Risk of preterm birth

Course to identify and safely manage the risk of preterm birth

WHO ACS-IR

VERSION FOR WHO ACS-IR TRIAL

Acronyms and abbreviations

APH	antepartum haemorrhage
BP	blood pressure
CS	caesarean section
EDD	estimated date of delivery
FHR	fetal heart rate
GA	gestational age
IM	intramuscular
IV	intravenous
LDHF	low-dose, high-frequency
LMP	last menstrual period
$MgSO_4$	magnesium sulphate
PE	pre-eclampsia
PPROM	preterm prelabour rupture of membranes
PTB	preterm birth
PTL	preterm labour
SBAR	situation, background, assessment, recommendation
SPE/E	severe pre-eclampsia or eclampsia
U/S	ultrasound
WHO	World Health Organization

Contents

Risk of preterm birth course

The Risk of preterm birth course equips you and your team with skills and knowledge to promptly diagnose and safely manage the different risks of preterm birth.

The RPB Provider Guide

This Provider Guide is for all health workers caring for women before and during labour. Use it to support continuous practice and quality improvement in your facility after participating in a facilitated course.

You will find short activities that teams can use frequently to strengthen and maintain competencies at the facility.

You will also find tools, resources and information to further support you during practice and clinical care.

Using the Provider Guide

Run short, frequent activities for quality improvement

After attending the initial short course, the **low-dose, high-frequency (LDHF)** approach continues with short activities to ensure better retention of skills and to improve teamwork and communication. This results in sustainable change in clinical care.

What is LDHF?

LDHF is an approach to training that occurs onsite, is hands-on, and includes the whole team.

Key Points of LDHF

- **Competency focused** on mastering clinical decision-making, essential skills and behaviours.
- **Case-based learning** with simulations and hands-on practice.
- **Team and facility-based** to support multidisciplinary teamwork and communication.
- **Brief ongoing activities** based on activities outlined in this Provider Guide. They are **led by peers** selected from your facility and include:
  - short practice sessions and drills
  - quality improvement exercises.
- **Measuring** quality of care indicators, clinical performance and outcomes to **identify areas for improvement** guided by local needs and adaptation.

Choose what to practise on based on your needs

Choose from the different activities based on the reflection with your team to address your needs to improve quality of care. Continuously reflect on your clinical practice and consider – **what do you think you could be doing better?**

Review events related to risks of preterm birth for quality improvement, in a safe and blame-free environment, using these five principles:

- **Readiness**
  - Adequate staff and supplies?
  - Regular drills?
- **Recognition**
  - Was the risk of preterm birth identified early?
- **Response**
  - Help requested and available?
  - Protocols followed?
  - Situation, background, assessment and recommendation (SBAR) and closed-loop used?
- **Reporting**
  - All care recorded in client record and register?
- **Respect**
  - Whole team respected, informed and heard?

Data use to improve quality of care

Using data can show us what we are doing well and what needs improvement.

Your Champions will share your facility's data with you monthly so you can see how care for women at high risk of PTB aligns with recommended interventions. You will also be able to see data on health outcomes.

Indicators you will review include:

- all births with gestational age (GA) by ultrasound (U/S).
- live births $<34^{+0}$ weeks GA confirmed by U/S
- stillbirths $<34^{+0}$ weeks
- safe antenatal corticosteroid (ACS) use including time to birth after ACS given
- unsafe ACS use or non-use.

Reviewing these and other indicators monthly will help you improve care.

Guided practice

Practice coordinators or mentors will engage you in these weekly activities. They are chosen based on clinical competence and interest. You and peers can practise without a coordinator as well.

Resources in the Provider Guide

The next pages include tools, simulation scenarios, skills practice and other short activities that you can do regularly to continuously improve care. You will also find information to refresh your knowledge.

Section 1

Tools and resources

In this section you will find

Job aids, templates and other resources, and how to use them.

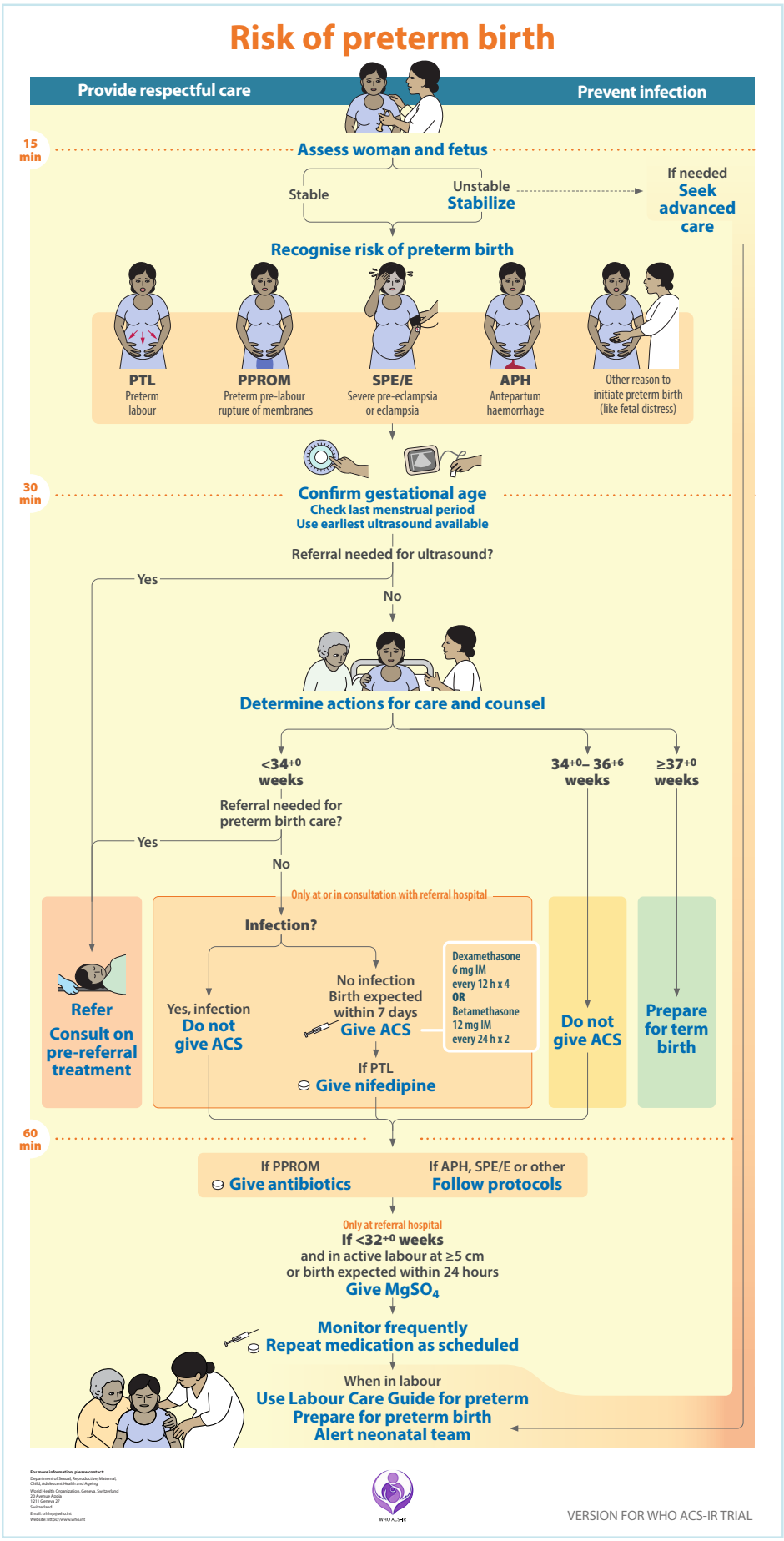
- Action Plan.
- Gestational age job aid.
- Checklist for initial assessment of woman and fetus.
- SBAR.
- Referral form.
- Feedback form.
- Medication information.
- MgSO4 dosing and monitoring checklist.
- WHO Labour care guide for preterm labour and preterm birth (LCG for PTL).
- Information for the woman and family.

