebulization using an electric air compressor.
- Tubing and nebulizer 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 similar to a nebulizer if correctly used.
- No child < 5 years should be given inhaler without spacer.
- Release a puff (100 mcg 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 (100 mcg/puff) at 2-3 min interval.

Spacers can be made in the following way:

- Use a plastic cup or a 500 ml soft-drink bottle or something similar.
- Cut a hole in the base of the object that you choose in the same shape/size as the mouthpiece of an 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 3-4 breaths and repeat.
- For younger children, place the cup over the child's mouth and use as a spacer in the way described above.

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 3 min 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 min after administration, so if stool is passed after this, the dose does not need to be repeated.
- Interval before giving another dose (if convulsions do not stop) is 10 min.

Intraosseous line

Facilitator can demonstrate and participants can practise on chicken thigh bone or any other animal bone.

- Gather necessary supplies.
- Wash hands and put on clean examination gloves.
- You can use a sterile intraosseous needle, bone marrow needle, or a 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 it to dry.
- Position the baby's leg with the knee bent about 30 degrees and 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 900 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 I/V 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 I/V access is available, and within 8 hrs, if possible.

Pulse Oximetry

- It is a very useful non-invasive tool for measuring the oxygen saturation in the blood.
- It uses a light emitter with Red and Infra-red LEDs that shines through a reasonably transluscent site with good blood flow like finger, toe, pinna or ear lobule. In infants foot or palm can also be used.

- The photodetector placed opposite to the emitter receives the light that passes through the measuring site.
- The deoxygenated blood absorbs more red light and lets through more of red light while the oxygenated blood does the opposite. The ratio of the transmitted R/IR signal is calculated and computed to the oxygen saturation based on certain formula by the machine.
- Readings from such machines will be highly affected by the motion artifacts and the perfusion status.
- The accuracy of spO2 is poorer in low perfusion states and when the saturations go below low 80s. Newer generation pulseoxs may be able to overcome some of these problems.
- Also remember that the pulse oximeters cannot detect hyperoxia and therefore corroboration with arterial blood gas values is needed in children on high oxygen flow rates.

DAY 5

Procedure		Feedback
5.0	Participants read *Anemia*	Individual
5.1	Participants read *Management of severe acute malnutrition* upto 13.4.1	Individual
5.2	Participants read from 13.4.1 up to Exercise 10	Individual
5.3	Participants do Exercise 10	Individual
5.4	Case study	Individual
5.5	Drill	Group
5.6	Clinical session: Recording weight, length/height, and assessing sick children	Group
5.7	Practical session	Group
5.8	Group work: Future planning	Group
5.9	Feedback evaluation	----------
5.10.	Valediction & Certificate Distribution	----------

Preparation for Day 5

1. Case recording forms.
2. Infant and adult weighing machines.
3. Infantometer.
4. Stadiometer.
5. Ingredients and measuring utensils for preparing starter and catch-up 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.

5.0 Module reading

Participants read about *Anemia* (section 12).

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

5.1 Module reading

Participants read about Severe Malnutrition (13.0) up to 13.4.1.

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

5.2 Module reading

Participants read from Hypoglycaemia (13.4.1) up to Exercise 10.

Lead a discussion with participants on each step in the management of severely malnourished cases. 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 practise preparing these diets.

Conduct a demonstration on filling the 24-hr intake and daily weight gain chart for severe malnutrition cases. Explain how to fill the 24-hr intake chart. Explain that while filling the weight chart participants can mark the completed weight at admission in front of arrow (eg, 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. Emphasize that the total amount of starter formula per day is based on admission weight (if the child is dehydrated then take the weight after rehydration). During the rehabilitation phase the child is expected to gain weight rapidly and the amount of catch - up formula given should be increased as the child gains weight.

5.3 Exercise 10: Individual activity followed by individual feedback

Compare participants' answers against those in the answer sheet and discuss differences if any.

