

MODULE 1:

ASSESS AND CLASSIFY

SICK and SMALL NEWBORNS

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INTRODUCTION

When the baby is born, routine care and resuscitation is provided. Triage is done to determine if the baby is sick or small and requires referral to the neonatal care ward. Babies who are not sick or small can receive routine care with their mothers in the postnatal ward.

This module describes how to assess and classify sick and small newborns using the Newborn Care Charts. A neonate is the name used for babies up to 28 days of age. All neonates may be assessed using these charts, and if requiring admission to hospital should be admitted to the newborn care (neonatal) unit.

Assess the newborn by taking a history (Ask, Check, Record) and performing an examination (Look, Listen, Feel). These findings are then used to classify the condition.

ASSESS		CLASSIFY		
Ask, Check and Record	Look, Listen and Feel	Signs	Classify	Act Now

Your facilitator will demonstrate the Assessment process on the wall chart.

OBJECTIVES

At the end of the module you will be able to

- Assess and classify the newborns “need for emergency care”
- Provide immediate care for the newborn requiring emergency care
- Assess and classify the newborn for priority signs
- Assess and classify the newborn for birth injuries, congenital abnormalities and local infections
- Provide immediate care
- Assess and classify the newborn for risk factors and special treatment needs

1.1 ASSESS AND CLASSIFY THE NEED FOR EMERGENCY CARE

Every time you assess a baby first assess the need for emergency care and ACT NOW to provide the care needed. Any sick baby coming to the ward or casualty may have changed condition in transit, so it is important to assess the **breathing, circulation and blood glucose level** before you get further information about the baby. This process will only take a minute if the baby is breathing well and has a normal circulation.

1.1.1 ASSESS THE NEED FOR EMERGENCY CARE



LOOK, LISTEN, FEEL

Assess breathing

- Is the baby breathing?
- Is the baby gasping?
- Count the respiratory rate
- Is the baby's tongue blue?

Assess circulation

- Count the heart rate
- Is the baby pale?
- Is the baby extremely lethargic or unconscious?

Assess for hypoglycaemia

- Check the blood glucose with a glucose test strip

Assess Breathing and Circulation

Look at the baby to see the breathing. Is the breathing normal and regular, or is the baby gasping for breath? Gasping breaths are deep slow respirations. If you are not sure then count the respiration in one minute. Is the respiration less than 20 breaths per minute?

Look to see if the baby's tongue is blue.

Look to see if the baby is pale. Look at the tongue and the palms.

Feel the pulse and count the heart rate in 1 minute. Is it more than 180 beats per minute or less than 100 beats per minute?

Look to see if the baby is extremely lethargic or unconscious. A baby who is lethargic or unconscious does not cry and is not easily roused.

Assess for hypoglycaemia

With a drop of heel prick blood and a haemoglucotest, check the blood glucose on arrival. Is it less than 2.5 mmol/l or more than 2.5mmol/l?

1.1.2 CLASSIFY NEED FOR EMERGENCY CARE AND ACT NOW

SIGNS	CLASSIFY	ACT NOW
<ul style="list-style-type: none"> • Not breathing at all OR • Gaspings OR • RR < 20, OR • Heart rate < 100, OR • Tongue blue 	RESPIRATORY FAILURE	<ul style="list-style-type: none"> • Resuscitate the baby using a bag and mask (p. 5) • Give oxygen (p. 38-40) • Call for help • Keep warm • Manage in neonatal unit
<ul style="list-style-type: none"> • HR > 180, OR • Pallor, OR • Extreme lethargy, OR • Unconscious 	CIRCULATORY FAILURE	<ul style="list-style-type: none"> • Give oxygen (p. 38 - 40) • Call for help • Establish an IV line • Infuse normal saline 10ml/kg of body weight over 1 hour • Then infuse Neonatalyte or 10% dextrose at the recommended volume for weight and age (p. 42-43) • Keep warm (p. 34 - 37) • Check blood glucose • Check vitamin K administration
<ul style="list-style-type: none"> • Glucose < 2.6 mmol/L 	HYPOGLYCAEMIA	<ul style="list-style-type: none"> • If the blood glucose is <1.4mmol/l, or baby ill, give 2ml/kg of 10% glucose IV • If the blood glucose is 1.4 - 2.5 and baby can feed, breastfeed or give EBM 10ml/kg PO immediately • For further care see p. 41

The baby has **RESPIRATORY FAILURE** if he / she is not breathing at all, has gasping respiration or if the respiratory rate is less than 20 per minute. In this situation the baby will also usually have a heart rate less than 100 per minute. The baby will usually also have a blue tongue.



ACT NOW by resuscitating the baby with a **bag and mask**.

Place the baby on a warm resuscitation table, and place the bag and mask firmly over the nose and mouth while you bag the baby with oxygen. **Call for help**. If you are applying bag and mask ventilation, someone else will need to assist you with further resuscitation.

The baby has **CIRCULATORY FAILURE** if he / she has a HR > 180, and is pale, unconscious or extremely lethargic.

ACT NOW by giving the baby oxygen. **Call for Help**. Establish an IV line and infuse a bolus of 10 ml / kg of Normal Saline over 1 hour followed by maintenance IV Neonatalyte or Dextrose 10% at the appropriate volume for weight. If the baby is pale, check that there is no bleeding and Vitamin K has been administered. Check the blood glucose. Keep the baby warm on the resuscitation table.

The baby has **HYPOGLYCAEMIA** if he / she has a blood sugar < 2.6 mmol / l.