Tips for using the tools and resources

- Make copies to have available.
- Adapt to local protocols as required.

Action Plan

The Action Plan is a poster that outlines the steps to take during care. You should have it hanging in a visible place in the labour ward, to use both during training and as a job aid for clinical practice.



Gestational age job aid

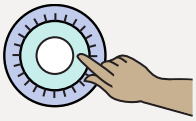
Review ultrasound dating

Dating U/S available?

Not available
Ensure U/S is done

Available
Use the earliest U/S
Do not re-date with later U/S

Compare U/S and LMP dates



LMP certain?

Not certain

Certain
Compare LMP and U/S

Not aligned

Aligned

Use U/S dating to confirm GA

Use LMP dating to confirm GA

Regardless of trimester

Abbreviations

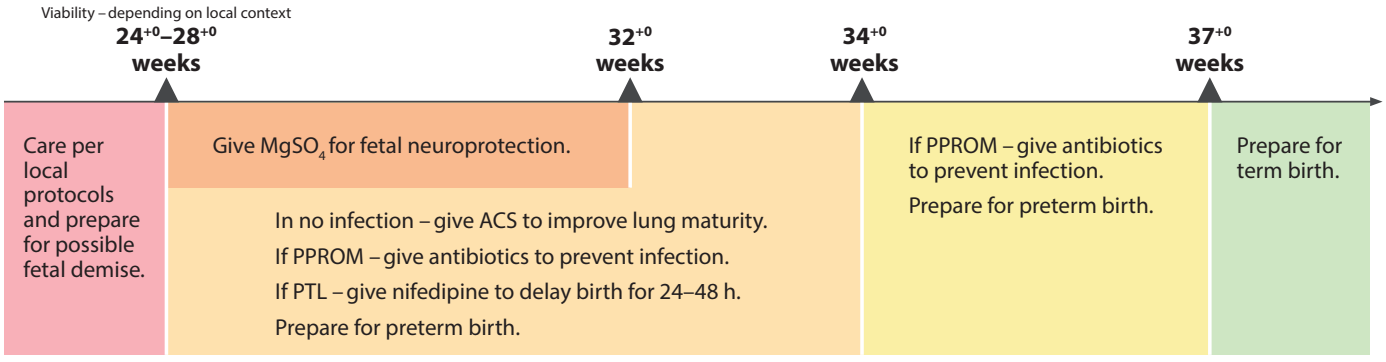
GA	gestational age
LMP	last menstrual period
U/S	ultrasound
PTL	preterm labour
PPROM	premature prelabour rupture of membranes

LMP is certain if

- Certain about the first day of LMP, **and**
- Regular cycles of 24–32 days for at least 6 months before pregnancy, **and**
- Not on contraception:
  - —oral for at least 3 months before her LMP **or**
  - —injectable for at least 6 months before her LMP.

Timing of ultrasound	Aligned if difference is:
Up to 8^{+6}	± 5 days
9^{+0} to 15^{+6}	± 7 days
16^{+0} to 21^{+6}	± 10 days
22^{+0} to 27^{+6}	± 14 days
>28^{+0}	± 21 days

Determine actions for care and counsel – based on confirmed GA



Checklist for initial assessment of woman and fetus

Welcome and ask questions

- ☐ Welcome the woman and introduce yourself.
- ☐ Explain that you will do a rapid assessment so you know how she and her baby are doing.
- ☐ Are you afraid, anxious or having trouble coping?
- ☐ Why did you come?
- ☐ When do you think you should be having your baby?
- ☐ Is the baby moving?

Check for danger signs

- ☐ History of convulsions/unconscious.
- ☐ Vaginal bleeding.
- ☐ Leaking fluid foul smelling vaginal discharge.
- ☐ Fever.
- ☐ Severe abdominal pain.
- ☐ Severe headache, visual disturbances.
- ☐ Severe vomiting.
- ☐ Difficulty breathing.
- ☐ Other problems or concerns.

Check antenatal and previous medical records

- ☐ Identify if/how GA has been determined.
- ☐ Identify any medical problems and obstetric complications and their management.

Check vital signs

- ☐ Maternal pulse (normal: 60-100 bpm).
- ☐ Temperature (normal: ≥ 37°C).
- ☐ Systolic BP (normal: 90-139 mmHg).
- ☐ Diastolic BP (normal: 60-89 mmHg).
- ☐ Respirations (normal: between 12 and 20 breaths per minute).
- ☐ Signs of anaemia and most recent haemoglobin.

Check the FHR

- ☐ Locate the baby's back. Listen for a full minute (normal: 110-159 bpm)
  - — if FHR <110 bpm, make sure you are not hearing maternal pulse
  - — if ≥160 bpm, rule out maternal infection.
- ☐ Check for fetal movement.
- ☐ If uncertain or absent FHR, ask another health worker to check.

Conduct an obstetric examination

- ☐ Measure fundal height.
- ☐ Assess fetal presentation if GA ≥28 weeks.
- ☐ Check for uterine tenderness/irritability, presence of contractions.
- ☐ If history of leaking amniotic fluid, confirm or rule-out ruptured membranes, assess liquor.
- ☐ Assess cervical length, dilatation, and effacement **only** if:
  - — spontaneous pre-term labour, and
  - — no ruptured membranes or vaginal bleeding.

Make a diagnosis and decisions based on findings

- ☐ Is preterm birth imminent (in the next 24 hours) or in the next 7 days?
- ☐ Are there danger or alert signs that need urgent care?
- ☐ Do they need:
  - — additional assessments?
  - — advanced care?
  - — stabilizing and planning for birth?
- ☐ What interventions do they need to manage the risk of preterm birth?

Communicate and record

- ☐ Share findings and options for care with the woman and her companion.
- ☐ Record in the Assessment form

Assessment and SBAR

SBAR stands for Situation, Background, Assessment, and Recommendation. Use SBAR to share information quickly and clearly – especially in emergencies, referrals or when calling for help. It helps you clearly share important information and prevent mistakes.