Answers:

1. *(a) Reena has no emergency sign.*
   (b) Yes. <3 Z score of median of WHO child growth standard.
   (c) Dehydration: Give low osmolarity ORS orally or by nasogastric tube 20ml every 30min for the first 2hrs\ Then give 20-40ml of ORS for the next 10hrs depending on how much the child wants and the losses.
   Start feeding after 2 hr of rehydration (alternate with ORS).
2. *(a) She is having signs of shock, which is an emergency sign.*
   (b) As she has signs of shock, is lethargic and has severe acute malnutrition, check and correct hypoglycaemia. Give oxygen. Make sure child is warm. IV 25ml of 10% dextrosc.
   Start IV 15ml/Kg (75 ml) of half normal dextrose saline over 1 hour.
   Monitor closely for pulse rate and respiratory rate, if improvement then repeat I/V fluid for next 1 hour.
   If deterioration stop I/V fluids or if no improvement after 1 hour then start I/V maintenance fluid and manage as septic shock.
3. *(a) Rahul has priority sign of visible severe wasting & referred patient.*
   (b) Give the first feed of starter formula, if it is quickly available and then continue with 2-hrly 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 to 3 hrly feeds, day and night, at least for the first day.
Give appropriate antibiotics (Inj Ampicillin -250 mg 6 hourly) & Gentamicin (40mg once a day). make sure the child is warm.

(c) *< 4 z score.*

(d) *Immediately.*

(e) *Blood sugar, serum electrolytes (at least sodium, potassium), screening for infections.*
- *Hb, Total and differential leukocyte count, blood culture (if possible).*
- *Urine routine examination.*
- *Urine culture.*
- *Chest x-ray.*

(f) *55 ml/feed of starter formula diet through NG tube every 2-hrly.*

(g) *Make a gradual transition from starter to catch-up formula.*
Replace the starter formula with an equal amount of catch-up formula for 2 days.
Give a milk-based formula, such as catch-up formula which contains 100 kcal/100 ml and 2.9 g of protein per 100ml. Then increase by 10ml each successive feeds as long as child is finishing feeds.
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.
- *Sensory stimulation*
- *Micronutrients for atleast two weeks*
- *24hr food intake chart*
- *Weight gain chart*

5.4 Case study

Compare participants' answers with those given in the answer sheet.

a. • Emergency signs: Severe respiratory distress

b. • Admit/Shift to 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 very severe pneumonia 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, 2 and 14.
- Tab Zinc 20 mg for 14 days.
- GV paint 0.25% for mouth application.
- Oxygen. Continue feeding, ORS 5-10ml per kg after each loose stool.

g. • Monitor respiratory rate, pulse rate, chest indrawing, pulse oximetery, daily intake/output
- The child should be checked by nurses at least every 3 hrs 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
- *HUS, Rectal prolapse.*

5.5 Drill

1. <-3SD
2. -1SD
3. Between -1SD and -2SD
4. <-4SD
5. Between -1SD and medium
6. Between -1SD and medium
7. Between -1SD and -2SD

5.6 Clinical session

Clinical practice

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

Facilitator assigns cases to participants. Participants should practise the steps relevant to the session's objectives with ***as many children as possible.*** Observe participants individually working with their assigned patients. Make sure they are doing the clinical skills correctly. Provide specific feedback and guidance as often as necessary. Comment on issues that are done well and offer additional guidance when improvement is needed.

Objective: Assessment and management of a child with severe malnutrition

Conduct individual case discussion. Teach participants Recording of weight and length/height of children.
How to calculate weight for height, fill weight chart, and fill 24-hr food intake.

5.7 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 > 85 cm).
- 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 child's socks and shoes.
- Work with a partner.
- Help child stand with back of the head, shoulder blades, buttocks, calves, and heels touching the vertical board.
- Hold 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.

Demonstration and practice preparation of starter formula and catch up diets.

Tips for correct preparation

- Wash 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 ingredient.
- Mix oil well so that it does not separate.
- 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 the correct amount of water to make 100 ml of formula.

5.8 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 groups 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.

Ask the groups to present their respective plans of action and recommendation. Provide feedback.

5.9 Feedback from evaluation

Present main findings from course evaluation.