ACT NOW: If the blood glucose is <1.4 mmol/l, or the baby is ill, give 2ml/kg of 10% glucose infusion. If the blood glucose is 1.4 – 2.5 mmol/l and the baby can feed,

breastfeed or give expressed breast milk 10 ml/kg per mouth immediately. Follow guidelines on treatment for hypoglycaemia on p. 41 in newborn care charts.



Always have the resuscitation table warm, the oxygen and the bag and mask and all equipment ready for resuscitation.

The Initial Assessment Form

The Initial Assessment form makes it easy to record the findings of your initial assessment and the action to be taken. There are three columns, Assess, Classify and Action Now.

- **Assess:** What do you see, hear or feel? **Look at the Chart Book.** Under “LOOK, LISTEN, FEEL” are the signs which you must look for. Look for **all** the signs.

Record the signs, which you have identified, on the Initial Assessment Form, in the block under “ASSESS”, usually a “yes / no”. When you have identified the signs, they will immediately enable you to classify the problem(s).

For example: You identify the sign “Respiratory rate < 20”. Circle the “Y” for yes” in the ASSESS column.

- **Classify: Look at the Chart Book.** Look for all the signs listed under “LOOK, LISTEN, FEEL”. The CLASSIFY column will tell you the classification.

For example: You have assessed the baby as “Respiratory rate < 20”. This enables you to classify the baby as “Respiratory failure”.

Record this on the Initial Assessment Form as “Yes” for respiratory failure.

Remember that there may be more than one classification on the form, meaning that the baby may have more than one problem. **Each of these problems** (classifications) **needs action.**

- **Act Now:** The **Chart Book** will inform you about what action you should take.

Record what action has been taken.

INITIAL ASSESSMENT: SICK AND SMALL NEWBORNS IN HOSPITAL

Date: _____ Time _____ Name: _____
 Date of birth: _____ Weight: _____ kg
ASK: How old is the baby? _____ Where was the baby born? _____
 What is the baby's current problem? _____
 Is the baby having a problem with feeding? _____
 Has the baby had any convulsions or abnormal movements? _____

ASSESS		NEEDS ACTION	CLASSIFY
ASSESS NEED FOR EMERGENCY CARE			Respiratory failure yes <input type="checkbox"/> no <input type="checkbox"/>
Breathing well	Y	N	
Gaspings	N	Y	Circulatory failure yes <input type="checkbox"/> no <input type="checkbox"/>
Respiratory rate < 20 / minute	N	Y	
Pale or cold	N	Y	
Heart rate > 180 or < 100 / minute	N	Y	
Baby extremely lethargic	N	Y	Hypoglycaemia yes <input type="checkbox"/> no <input type="checkbox"/>
Glucose test stripm / mol / l	Norm	Low	
ASSESS		NEEDS ACTION	CLASSIFY
ASSESS FOR PRIORITY SIGNS:APNOEA AND RESPIRATORY DISTRESS			Classify for apnoea and respiratory distress
Central cyanosis	N	Y	
Fast breathing (respiratory rate / min)	N	Y	
Severe chest in-drawing	N	Y	
Grunting	N	Y	
Apnoea	N	Y	Classify for priority signs
ASSESS FOR OTHER PRIORITY SIGNS			
Temperature: < 36°C	N	Y	
Birth weight: < 2500g	N	Y	
> 4000g	N	Y	
Increased tone	N	Y	
Decreased tone	N	Y	
Irregular jerky movements	N	Y	
Reduced activity	N	Y	
Lethargic or unconscious	N	Y	
Bulging fontanelle	N	Y	
Abdominal distension	N	Y	
Bile stained vomiting	N	Y	
Jaundice	N	Y	

1.2 ASSESS FOR PRIORITY SIGNS

After having assessed the baby's need for emergency care, assess every sick and small baby for priority signs. Assess the signs according to the order on the chart. Assess for respiratory problems, for birth weight and temperature, for tone movement and fontanelle and then for jaundice and serious abdominal problems. (p.26 – 27 Newborn Care Charts)

INITIAL ASSESSMENT: SICK and SMALL NEWBORNS

Ask the mother or nurse bringing the baby about the current problem, any difficulty in feeding and if the baby has had apnoea, convulsions or abnormal movements. You will take a more detailed history and evaluate antenatal care, labour and birth after assessing for priority signs.

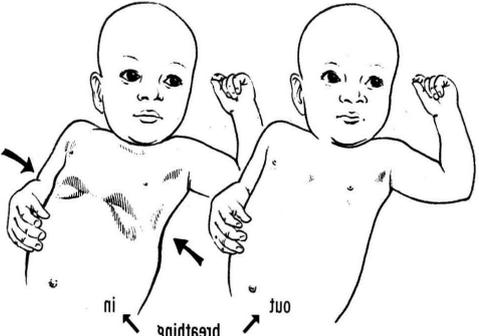
A	What is the baby's current problem? Let the mother or nurse describe in her own words what the problem is.	
	Is the baby having a problem with feeding? If the baby is coming from home or the postnatal ward, ask if there has been a problem with feeding. This is often an indication that the baby is unwell.	
	S	Has the baby had any apnoea, convulsions or abnormal movements? <ul style="list-style-type: none">• The mother or nurse may describe abnormal jerky movements of one or more limbs or fingers. The baby may become stiff. These are all signs of convulsions.• The baby may also have apnoea, which may be a sign of prematurity, a convulsion, or be due to respiratory distress.
	K	<ul style="list-style-type: none">• If the mother or nurse describes these signs, even though you do not observe them, you will record accordingly the sign on the initial assessment chart.

 **Record** your findings on the recording form

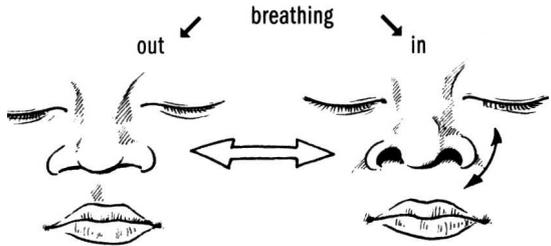
Date: _____ Time _____ Name: _____
Date of birth: _____ Weight: _____ kg
ASK: How old is the baby? _____ Where was the baby born? _____
What is the baby's current problem? _____
Is the baby having a problem with feeding? _____
Has the baby had any convulsions or abnormal movements? _____

1.2.1 ASSESS FOR APNOEA AND RESPIRATORY DISTRESS

COUNT THE RESPIRATORY RATE AND LOOK FOR CHEST IN-DRAWING

L O O K	<p>Count the breaths taken in a full minute, as babies may breathe irregularly for short periods of time, or stop breathing for a few seconds. The normal respiratory rate of a newborn baby is 30 – 60 breaths per minute. If the first count is more than 60 breaths per minute, repeat the count.</p> <p>For Severe Chest In-drawing</p> <p>The baby has chest in-drawing if the lower chest wall goes <u>IN</u> when the baby <u>breathes in</u>. In normal breathing the whole chest wall and the abdomen move <u>OUT</u> when the baby breathes in. Babies < 2.5kg normally have mild chest in-drawing. Severe chest in-drawing is very deep and easy to see. If the baby has severe chest in-drawing this is abnormal and a sign of a severe chest problem. In a preterm baby this could be due to hyaline membrane disease or pneumonia. In a term baby this may be due to meconium aspiration or pneumonia.</p>	
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LOOK and LISTEN for GRUNTING

<h2 style="margin: 0;">LOOK and LISTEN</h2> 	<p>Grunting is the soft, short sound a baby makes <u>when breathing out</u>. Grunting occurs when a baby is having difficulty breathing. It is common with pre-term babies who have hyaline membrane disease. Babies who are grunting need oxygen. If the grunting continues while they are receiving oxygen, they may need CPAP.</p>
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LOOK FOR APNOEA

L O O K	<p>For Apnoea</p> <p>Apnoea is when the baby ceases breathing for more than 20 seconds, or for long enough to result in cyanosis. Observe whilst examining the baby if there is any apnoea. A baby with apnoea may need stimulation to breathe. If the baby does not breathe or becomes cyanosed, stimulate by rubbing the baby's back for 10 seconds. If the baby still does not breathe you may need to resuscitate him / her with a bag and mask. Preterm babies less than 34 weeks gestation frequently have apnoea. Apnoea in a term baby may be a convulsion or a sign of sepsis and needs further investigation.</p> <p>For Central cyanosis</p> <p>Central cyanosis occurs when the tongue is blue. Central cyanosis can occur with a respiratory or cardiac problem.</p>
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 **Record** your findings on the recording form

ASSESS		NEEDS ACTION	CLASSIFY
ASSESS NEED FOR EMERGENCY CARE			
Breathing well	Y	N	Respiratory failure yes <input type="checkbox"/> no <input type="checkbox"/>
Gasping	N	Y	Circulatory failure yes <input type="checkbox"/> no <input type="checkbox"/>
Respiratory rate < 20 / minute	N	Y	
Pale or cold	N	Y	
Heart rate > 180 or < 100 / minute	N	Y	
Baby extremely lethargic	N	Y	Hypoglycaemia yes <input type="checkbox"/> no <input type="checkbox"/>
Glucose test stripm / mol / l	Norm	Low	

1.2.2 ASSESS LOW WEIGHT AND TEMPERATURE

LOOK FOR LOW BIRTH WEIGHT

L O O K	<p>For Low Weight Use the birth weight to classify the baby for low birth weight. If the baby weighs less than 2.5 kg, then classify according to weight and then move on to other priority signs. If the baby is low birth weight you will need to commence specific care for the low birth weight newborn.</p>
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MEASURE TEMPERATURE

F E E L	<p>Measure temperature Take the baby's axillary temperature with a low reading thermometer (reads below 35°C). Place the thermometer in the baby's armpit for 2 minutes before reading. The normal axillary temperature is 36 – 37°C. If the baby's axillary temperature is less than 36°C you will classify as HYPOTHERMIA. If the baby has a temperature below 32°C, this is classified as SEVERE HYPOTHERMIA OR SEVERE DISEASE.</p>
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1.2.3 ASSESS TONE, MOVEMENT AND FONTANELLE

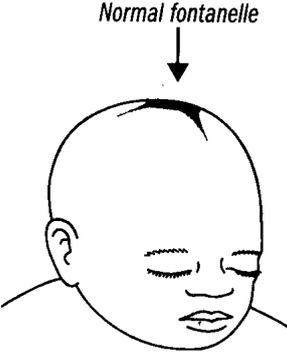
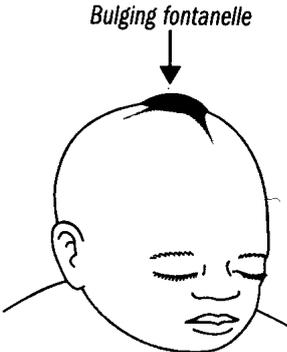
LOOK AND FEEL THE BABY'S TONE

L O O K and F E E L	 <p>Is the baby floppy? A normal, term baby has a flexed posture and moves a lot. A floppy baby has weak muscle tone and the limbs are not flexed well and fall loosely when picked up and released.</p> <p>Is there increased tone? The baby has increased flexion and often has clenched fists. He / she may also be stiff or if severe lies in a hyperextended position (Opisthotonus) Has the baby difficulty in opening his / her mouth (the jaw feels stiff)? This is trismus, and is usually present in tetanus.</p>
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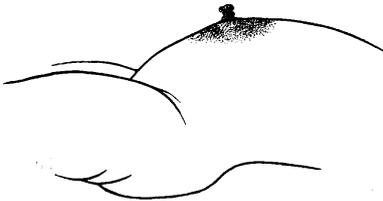
LOOK FOR ABNORMAL MOVEMENTS AND LEVEL OF CONCIIOUSNESS

L O O K	<p>Are there irregular jerky movements? Irregular jerky movements of the limbs, body or face are usually due to seizures. The baby may become stiff or have apnoea.</p>
	<p>Does the baby have reduced activity? A baby will normally move his arms and legs when awake. Reduced movement is a sign of severe disease. Sometimes there may be decreased movement in a single limb e.g. an arm.</p>
	<p>Is the baby lethargic or unconscious? A baby is lethargic if he is drowsy or is only roused with difficulty or does not move much even when awake. An unconscious baby is unresponsive to stimuli.</p>

LOOK AT AND FEEL THE FONTANELLE

L O O K and F E E L	<p>Is the fontanelle full? Place the flat of your hand over the occiput and bring it to the front. You will feel the fontanelle, which is a slight depression where the bones are separated. If the fontanelle is filled in or feels tense, or occasionally bulges above the bone, it means that there is raised intracranial pressure, and the baby may have meningitis or hydrocephalus.</p>	<p><i>Normal fontanelle</i></p> 	<p><i>Bulging fontanelle</i></p> 
	<p>Is there boggy swelling of the head extending down the neck?</p>		

LOOK FOR SERIOUS ABDOMINAL SIGNS

L O O K	<p>For Serious Abdominal Signs</p> <ul style="list-style-type: none"> • Is the baby's abdomen distended and large? • Is the baby vomiting bile? 	

LOOK FOR JAUNDICE AND ANAEMIA

L O O K	<p>For Jaundice</p> <p>Look at the sclera of the eyes and gently press the forehead. If the sclera are yellow, or the skin is yellow the baby has jaundice. Jaundice is common in babies, but can also be very serious. You will evaluate and manage according to the severity of the jaundice and look for a cause.</p>
	<p>If the mother's blood group is O or rhesus positive, the bilirubin level must be done on the baby at 6 hours of age. If the bilirubin level is 80 umol / l or more the baby must be started on phototherapy even if he / she does not look jaundiced.</p>
	<p>Look at the baby's palms for pallor. If there is pallor the baby has anaemia.</p>

 **Record** your findings on the recording form

ASSESS FOR OTHER PRIORITY SIGNS			Classify for priority signs
Temperature: < 36°C	N	Y	
Birth weight: < 2500g	N	Y	
> 4000g	N	Y	
Increased tone	N	Y	
Decreased tone	N	Y	
Irregular jerky movements	N	Y	
Reduced activity	N	Y	
Lethargic or unconscious	N	Y	
Bulging fontanelle	N	Y	
Abdominal distension	N	Y	
Bile stained vomiting	N	Y	
Jaundice	N	Y	

1.2.4 CLASSIFY FOR PRIORITY CONDITIONS and ACT NOW



You will classify the baby in the following order

- Classify for apnoea and respiratory distress
- Classify for low weight
- Classify for hypothermia
- Classify for other priority illness
- Classify for jaundice and anaemia

The baby does not necessarily have a classification in every section but can have more than one classification. For example a baby may be classified as low birth weight but can also be classified as respiratory distress. Both of these must be recorded. Once you have classified the baby, **ACT NOW**. This means: Commence immediate care, and then refer to the section in the charts for specific treatment, for ongoing care, investigation and observation.

1.2.5 CLASSIFY FOR RESPIRATORY DISTRESS

If the baby had apnoea classify as **APNOEA**. If the baby had any signs of respiratory distress, then classify for **RESPIRATORY DISTRESS**. A baby with apnoea and / or respiratory distress may, in addition, have another classification.

SIGNS	CLASSIFY	ACT NOW
<ul style="list-style-type: none"> • No breaths for > 20 seconds and needs stimulation 	APNOEA	<ul style="list-style-type: none"> • Gentle physical stimulation or ventilate with bag and mask. • Manage for apnoea (p.50)
<ul style="list-style-type: none"> • Severe chest in-drawing AND / OR • Grunting AND / OR • RR > 80 breaths per minute 	SEVERE RESPIRATORY DISTRESS	<ul style="list-style-type: none"> • Start oxygen (p. 38-40) • If preterm and nasal CPAP is available, commence nasal CPAP (p. 40) • Monitor the response to oxygen (p. 38) • Mobile CXR (p. 50) • Observe hourly • Start antibiotics (p. 51) • Keep nil per mouth for 24 hours • Treat, care and observe (p. 50-51)
<ul style="list-style-type: none"> • RR 60 - 80 breaths per minute but NO cyanosis, grunting or chest in-drawing 	MILD RESPIRATORY DISTRESS	<ul style="list-style-type: none"> • Check oxygen saturation – if oxygen saturation is < 90% or cyanosis, manage as moderate or severe respiratory distress • Observe 3 hourly • Start antibiotics if at risk for infection (p.51) • CXR if no improvement after 6 hours

<ul style="list-style-type: none"> Central cyanosis and NO chest in-drawing or grunting 	POSSIBLE HEART ABNORMALITY	<ul style="list-style-type: none"> Give oxygen (p.38-40) Consult specialist for further advice, referral and possible use of Prostaglandin E2 (p.47)
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APNOEA

Apnoea can be a sign of immaturity of the brain in preterm babies. All pre-term babies, of less than 35 weeks gestation are treated with oral Theophylline or caffeine to prevent apnoea. In term babies, apnoea is serious. It may be due to a convulsion, or a sign of meningitis, a metabolic disorder or neonatal encephalopathy. Treat infants by stimulating the back for ten seconds. If this does not work resuscitate with a bag and mask. Investigate term infants for sepsis, convulsions or asphyxia.

SEVERE RESPIRATORY DISTRESS

Babies with severe respiratory distress have significant pathology in the lungs. In pre-term babies this is most often due to hyaline membrane disease, which is caused by the lack of surfactant in the immature lungs. These babies probably need oxygen and some might need additional support with Continuous Positive Airway Pressure (CPAP). Where semi-artificial surfactant is available, this can assist. Pre-term babies can also have a congenital pneumonia if there has been chorioamnionitis. In term babies, severe respiratory distress is usually due to pneumonia or meconium aspiration.

MILD RESPIRATORY DISTRESS

Babies with mild respiratory distress may have a mild lung immaturity called transient tachypnoea or wet lung syndrome. This usually resolves in 1 – 2 days. They may need oxygen. They need careful observation and assessment for pneumonia.

POSSIBLE HEART ABNORMALITY

A baby with cyanosis and no features of respiratory distress may have a congenital cyanotic heart lesion. However, a baby with respiratory distress with or without cyanosis may also have a congenital heart lesion. All children with cyanosis and / or respiratory distress need careful examination by the doctor to exclude congenital heart lesions. This baby may need to be referred and possible use of Prostaglandin E2.

1.2.6 CLASSIFY FOR LOW WEIGHT

SIGNS	CLASSIFY	ACT NOW
<ul style="list-style-type: none"> Birth weight < 1 kg → Birth weight 1–1.49 kg → Birth weight 1.5–1.99 kg → 	EXTREMELY LBW VERY LBW LBW (< 2 kg)	<ul style="list-style-type: none"> Ensure warmth Commence fluids or feeds (p. 42-44) Check blood glucose (p. 41) See low birth weight chart (p. 52-57)
<ul style="list-style-type: none"> Birth weight 2 – 2.5 kg 	LBW (2 - 2.5 kg)	<ul style="list-style-type: none"> Place in KMC position with the mother in postnatal ward or KMC ward Manage according to LBW guidelines 2.2.2 (p.52-61)

1.2.7 CLASSIFY FOR HYPOTHERMIA

SIGNS	CLASSIFY	ACT NOW
<ul style="list-style-type: none"> Temp < 36.0°C 	HYPOTHERMIA	<ul style="list-style-type: none"> Re-warm (p. 34-37) Check blood glucose (p. 41)

ACT NOW: Babies with **HYPOTHERMIA** need rapid re-warming. Skin to skin is the fastest way to do this, but this may not be feasible if the mother is not available or if the

baby has other problems. Then use a radiant warmer or warm incubator. Measure the blood glucose and feed. Observe and record the baby's temperature every hour. The temperature should increase 0.5°C every hour.

Babies with **SEVERE HYPOTHERMIA** (temperature less than 32°C) must be re-warmed using a pre-warmed incubator at 38°C or under a radiant heater and the babies temperature monitored every 30 minutes and then hourly until normal. The temperature should increase by more than 0.5°C every hour. Set up a 10% glucose (Neonatolyte) infusion and monitor the blood glucose, keep baby nil per mouth until rewarmed. Administer oxygen by nasal prongs until the temperature is normal. Continually reassess for emergency signs as the baby is at risk of cardio-respiratory failure.

1.2.8 CLASSIFY FOR SEVERE DISEASE

SIGNS	CLASSIFY	ACT NOW
<ul style="list-style-type: none"> • Temp < 32°C OR • Temp > 38°C OR • Not feeding OR • Decreased tone OR • Increased tone OR • Irregular jerky movements OR • Reduced activity OR • Lethargic OR • Full fontanelle OR • Boggy swelling of head extending down neck OR • Anaemia OR • Abdominal distension OR • Vomiting bile OR • Jaundice in the first 24 hours 	<p style="text-align: center;">SEVERE DISEASE</p> <p style="text-align: center;">(Classify if any one sign is present)</p>	<ul style="list-style-type: none"> • Treat convulsions if present (p. 63 and 66) • Commence IVI infusion at maintenance rate (p. 42-43) • Check blood glucose now and 3 hourly (p. 41) • Re-warm if cold (p. 34-37) • Keep warm (p. 34-37) • Check for risk factors and determine the cause (p. 31) • Treat the cause • Start antibiotics if sepsis is suspected (p. 62) • If abdomen distended, pass a naso/orogastric tube and leave on open drainage • Reassess 1 - 3 hourly

Any one of a number of signs can lead to the classification **SEVERE DISEASE**. The baby may have sepsis, pneumonia, meningitis, congenital syphilis, a metabolic problem or asphyxia. They are all serious disorders and the initial management is the same. Further management is based on the risk factors and other signs. These are discussed further in the section under **TREAT, OBSERVE AND CARE**.

For all infants with SEVERE DISEASE ACT NOW, to treat convulsions if present, set up an IV infusion of 10% Glucose or Neonatolyte (p. 66), keep warm and rewarm if necessary, and investigate the cause.

1.2.9 CLASSIFY FOR JAUNDICE

SIGNS	CLASSIFY	ACT NOW
<ul style="list-style-type: none"> • Jaundice after the first 24 hours 	<p style="text-align: center;">JAUNDICE</p>	<ul style="list-style-type: none"> • Determine the bilirubin level and manage (p. 67-69) • Determine the cause (p. 67)

If the baby has developed jaundice after the first 24 hours of birth classify as **JAUNDICE**. The baby who has jaundice in the first 24 hours is classified as **SEVERE DISEASE**.

The baby may have other classifications, or jaundice may be the only classification. Measure the bilirubin level to determine the severity of the jaundice. Start phototherapy while waiting for the bilirubin result, and determine the cause of the jaundice.



Record your assessment and classification on the recording form

ASSESS FOR OTHER PRIORITY SIGNS			Classify for priority signs
	N	Y	
Temperature: < 36°C	N	Y	
Birth weight: < 2500g	N	Y	
> 4000g	N	Y	
Increased tone	N	Y	
Decreased tone	N	Y	
Irregular jerky movements	N	Y	
Reduced activity	N	Y	
Lethargic or unconscious	N	Y	
Bulging fontanelle	N	Y	
Abdominal distension	N	Y	
Bile stained vomiting	N	Y	
Jaundice	N	Y	



Now do exercises 1A, 1B (p. 4-9)

1.3 ASSESS AND CLASSIFY FOR BIRTH INJURIES, ABNORMALITIES OR LOCAL INFECTIONS

You have evaluated the baby for emergency and priority signs, and initiated emergency and urgent treatment if it was required. You are now able to ask the mother about the baby and find out the details of the pregnancy and birth.

Ask the mother:

“Have you noticed anything abnormal or of concern?”

Listen to any concerns that the mother may have.

Ask the mother

“Has your baby passed meconium?”

Babies should pass meconium within the first 24 hours, and you need to ensure the baby has passed meconium before allowing mom and baby home. The baby who does not pass meconium may have an imperforate anus or intestinal obstruction.

Examine the baby

Examine the baby from head to toe. If possible examine the baby in front of the mother so she can express any concerns she may have, and you can in turn explain your findings to her.

Record this information on the Newborn **Admission** Record and on the Initial Assessment recording form or on the record you use in your hospital. If you are examining a well-baby record the information in the maternity record.

MEASURE AND RECORD the head circumference on the head circumference chart in the Newborn Admission Record.

- Is the head circumference normal? A term baby's head circumference is between 32 and 38 cm. If the baby is preterm use the Foetal-infant-growth chart (p. 99) to determine whether the head circumference is > 97th centile or < 3rd centile.
- If the head circumference is > 97th centile the baby has macrocephaly and may have hydrocephalus.
- If the head circumference is less than the 3rd centile the baby has microcephaly. The cause of the microcephaly will need to be determined.

For swelling of the scalp

- The baby may have a subaponeurotic haemorrhage or cephalhaematoma. A subaponeurotic haemorrhage causes a boggy swelling of the head that may extend down the neck. The baby may bleed severely and become shocked and anaemic and later jaundiced.
- A baby with a cephalhaematoma has a swelling over one skull bone. It may not be present at birth, and will usually subside normally, but may predispose to jaundice as the blood resorbs and the haem is broken down to bilirubin.

At the face, eyes, mouth and nose

- Does the face appear unusual? Is it asymmetrical?
- Are the ears in the normal position? Are the eyes normal and correctly spaced? Are there epicanthic folds?
- Does the infant have a normal red reflex; does he or she follow a light or object?
- Are there sub-conjunctival bleeds?
- Is there pus in the eyes? If so is it severe with oedema of the eyelids?
- Are the mouth and lips normal? Place your little finger in the mouth and check that the palate is intact.
- Is the nose patent? Check that the infant breathes comfortably through the nose with the mouth closed.

At the abdomen and back

- Are there any abnormalities?
- Is there a myelomeningocele or gastroschisis?
- Has the baby passed meconium and is the anus patent?
- Check the gender of the baby. Is there ambiguous genitalia?

At the skin and umbilicus

- See if the skin is intact.
- Are there any pustules? Is the skin red or is there a rash?
- Is the umbilicus draining pus?
- Is the skin around the umbilicus red?

At the limbs

- Observe the infants limbs while the infant is lying on its back.
- Are the limbs in an abnormal position?
- Does the baby have poor limb movements?
- Does the infant move all the limbs without pain?
- Is there swelling of the joints or legs?
- Are the movements symmetrical? Test for the moro reflex and see if the baby's movements are symmetrical.

At the hands and feet.

- Are there any abnormalities of the position or digits?
- Are the feet clubbed?

 **Record** your findings on the recording form

ASSESS FOR BIRTH INJURIES, MALFORMATIONS, LOCAL INFECTIONS			Classify for all problems
Abnormal position of limb	N	Y	
Asymmetric movements	N	Y	
Cries when limb touched	N	Y	
Swollen limb or joint	N	Y	
Head circumference: < 3 rd centile	N	Y	
> 97 th centile	N	Y	
Normal	Y	N	
Swelling of scalp	N	Y	
Unusual appearance	N	Y	
Cleft lip / palate	N	Y	
Neural tube defect	N	Y	
Gastroschisis / omphalocele	N	Y	
Ambiguous genitalia	N	Y	
Imperforate anus	N	Y	
Club foot	N	Y	
Extra digit	N	Y	
Eyes: Pus draining	N	Y	
Red or swollen eyelids	N	Y	
Skin pustules / rash	N	Y	
Umbilicus red / pussy discharge	N	Y	
Other:	N	Y	

CLASSIFY THE CHILD FOR BIRTH INJURIES, ABNORMALITIES OR LOCAL INFECTIONS

SIGNS	CLASSIFY
<ul style="list-style-type: none"> Open tissue on the head or back 	NEURAL TUBE DEFECT / SPINA BIFIDA
<ul style="list-style-type: none"> Omphalocele Gastrochisis Imperforate anus, not passed meconium in 24 hours 	MAJOR GASTROINTESTINAL ABNORMALITY
<ul style="list-style-type: none"> Head circumference above the 97th centile on the fetal infant growth chart 	HYDROCEPHALUS
<ul style="list-style-type: none"> Uncertain of the gender of the baby 	AMBIGUOUS GENITALIA
<ul style="list-style-type: none"> Head circumference < 3rd centile on head circumference chart 	MICROCEPHALY
<ul style="list-style-type: none"> Club foot 	CLUB FOOT
<ul style="list-style-type: none"> Cleft lip and / or palate 	CLEFT LIP AND / OR PALATE
<ul style="list-style-type: none"> One major abnormality and two minor abnormalities OR 3 other minor abnormalities 	OTHER MAJOR CONGENITAL ABNORMALITY
<ul style="list-style-type: none"> One or two minor abnormalities 	MINOR ABNORMALITY
<ul style="list-style-type: none"> Swelling confined to one skull bone 	CEPHALHAEMATOMA
<ul style="list-style-type: none"> Abnormal position of legs or arms Poor limb movement Pain on movement of the limb 	LIMB INJURY
<ul style="list-style-type: none"> Blisters containing pus in the skin Blisters rupture leaving reddish dry skin 	STAPH SKIN SEPSIS
<ul style="list-style-type: none"> Pussy discharge from the umbilicus Redness and swelling of the skin around the umbilicus 	OMPHALITIS
<ul style="list-style-type: none"> Pussy discharge Red conjunctivae Oedema of the eyelid 	SEVERE CONJUNCTIVITIS
<ul style="list-style-type: none"> Mild eye discharge 	MILD CONJUNCTIVITIS

There are many other abnormalities and minor skin disorders. Consult standard newborn care textbooks for these, or refer patient for further assessment.

1.4 ASSESS AND CLASSIFY FOR RISK FACTORS AND SPECIAL TREATMENT NEEDS

Assess the baby for any risk factors. Risk factors mean that the baby will need certain observations or specific prophylactic treatment.

To evaluate for risk factors take a complete history of the pregnancy and the delivery. Record the information on the Initial Assessment Form and the Newborn Admission record or your hospital record. If the baby is in postnatal ward use the maternity record.

ASK OR CHECK THE ANTENATAL CARD AND MATERNAL RECORD

<u>Pregnancy</u>	<u>Labour and birth</u>
<ul style="list-style-type: none"> • Duration of pregnancy • Mother diabetic • Mother has or had TB in last 6 months • Mother tested RPR positive or status unknown • Mother tested HIV positive or status unknown • Mother's blood group O or Rhesus Negative 	<ul style="list-style-type: none"> • Uterine infection or fever • Membranes ruptured for > 18 hours • Difficult labour • Apgar score < 8 at 5 minutes • Complications after birth • Birth weight < 2.5kg or > 4 kg

If you answer yes to any of the above then classify the risk factors and indicate them on the chart. Ensure that you respond to them.

1.4.1 RISK OF HYPOGLYCAEMIA

SIGNS	CLASSIFY	ACT NOW
<ul style="list-style-type: none"> • Mother has diabetes or • Baby weighs > 4,5 kg or • Baby is low birth weight <2.5kg or premature or • Baby has severe disease 	RISK OF HYPOGLYCAEMIA	<ul style="list-style-type: none"> • Feed immediately, or IV fluids • Hourly glucose for 6 – 12 hours if mother diabetic, otherwise 3 hourly for 24 hours • Treat hypoglycaemia (p.41)

- **A big baby, or a baby whose mother has diabetes,** grows well because he / she gets a lot of glucose from the mother through the placenta. The foetus produces extra insulin to deal with this extra glucose. At birth the glucose supply from the mother stops and the high levels of insulin in the baby's blood can cause hypoglycaemia. This is particularly important in the first 6 hours after birth.
- **Low birth weight babies** are at risk of hypoglycaemia because they do not have adequate energy stores.
- The risk of hypoglycaemia is likely to be aggravated when there is hypothermia, hypoxia or when the baby is severely ill, because in these circumstances more glucose is required. These conditions are also common in low birth weight babies.
- Large babies (birth weight greater than 4 kg), infants whose mothers have diabetes, low birth weight and sick babies are those whose blood glucose levels must be checked frequently.
- A baby with a risk of hypoglycaemia needs to have the blood glucose checked, be fed immediately or given IV glucose (Neonatalyte). The specific management of infants of diabetic mothers is discussed later.

1.4.2 RISK OF JAUNDICE

SIGNS	CLASSIFY	ACT NOW
<ul style="list-style-type: none"> • Mother's blood group O OR • Mother Rhesus Negative OR • Baby has birth injuries • Baby is low birth weight 	RISK OF JAUNDICE	<ul style="list-style-type: none"> • Measure bilirubin 6 hourly • Commence phototherapy if bilirubin > 80 umol/l (p. 67-69)

Mothers who are blood group O may have a baby who has ABO incompatibility. The baby would usually be blood group A or B if there is an incompatibility. If the mother's Rhesus factor (Rh) is negative, the baby is at risk of haemolytic disease of the newborn due to Rh incompatibility. If the mother's group is Rhesus negative, she needs to be given anti-D gamma globulin after birth.

Babies with extravascular blood such as subaponeurotic haemorrhage, cephalohaematoma, cerebral haemorrhage or any other bruising are predisposed to jaundice.

The management of these at risk groups is discussed later.

	If jaundice is suspected commence phototherapy as soon as possible. Check the bilirubin levels 6 hourly if there is a potential blood group incompatibility.
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1.4.3 RISK OF BACTERIAL INFECTION

A baby born to a mother with an intrauterine infection or fever any time from the onset of labour to three days after birth, or rupture of membranes for more than 18 hours before birth, is often normal at birth but can develop a problem later.

SIGNS	CLASSIFY	ACT NOW
<ul style="list-style-type: none"> • Membranes rupture > 18 hours OR • Maternal fever OR • Offensive smell of liquor at birth 	RISK OF BACTERIAL INFECTION	<ul style="list-style-type: none"> • If clinical signs of infection or VLBW • Treat with Benzyl Penicillin and Gentamycin for 5 days unless CRP is normal at 2 days • If well observe for 48 hours and if still well, the baby can be discharged

1.4.4 RISK OF NEONATAL ENCEPHALOPATHY

Asphyxia in the newborn baby means *“failure to start and to continue breathing spontaneously”*. There are two main causes:

- Immaturity of the respiratory centre – in preterm infants.
- Hypoxia that usually occurs during labour, or as the result of abruptio placentae. This often leads to encephalopathy in the newborn, especially the term infant. Foetal hypoxia is recognised in labour as foetal distress.

It is therefore very important to anticipate asphyxia in mothers who are in preterm labour or when there is foetal distress, and be ready to resuscitate the baby.

SIGNS	CLASSIFY	ACT NOW
<ul style="list-style-type: none"> • Apgar score < 8 at 5 minutes OR • Baby did not breathe on own until 5 minutes 	RISK OF NEONATAL ENCEPHALOPATHY	<ul style="list-style-type: none"> • Observe for at least 12 hours • Evaluate and manage for neonatal encephalopathy (p. 63-65)

1.4.5 RISK OF CONGENITAL SYPHILLIS

Babies at risk of getting syphilis are those whose mothers have the disease. Therefore all pregnant women must be tested for syphilis at the booking visit, and the results must be available quickly and the woman treated if she is positive. **Record** the mother's results on the Newborn Admission Record, and on the Initial Assessment Chart. Manage the baby and mother according to the protocol (p. 73)

SIGNS	CLASSIFY	ACT NOW
<ul style="list-style-type: none"> • Mother tested RPR positive OR • Mother's RPR not known OR • Mother partially treated 	RISK OF CONGENITAL SYPHILLIS	<ul style="list-style-type: none"> • Evaluate and manage according to congenital syphilis protocol (p. 73)

1.4.6 RISK OF HIV TRANSMISSION

Babies born to HIV positive mothers are at risk of transmission before, during and after delivery, and later through breast-feeding. **Document** the mothers HIV status, the treatment the mother is getting, i.e. dual therapy or ART, and any treatment the infant has received. If the mother has not been tested, or has not had a repeat test if initially negative, ensure urgent testing of the mother so that post exposure prophylaxis can be provided for the baby. Ensure mother has a CD4 count result, if not take blood for CD4.

SIGNS	CLASSIFY	ACT NOW
<ul style="list-style-type: none"> • Mother tested HIV positive OR • Mother tested HIV negative and has not re-tested in the last 3 months OR • Baby abandoned OR • Unknown maternal HIV status 	RISK OF HIV TRANSMISSION	<ul style="list-style-type: none"> • Manage according to PMTCT protocol (p. 76-79)

1.4.7 RISK OF TUBERCULOSIS

Mothers with *Mycobacterium tuberculosis* infection should be identified during pregnancy. If the mother has TB she should be treated according to protocol. A baby born to a mother with TB needs to be managed according to protocol on page 74-75. Treatment for the infant depends on the activity of TB in the mother and the time period that she has been ill.

SIGNS	CLASSIFY	ACT NOW
<ul style="list-style-type: none"> • Mother started TB treatment within the past 6 months OR • Mother coughing for > 2 weeks 	RISK OF TUBERCULOSIS	<ul style="list-style-type: none"> • Manage according to TB protocol (p. 74-75)

Record the perinatal risk factors on the Initial Assessment Form and Newborn Admission Record

ASSESS RISK FACTORS AND SPECIAL TREATMENT NEEDS			Classify for risk factors
Mother has diabetes	N	Y	
Baby weighs > 4000g	N	Y	
Mother's blood group: O	N	Y	
Rhesus negative	N	Y	
Unknown	N	Y	
Rupture of membranes > 18 hours	N	Y	
Maternal fever	N	Y	
Offensive liquor	N	Y	
Apgar score < 8 at 5 minutes	N	Y	
Mother's RPR: Positive	N	Y	
Partially treated	N	Y	
Unknown	N	Y	
Mother's HIV status: Positive	N	Y	
Unknown	N	Y	
Mother has TB, or has been on TB treatment in the last 6 months	N	Y	



Now do exercise 1C and 1D (Part 1) (p.10 - 13)