SBAR form		Example
S	**Situation – What is happening now?** Identify yourself and the patient, say where you are. Introduce the concern.	I am (name) from (facility) caring for Mrs. Diallo who came in because she is bleeding.
B	**Background – What led up to this?** Share key details such as: • admission date • reason for admission • relevant history • treatment summary and time • findings.	She is 32 a yo G1with vital signs: BP 102/58, pulse 102 bpm, respirations 22, temp 37.5, and FHR 132 bpm with no contractions. GA is approximately 33 weeks by certain LMP with no ultrasound during this pregnancy. Her clothes are blood stained. We sent blood for haemoglobin and type/ cross-match. We are giving oxygen, and started an IV with normal saline running at 1L in 1 hour.
A	**Assessment – What do you think is going on with the patient?** Explain you concerns, or problems you have identified.	She is having an antepartum haemorrhage which may be from placental abruption.
R	**Recommendations – What do you think needs to be done?** Ask for specific actions or instructions of what to do.	She may need a CS and care for a preterm newborn. Is there anything you would like me to do until (you arrive OR she arrives at your facility)?

Referral form

Referring facility: Provider completing the form: Contact:	Patient record n.:	Admission date: ____/____/20 Time: _____:____
Referral facility: Provider contacted at referral facility: Contact:		Referral date: ____/____/20____ Time: ____:____
Woman's name: DOB: ___/_____/20_____ Age: Address:	Clinical history:	
LMP: ___/___/20___ GA today (LMP): ___ wks + ___ days GA today (U/S): ___ wks + ___ days Presenting problems: [ ] Vaginal bleeding [ ] Contractions [ ] Leaking liquor [ ] Severe abdominal pain [ ] Headache/Visual changes [ ] Reduced fetal movement [ ] Other: _____	Clinical findings: BP: _____ Temp: _____ FHR: _____ Proteinuria (dipstick)_____ Fundal height: ___cm Presentation: _____ Uterine contractions___/10 min Cervical dilatation: ___cm Effacement: ___% Other:_____	
Diagnoses:		
Treatments given and time:		
Recommendations for further treatment:		

Feedback form to be sent to referring facility

Referring facility:	Record number:	Referral date: ____/____/20____	Time: ____:____
Referral facility:	Record number:	Admission date: ____/____/20____	Time: ____:____
Provider completing the form:	Contact number:	Discharge date: ____/____/20____	Time: ____:____

Woman's name: Age:	Address:
Diagnoses:	DOB: ____/____/20____, Time: ____:_____, GA at birth: _____weeks + ___days Diagnoses:
Treatments given and time:	**Treatments given and time:**
Recommendations on further care/treatments	**Recommendations on further care/treatments**
Follow-up visit: When: _____ Where: _____	Follow-up visit: When: _____ Where: _____
Preventive measures:	Preventive measures:
Social considerations:	Social considerations:
If death: Date of death ____/____/20____ Cause(s):	If death: Date of death ____/____/20____ Cause(s):

This form was created for use in an implementation research study. WHO is not responsible for the content.

Medication information

	Eligibility	Regimen
ACS	• GA – from viability to <34+0 confirmed by U/S. • Risk of preterm birth. • High likelihood of preterm birth in next 7 days. • No clinical evidence of maternal infection. • Adequate birth and preterm newborn care is available.	• First course: — dexamethasone 6 mg IM every 12 hours x 4 doses **or** — betamethasone 12 mg IM every 24 hours x 2 doses. • A single repeat course may be beneficial: — only once, after 7 days of the first course and — only if all eligibility criteria are still met. • More than two courses can be harmful to the fetus.
Nifedipine	• GA – from viability to <34+0 confirmed by U/S. • High likelihood of preterm birth in next 7 days. • In preterm labour (based on skilled clinical assessment) with or without ruptured membranes. • The woman is receiving ACS. • No cardiac problems. • Not dangerous to prolong pregnancy.	**Modified/extended release nifedipine** • Loading dose: 20 mg by mouth. • Maintenance 10–20 mg by mouth every 4–8 hours. • Never give more than: — 30 mg at one time, **or** — 60 mg/day. **Immediate release nifedipine** Less available but preferred: • Loading dose: 20 mg by mouth • Repeat 20 mg by mouth every 20–30 minutes until contractions stop. • Maintenance 20–40 mg by mouth every 8 hours. • Never give more than: — 40 mg at one time, **or** — 160 mg/day.
Prophylactic antibiotics	• GA – from viability to GA <37+0. • Ruptured membranes (confirmed) • No known allergy to prescribed antibiotic.	• Follow local protocols for the antibiotic. • Erythromycin: 250 mg by mouth four times/day for 10 days or until birth, whichever comes first. • If erythromycin is unavailable, use a penicillin such as amoxicillin. • Do not use co-amoxiclav/Augmentin due to increased rates of necrotizing enterocolitis.
MgSO4 (neuroprotection)	• GA – from viability to <32+0 weeks confirmed by U/S. • In labour (≥5 cm) or planned birth within 24 h. • No cardiac problems or myasthenia gravis	• Recommended IV options: — 4 g IV over 20 minutes, — then 1 g/h IV until birth or for 24 hours, whichever comes first. • If IV is not possible: — 5 g MgSO4 50% solution IM in each buttock, — then 5 g MgSO4 50% solution every 4 hours alternating buttocks. • Stop or delay maintenance dose if: — patellar reflex absent — respirations less than 16 per minute — urine output less than 30 mL/h over the past 4 hours.

	Benefits	Considerations
ACS	Can reduce death in preterm babies by 22% by: • maturing fetal lungs • protecting fetal intestines and blood vessels in the brain.	• Monitor lood glucose in women with pre-existing or gestational diabetes and expect an increased insulin need. • Might affect blood glucose levels in women with pre-existing or gestational diabetes. • Risks: — maternal sepsis when used in women with chorioamnionitis or other infections — perinatal mortality in infants born at term.
Nifedipine	Slows or stops contractions and can delay birth for ACS course and referral to be completed.	• Monitor the woman for an excessive drop in blood pressure and hold or reduce medication as needed. • Side effects: — hypotension — tachycardia — palpitations — flushing — headache — dizziness — nausea. • Risks: severe hypotension, shortness of breath.
Prophylactic antibiotics	For PPROM, helps prevent infection, which also reduces prematurity-related problems for baby.	• Monitor closely and change to treatment protocol if signs of infection appear. • Side effects: — diarrhea — nausea — vomiting • Risks: allergic reaction.
MgSO4 (neuroprotection)	Given within 24 hours of preterm birth – reduces incidence and severity of cerebral palsy. Even one hour of exposure can have a positive impact.	• Can be used for severe pre-eclampsia or eclampsia to prevent seizures and has a mild tocolytic activity even though not recommended for this purpose. • If impaired renal function – loading dose only. • Side effects: — sweating — flushing and feeling of warmth — headache — nausea/vomiting — slight decrease in fetal heart rate. • Risks: respiratory or cardiac arrest related to magnesium toxicity (very rare).