5.10 Valediction and Certificate distribution

ANNEXURE I

Participants 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 s	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	Poisoning	Trauma or other surgical condition
Burns			

ANNEXURE 2

Evaluation questionnaire for 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 option)**				
	(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 option)**				
	(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)	Nebulizer and 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 practise 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?**				

ANNEXURE 3

Checklist for Monitoring Clinical Sessions

Date:

ETAT

- **Tick if correct**
- **Circle if wrong or any problem**
- **Annotate below**

Participant's Initials											
SICK YOUNG INFANT (WEEKS)/ SICK CHILD (MONTHS)											
TRIAGE	**Emergency signs**										
	Airway & Breathing										
	Circulation										
	Coma										
	Convulsion										
	Severe dehydration										
	Priority signs										
	Non-urgent										
TREATMENT FOR EMERGENCY SIGNS	Manage Airway										
	Provide basic life support										
	Give oxygen										
	Make sure child is warm										
	IV fluids										
	IV glucose										
	Glucose oraly or by NG tube										
	Position the child										
	IV calcium in young infant										
	Give anticonvulsants										
	Proceed immediately to full assessment and treatment										
FOR PRIORITY SIGNS	Prompt assessment and treatment										
PROBLEMS:											

Checklist for Monitoring Clinical Sessions

Date:

Sick Young Infant Age up-to 2 months

- Tick if correct

- Circle if wrong or any problem

- Annotate below

Participant's Initials											
SICK YOUNG INFANT (weeks)											
SIGNS OF SEPTICAEMIA	Unable to feed										
	Convulsions										
	Fast breathing (60 breaths per minute or more)										
	Severe chest in-drawing										
	Nasal flaring										
	Grunting										
	Bulging fontanel										
	Axillary temperature 37.5^{0}C or above (or feels hot to touch) or temperature less than 35.5^{0}C (or feels cold to touch)										
	Lethargic or unconscious										
	Less than normal movements										
DIARRHOEA	Some dehydration										
	No dehydration										
	Persistent Diarrhea										
	Dysentery										
JAUNDICE	Physiological										
	Pathological										
WEIGHT FOR AGE	Severely under weight										
	Moderately under weight										
	Not low weight										
ANY OTHER PROBLEM											
TREAT, MONITORING and COUNSEL	Drugs										
	Supportive care										
	Monitoring										
	Advice										
SIGNS DEMONSTRATED IN ADDITIONAL CHILDREN PROBLEMS:											
PROBLEMS:											

Checklist for Monitoring Clinical Sessions

Date:

Sick Child age 2 months up-to 5 years

- Tick if correct

- Circle if wrong or any problem

- Annotate below

Participant's Initials											
SICK CHILD AGE (months)											
TRIAGE	**Emergency signs**										
	Airway & Breathing										
	Circulation										
	Coma										
	Convulsion										
	Severe dehydration										
	Priority signs										
	Non-urgent										
COUGH OR DIFFICULT BREATHING	Severe pneumonia										
	Pneumonia										
	No pneumonia										
	Asthma/WALRI										
	Viral Croup										
DIARRHOEA	Some dehydration										
	No dehydration										
	Severe persistent diarrhea										
	Persistent Diarrhea										
	Dysentery										
FEVER	Malaria										
	Meningitis										
	Typhoid										
	Dengue										
	Severe complicated measles										
	Other causes										
ANEMIA	Severe anemia										
	Anemia										
	No anemia										
MALNUTRITION	SAM (<-3SD)										
	NO (>-3SD)										
Tick treatments or counseling actually given. Circle if any problem. Annotate below											
TREATMENT GIVEN	Drugs										
	Supportive care										
	Monitoring										
COUNSEL FEEDING	Asks feeding questions										
	Feeding problems identified										
	Gives advice on feeding problems										
SIGNS DEMONSTRATED IN ADDITIONAL CHILDREN PROBLEMS:											
PROBLEMS:											

ANNEXURE 4

F-IMNCI Training Report (5 days training)						
Training Site						
Dates		start	end			
Type of Training		Physician/Staff nurses				
						Score[1]
1	Facilitator to Participant Ratio					
2	No. of days facilitators' meeting held					
3	Whether planning session conducted at the end of the training?					
4	Total number of sick young infant seen on day 2 and 3					
5	Number of facilitators used clinical monitoring forms to assess and give feedback					
6	Number of days case demonstration was done for each group					
		Young infant (0 – 2 months)	Score	Children (2 months - 5 yrs)	Score	Score
7	No of signs not seen by even half of the participants (Mention name of signs if possible)					
8	Total number of case sheets filled by a participant					
9	Total No of participants having problems in	**Day-2**	**Day-3**	**Day-4**	**Day-4**	Score
	Assessment					
	Diagnosis					
	Treatment					
	Counselling					
Total Score						
Prepared by:						
Name and Signature of all the facilitators						