MgSO4 monitoring sheet

For use with Labour Care Guide or postpartum record

Name of client _____ **Date** _____

Provider in charge_____ **Clinic/Hospital name** _____

HOUR	Time	$MgSO_4$ DOSE	REFLEXES PRESENT YES/NO (circle one) If absent DO NOT GIVE $MgSO_4$	BLOOD PRESSURE	RESPIRATION If <16/min DO NOT GIVE $MgSO_4$	URINE OUTPUT If <30ml/hr DO NOT GIVE $MgSO_4$	CONVULSIONS YES/NO (circle one)	OTHER DRUGS OR OBSERVATIONS	INITIALS
Initial BP___/___						Initial Urine protein _____			
0			Yes No				Yes No		
1			Yes No				Yes No		
2			Yes No				Yes No		
3			Yes No				Yes No		
4			Yes No				Yes No		
5			Yes No				Yes No		
6			Yes No				Yes No		
7			Yes No				Yes No		
8			Yes No				Yes No		
9			Yes No				Yes No		
10			Yes No				Yes No		
11			Yes No				Yes No		
12			Yes No				Yes No		
13			Yes No				Yes No		
14			Yes No				Yes No		
15			Yes No				Yes No		
16			Yes No				Yes No		
17			Yes No				Yes No		
18			Yes No				Yes No		
19			Yes No				Yes No		
20			Yes No				Yes No		
21			Yes No				Yes No		
22			Yes No				Yes No		
23			Yes No				Yes No		
24			Yes No				Yes No		

LABOUR CARE GUIDE FOR PTL

Date: ___/___/____ Page: 1/___

Name: _____ PID: _____ Parity: ____ Gestational age: ____wks + ____ days

Confirmed by ultrasound on - Date: ___/___/____

Ruptured membranes [Date: ___/___/____ Time: ___:___] Risk factors for PTL: _____

PTL diagnosis - Date: ___/___/____ Time: ___:___

Active labour onset - Date: ___/___/____ Time: ___:___

Results of initial examination [Date: ___/___/____; Time ___:___]: Temperature _____°C / Pulse _____bpm / Respirations _____/min / BP ____/____mmHg; Ruptured membranes - confirmed /not confirmed; Cervical length: _____cm / Cervical effacement: _____% / Cervical dilatation: _____cm; _____contractions/10 min; Medications administered at admission:

_____

_____

Medications prescribed on admission: _____

_____

			Time	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
			Hours	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
			ALERT	←					FIRST STAGE						→	←	SECOND STAGE	→
SUPPORTIVE CARE	Companion	N																
	Pain relief	N																
	Oral fluid	N																
BABY	Baseline FHR	<110, ≥160																
	FHR deceleration	L																
	Amniotic fluid	M+++, B, P																
	Fetal position	OP, OT, B,TL																
	Caput	+++																
	Moulding	+++																
WOMAN	Pulse	<60, ≥120																
	Systolic BP	<80, ≥140																
	Diastolic BP	≥90																
	Temperature °C	<35.0, ≥ 37.5																
	Uterine tenderness	TU																
	Urine	P++, A++																
LABOUR STATUS	Contractions per 10 min	>5																
	Duration of contractions	>60																
	Cervix [Record cm]	8-10																
	Descent [Record __/5]																	
MEDICATION	Dexamethasone Betamethasone																	
	Nifedipine																	
	Antibiotics																	
	$MgSO_4$																	
	Other medicine(s)																	
	IV fluids																	
SHARED DECISION-MAKING	ASSESSMENT																	
	PLAN																	
	INITIALS																	

INSTRUCTIONS: CIRCLE ANY OBSERVATION MEETING THE CRITERIA IN THE 'ALERT' COLUMN, ALERT THE SENIOR MIDWIFE OR DOCTOR AND RECORD THE ASSESSMENT AND ACTION TAKEN. IF LABOUR EXTENDS BEYOND 12H, PLEASE CONTINUE ON A NEW LABOUR CARE GUIDE FOR PTL/PTB. Abbreviations: **Y** – Yes, **N** – No, **D** – Declined, **U** – Unknown, **E** – Early, **L** – Late, **V** – Variable, **I** – Intact, **C** – Clear, **M** – Meconium, **B** – Blood, **P** - Purulent, **OA** – Occiput Anterior, **OP** – Occiput Posterior, **OT** – Occiput Transverse, **B** - Breech, **TL** - Transverse lie, **NT** = Non-tender uterus, **TU** - Tender uterus, **P+** – Protein, **A+** – Acetone, **ND** - Not Due

Premature birth

Premature birth — or preterm birth — is birth of a baby that happens before 37 weeks of pregnancy. Preterm birth occurs for a variety of reasons. Many times, the cause of a preterm birth is not known, but sometimes it is due to medical reasons such as infections, or other pregnancy complications.

Your health worker has determined your pregnancy is preterm and that you either are at risk of a preterm birth in the next 7 days or that you may need to give birth early for your own safety and/or the safety of your baby.

A baby grows throughout pregnancy – the brain, lungs, and liver need the final weeks of pregnancy to fully develop. Premature babies face a higher risk of health problems than babies born at full term. Babies born too early (especially more than two months early) have higher rates of death and disability. Babies who survive may have serious medical problems, including difficulty with breathing, staying warm, feeding, as well as injury to the eyes, intestines, and nervous system.

Some treatments can help the survival and health of a premature baby. The most important thing you can do is to get to a health facility that can care for you during a premature birth and care for your premature baby. **If you are not in a facility that can provide this care, your health worker will offer certain treatments before your referral and help you get safely before birth to the facility that can care for you and your baby.**

Strategies to improve the health of your baby when you are at risk of preterm birth

Get care and give birth at a health care facility that can care for a premature baby

Not all health care facilities have the specialized health workers and equipment to provide the care needed by premature babies. To improve the chance that your baby will survive, you should give birth in a facility where this specialized care is available. At these facilities your baby can receive, if needed, advanced breathing treatments, high-level monitoring and testing, life support, special feeding, and other specialized care.

Antenatal corticosteroids to speed up the baby's lung development

If health workers feel that you are at risk of giving birth in the next 7 days when your pregnancy is less than 34 weeks, they may offer antenatal corticosteroids, dexamethasone or betamethasone, if they are safe for you to take.

Antenatal corticosteroids speed up a premature baby's lung development. They also help reduce the baby's chances of having certain health problems after birth, including breathing problems, bleeding in the brain, and intestinal problems.

It takes 2 days after the first dose is given for the most benefits to occur, but there is some benefit in the first 24 hours. A repeat course of corticosteroids can be given if a previous course was given 7 days ago, and there is risk for giving birth within 7 days.

Possible side effects of antenatal corticosteroids may include elevated blood sugar. If you take insulin and receive antenatal corticosteroids, your insulin regimen may need to be adjusted.

Nifedipine to delay birth for up to 72 hours

If your health care provider diagnoses you with early preterm labor before 34 weeks of pregnancy and believes that nifedipine will be helpful and is safe for you to take, they will offer it.

Nifedipine is used to help delay birth up to 48 hours when a woman is in early preterm labor. The main purpose of nifedipine is to give extra time so the health team can give other medicines to help the baby's lungs mature. Nifedipine can also delay labor long enough for you to be transferred to a facility that is better equipped to handle a preterm birth and care for a preterm baby, if necessary.

Headache is the most troubling side effect of nifedipine; paracetamol can help reduce the headache. Other side effects are low blood pressure, palpitations, flushing, dizziness, and nausea. Always consult a health worker about any side effects you may experience to help manage them.

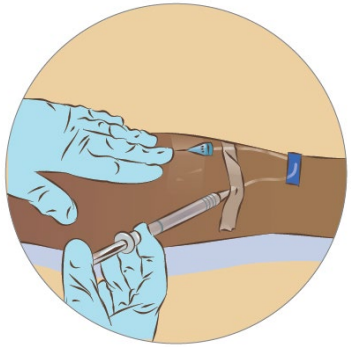
Antibiotics for prevention of infection

If your bag of waters broke, you are not yet in labor, and your pregnancy is less than 37 weeks, your health worker will offer you antibiotics. The antibiotics help prevent infections in you and your baby.

The most common side effects of antibiotics are diarrhea, nausea, and vomiting. Always consult a health worker about any side effects you may experience to help manage them.

Magnesium sulfate to prevent cerebral palsy

If you are in a facility that can provide care for preterm babies, a health care provider may offer magnesium sulfate if your pregnancy is less than 32 weeks, you are likely to give birth in the next 12 hours, and it is safe for you.



Magnesium sulfate protects the brains of premature babies. Premature babies, especially those who are born before about 32 weeks gestation, have immature brains at birth. Magnesium sulfate can reduce the chance a premature baby develops cerebral palsy that affects a person's ability to move and maintain balance and posture.

Magnesium sulfate is also used to treat severe pre-eclampsia and eclampsia. Pre-eclampsia is a complication of pregnancy when a woman has high blood pressure, high levels of protein in the urine that indicate kidney damage, or other signs of organ damage. If pre-eclampsia progresses to eclampsia, the woman has fits.

The most common side effects of magnesium sulfate are flushing, sweating, and diarrhea. Your health worker will monitor you closely for other rare side effects.

How family and supportive networks can help when you are receiving care

They can help you:

- manage daily stress levels and its effects
- follow activity guidelines and care recommended by your health worker
- eat healthy food

Things you can do to keep you and your baby safe

- Avoid smoking, alcohol, and drugs
- Drink plenty of fluids

Practice activities

In this section you will find activities with cases, checklists and scenarios to practise key skills needed to identify and safely manage the risks of preterm birth.

- Practise together with a mentor or peers from your facility.
- Mastery is developed through repetitive practice – run activities frequently and repeat as needed.
- Make sure you have all the equipment ready.
- Ensure you will be able to practise without interruptions and in an appropriate space.

Equipment and resources for practice activities

- ☐ Action Plan
- ☐ GA Job Aid
- ☐ Pen and paper
- ☐ Pregnancy calculator, such as a gestational age wheel or App
- ☐ Clean and sterile gloves
- ☐ Clock with second hand
- ☐ Simulated handwashing site (can draw sink on blackboard or piece of paper)/Alcohol-based hand rub
- ☐ Stethoscope, thermometer and blood pressure machine
- ☐ Fetoscope
- ☐ Vaginal speculum

Case practice app

During the Risk of Preterm Birth course, you have used cases to practice the steps outlined in the Action Plan. After a course, you can continue to practice in this way using the app Case practice for Risk of Preterm Birth.

What you will do

Each case presents a pregnant woman with a set of clinical findings. You can work through a case on your own or in pairs. You will go through the steps using the Action Plan as your guide:

- Recognise the risk of preterm birth
- Confirm gestational age
- Determine the right interventions
- Counsel the woman on her care

What you will need

- A phone or tablet – with access to internet to download the app, but you can work offline afterwards.
- The Action Plan.
- This Provider Guide to use:
  - the Gestational Age Job Aid on page 7
  - the medication information table on pages 12-13
- A pregnancy wheel or calendar to calculate GA.

How to access the app

- Open a browser on your phone and go to: **hmbs.org/case-practice/rptb**
- Alternatively, scan the QR code on this page.
- When you first open the page, you will be prompted with instructions to save the app it to your home screen so you can use it offline.
- You can always find these instructions by
  - opening the menu on the right top corner ☰
  - click on "How to install the app".

Case practice for Risk of Preterm Birth

hmbs.org/case-practice/rptb

Activity – roleplay

Initial assessment and SBAR

This practice activity is for assessment and communication.
Management of conditions will be covered later in the course.

You will need

- The assessment checklist on page 8.
- The SBAR template on page 9.
- Pen and paper.

Intructions – Role-play assessment

In pairs, role-play how you would do an **initial assessment and use SBAR to communicate** the case.

Assign roles

- One of you will be the woman, read the case and give out information when the health worker assesses.
- The other person will be the health worker assessing the woman.

Read the case

> My name is Hester Moyo. I am 22 years old and I am having my second baby. I have a very strong headache and blurry vision.

Information for assessment

- GA 28 + 4 by U/S at 12 weeks which matches dates by LMP.
- Maternal pulse: 82 beats per minute.
- Temperature: 37.2°C.
- BP: 174/100 mmHg.
- Respirations: 20 breaths per minute.
- Signs of anaemia: No.
- Most recent haemoglobin: 12 g/dL at antenatal visit last week.
- FHR:144 bpm (listen for a full minute).
- Fetal movement: Yes.
- Fundal height: 28 cm.
- Presentation: Head down.
- Uterine tenderness/irritability: No.
- Right upper quadrant pain: No.
- Contractions:None.
- Leaking amniotic fluid or vaginal bleeding: None
- Ruptured membranes: Does not appear to be but will not do digital exam as she is not in labour.

Intructions – Role-play SBAR

- With a peer or in a larger group, act out how you would communicate Hester Moyo's case:
  - if you are at a health centre, you will be calling the referral hospital
  - if you are at the referral hospital, you will be calling your peers.
- Use the SBAR template on page 9.
- Be concise, clear and realistic.

Discuss

- What was easy or difficult about using the SBAR format?
- How could this help in real emergencies?

Activity – cases

Confirming the gestational age

Practise calculating gestational age using the criteria you've learned.

You will need

- GA wheel, calendar and/or relevant GA app.
- GA job aid on page 7.
- Pen and paper.

Instructions

- In pairs, practice confirming GA using the GA job aid on page 7 and a GA wheel or calendar.
- Use April 15, 2023 as today's date.
- For each case write down the answers to the following questions.

Questions

- Dating U/S available?
- Certain LMP date?
  - regular cycles?
  - off contraception long enough?
  - LMP reliable?
- Calculate expected due date:
  - by LMP
  - by U/S.
- Calculate GA today:
  - by LMP
  - by U/S.
- If LMP is reliable and U/S available:
  - GA on day U/S was done?
  - difference between LMP and U/S dating?
  - U/S and LMP dating align?
- Will you confirm the GA based on LMP or U/S dates? Why?

Cases

1. Sadia's first day of her LMP was September 15, 2022. She is certain of this date, as it was the day her eldest child started school. She has never used hormonal contraception and has regular 28-day cycles. She had an ultrasound on December 20, 2022, which showed 13^{+5} weeks GA.