[1] Scoring process is given in back of the sheet

Process of scoring

1. Facilitator :Participant Ratio			
Ratio	**Score**		
1:4-5	5		
1:>5	0		
2. Days facilitators meeting held			
No. of days	**Score**		
5	10		
4	5		
<4	0		
3. Planning sessions			
Planning session	**Score**		
Yes	6		
No	0		
4. Young Infant seen on days 2 &3			
No. of YI	**Score**		
>15	3		
10-14	2		
5-9	1		
<5	0		
5. Facilitators using clinical monitoring forms on all days			
No. of facilitators	**Score**		
All	3		
All but 1	2		
All but 2	1		
Less than above	0		
6. Case Demonstration for each group			
No. of days	**Score**		
4	5		
3	2		
<3	0		
7. No of signs not seen by even half of the participants			
Young Infant		**Children (2mths to 5years)**	
No. of signs	Score	No. of signs	Score
<2	5	<2	5
2-5	4	2-5	4
6-9	2	6-9	2
>9	0	>9	0

8. Total number of case sheets filled by a participants (including case sheets filled in class room given in the module and that filled during clinical sessions but don't include exercises for counting respiratory rate or photo exercises)			
Young Infant		**Children (2mths to 5years)**	
No. of case sheets	**Score**	**No. of case sheets**	**Score**
>15	5	>10	5
10-14	4	6-9	4
5-9	3	4-5	3
<5	0	<4	0

9. Number of participants having problem								
	Day 2		**Day-3**		**Day-4**		**Day-5**	
	Number	**Score**	**Number**	**Score**	**Number**	**Score**	**Number**	**Score**
Assessment	<3	3	<2	3	<2	3	<2	3
	3-5	2	2-4	2	2-4	2	2-4	2
	6-8	1	5-7	1	5-7	1	5-7	1
	>8	0	>7	0	>7	0	>7	0
Classification/ Diagnosis	<3	3	<2	3	<2	3	<2	3
	3-5	2	2-4	2	2-4	2	2-4	2
	6-8	1	5-7	1	5-7	1	5-7	1
	>8	0	>7	0	>7	0	>7	0
Treatment	<3	3	<2	3	<2	3	<2	3
	3-5	2	2-4	2	2-4	2	2-4	2
	6-8	1	5-7	1	5-7	1	5-7	1
	>8	0	>7	0	>7	0	>7	0
Counselling	<3	3	<2	3	<2	3	<2	3
	3-5	2	2-4	2	2-4	2	2-4	2
	6-8	1	5-7	1	5-7	1	5-7	1
	>8	0	>7	0	>7	0	>7	0
Total Score – 100								

F-IMNCI Training Report (11 days training)							
Training Site							
Dates		start	end				
Type of Training		Physician/Staff nurses					
							Score[1]
1	Facilitator to Participant Ratio						
2	No. of days facilitators meeting held						
3	Whether planning session conducted at the end of the training?						
4	Total number of sick young infant seen on day 2,3,8 and 9						
5	Number of facilitators used clinical monitoring forms to assess and give feedback						
6	Number of days case demonstration was done for each group						
		Young infant (0 – 2 months)	Score	Children (2 months - 5 yrs)		Score	Score
7	No of signs not seen by even half of the participants (Mention name of signs if possible)						
8	Total number of case sheets filled by a participant						
9	Total No of participants having problems in	**Day-2**	**Day-4**	**Day-7**	**Day-9**	**Day-11**	**Score**
	Assessment						
	Classification						
	Treatment						
	Counselling						
Total Score							
Prepared by:							
Name and Signature of all the facilitators							

[1] Scoring process is given in back of the sheet

1. Facilitator :Participant Ratio	
Ratio	**Score**
1:4-5	5
1:>5	0
2. Days facilitators meeting held	
No. of days	**Score**
11	5
10	4
<10	0
3. Planning sessions	
Planning session	**Score**
Yes	5
No	0
4. Young Infant seen on days 2,3,8 &9	
No. of YI	**Score**
>30	5
25-30	4
15-24	3
10-23	2
<10	**0**
5. Facilitators using clinical monitoring forms on all days	
No. of facilitators	**Score**
All	5
All but 1	4
All but 2	3
Less than above	0
6.Case Demonstration for each group	
No. of days	**Score**
10	5
9	2
<9	0

7. No of signs not seen by even half of the participants			
Young Infant		**Children (2mths to 5years)**	
No. of signs	Score	No. of signs	Score
<2	5	<2	5
2-5	4	2-5	4
6-9	3	6-9	3
>9	0	>9	0

8. 8. Total number of case sheets filled by a participants (including case sheets filled in class room given in the module and that filled during clinical sessions but don't include exercises for counting respiratory rate or photo exercises)			
Young Infant		**Children (2mths to 5years)**	
No. of case sheets	**Score**	**No. of case sheets**	**Score**
>20	5	>10	5
15-20	4	6-9	4
10-14	3	4-5	3
5-9	2	<4	0
<5	0		

9. Number of participants having problem										
	Day-2		**Day-4**		**Day-7**		**Day-9**		**Day-11**	
	No.	**Score**	**No.**	**Score**	**No.**	**Score**	**No.**	**Score**	**No.**	**Score**
Assessment	<3	5	<2	5	<2	5	<2	5	<2	5
	3-5	4	2-4	4	2-4	4	2-4	4	2-4	4
	6-8	3	5-7	3	5-7	3	5-7	3	5-7	3
	9-11	2	>7	0	>7	0	>7	0	>7	0
	>11	0								
Classification/ Diagnosis	<3	5	<2	5	<2	5	<2	5	<2	5
	3-5	4	2-4	4	2-4	4	2-4	4	2-4	4
	6-8	3	5-7	3	5-7	3	5-7	3	5-7	3
	9-11	2	>7	0	>7	0	>7	0	>7	0
	>11	0								
Treatment			<2	5	<2	5	<2	5	<2	5
			2-4	4	2-4	4	2-4	4	2-4	4
			5-7	3	5-7	3	5-7	3	5-7	3
			>7	0	>7	0	>7	0	>7	0
Counselling			<2	5	<2	5	<2	5	<2	5
			2-4	4	2-4	4	2-4	4	2-4	4
			5-7	3	5-7	3	5-7	3	5-7	3
			>7	0	>7	0	>7	0	>7	0
Total Score – 140										

ANNEXURE 5

Skill set scoring tool

Instructions: Reverse demonstration – The participants individually perform the skill in front of the facilitator

Scoring: 1 = Done
0 = Not done

Day	Skill	Done	Not done
Day 1	Steps of airway management	1	0
	Bag and mask ventilation	1	0
	Complete process of basic life support	1	0
Day 2	Handwashing & wrapping the baby	1	0
	Umbilical vein cannulation and I/V cannulation	1	0
	Blood sugar estimation	1	0
	Steps of neonatal resuscitation	1	0
Day 4	Aerosol therapy	1	0
	Intraosseous line	1	0
Day 5	Plotting weight/length & weight/height	1	0
Total Score		**10**	**0**

ANNEXURE 6

Skill set scoring tool

Instructions: To be filled by observer/course director

Scoring: 1 = Done
0 = Not done

Day	Skill	Done	Not done
Day 1	Facilitator demonstrated steps of airway management & Bag and mask ventilation	1	0
	Participants practiced steps of airway management & Bag and mask ventilation	1	0
	Facilitator demonstrated technique of chest compression	1	0
	Participants practiced complete process of basic life support	1	0
Day 2	Participants taken to emergency room to practice (ETAT)	1	0
	Facilitators demonstrated steps of hand-washing	1	0
	Facilitators demonstrated setting of newborn corner	1	0
	Participants practiced hand-washing and wrapping the baby	1	0
	Facilitaror demonstrated IV, umbilical cannulation, blood sugar estimation	1	0
	Participants practiced umbilical cannulation	1	0
	Facilitator demonstrated radiant warmer and phototherapy machine.	1	0
	Facilitator demonstrated steps of neonatal resuscitation	1	0
	Participants practiced steps of neonatal resuscitation	1	0
Day 3	Gavage feeding shown to participants	1	0
Day 4	Aerosol therapy (Nebulizer, spacer) shown to participants	1	0
	Pulse oximetry	1	0
	Intraosseous line demonstrated and practiced by participants	1	0
Day 5	Facilitator demonstrate preparation of starter diets/catch-up diets	1	0
	Facilitators demonstrated measurement of height/weight/length	1	0
	Participants prepared special diets.	1	0
Total Score		**20**	**0**

ANNEXURE 7

PROFORMA FOR Emergency Triage Assesment and Treatment (ETAT) Case Recording Form

Date

Name_____ Age_____ Sex_____ Wt_____ Temp_____

ASK: What are the infant's problems?