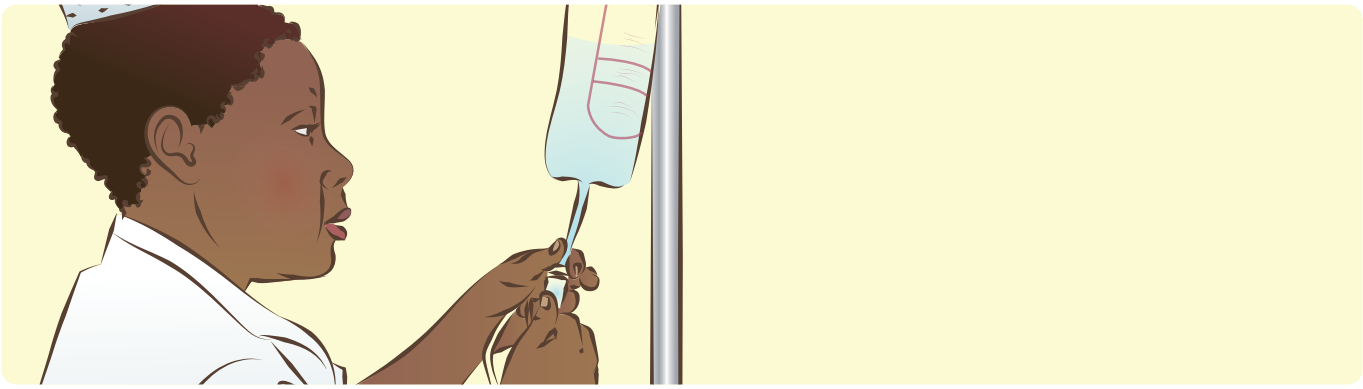
2. Maria's first day of her LMP was August 5, 2022. She is certain of this date. She has regular 30-day cycles and has not used any hormonal contraception for over a year. She had an ultrasound on March 16, 2023, which showed 28^{+2} weeks GA.

3. Fatima's LMP was sometime in early August 2022 but cannot remember the exact date. Her cycles were 25 to 40 days. She stopped all contraception 8 months before she got pregnant.

4. Lena is guessing the first day of her LMP was October 6, 2022 but she is not certain. She has regular 28-day cycles and stopped taking oral contraceptive pills 6 months before her LMP. She has not had an ultrasound during this pregnancy.

Activity – skills practice for referral hospitals

Giving $MgSO_4$ for neuroprotection



Never give $MgSO_4$ for neuroprotection at a health centre. If appropriate, this will be given at the referral hospital.

Review

Read the information on pages 12 and 13 about $MgSO_4$:

- eligibility
- regimen
- benefits
- considerations.

Monitoring for toxicity

- Monitor hourly – record on $MgSO_4$ monitoring sheet on page 14.
- Stop or delay maintenance dose if:
  - patellar reflex absent
  - respirations less than 16 per minute
  - urine output less than 30 mL/hour over the past 4 hours.
- If respiratory depression occurs:
  - Assist ventilation with bag and mask
  - Give calcium gluconate 1 g IV (10 mL of 10% solution) over 3 minutes.

You will need

- Clean gloves.
- MgSO4 20% and/or 50% solution or local concentration, and labelled mock substitutes.
- 20 mL syringe with IM needle.
- Sterile water.
- Lidocaine, 2%.
- Supplies for starting an IV line.
- Spirits (rubbing alcohol) and cotton balls.
- Safe disposal system.
- Form on page 14 to document administration.

Instructions for practice

In pairs, take turns to practice administering $MgSO_4$ using the checklist on the next page for guidance.

Practice checklist

Prepare and give loading dose 4g $MgSO_4$ in 20% solution – IV injection

- ☐ Wash hands, put on clean gloves.
- ☐ If using 20% solution:
  - — draw 20 mL of $MgSO_4$ (1g/5mL) into a 20 mL syringe.
- ☐ If using 50% solution:
  - — draw 12 mL of sterile water for injection into a 20 mL syringe,
  - — add 8 mL of 50% $MgSO_4$ (1g/2 mL) to make 20 mL of 20% solution.
- ☐ Establish IV access per protocol.
- ☐ Slowly administer the prepared syringe by IV injection over 20 minutes by pump or manually.

Prepare and give maintenance dose when loading dose is complete

- ☐ Wash hands, put on clean gloves.
- ☐ Add 10 g 50% $MgSO_4$ to 500 mL IV bag or bottle of saline or lactated Ringer.

Alternative 1 – IV pump

- ☐ Attach the prepared bag or bottle to IV pump tubing.
- ☐ Attach to IV access port.
- ☐ Set pump to deliver 1 g $MgSO_4$ per hour
  - — for 24 hours or
  - — until birth (whichever comes first).

Alternative 2 – manual/gravity drip

- ☐ Check IV giving set packaging for drop factor (usually 10, 15, or 20 gtt/mL).
- ☐ Start the IV infusion and count the drops in the drip chamber.
- ☐ Calibrate the drops per minute based on the drop factor to infuse 50 mL/hour.
  - — If the drop factor is 10 gtt/mL, this will be 8–9 drops per min.
  - — 15 gtt/mL will be 12–13 drops per min.
  - — 20 gtt/mL will be 16–17 drops per min.
- ☐ Give maintenance dose of 1 g $MgSO_4$ per hour:
  - — for 24 hours or
  - — until birth (whichever comes first).

When IV is not possible — Prepare and give $MgSO_4$ IM

- ☐ Prepare two 10 mL syringes with 5g $MgSO_4$ 50% solution in each syringe.
- ☐ Draw 10 mL of $MgSO_4$ 50% solution to equal 5g into each syringe.
- ☐ Add 1 mL of 2% lignocaine to each syringe.
- ☐ Clean injection site and give deep IM injection in one buttock.
- ☐ Repeat with second syringe containing 5g $MgSO_4$ in the other buttock.
- ☐ Dispose of used needle, syringe and opened vials in a puncture-proof container.

Check toxicity and document

- ☐ Monitor for toxicity every hour.
- ☐ Stop or delay maintenance dose if:
  - — patellar reflex absent
  - — respirations less than 16 per minute
  - — urine output less than 30 mL/hr over the past 4 hours.
- ☐ For both IV and IM, document time, medication, route, amount and site.

Activity – cases

Interventions – at referral hospitals

Determine care based on the GA age and relevant interventions available.

You will need

- GA wheel, calendar and/or relevant GA app.
- GA job aid on page 7.
- Pen and paper.

Instructions

Discuss and write down the following for each case:

- What is the risk factor for PTB?
- What is the GA and is it confirmed by U/S?
- Are these four interventions appropriate or not, and why?
  - ACS
  - nifedipine
  - antibiotics (prophylactic or treatment)
  - MgSO4 for fetal neuroprotection.

Cases

1. Sadia is 30^{+2} weeks pregnant (certain LMP, confirmed by 1st trimester U/S). She reports cramping and pelvic pressure that started 4 hours ago. On examination, she is having 12 contractions per hour. Cervical examination reveals 3 cm dilation and 80% effacement. Her membranes are intact. She has no vaginal bleeding, no fever and no signs of SPE/E.

2. Amina is 31^{+2} weeks pregnant (certain LMP, confirmed by 2nd trimester U/S). She reports leaking clear fluid since yesterday. On speculum exam, you see clear fluid pooling in the posterior fornix and nitrazine test is positive. She has no contractions, no vaginal bleeding, no fever and no signs of SPE/E.

3. Mira has light vaginal bleeding. Her LMP is uncertain and suggests 33^{+2} weeks. An ultrasound done today shows 35^{+2} weeks. She is not having contractions and has no signs infection or SPE/E.

4. Maria's blood pressure is 165/115 mmHg. She has a severe headache and her urine shows 3+ protein. She is 32^{+4} weeks pregnant (certain LMP, confirmed by 2nd trimester U/S). She has no vaginal bleeding, is not in labour, her membranes are intact and she has no signs of infection.

5. Sarah is 28^{+3} weeks pregnant (certain LMP, confirmed by 2nd trimester U/S). She has uncontrolled diabetes mellitus. She is contracting every 4 minutes and her cervix is 5 cm dilated and 80% effaced. She has no vaginal bleeding, her membranes are intact and she has no signs of infection or SPE/E.

6. Ruth arrives with heavy vaginal bleeding. She is 31^{+1} weeks pregnant (uncertain LMP, confirmed by 2nd trimester U/S) with fundal height 34 cm. She is not in labour and has no signs of SPE/E or infection.

7. Joy is 30^{+4} weeks pregnant (certain LMP, confirmed by 2nd trimester U/S). She has had two previous preterm births and is very worried she will have another preterm birth. However, she has no symptoms and no signs of any condition that would lead to birth in the next 7 days.

8. Fatima is 29^{+4} weeks pregnant (uncertain LMP, confirmed by 2nd trimester U/S). She arrives with fever of 39°C leaking fluid. Her uterus is tender on palpation. She has maternal tachycardia (pulse 120) and fetal tachycardia (FHR 175). She is not contracting. By sterile speculum exam, her cervix appears closed and thick with pooling of fluid in the posterior fornix. Nitrazine is positive. No vaginal bleeding or signs of SPE/E.

Activity – cases

Interventions – at health centres

Determine care based on the GA age and relevant interventions available.

You will need

- GA wheel, calendar and/or relevant GA app.
- GA job aid (page 7).
- Pen and paper.

Intructions

Discuss and write down the following for each case:

- What is the risk factor for PTB?
- What is the GA and is it confirmed by U/S?
- Are these three interventions, which might the referral team ask you to start before transfer? Why are they appropriate or not?
  - ACS
  - nifedipine
  - antibiotics (prophylactic or treatment) and
- Note that MgSO4 for fetal neuroprotection may be given at the referral hospital but not at health centres.

Cases

1. Sadia is 30^{+2} weeks pregnant (certain LMP, confirmed by 1st trimester U/S). She reports cramping and pelvic pressure that started 4 hours ago. On examination, she is having 12 contractions per hour. Cervical examination reveals 3 cm dilation and 80% effacement. Her membranes are intact. She has no vaginal bleeding, no fever and no signs of SPE/E.

2. Aisha is 31^{+2} weeks pregnant (certain LMP, confirmed by 2nd trimester U/S). She reports leaking clear fluid since yesterday. On speculum exam, you see clear fluid pooling in the posterior fornix and nitrazine test is positive. She has no contractions, no vaginal bleeding, no fever and no signs of SPE/E.

3. Clara has light vaginal bleeding. Her LMP is uncertain and suggests 33^{+2} weeks. Her fundal height is 32 cm. She is not having contractions but her uterus is tender and her temperature is 39. She has no signs of SPE/E.

4. Diana's blood pressure is 165/115 mmHg. She has a severe headache and her urine shows 3+ protein. She is 33^{+4} weeks pregnant (certain LMP, confirmed by 2nd trimester U/S). She has no vaginal bleeding, is not in labour, her membranes are intact and she has no signs of infection.

5. Rosa is 30^{+4} weeks pregnant (certain LMP, confirmed by 1st trimester U/S). She has had two previous preterm births and is very worried she will have another. However, she has no symptoms and no signs of any condition that would lead to birth in the next 7 days.

Activity – cases

Counselling – at referral hospitals

Determine care based on the GA age and relevant interventions available.

You will need

- Medication information on page 12.

Intructions

- In pairs, use role play to practise counselling.
- Use the checklist for counselling below.
- Use the medication information table on page 12. Pay attention to the benefits and considerations when counselling about each drug.

Counselling checklist

- ☐ Explain options, including doing nothing.
- ☐ For each option, explain benefits, risks, and uncertainties.
- ☐ Check that the patient understands what you have said. Ask if she has any questions.
- ☐ State your recommendation and explain what you will do (for example, how and when a drug will be given).
- ☐ Ask permission to start care.

Cases

1. Sadia is G2P1, and 30^{+2} weeks pregnant. She is contracting every 5 minutes and her cervix is 3 cm dilated and 80% effaced. She has no signs of infection, no vaginal bleeding and no signs of SPE/E.

— Role 1: Act as Sadia. You are scared your baby will come too soon. You want to know if the medicines will harm your baby.
— Role 2: Counsel Sadia about ACS and nifedipine and MgSO4 when birth is close.. Use the counselling checklist.

2. Miriam is G3P2, and 28^{+3} weeks pregnant. She reports that her waters broke 6 hours ago which you have confirmed on speculum examination. She has no contractions or vaginal bleeding, no signs of infection and no signs of SPE/E.

— Role 1: Act as Miriam. You feel fine and do not understand why you need medication or why you cannot go home.
— Role 2: Counsel Miriam about ACS, prophylactic antibiotics and $MgSO_4$ for neuroprotection when birth is close. Use the counselling checklist.

3. Nadia is G4P3, and 32^{+1} weeks pregnant. Her blood pressure is 158/108 with 2+ proteinuria and she has a severe headache. She is not in labour, has no signs of infection, no vaginal bleeding or leaking fluid.

— Role 1: Act as Nadia. You have a headache. You are worried about the side effects of medicines on your baby.
— Role 2: Counsel Nadia about $MgSO_4$ for treatment of SPE, ACS for fetal lungs. Use the counselling checklist.

4. Patience is G1P0, and 33^{+4} weeks pregnant. She is contracting every 4 minutes and her cervix is 4 cm dilated and 80% effaced. Her membranes are intact, but she has uterine tenderness and her temperature is 39 C. There are no signs of SPE/E and she is not bleeding.

— Role 1: Act as Patience. This is your first pregnancy. You are scared the baby will come too soon and want to know if anything can stop the labour.
— Role 2: Counsel Patience about need for antibiotics and that you will not slow down labour because she has an infection. Use the counselling checklist.

Activity – cases

Counselling – at health centres

Determine care based on the GA age and relevant interventions available.

You will need

- Medication information on page 12.

Intructions

- In pairs, use role play to practise counselling.
- Use the checklist for counselling below.
- Use the medication information table on page 12. Pay attention to the benefits and considerations when counselling about each drug.

Counselling checklist

- ☐ Explain options, including doing nothing.
- ☐ For each option, explain benefits, risks and uncertainties.
- ☐ Check that the woman understands what you have said. Ask if she has any questions.
- ☐ State your recommendation and explain what you will do (for example, how and when a drug will be given).
- ☐ Ask permission to start care.

Cases

1. Sadia is G2P1, and 30^{+2} weeks pregnant. She is contracting every 5 minutes and her cervix is 3 cm dilated and 80% effaced. She has no signs of infection, no vaginal bleeding and no signs of SPE/E. You consulted with the referral hospital and you will give her ACS and nifedipine before transfer.

— Role 1: Act as Sadia. You are scared your baby will come too soon. You want to know if the medicines will harm your baby.
— Role 2: Counsel Sadia about ACS, nifedipine, and the need for transfer to the referral facility. Use the counselling checklist.

2. Miriam is G3P2, and 28^{+3} weeks pregnant. She reports that her waters broke 6 hours ago. She has no contractions or vaginal bleeding, no signs of infection and no signs of SPE/E. You consulted with the referral hospital and you will give her ACS and antibiotics before transfer.

— Role 1: Act as Miriam. You feel fine and do not understand why you need medication or why you cannot go home.
— Role 2: Counsel Miriam about ACS, prophylactic antibiotics and the need for transfer to the referral facility for MgSO4 and care for her and her newborn. Use the counselling checklist.

3. Nadia is G4P3, and 32^{+1} weeks pregnant. Her blood pressure is 158/108 and she has a severe headache. She is not in labour, has no signs of infection, no vaginal bleeding or leaking fluid. You consulted with the referral hospital and you will give her ACS and MgSO4 for SPE before transfer.

— Role 1: Act as Nadia. You have a headache. You are worried about the side effects of medicines on your baby.
— Role 2: Counsel Nadia about MgSO4 for treatment of SPE, ACS for fetal lungs and the plan to transfer to the referral facility. Use the counselling checklist.

4. Patience is G1P0, and 33^{+4} weeks pregnant. She is contracting every 4 minutes and her cervix is 4 cm dilated and 80% effaced. Her membranes are intact, but she has uterine tenderness and her temperature is 39°C. There are no signs of SPE/E and she is not bleeding. You consulted with the referral hospital and you will give her ACS and nifedipine before transfer.

— Role 1: Act as Patience. This is your first pregnancy. You are scared the baby will come too soon and want to know if anything can stop the labour.
— Role 2: Counsel Patience about need for antibiotics and that she needs to be transferred. Use the counselling checklist.

Activity – simulation

Scenario practice for referral hospitals – Preparing for birth

1. Prepare

- Make sure all equipment is ready. See list on page 19.

2. Brief

Begin with a clear introduction to the activity, to prepare participants mentally and emotionally. Resolve any doubts and establish a psychologically safe learning environment.

Share the learning outcomes

- Be prepared for preterm birth.
- Use the LCG for PTL to support and document care.
- Use LCG for PTL to act on alert values.
- Team work and communication.

Assign roles

- Health worker 1.
- Health worker 2.
- Woman (facilitator).

Read the case

> You are caring for Sadia who we have been following since Activity 2. She came in for care 2 days ago at 30+2 weeks pregnant (certain LMP, confirmed by 1st trimester U/S). You diagnosed her to be in PTL with intact membranes. She had no vaginal bleeding, no fever, and no signs of SPE/E and she was admitted for high risk of PTB. She was given nifedipine for tocolysis and betamethasone 12mg IM on admission. Contractions slowed and betamethasone was repeated 24 hours later which was yesterday. She is now complaining of increasing pressure and return of very painful contractions. Provide care for Sadia.

Resolve doubts

Answer any questions participants may have.

3. Run the scenario

The simulation should be as realistic as possible. Use realistic equipment and encourage participants to act as they would in their real-life roles.

4. Debrief

The debrief after the scenario is where most learning happens. Start by establishing trust, mutual respect and a non-judgmental tone. The goal is learning, not evaluation.

Ask participants:

- What happened during the simulation?
  - Focus on facts and actions, not interpretations.
- What went well? What would you do differently?
  - Encourage reflection of their thought processes, emotions and decision-making.
- How can we apply these insights in the future?
  - Connect the experience to clinical practice or real-world application.
  - Highlight learnings and correct behaviours.

5. Key takeaways

- Identify active preterm labour.
- Recognize alert values.
- Alert neonatal team using SBAR.

Expected actions	Prompts and info
Rapid assessment ☐ Check cervical dilation. ☐ Alert neonatal team.	"Is there someone you need to call?" • Cervix 7 cm 100% effaced.
Supportive care ☐ Ensure she has a companion if she wants one. ☐ Offer pain relief. ☐ Give oral fluid.	"I am in pain, I would like my sister with me."
Supportive care ☐ Ensure she has a companion if she wants one. ☐ Offer pain relief. ☐ Give oral fluid.	• FHR baseline 148. • Early decelerations. • Fluid clear. • Occiput transverse (alert), caput +, moulding +.
Woman ☐ Assess vital signs. ☐ Assess urine for protein and acetone.	• Pulse 88. • BP 124/76. • T 37. • R 18. • No protein. • A++ (alert).
Labour status, medication, shared decision-making ☐ Assess contractions. ☐ Assess descent. ☐ Give relevant medication. ☐ Fill out LCG for PTL. ☐ Create a plan and share. ☐ Record on LCG for PTL.	• 3 contractions in 10 minutes lasting 60 sec. • Descent 3/5. "Do I need more medication?" "Is there something wrong?" "Is there someone you need to call?" "Can I eat something?" "Can I change position?"

Activity – simulation

Scenario practice for health centres – Pre-referral care

1. Prepare

- Make sure all equipment is ready. See list on page 19.
- Have a Referral form ready (page 10).
- The facilitator will act as a member of the referral team and you can give prompts still playing that role.

2. Brief

Begin with a clear introduction to the activity, to prepare participants mentally and emotionally. Resolve any doubts and establish a psychologically safe learning environment.

Share the learning outcomes

- Work as a team and communicate.
- Give appropriate care.
- Document appropriately.

Assign roles

- Health worker 1.
- Woman (volunteer).
- Referral team member (facilitator).

Read the case

> You are caring for Sadia who we have been following since Activity 2.
>
> — She came in today at 30^{+2} weeks pregnant (certain LMP, confirmed by 1st trimester U/S).
> — On examination, you found she is having 12 contractions per hour, FHR 144, uterus nontender, vital signs all normal. Sterile speculum examination reveals 3 cm dilation and 80% effacement which is confirmed by cervical examination.
> — You diagnosed her to be in PTL with intact membranes.
> — She had no vaginal bleeding, no fever and no signs of SPE/E.
>
> Provide care for Sadia. Use the Action Plan and the Provider Guide as resources.

Resolve doubts

Answer any questions participants may have.

3. Run the scenario

The simulation should be as realistic as possible. Use realistic equipment and encourage participants to act as they would in their real-life roles.

4. Debrief

The debrief after the scenario is where most learning happens. Start by establishing trust, mutual respect and a non-judgmental tone. The goal is learning, not evaluation.

Ask participants:

- What happened during the simulation?
  - Focus on facts and actions, not interpretations.
- What went well? What would you do differently?
  - Encourage reflection of their thought processes, emotions and decision-making.
- How can we apply these insights in the future?
  - Connect the experience to clinical practice or real-world application.
  - Highlight learnings and correct behaviours.

5. Key takeaways

- Identify need for referral.
- Work as a team and communicate using SBAR and referral form.
- Counsel the woman, gain consent and share decision making.
- Give appropriate care.

Expected actions	Prompts and info
☐ Call perinatal team. ☐ Communicate using SBAR.	"Is there someone you need to call?" After adequate reporting of Sadia's condition: "Please give Sadia nifedipine 20 mg by mouth for tocolysis and betamethasone 12 mg IM before referring her to us."
☐ Give counselling on referral, nifedipine and ACS. ☐ Share decision making and gain consent.	"What is going to happen to Sadia?" "Did Sadia agree to the plan?"
☐ Give nifedipine 20 mg by mouth. ☐ Give betamethasone 12 mg IM.	"Should you check if she needs medicines?"
☐ Fill referral form appropriately.	"Do you need to fill out a referral form to send with Sadia to the referral hospital?"

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