ASSESS (Circle all signs present)	**Emergency treatments** • Check for head/neck trauma before treating child – do not move neck if cervical spine injury possible • EMERGENCY SIGNS: (If any sign positive: give treatment(s), call for help, draw blood for emergency laboratory investigations (glucose, malaria smear, Hb)
AIRWAY AND BREATHING • Not breathing or gasping or • Central cyanosis or • Severe respiratory distress (Respiratory rate ≥ 70/min, Severe lower chest in-drawing, Grunting, Head nodding, Apnoeic spells, Unable to feed due to respiratory distress, Stridor in a clam child)	
CIRCULATION Cold hands with: • Capillary refill longer than 3 seconds, and • Weak and fast pulse IF POSITIVE Check for severe acute malnutrition	
COMA CONVULSING • Coma (AVPU) or • Convulsing (now)	
SEVERE DEHYDRATION (ONLY IN CHILD WITH DIARRHOEA) Diarrhoea plus any two of these: • Lethargy • Sunken eyes • Very slow skin pinch If two signs positive check for severe acute malnutrition	
PRIORITY SIGNS · • Tiny baby (<2 months) • Respiratory distress (RR>60/min) • Temperature <36.5°C or > 38.5°C • Bleeding • Restless, Continuously irritable, or lethargy • Trauma or other urgent surgical condition • Referral (urgent) • Pallor (severe) • Malnutrition: Visible severe wasting • Oedema of both feet • Poisoning • Burns (major)	

RECORDING FORM
Assessment of the newborn in Postnatal Wards

Name: _____ Date and time of Birth _____ Sex: M/F Birth Weight:_____

Mode of Delivery: Vaginal/Forceps/ Cesarian section Resuscitation -Yes/No

ASK: Does the mother or infant have any problem? _____

ASK THE MOTHER		D1	D2	
• Has the infant passed stools? • Has the infant passed urine? • Have you started breast feeding the infant? If yes, how many times in 24 hrs. • Have you given any other foods or drinks to theinfant? If Yes, what and how ?				
EXAMINE THE INFANT				
• Count the breaths in one minute. _____breaths per minute Repeat if elevated _____ Fast breathing? • Look for severe chest indrawing. • Look and listen for grunting. • Look at the umbilicus. Is it red or draining pus? • Look for skin pustules. Are there 10 or more pustules or a big boil? • Measure axillary temperature (if not possible, feel for fever or low body temperature): Normal (36.5-37.4° C) Mild hypothermia (36.0-36.4° C/ cold feet) Moderate hypothermia (32.0° C – 35.9° C, cold feet and abdomen) Severe hypothermia (< 32° C) Fever (> 37.5° C/ feels hot) • See if young infant is lethargic • Look for jaundice. Are the face, abdomen or soles yellow? • Look for malformations				
ASSESS BREASTFEEDING: · • Has the infant breastfed in the previous hour? • Is there difficulty or pain while feeding?	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. · Is the infant able to attach? To check attachment, look for:- Chin touching breast Yes ___ No ___ Mouth wide open Yes __ No ___ Lower lip turned outward Yes __ No ___ More areola above than below the mouth Yes__ No___ no attachment at all not well attached good attachment · Is the infant suckling effectively (that is, slow deep sucks, sometimes pausing)? not suckling at all not suckling effectively suckling effectively If not sucking well, then look for: · ulcers or white patches in the mouth (thrush). Look for • Engorged breasts or breast abcess • Flat or inverted, or sore nipples			
HAS THE YOUNG INFANT RECIEVED • Vitamin K • BCG, OPV 0, HEP-B 1				
Any other problems:				

RECORDING FORM
Assessment of Sick Young Infant in Health Facility

Name _____ Age _____ (days) Sex_____ Reg. No._____
Date of Birth _____ Time of Birth ____ Birth Weight _____ g
Presenting Complaints:

Antenatal History

Maternal Illness: Anemia / PIH / Diabetes / Others (specify)

Leaking PV: Present / Absent ; Duration _____(hrs)
If Leaking > 24 hr - Ask For: Fever / Foul smelling liquor
TT Immunization: Yes / No

Delivery History

Place of Delivery: Institution / Home

Type of Delivery: Vaginal/Foreceps/Cesarean

Presentation: Vertex/breech / other

Person conducting delivery: TBA /ANM /Nurse /Doctor / Others

Did the baby cry at birth? Yes / No

Did the baby need resuscitation? Yes / No (if yes, provide details)

Infant Immunization

BCG OPV0 DPT1 OPV1 HEPB1

Examination

Weight:_____g Severely underweight/moderately underweight/not low weight for age

Gestation: Term / Preterm Temperature _____

Heart Rate_____ CRT ≤3 sec / >3 sec

Respiratory rate:_____ Nasal flaring/ grunting/ apnea/ cyanosis

- Bulging anterior Fontanelle
- 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 If present: Face / Chest / Abdomen / Soles
- Abdominal distension: Present / Absent

- Activity: lethargy/ irritable
- Abnormal movement: seizure/ jitteriness
- Bleeding from any site

If Diarrhoea present, Assess for dehydration

- Sunken eyes
- Skin pinch immediate/ slowly / very slowly

Assess For feeding

Ask Mother

- Is there any difficulty in feeding the infant?
- Is she breast feeding the infant?
- If yes, how many times a day?_____
- Has the infant received any other foods or drinks?

If Yes, what and how ? _____

If there is difficulty in feeding or feeding less than 8 times/day or receiving other foods/fluids or low or very low weight then assess breaqst feeding

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.

- Is the infant able to attach? To check attachment, look for:
  - Chin touching breast Yes ____ No ____
  - Mouth wide open Yes____ No ____
  - Lower lip turned outward Yes____ No ____
  - More areola above than below the mouth Yes____ No ____

  no attachment at all not well attached good attachment
- Is the infant suckling effectively (that is, slow deep sucks, sometimes pausing)?
  not suckling at all not suckling effectively suckling effectively
  If not sucking well, then look for:
- ulcers or white patches in the mouth (thrush).

Any Other Examination:

Provisional Diagnosis _____

Plan of Management:

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

Monitoring

PROFORMA FOR ASSESSMENT OF 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** • Check for head/neck trauma before treating child – do not move neck if cervical spine injury possible · • EMERGENCY SIGNS: (If any sign positive: give treatment(s), call for help, draw blood for emergency laboratory investigations (glucose, malaria smear, Hb)
AIRWAY AND BREATHING • Not breathing or gasping or • Central cyanosis or • Severe respiratory distress (Respiratory rate ≥ 70/min, Severe lower chest in-drawing, Grunting, Head nodding, Apnoeic spells, Unable to feed due to respiratory distress, Stridor in a clam child)	
CIRCULATION Cold hands with: • Capillary refill longer than 3 seconds, and • Weak and fast pulse IF POSITIVE Check for severe acute malnutrition	
COMA CONVULSING • Coma (AVPU) or • Convulsing (now)	
SEVERE DEHYDRATION (ONLY IN CHILD WITH DIARRHOEA) Diarrhoea plus any two of these: • Lethargy • Sunken eyes • Very slow skin pinch If two signs positive check for severe acute malnutrition	
PRIORITY SIGNS · • Tiny baby (<2 months) • Respiratory distress (RR>60/min) • Temperature <36.5°C or > 38.5°C • Bleeding • Restless, Continuously irritable, or lethargy • Trauma or other urgent surgical condition • Referral (urgent) • Pallor (severe) • Malnutrition: Visible severe wasting • Oedema of both feet • Poisoning • Burns (major)	

Check temperature if baby is cold to touch, rewarm

• **History**

• **Immunization**

• **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**

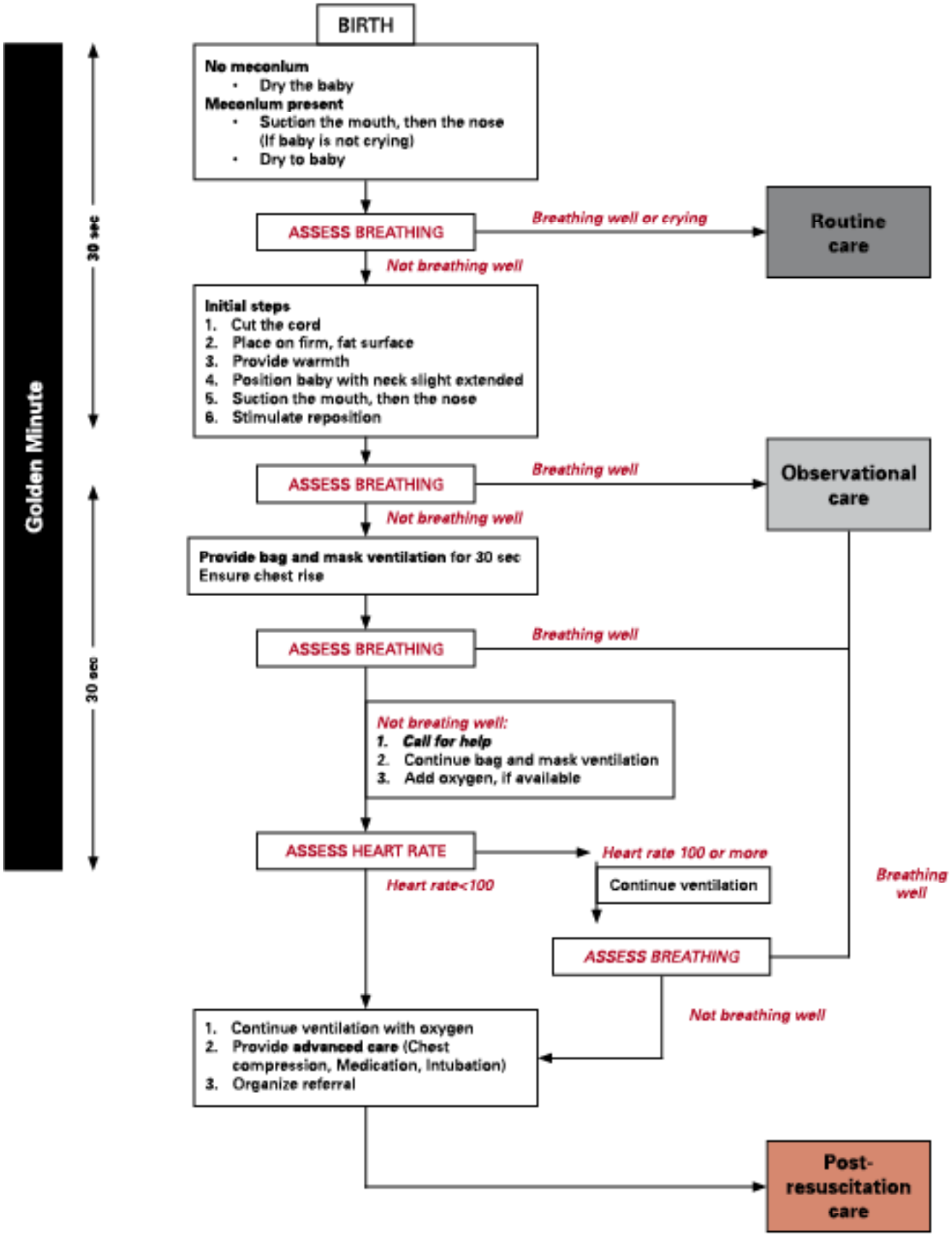
• **Management**

ANNEXURE 7

NAVJAAT SHISHU SURAKSHA KARYAKRAM (NSSK)

The Ministry of Health and Family Welfare has launched Navjaat Shishu Suraksha Karyakram (NSSK). A simple and scalable training module on Basic Newborn Care and Resuscitation has been developed to train ANMs, Nurses and Medical officers in low resource settings. The NSSK manual includes simplified version of the newborn resuscitation algorithm for the community and small health facilities. The algorithm is given on the next page. The health worker is trained in initial steps of resuscitation and providing bag and mask ventilation. If the baby is not breathing after 30 seconds of positive pressure ventilation and heart rate (cord pulsations) is less than 100 per minute, advanced care is needed. If advanced care can be provided by the medical officer in that health facility, follow the algorithm given in the F-IMNCI manual. If advanced care is not possible then the baby should be referred to the nearest higher health facility while positive pressure ventilation is continued on the way.

Flow Diagram for Basic Neonatal Resuscitation



NOTES: