EMERGENCY OBSTETRICAL CARE(EMOC)

TRAINER'S MANUAL 2025

University of Health Sciences
Lahore

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Contents

Course Overview

Emergency obstetrical care is a critical component of maternal health training for MBBS students. This 5-hour course provides essential knowledge and hands-on practice for managing common obstetric emergencies. The focus is on timely recognition and initial management of life-threatening conditions during pregnancy, labor, and the postpartum period. Participants will review normal labour processes as a foundation and then learn to handle complications such as shock, postpartum hemorrhage (PPH), eclampsia, and maternal sepsis. By the end of the course, students should feel more confident in stabilizing patients and initiating appropriate interventions while awaiting specialist care or transfer.

Target Audience: Final-year medical students.
Course Format: Interactive lectures, skill demonstrations, simulation scenarios, and case-based discussions over five hours.
Prerequisites: Basic knowledge of obstetric physiology and routine labour management.

Course Goal

Goal: To equip MBBS students with the knowledge, skills, and confidence to **recognize and manage obstetrical emergencies** – including normal and abnormal labour, hemorrhagic shock, postpartum hemorrhage, eclampsia, and sepsis – thereby improving maternal and neonatal outcomes through prompt, appropriate care.

General Learning Outcomes

By the end of this course, participants will be able to:

Identify Obstetric Emergencies: Recognize early warning signs of obstetrical emergencies (e.g. abnormal labour progress, signs of shock, seizures in pregnancy, infection) and differentiate normal from pathological states.

Immediate Management: Initiate first-line management for major obstetric emergencies – including resuscitation measures, administration of critical medications (uterotonics, anticonvulsants, antibiotics), and other stabilizing interventions – in a timely and prioritized manner.

Practical Skills: Perform essential obstetric emergency skills such as conducting a normal delivery with active management of third stage, uterine fundal massage and bimanual compression for PPH, administration of magnesium sulfate in eclampsia, and sepsis bundle implementation, in simulated settings.

Team Communication: Demonstrate effective communication and teamwork during emergency scenarios, including calling for appropriate help (activation of emergency response, senior staff, or referral) and clearly conveying patient status and interventions.

Apply Protocols and Guidelines: Follow evidence-based protocols and checklists (e.g. WHO or hospital guidelines) for managing PPH, eclampsia, and sepsis ("Sepsis 6" bundle), and understand when to escalate care or refer to higher centers.

Safety and Monitoring: Ensure maternal and fetal safety through continuous monitoring, infection prevention, and preparation for possible complications or rapid deterioration, including planning for urgent delivery if required (e.g. in eclampsia or sepsis).

Curriculum Structure and Session Plan

The course is structured into five modules (approximately 1 hour each, including a mix of teaching and interactive activities), plus introduction and assessments. A suggested timetable is below:

Session 1– Introduction & Pre-Test: Course introduction, objectives overview, followed by a 20-item MCQ **pre-test** to assess baseline knowledge**.**

Session 2; Rapid Maternal Assessment & Triage: Recognition of obstetric shock and basic resuscitation principles. (Case scenarios + demonstration of shock position and CPR modifications)

Session 3: Normal Labour Management: Overview of normal labour stages, conduct of a normal vaginal delivery, and introduction to active management of the third stage. (Interactive lecture + brief video) prolong labour and obstructed labour .

Session 4 ; Emergency Delivery Techniques; Shoulder dystocia maneuvers (McRoberts, suprapubic pressure), Breech delivery principles

Session 5; Management of Obstetric Hemorrhage): Identification of PPH, Identification of Antepartum haemorrhage**,** stepwise management, including uterine massage and uterotonics, tamponade, IV access and fluid resuscitation**,** teamwork & collaboration. Skill station with mannequin for uterine massage)

Session 6: Hypertensive Emergencies (Eclampsia): Managing severe preeclampsia and eclampsia – seizure management and magnesium sulfate protocol. (Simulation of eclamptic seizure scenario + magnesium sulfate preparation drill)

Session 7: Maternal Sepsis: Recognition of maternal sepsis and implementation of the "Sepsis 6" bundle within one hour. (Case-based discussion + group activity creating a sepsis management checklist)

Post-Test (20 MCQs): The same 20-item MCQ test is administered as a **post-test** to evaluate knowledge gained.

Conclusion and Q&A: Review key take-home points, address questions, and provide course feedback forms.

Note: **The schedule can be adjusted slightly based on class size and participation. Each session includes a brief interactive quiz or discussion to keep learners engaged.**

Teaching and Learning Strategies

To maximize learning for undergraduate students, the course employs a variety of **student-centered teaching methods**:

Interactive Mini-Lectures: Short lectures introduce core concepts for each topic, supported by slides and diagrams. Questions are posed throughout to keep students thinking actively rather than just listening.

Case-Based Learning: Realistic clinical case vignettes are presented (e.g. a postpartum woman with heavy bleeding, a pregnant woman seizing, etc.), and students work in small groups to discuss diagnosis and initial management. Facilitators then review the cases, linking back to key principles.

Skill Demonstration and Return Demonstration: Instructors demonstrate practical skills (for example, performing uterine massage or preparing magnesium sulfate injection) using models or task trainers. Students then practice these skills under supervision (hands-on learning by doing).

Simulation Drills: High-yield emergency scenarios are simulated in a controlled environment. For instance, a PPH scenario where a student must apply uterotonics and compression, or an eclampsia scenario using a high-fidelity manikin to practice airway management and drug administration. Simulation allows rehearsal of teamwork and communication in emergencies.

Visual Aids and Videos: Diagrams (such as the mechanism of labour) and short videos (e.g. managing shoulder dystocia or performing bimanual compression) are shown to reinforce learning through visual memory. These aids help clarify complex physiological processes and procedural steps.

Discussion and Reflection: After each simulation or skill practice, the group discusses what went well and what could be improved (debriefing). This reflective discussion helps consolidate lessons and correct misunderstandings in a supportive atmosphere.

This mix of strategies addresses various learning styles (visual, auditory, kinesthetic) and helps students not only understand the theory but also apply it in practice. The emphasis throughout is on **active participation**, critical thinking, and building confidence in a low-stakes setting.

Assessment Methods

Assessment is primarily formative, aimed at identifying knowledge gaps and reinforcing key points:

Pre-Test and Post-Test MCQs: A 20-item multiple-choice questionnaire is given at the start (pre-test) and end (post-test) of the course. The questions cover all five topic areas to gauge improvement in understanding. The difference in scores helps illustrate learning gains for the participants. *(Example MCQ: "What is the first step in management of postpartum hemorrhage?")* The MCQs are single-best-answer format appropriate for MBBS level. Students will receive the correct answers and explanations during the review.

Skills Assessment (OSCE Stations): Although low-stakes, an Objective Structured Clinical Examination approach is used informally during the course. Students rotate through simulated stations (see **OSCE Stations** below) to practice critical skills. Instructors use checklists to give immediate feedback. This helps ensure each participant can perform the steps of key procedures correctly (for example, the steps of **Active Management of Third Stage of Labour (AMTSL)**).

Continuous Observation: Instructors observe group work, discussions, and simulation performance to assess engagement and identify any areas of confusion. Misconceptions are addressed on the spot. There is no formal grade, but constructive feedback is given.

Post-Test Review and Discussion: After the post-test, each question is reviewed plenary. This serves as a reinforcement of correct knowledge and an opportunity to clarify any remaining doubts.

Course Feedback: Participants complete a feedback form about the course content and teaching methods. While not an assessment of the students, this feedback helps facilitators improve future sessions and also encourages students to reflect on what they learned.

Overall, assessment is used to enhance learning, not to penalize. Students who practice test questions and hands-on skills in a safe environment are better prepared for real clinical situations and future formal evaluations.

Facilitator Tips for Interactive Learning

Mini-Lectures: Keep lectures brief and focused. Use slides or flipcharts with key images/points. Pause frequently to ask for questions or to quiz the group on what's next.

Case-Based Discussion: Present real-world scenarios in stages. After giving history, pause and ask the group how they would proceed. Encourage learners to reason through steps. For example, after describing a bleeding patient, ask, "What is your first action? Why?"

Simulations and Drills: Perform timed drills where a scenario unfolds with deliberate complications. Use role play with someone acting as the patient or family member. Have observers use an evaluation checklist. Debrief immediately afterward: discuss what went well, what could improve, and reaffirm correct procedures.

Return Demonstrations: After showing a skill (e.g. neonatal resuscitation, uterine massage), have each learner or a pair practice it under supervision. Provide corrective feedback focusing on safety and comfort.

Teamwork Emphasis: Encourage learners to address emergencies as a team. Assign roles (team leader, airway manager, recorder) during simulations so all practice leadership and communication. Highlight closed-loop communication ("Tell me again") and using protocols/checklists as in clinical practice.

Time Management Advice: Allocate time blocks as shown in the session plan. Use a stopwatch or clock. Start sessions promptly. For longer simulations, set intermediate goals (e.g. "In the next 5 minutes, the team should have secured IV access"). Keep the group aware of time remaining ("5 min left in this case"). If time runs short, prioritize critical content (skills practice over additional slides).

Session 1: Introduction to Emergency Obstetric Care

Learning Objectives

By the end of this session, students will be able to:

- Define Emergency Obstetric Care (EMOC) and describe its significance in reducing maternal morbidity and mortality.
- Explain the global and national burden of maternal mortality with supporting statistics.
- Recognize the roles and responsibilities of medical students and junior doctors in maternal health services.
- Identify and explain the 9 signal functions of Basic and Comprehensive Emergency Obstetric Care (as per WHO).
- Appreciate the importance of timely interventions and teamwork in managing obstetric emergencies.

Key Contents:

The **World Health Organization (WHO)** defines maternal mortality as:

"The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes."

Global Statistics and Trends:

Global Maternal Mortality Ratio (MMR): According to WHO (2023 estimates), the global MMR is approximately **223 deaths per 100,000 live births**.

Trends: While there has been a **38% decline** in global MMR since 2000, progress has stalled in many low- and middle-income countries (LMICs), particularly in Sub-Saharan Africa and parts of South Asia.

High-risk regions

- Sub-Saharan Africa accounts for about **70%** of all maternal deaths.
- South Asia contributes around **16%** of maternal deaths.

National MMR (Pakistan)

- Key contributing factors in Pakistan include delays in accessing care, poor antenatal coverage, low skilled birth attendance, and lack of emergency obstetric services.

Causes of Maternal Death

Maternal deaths are broadly classified into **direct** and **indirect causes**:

1. **Direct Obstetric Causes**
   These are complications resulting from:
   - Hemorrhage (postpartum and antepartum) – the leading cause worldwide.
   - Hypertensive disorders (eclampsia, preeclampsia)
   - Sepsis and infections
   - Unsafe abortion
   - Obstructed labor or uterine rupture
   - Embolism (amniotic fluid or thromboembolism)

2. **Indirect Obstetric Causes**
   These are deaths resulting from **pre-existing medical conditions** aggravated by pregnancy:
   - Anemia
   - Cardiac disease
   - Malaria
   - HIV/AIDS
   - Tuberculosis
   - Diabetes

Trainer Tips:

Begin by engaging learners—ask about any prior emergency experience or expectations. Emphasize the relevance of EMOC to local healthcare challenges (e.g. high maternal mortality in Pakistan). Allocate time blocks as shown in the session plan. Use a stopwatch or clock. Start sessions promptly

Session 2: Rapid Maternal Assessment & Triage

Recognition of obstetric shock and basic resuscitation principles

Learning Objectives

By the end of this session, participants will be able to:

- Apply the ABCDE (Airway, Breathing, Circulation, Disability, and Exposure) approach in the rapid assessment of a critically ill pregnant woman.
- Recognize and interpret early warning signs using the Modified Early Obstetric Warning Score (MEOWS) to identify clinical deterioration.
- Calculate and interpret the Shock Index in obstetric patients to promptly detect and manage hypovolemia and other critical conditions.
- Differentiate the physiological adaptations in pregnancy that affect maternal assessment.
- Initiate timely and appropriate interventions based on rapid assessment findings.

Key Content

ABCDE Approach in Pregnant Women

a) **Airway** – Recognize increased risk of airway edema and aspiration due to hormonal and anatomical changes in pregnancy. Use left lateral tilt to avoid aortocaval compression.
Breathing – Understand increased oxygen demand, decreased functional residual capacity; assess for dyspnea, cyanosis, or chest movement.
Circulation – Account for increased plasma volume and cardiac output; identify signs of hypovolemia or hemorrhage using central pulse, skin perfusion, and capillary refill.
Disability – Check AVPU or Glasgow Coma Scale; consider eclampsia or hypoglycemia.
Exposure/Environment – Full body examination for trauma, bleeding, rash, or signs of infection while maintaining warmth.

Modified Early Obstetric Warning Score (MEOWS)

MEOWS stands for Modified Early Obstetric Warning Score. It is a clinical tool used in obstetric settings to help healthcare providers detect early signs of maternal deterioration during pregnancy and the postpartum period.

It works by tracking specific physiological parameters and assigning points when values deviate from normal. These scores then guide the escalation of care**.**

Purpose of MEOWS

- Early identification of clinical deterioration in pregnant or postpartum women.
- Standardized communication among healthcare teams.
- Helps trigger timely interventions to prevent maternal morbidity and mortality.
- Supports triage decisions in busy emergency or obstetric units

Parameters Monitored in MEOWS

Vital Sign / Parameter	Normal Range (Pregnancy Adapted)	Action Trigger (Abnormality)
Respiratory Rate (RR)	12–20 breaths/min	<10 or >20 breaths/min
Oxygen Saturation (SpO_2)	≥ 96%	< 95%
Heart Rate (HR)	60–100 bpm (up to 110 in pregnancy)	<50 or >110 bpm
Systolic Blood Pressure (SBP)	100–140 mmHg	<90 or >160 mmHg
Diastolic Blood Pressure (DBP)	< 90 mmHg	>100 mmHg
Temperature	36–37.4°C	<35 or >38°C
Urine Output	≥30 mL/hr	<30 mL/hr
Neurological Status	Alert (A on AVPU scale)	Confusion or reduced consciousness
Pain/bleeding (optional)	None or minimal	Heavy bleeding, pain unresponsive to analgesia

Trainer Tips

- Participants divided into small groups
- Develop scenarios
- Observation using MEOWS chart
- Debrief and reflection
- Time keeping

Session 3: Normal Labour and Delivery (Module3)

Learning Objectives:

Normal Labour: By the end of this session, students will be able to:

- Define *normal labour* and describe its onset and stages.
- List the **three stages of labour** and key features/landmarks of each stage (cervical dilation in first stage, delivery of baby in second stage, placental delivery in third stage).
- Recognize the signs of true labour (regular painful contractions, cervical effacement/dilation, "show" of mucus plug, rupture of membranes)
- Explain the **mechanism of labour** (the "cardinal movements" of the fetal head: engagement, descent, flexion, internal rotation, extension, restitution, external rotation, expulsion).
- Partograph review maternal parameters - Alert vs. action line - Interpretation and documentation \identify early sign of prolong labour/ obstructed labour and timely referral according to referral policy of the facility area
- Manage a normal vaginal delivery in an uncomplicated term pregnancy, including proper maternal positioning, guiding the delivery of the head and shoulders safely, and the use of episiotomy if indicated.
- Perform **Active Management of Third Stage of Labour (AMTSL)** to prevent haemorrhage – including administering a uterotonic, controlled cord traction, and uterine massage – and inspect the placenta and membranes for completeness.
- Monitor the mother in the immediate **postpartum** period (vital signs, uterine tone, bleeding/lochia, perianal tears, urinary output) and initiate essential newborn care (drying, warming, assessing APGAR, etc., though newborn care is only briefly noted).

Key Content:

Labour is a normal physiological process culminating in the birth of the baby and placenta. **Normal labour** is defined by the spontaneous onset of regular uterine contractions that result in progressive cervical dilation and effacement, leading to the delivery of the baby and placenta. It typically occurs at term (37–42 weeks gestation) in a low-risk mother with a single fetus in cephalic presentation. There are three stages of labour:

First Stage: From onset of true labour contractions to full cervical dilation (10 cm). This stage has a *latent phase* (slow cervical change up to ~4 cm dilated) and an *active phase* (faster dilation from ~4 cm to 10 cm). During the latent phase, contractions are milder/irregular; in active phase they become regular and strong. A primigravida might take ~8–12 hours to complete the first stage, while a multipara progresses faster on average.

Second Stage: From full dilation (10 cm) to delivery of the infant. In the passive second stage, the fully dilated cervix may have the head descending slowly without expulsive efforts, especially if the mother has no urge to push yet. The active second stage begins when the mother has an urge to push or fetal head is visible, and involves maternal bearing-down efforts. Normal duration is up to 3 hours in a first-time mother (2 hours if no regional anesthesia) and 2 hours in multiparas. In this stage, careful coaching of the mother's pushing and controlled delivery of the head help prevent trauma.

Third Stage: From delivery of the baby until delivery of the placenta and membranes. Normally lasts a few minutes (usually < 10–15 minutes). Signs of placental separation include a gush of blood and lengthening of the umbilical cord.

During labor, *ongoing assessment* is critical. Students should note the **signs of labor**: regular painful contractions increasing in intensity/frequency, cervical change on exam, the "show" (blood-tinged mucus discharge), or spontaneous rupture of membranes releasing amniotic fluid. Admission to the labor ward is recommended once active labor is established (cervix >4 cm with regular contractions). If still in latent phase (<4 cm dilated) and mother/fetus are well, it may be appropriate to advise walking or staying home with precautions. Students should know the monitoring of labor using partograph , and should be able to detect early sign of prolong and obstructed labor . incase early referral to tertiary care hospital according to rules and sops of the facility area.

Mechanism of Labour (Cardinal Movements): As the fetus navigates through the birth canal, it undergoes a series of movements to adapt to the maternal pelvis. The key steps include: **Engagement** (the fetal head's widest part enters the pelvic inlet), **Descent** (the head moves down through the pelvis), **Flexion** (the chin tucks toward the chest, presenting the smallest diameter of the head), **Internal Rotation** (the head rotates, usually to an occiput-anterior position, to navigate the pelvic outlet), **Extension** (as the head reaches the perineum, it extends back – enabling the head to be delivered as the occiput, then face, then chin emerge), **Restitution** (after the head is out, it rotates slightly to realign with the shoulders), **External Rotation** (the shoulders rotate into AP position, causing the head to turn further externally), and finally **Expulsion** (the anterior shoulder slips under the pubic arch, followed by the posterior shoulder and the rest of the body). Understanding these movements helps in assisting delivery – for example, knowing to allow the head to rotate and extend naturally, and to assist gently in downward then upward motion for shoulder delivery.

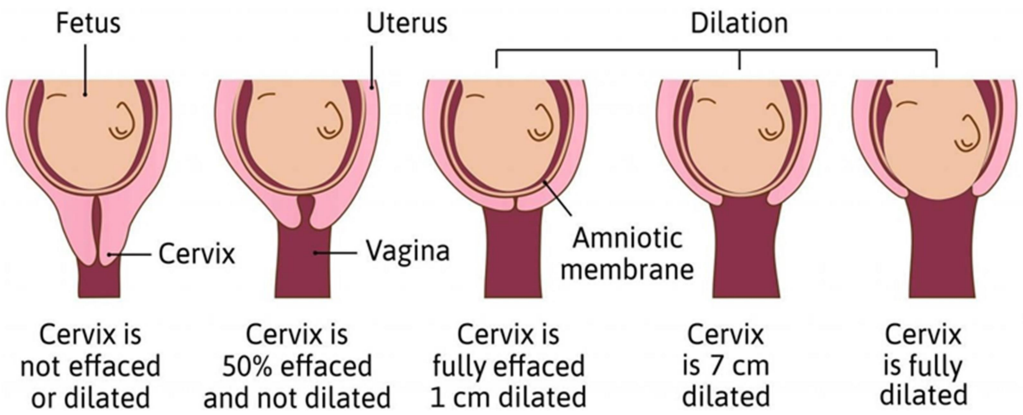
Conduct of a Normal Delivery: Ensure the mother is in a comfortable dorsal lithotomy or squatting position as suitable. Throughout second stage, **maternal vital signs** (BP, pulse, etc.) and fetal heart rate (every 5 minutes in active second stage) are monitored closely. As the head

crowns, support the perineum with a warm compress or hand guard to reduce tears. The baby's head should be delivered slowly and in a controlled manner; one hand can provide gentle counter-pressure on the emerging head to prevent it from delivering too rapidly. After the head is delivered, **check for a nuchal cord** (umbilical cord around the neck) – if present, gently loop it over the baby's head or, if too tight, clamp and cut it. Allow the head to turn (restitution and external rotation) without force. Then, guide the baby's head downward to deliver the anterior shoulder under the pubic bone, and then upward to deliver the posterior shoulder. Support the baby's body as it slides out. Note the time of delivery.

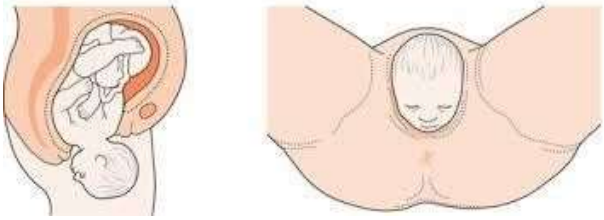
An episiotomy (a mediolateral cut to enlarge the vaginal opening) is **not routine** but can be performed if needed for shoulder dystocia or to expedite delivery in fetal distress. If done, a mediolateral episiotomy at 45–60° from the midline is preferred. Proper local anesthesia should be infiltrated if time permits.

Active Management of Third Stage: Immediately after the baby is delivered (preferably as the anterior shoulder is delivered), administer a uterotonic medication – commonly **Oxytocin 10 IU intramuscular** – to help the uterus contract and prevent PPH. Clamp and cut the cord (some protocols delay clamping for 1–3 minutes if the baby is term and breathing). Perform **controlled cord traction**: one hand applies gentle traction on the cord while the other hand supports the uterus (counter-pressure on the uterine fundus) to deliver the placenta once signs of separation appear. Never pull hard on a cord that hasn't detached – if resistance is felt, wait and allow further uterine contraction. Once the placenta is expelled, **uterine fundal massage** is done to promote contraction. Examine the placenta and membranes carefully for completeness (no missing lobes or torn membranes left inside) – incomplete placenta could indicate retained tissue which can cause hemorrhage. If any part is missing or if bleeding is heavy and placenta is incomplete, prepare for manual removal of placenta. Inspect the perineum, vagina, and cervix for tears and suture any significant lacerations or the episiotomy.

First stage



Second stage



Immediate Postpartum Care: In the first hour after birth, closely monitor the mother's vital signs (pulse, BP, respiratory rate, temperature). Check the uterine fundus frequently – it should remain firm, central, and at or below the level of the umbilicus; a boggy (soft) uterus indicates atony and risk of hemorrhage, requiring immediate massage and intervention. Assess vaginal bleeding (lochia); it is normal to have moderate bleeding, but excessive bleeding or large clots indicate PPH. Ensure the mother can pass urine; a distended bladder can impede uterine contraction, so catheterize if she cannot void within 6 hours post-delivery. Provide comfort and support: analgesia for perineal pain, warm blankets, and emotional reassurance. If an episiotomy or tear was repaired, advise on perineal hygiene and pain management (e.g. sitz baths, oral analgesics). Initiate breastfeeding within the first hour if the baby is well – this also helps uterine contraction. Document all findings and events of labour in the partograph or delivery record.
This session lays the groundwork by reinforcing what *normal* looks like, so that deviations can be quickly identified in the subsequent emergency scenarios

Session 4: Emergency Delivery Techniques

Learning Objectives

- Demonstrate appropriate maneuvers for managing shoulder dystocia, including McRoberts and suprapubic pressure.
- Outline and perform the principles of breech delivery, including assisted breech maneuvers.

Shoulder Dystocia Maneuvers

Learning Objectives

- Recognize clinical signs of shoulder dystocia.
- Demonstrate McRoberts maneuver and suprapubic pressure effectively.
- Understand the HELPERR mnemonic

Key Content

Recognition: Turtle sign, head-to-body delivery time >60 seconds.

HELPERR- Mnemonic

H= Help (call for help)

E= Evaluate for episiotomy

L= Legs (McRoberts Maneuver)

P= Pressure (suprapubic)

E= Enter the vagina (rotatory maneuvers)

R= Remove the posterior arm

R= Roll the patient (to hands and knees)

Methods of last resort

Zavanelli maneuver:
It involves pushing backdelivered fetal head into birth canal and performing cesarean section

Symphysiotomy:
Cartilage of the pubic bone is divided to widen the pelvis to allow child birth
Cleidotomy:
One or both clavicles are cut to reduce biacromial diameter
Abdmoninal rescue (cesarean):
Low transverse hystrotomy is performed, and fetal shoulders are manually rotated

Trainer Tips

- Stress urgency but a calm approach in simulations.
- Stress importance of team work
- Practice should rotate among all participants for skill acquisition.

Criteria

- Frank breech, EFW 2.5–3.5 kg,
- Adequate pelvis,
- Experienced operator.
- On ultrasound, fetal head must be flexed, liquor adequate, placenta not low lying and normal fetal parameters

Masterly Inactivity-Hands Off Technique

- Delivery of buttocks occurs naturally with uterine contractions and maternal expulsive efforts
- Legs if flexed , will deliver spontaneously
- Legs extended ...Do pinard's manoeuvre
- Delivery of shoulders ... Loveset's manoeuvre
- Delivery of the head
- Mauriceau Smellie Veit manoeuvre Burns
- Marshall method
- Forceps delivery

Trainer Tips

- Role-play scenarios: simulate decision-making during breech labor.
- Debrief each practice attempt with focused feedback.

Session 5: Shock and Maternal Collapse (Module)

Learning Objectives:

Shock: By the end of this session, participants will:

- Define **shock** in the obstetric context as inadequate perfusion of tissues (often due to hemorrhage) leading to cellular dysfunction and organ failure.
- Identify common **causes of shock**
- **In obstetrics**, including severe hemorrhage (e.g. postpartum hemorrhage, uterine rupture), hypovolemia from trauma, amniotic fluid embolism, septic shock (from severe infection), and **rarely** cardiogenic causes (e.g. peripartum cardiomyopathy).

- Recognize early **warning signs** of shock ("red flags" like tachycardia >100/min, pale cool skin, dizziness, hypotension, etc.) and impending maternal collapse.
- Calculate and interpret the **Shock Index (SI)** (heart rate / systolic BP) – understanding that SI > 0.9 indicates significant shock, and SI ≥1.4 suggests severe shock with high mortality risk.
- Perform the initial **ABCs of resuscitation** for a pregnant patient in shock or cardiac arrest: ensure Airway patency (with cervical spine protection if trauma), support Breathing (100% oxygen by mask, or ventilation if needed), support Circulation (uterine displacement, IV fluids, uterotonics if hemorrhage, etc.), and definitive actions like CPR modifications or peri-mortem C-section if indicated.
- Demonstrate the **maternal shock position** and other first-aid measures: left lateral tilt (15–30°) for a pregnant woman to relieve aortocaval compression, elevating the legs to improve venous return, keeping the patient warm, and avoiding supine position in late pregnancy.
- Outline the protocol for urgent **referral/activation of help** (call for a Code Blue or obstetric emergency team, or dial emergency services/ambulance) as soon as shock is recognized, rather than waiting for condition to worsen.

Key Content:

Shock in pregnancy is most often **hypovolemic shock** due to hemorrhage (e.g. massive obstetric bleeding). However, it can also result from **septic shock** (severe infection leading to vasodilation) or **cardiogenic shock** (cardiac failure), or a combination (e.g. hemorrhagic shock complicated by sepsis). Unique obstetric causes of hemorrhagic shock include uterine rupture and uterine inversion, in addition to postpartum hemorrhage. Uterine rupture is a tear through the uterine wall (often at a prior C-section scar or due to obstructed labor) leading to major internal bleeding. Uterine inversion is the turning inside-out of the uterus, usually when excessive cord traction is applied on an atonic uterus causing it to prolapse – this also can lead to shock from neurogenic and hemorrhagic mechanisms. Regardless of cause, the manifestations of shock are similar.

Recognition of Shock: Early signs can be subtle –

- Tachycardia (HR > 100/min) and tachypne**a** (fast breathing) are often the first indicators as the body compensates.
- The patient may report **weakness, lightheadedness, or nausea**. Look for **pallor** (pale skin), **cold, clammy extremities**, and **sweating** – signs of peripheral vasoconstriction.
- **Anxiety or confusion** may indicate reduced brain perfusion.
- A **drop in blood pressure** is a late sign; by the time hypotension (e.g. systolic <90 mmHg) occurs, significant blood loss (over 30-40% of volume) has occurred.
- In obstetric shock, **uterine atony with heavy vaginal bleeding** or **abdominal distension (internal bleeding)** may be apparent.
- The **Shock Index (SI)** can be a useful quick gauge: SI = heart rate / systolic BP. Normally ~0.6-0.7; if >0.9, shock is likely, and >1.4 is severe. For example, HR 120 with BP 90 yields SI=1.33 (significant shock).

If not recognized and treated, shock progresses to **maternal collapse** – defined as sudden loss of consciousness and effective circulation. This is an obstetric emergency requiring immediate resuscitation and possibly **perimortem cesarean delivery** (if >20 weeks pregnant and no response to CPR in 4 minutes, to improve maternal outcomes and potentially save the fetus).

Immediate Management of Shock: The approach follows an ABC (Airway, Breathing, and Circulation) pattern with modifications for pregnancy:

- **Call for Help:** As soon as shock is suspected, summon additional help. In a hospital, activate the obstetric rapid response team; if in a peripheral setting, call ambulance services (e.g., *Dial 1122* in some regions). Do not manage alone – shock often requires multiple hands (for IV access, airway management, etc.).
- **Airway:** Ensure the patient's airway is open. An unconscious pregnant patient should be handled with care to avoid aspiration – position her on her side (recovery position) if breathing. If not breathing or airway obstructed, use basic maneuvers (jaw thrust without head tilt if trauma suspected) and be ready to intubate (though as MBBS students, just ensure help from anesthesia/experienced provider is on the way).
- **Breathing:** Give high-flow oxygen by non-rebreather mask (15 L/min) to any woman in shock, even if oxygen saturation appears normal. Ventilate with bag-mask if she's not breathing adequately. In late pregnancy, also displace the uterus to the left to relieve pressure on the vena cava – this can be done manually or by placing a wedge under the right hip (15–30° tilt). This improves venous return to the heart and may significantly improve cardiac output.
- **Circulation:** Lay the woman flat with legs elevated (~30 cm) to autotransfuse blood from legs to core (the **Trendelenburg** or modified shock position), unless her airway management contradicts flat positioning. Establish **large-bore IV access** (two 14G or 16G cannulas if possible). Begin **fluid resuscitation** with rapid infusion of crystalloid (e.g. Ringer's Lactate or Normal Saline); initial bolus of 1-2 liters is common while preparing blood transfusion. Keep the patient **warm** (use blankets or a warming device) to avoid hypothermia which worsens coagulopathy. If the pulse is absent or extremely weak, follow advanced cardiac life support (ACLS) – start CPR if no pulse; remember to perform manual uterine displacement during CPR on a pregnant patient. If there is no response to CPR within 4 minutes in a late pregnancy cardiac arrest, initiate **peri-mortem Cesarean** (this is advanced, and typically done by a senior doctor, but students should know the 4-minute rule for maternal CPR).
- **Identify and Manage the Cause:** While resuscitating, concurrently look for the cause of shock. The **4 T's** of obstetric hemorrhage (Tone, Trauma, Tissue, Thrombin) help recall PPH causes For hemorrhagic shock specifically (which is common in obstetrics), **control of bleeding** is paramount: continue uterine massage, give uterotonics (oxytocin IV/IM, and others like ergometrine or carboprost if available and no contraindications), and perform **bimanual uterine compression** if uterine atony persists (this technique is covered in the PPH session). If bleeding is due to trauma (suspected rupture or inversion), **do not delay surgical management** – stabilize and move to OT as soon as possible. In uterine inversion, for example, one should not pull on the cord; instead, attempt to reposition the uterus if trained, or keep it moist and covered while awaiting an obstetrician (this will be touched on in PPH module).

In shock from any cause, continue to reassess vital signs every 5 minutes. If blood pressure is not responding to fluids and bleeding control, arrange for **blood transfusion** (O-negative or uncrossmatched blood if urgent). Also consider uterine tamponade (balloon) or surgical measures if PPH continues (these steps are typically by specialists but should be recognized by trainees). Throughout, maintain communication with the team and the patient (if conscious), explaining actions to reduce anxiety.

Hospital Care and Transfer:

Suppose this happens in a lower-level facility or outside a hospital. In that case, once the patient is somewhat stabilized (or sooner if not improving), **transfer to a higher center** with surgical and ICU facilities is critical.

During transfer, continue care – e.g., keep IV lines patent, continue fluids, maintain lateral tilt, and send an escort with the patient. Always send relevant information (what happened, estimated blood loss, treatments given like drugs and fluids, vital signs) ahead to the receiving facility. This session trains students to **act quickly and systematically** in a shock scenario. A scenario practiced could be: a woman after delivery who becomes tachycardia and dizzy – students must identify PPH as the cause and begin ABC and PPH treatment steps. They also practice calling for help early, a vital non-technical skill.

Session 6: Management of Obstetric Hemorrhage

Learning Objectives – PPH: After this session, participants will be able to:

- Define **Postpartum Hemorrhage (PPH)** as blood loss >500 ml after a vaginal birth or >1000 ml after a C-section, or any loss sufficient to cause hemodynamic instability. Recognize that even without exact measurement, excessive bleeding that is more than expected (soaking a peripad in <15 minutes, or causing symptoms) should be treated as PPH.
- List the main **causes of PPH** using the "4 T's" mnemonic: **Tone** (uterine atony – most common cause), **Tissue** (retained placenta or membranes), **Trauma** (lacerations of uterus, cervix, vagina, or uterine inversion, rupture), **Thrombin** (coagulation disorders).
- Identify risk factors for PPH (e.g. overdistended uterus from twins/polyhydramnios, prolonged labor, high parity, chorioamnionitis, use of tocolytics, history of PPH, etc.) and use active management to prevent PPH in every delivery (as done in Session 1).
- Recognize PPH **early signs**: uterine fundus that is soft ("boggy") and enlarged (above the level of the umbilicus) indicating atony, heavy vaginal bleeding (more than one pad soaked in 5-10 min), formation of large clots, pallor, rising pulse, or dropping blood pressure.
- Demonstrate the **immediate management of PPH**: call for help; massage the uterine fundus; ensure IV access and start fluids; give uterotonic medications (oxytocin IV/IM as first line, followed by others as needed); and proceed to further interventions if bleeding continues (e.g., second-line uterotonics, uterine compression, tamponade).
- Perform **uterine fundal massage** correctly to stimulate contractions, and if needed, perform **bimanual uterine compression** to mechanically compress the uterus and reduce bleeding.
- Administer first-line **uterotonic drugs**: Oxytocin (10 IU IM or IV infusion) as first choice; know alternatives like IV/IM ergometrine (if not hypertensive), carboprost (Hemabate) IM, and misoprostol rectally if oxytocin alone is insufficient.
- Outline further PPH management steps: insertion of a uterine tamponade balloon, surgical interventions (B-Lynch suture, uterine artery ligation), and ultimately hysterectomy if bleeding is unmanageable – with the understanding that these are carried out by specialists, but a junior doctor should anticipate and assist in escalation.
- Emphasize **communication and documentation**: alert the blood bank for urgent blood, update the team leader/consultant, and document medications given, estimated blood loss, and patient response.

Key Content:

PPH is one of the leading causes of maternal mortality worldwide. By definition, **PPH** is >500 ml blood loss after vaginal birth, but in practice, any excessive bleeding that threatens the mother's stability is treated as PPH. It can be **Primary PPH** (within 24 hours of birth) or **Secondary PPH** (24 hours to 6 weeks postpartum, often due to retained tissue or infection). This session focuses on primary PPH occurring immediately or within hours after delivery.

The **4 T's** of PPH causes:

- **Tone (Uterine Atony):** Failure of the uterus to contract after delivery is the cause in 70-80% of PPH cases. Atony risk is higher with an overdistended uterus (multiples, polyhydramnios, big baby), prolonged labor, very rapid labor, high parity, chorioamnionitis, or magnesium sulfate use.
- **Tissue (Retained products):** If pieces of placenta or membranes remain in the uterus, it prevents full contraction and causes continued bleeding. A succenturiate lobe of placenta or placenta accreta (abnormal adherence) can lead to this.
- **Trauma:** Lacerations of the cervix, vagina, or perineum can cause significant hemorrhage, especially if unnoticed (e.g. a cervical tear). Uterine rupture (tear through uterine wall, often at scar) or uterine inversion (the uterus turns inside out) are severe traumatic causes.
- **Thrombin (Coagulopathy):** A clotting disorder can exacerbate bleeding or even be a primary cause (e.g. severe preeclampsia can lead to HELLP syndrome or DIC; amniotic fluid embolism causes coagulopathy).

Students should assess for all these causes quickly. Often, PPH from atony is evident by a bogie, enlarged uterus on palpation. Trauma might be suspected if uterus is firm but bleeding persists (requiring inspection for tears). Retained tissue might be suspected if placenta was not complete or bleeding persists despite a firm contracted uterus.

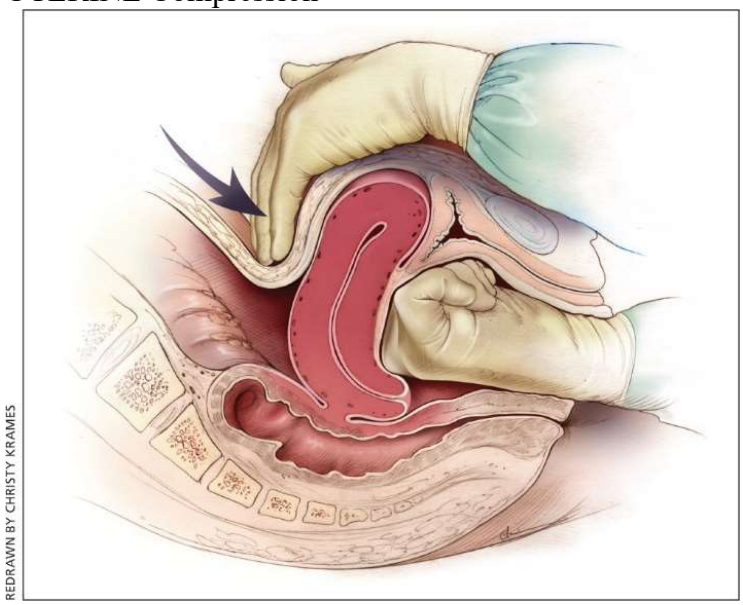
Immediate PPH Management – "First response":

1. **Call for Help:** PPH can worsen rapidly. Shout for additional hands – ask a nurse to call the obstetrician on call, activate a PPH protocol, and notify blood bank. If in a facility without surgical capability, initiate transfer plans early (call ambulance) while doing interventions.
2. **Massage the Uterus:** Begin **fundal massage:** immediately if the uterus is soft. Place one hand firmly on the fundus (top of uterus, just below the navel) and rub in a circular motion to stimulate contraction. Often this alone can make the uterus contract and expel pooled blood and clots, which helps it stay contracted. Ensure you support the lower uterus with your other hand above the pubic bone if the abdomen is open (to avoid inversion), but in a postpartum scenario after delivery, usually just external massage is done first.
3. **Assess Airway, Breathing, and Circulation (ABC):** Check the mother's vital signs. If she shows signs of shock (as per Session 2), begin resuscitation – lay her flat, give oxygen, insert IV lines. **Start IV fluids:** (a wide-open bore IV with normal saline). Keep her warm. These steps occur simultaneously with uterine massage if enough personnel are present.
4. **Uterotonics:** Administer uterotonic medications promptly:
    - **Oxytocin:** First-line. If not already given as part of AMTSL, give 10 IU intramuscular or slow IV push (per protocol) immediately. Also start an IV infusion of oxytocin (e.g. 20 IU in 1 L NS at a rapid rate). Oxytocin helps the uterus contract.

- If bleeding continues and uterus still atonic, give additional uterotonics sequentially (assuming no contraindications): **Carboprost (15-methyl PGF2α)** 0.25 mg IM, can repeat every 15 minutes up to 8 doses (avoid in asthmatic patients); **Misoprostol** 800–1000 mcg rectally (especially useful in low-resource settings). These cause stronger uterine contractions. Misoprostol can be given even without IV access (per rectum or sublingual). The document suggests misoprostol PR or IV oxytocin as first-line if available.

5. **Continue Fundal Massage:** Do not underestimate the effectiveness of massage. Maintain uterine massage throughout if atony persists, even while medications are taking effect.
6. **Bimanual Uterine Compression:** If the uterus still does not stay contracted and bleeding is ongoing, proceed to **bimanual compression**. This is an internal-external manual technique: wear sterile gloves, insert one hand into the vagina and form a fist that presses against the anterior wall of the uterus from inside, while the other hand presses on the fundus from outside, effectively "sandwiching" the uterus between your two hands. This provides direct pressure to help tamponade bleeding from uterine arteries and encourages uterine muscle contraction). Maintain compression for several minutes. Often this maneuver can slow bleeding significantly while waiting for other measures or transport.

UTERINE Compression



Uterine fundal massage

7. **Evaluate for Tissue or Trauma:** While uterotonics are being given, quickly ensure the placenta is out and complete. If the placenta has not delivered and PPH is ongoing, suspect retained placenta – the obstetrician may need to do manual removal (with appropriate anesthesia). If placenta is out, examine it for missing fragments. Also inspect the birth canal: is there a large tear bleeding? If so, that laceration needs to be clamped and sutured. If the uterus is not palpable abdominally (and instead a mass is felt in the vagina), suspect **inversion** – in that case, do **not** pull the cord; instead, attempt to reposition the uterus if possible (Cup it with a palm and push it back through the cervix), or at least keep it moist and apply pressure while awaiting help. For uterine rupture, the only effective treatment is surgical – immediate laparotomy – so get surgical team ready if the woman had risk factors (like a prior scar) and you see signs (sudden pain, cessation of contractions, possibly a fetus in abdomen if undelivered, or shock out of proportion to visible loss).
8. **Tamponade and Surgery:** If bleeding still continues despite all the above (uterotonics, massage, compression) and facilities are available, the next step is often to insert a **uterine tamponade balloon** into the uterus and inflate it to apply internal pressure. This can be done quickly by an OB/GYN if on hand. Simpler methods like packing the uterus with gauze can be tried if no balloon is available. Meanwhile, ensure blood transfusion is in progress if heavy loss (cross-matched blood ideally, or O-negative in dire emergency). If these measures fail, surgical intervention (e.g. B-Lynch suture or arterial ligation) is needed, and ultimately a peripartum hysterectomy might be life-saving if bleeding is refractory. **The role of the junior doctor is to keep the resuscitation going (fluids, blood, meds) and assist the senior clinicians**. Early referral to tertiary care hospital according to SOPs of referral of the facility area.
9. **Monitoring and Support:** Throughout PPH management, closely monitor vitals. Put in a Foley catheter to keep bladder empty (a full bladder can hinder uterine contraction) and to monitor urine output as a sign of perfusion. Use a chart to record blood loss (weigh pads, etc.), vitals, and interventions every few minutes. Communicate with the woman (if conscious) – explain what is happening and reassure her. Provide pain relief if possible (fundal massage and compression can be painful – consider IV analgesia once IV access and initial resuscitation is underway, as long as BP is stable enough to handle opioids).

The **PPH emergency kit** or tray with uterotonics, IV fluids, and instruments for suturing should be readily accessible on labour ward; students should familiarize themselves with its contents. In simulation, they will practice grabbing the right medication and performing massage without delay.

Finally, once PPH is controlled, continue uterine massage every 15 minutes for the first 1–2 hours and keep oxytocin infusion going. Monitor for re-bleeding. Do not leave the patient unattended until you are confident the hemorrhage is truly under control. Update the patient and her family about her condition. PPH can be a harrowing experience, so also be mindful of the psychological support needed.

Teaching Strategies:

Through a hands-on drill in this session, students practice calling out each step (like a PPH checklist) and performing the maneuvers on a mannequin. They learn that **time is critical** – interventions in the first 5-10 minutes can make the difference in outcome. They also learn to prepare for transfer if in a low-resource setting while doing what they can (e.g., *"Call 1122 for help or arrange referral"* as the document says).

Session 7 : Hypertensive Emergencies – Preeclampsia & Eclampsia

- **Learning Objectives – Eclampsia:** Upon completion of this session, participants will:

- Explain the spectrum of **hypertensive disorders of pregnancy** (gestational hypertension, mild preeclampsia, severe preeclampsia, eclampsia, HELLP syndrome), with emphasis on severe preeclampsia and eclampsia as emergencies.

- Define **preeclampsia** as hypertension (BP ≥140/90 mmHg on two separate readings) with proteinuria or end-organ dysfunction after 20 weeks gestation in a previously normotensive woman. Recognize **severe preeclampsia** features: BP ≥160/110, heavy proteinuria or signs like severe headache, visual disturbances, right upper quadrant pain, low platelets, elevated liver enzymes, pulmonary edema, or fetal growth restriction.

- Define **eclampsia** as the occurrence of new-onset **tonic-clonic seizures** in a woman with preeclampsia, not attributable to other causes. Understand that eclamptic seizures can occur antepartum, intrapartum, or postpartum (up to 1–2 days after delivery typically).

- Initiate **management of severe preeclampsia**: stabilize the mother (prevent seizures with magnesium sulfate, control severe BP with antihypertensives), assess maternal and fetal condition, and expedite delivery as the definitive treatment once stable (usually after 34 weeks, or earlier if life-threatening).

- Manage an **eclamptic seizure** with a stepwise approach: ensure patient safety (prevent falls or injuries), maintain airway and left lateral positioning, administer magnesium sulfate to stop/prevent further seizures, control blood pressure, and plan for delivery once the patient is stabilized.

- Demonstrate preparation and administration of **Magnesium Sulfate ($MgSO_4$)** for eclampsia according to a standard regimen (e.g. the Pritchard regimen: 4 g IV + 10 g IM as loading dose, followed by 5 g IM every 4 hours; or 4–6 g IV loading, then 1–2 g/hour IV infusion). Know the signs of magnesium toxicity (loss of deep tendon reflexes, respiratory depression) and its antidote (calcium gluconate).

- Select appropriate **antihypertensive therapy** for severe hypertension in pregnancy (hydralazine IV, labetalol IV, or nifedipine oral being first-line options), aiming to lower BP gradually to a safe range (~140-150/90-100) to prevent stroke while maintaining uteroplacental perfusion.

- Appreciate the importance of **multi-disciplinary care**: involving obstetricians, anesthesiologists, and ICU if needed, and planning **delivery** (often by induction of labour or C-section depending on circumstances) once the mother is stable – since delivery is the cure for preeclampsia/eclampsia.

- Understand how to provide **post-eclampsia care** including continued $MgSO_4$ for 24 hours post-delivery, monitoring for recurrent seizures or hypertension, and counseling about future pregnancy risks.

Key Content:

Preeclampsia is a multi-system disorder unique to pregnancy. It is thought to originate from abnormal placentation leading to endothelial dysfunction. It typically presents after 20 weeks with high blood pressure and proteinuria, but some patients present with severe features without much proteinuria (involving liver, kidneys, brain, etc.).

Eclampsia is one end of this spectrum and is a life-threatening emergency. The onset of seizures differentiates eclampsia from preeclampsia. Without prompt treatment, eclampsia can lead to maternal hypoxia, trauma, stroke, or even death, and fetal compromise. HELLP syndrome (Hemolysis, Elevated Liver enzymes, Low Platelets) is a severe variant of preeclampsia with high morbidity.

Recognition: A woman with severe preeclampsia may have

- Symptoms like severe headache, visual disturbances (spots, blurriness), epigastric or right upper quadrant pain (from liver capsule distension), nausea/vomiting, or swelling in face/hands (edema).
- Neurologically, hyperreflexia or clonus may be noted – a warning sign that seizures could occur.
- Blood pressure is often very high (e.g. 170/115 mmHg
- Urine output may drop (oliguria if kidneys are affected).
- Lab tests might show elevated creatinine, liver enzymes, and low platelets.
- In eclampsia,the patient actually has a seizure – often generalized tonic-clonic. The seizure usually lasts less than 1–2 minutes but can recur. After a seizure, the patient may be postictal (drowsy, confused).
- It's critical to **rule out other causes** of seizures (like epilepsy, intracranial hemorrhage) but in a pregnant or postpartum woman with hypertension or other signs, it's eclampsia until proven otherwise.

Emergency Management of Eclampsia: The priorities are: stop/prevent seizures, control blood pressure, and deliver the baby once safe for mother. The **ABCDE** approach is useful here too, but specific steps are as follows:

- **Protect Airway and Breathing:** During a seizure, do **not** put anything in the patient's mouth. Turn her onto her left side (recovery position) to maintain airway and prevent aspiration of saliva or vomit. Once the seizure subsides, ensure the airway is clear; if she is not breathing or if the seizure is prolonged (>2–3 minutes status epilepticus), assist ventilation (bag-mask) and prepare for possible intubation (by an anesthesiologist). Provide high-flow oxygen since maternal hypoxia will harm both mother and fetus. Suction any secretions gently.
- **Prevent Injury:** Padding the bed rails or putting pillows around can prevent injury from convulsions. If the patient is on the floor, ensure a soft surface under head. Restrain only gently to prevent her from falling off the bed, but do not forcefully hold her limbs.
- **Call for Help:** Eclampsia requires an obstetric emergency response. Call an obstetrician and anesthesiologist immediately. Also alert neonatal team because an emergent delivery may be needed and the baby could be premature or depressed.
- **Magnesium Sulfate Therapy:** This is the cornerstone of eclampsia management. Magnesium sulfate is an anticonvulsant specifically effective for eclampsia – it prevents further seizures better than diazepam or phenytoin (according to international trials). Administer the loading dose as soon as possible:
    - **Loading Dose:** 4–6 g IV magnesium sulfate diluted in 100 mL normal saline given over 15-20 minutes *OR* if IV not ready, give 10 g of 50% magnesium sulfate solution IM (5 g deep IM in each buttock, with lignocaine to reduce pain).

A common regimen (Pritchard) is 4 g IV + 5 g IM in each buttock to start. The document indicates 4–6 g IV or 10 g IM (5 g each buttock) as alternatives.

- **Maintenance Dose:** 1–2 g per hour IV infusion continuously, or if using IM route (Pritchard regimen), give 5 g $MgSO_4$ IM every 4 hours in alternate buttocks. Continue $MgSO_4$ for 24 hours after the last seizure or after delivery, whichever is later.
- If another seizure occurs while on $MgSO_4$, give an **additional 2 g IV bolus** of $MgSO_4$. If seizures still continue (which is rare if magnesium levels are adequate), you may use a benzodiazepine like diazepam 5–10 mg IV or lorazepam 4 mg IV as backup, but be cautious as these can cause respiratory depression especially when combined with magnesium.
- Monitor for **magnesium toxicity**: check patellar reflexes (deep tendon reflexes) – loss of reflexes is an early sign of excess magnesium; monitor respiratory rate (should be >12; respiratory depression indicates toxicity), and urine output (needs to be >25–30 mL/hour as magnesium is excreted by kidneys; if oliguria, magnesium can accumulate). Keep **Calcium Gluconate 1 g IV** at bedside as an antidote in case of toxicity (given slowly IV if reflexes are gone or respiration < 10). In simulation, students will practice calculating and drawing up the correct doses of $MgSO_4$.

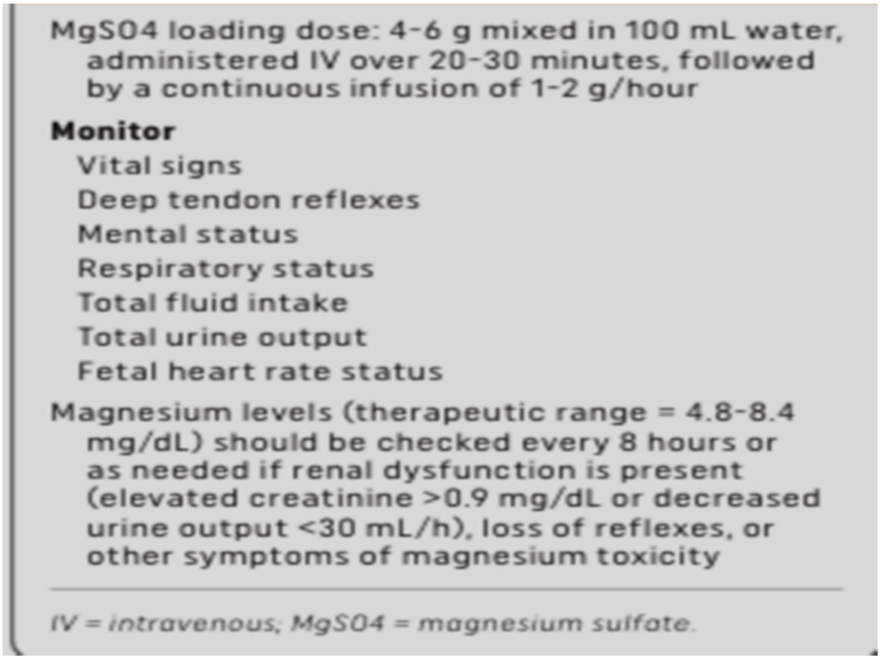
- **Blood Pressure Control:** Severe hypertension (≥ 160/110) can cause stroke or placental abruption. After stabilizing airway and starting $MgSO_4$, treat BP:
  - **Labetalol IV:** Give 20 mg slow IV push. Re-check BP in 10 minutes; if still above threshold, give 40 mg IV; then 80 mg IV every 10 minutes up to a total of 300 mg until target achieved. (Avoid labetalol if patient has asthma or heart failure.)
  - **Hydralazine IV:** 5–10 mg slow IV. Expect effect in 10-20 min. Repeat 5-10 mg every 20 min as needed. (Hydralazine can cause reflex tachycardia; hence labetalol which also lowers heart rate is often preferred.)
  - **Nifedipine oral:** 10 mg capsule (bite-and-swallow or chew) can be given if IV meds not available, repeat every 20 minutes up to 30 mg. Do *not* give sublingual nifedipine (unpredictable drop in BP). Avoid nifedipine if patient is tachycardic.
  - Goal is to bring BP to ~140–150 systolic and ~90–100 diastolic, not completely normal, to maintain uteroplacental perfusion. Use one agent at a time and monitor. Once BP is in target range, maintain it (maybe switch to oral antihypertensives like nifedipine 10 mg 6 hourly as needed).
- **Evaluate Fetus:** If pregnant and not delivered yet, quickly assess fetal heart rate once mother is somewhat stabilized. Prolonged severe maternal hypotension or hypoxia can cause fetal bradycardia. However, the fetus often tolerates a short seizure; the main treatment for the fetus is to stabilize the mother. After maternal stabilization, plan for delivery.
- **Decide on Delivery:** Definitive treatment for eclampsia is **delivery of the baby and placenta**, as that will start improving the maternal condition (though magnesium is continued after delivery). In general, once the eclamptic woman is stabilized (seizures controlled and BP controlled), proceed to deliver regardless of gestational age (if very preterm, weigh risks but maternal safety is priority). If the patient is in late preterm or term, or cervix is favorable, induction of labor for a vaginal delivery is preferred (vaginal delivery is often possible and has less recovery risk). However, if the patient is remote

from delivery (cervix closed and high, or if fetal distress is present, or other obstetric indications), a prompt **Cesarean section** may be done. The decision is individualized, but should be made quickly in consultation with the obstetric specialist. In our course scenario, we assume senior doctors handle the actual delivery – but students should know that *after initial stabilization, do not delay delivery*. For example, if eclampsia occurs at 28 weeks, after stabilization, deliver – because continuing the pregnancy is too dangerous. If it occurs during labor, expedite delivery (assisted vaginal or C-section as needed).

- **Further Care:** Once delivered, continue Magnesium sulfate for 24 hours postpartum (to prevent recurrent seizures). Watch for postpartum hemorrhage, as preeclampsia can cause coagulopathy or atony risk (magnesium can relax the uterus somewhat as well). Monitor urine output, kidney function, liver enzymes, and platelets daily until improving. Also watch for **pulmonary edema**, a complication in severe preeclampsia especially if too much fluid is given IV; use a fluid-restricted regimen (don't overload with fluids; usually 80 mL/hr is enough unless there's hemorrhage) and use diuretics if pulmonary edema develops.
- **Emotional support:** An eclamptic seizure is frightening. Once the patient is alert, explain to her what happened (often they have amnesia of the event). Reorient her and assure that she and the baby are being cared for. If the baby is preterm or in NICU, provide updates.

In this session's **skills practice**, students will specifically focus on preparing and administering magnesium sulfate. For example, they may be given an order: "Give a 4 g IV bolus of $MgSO_4$ over 20 minutes and 5 g IM in each buttock" – they must choose the correct concentration (50% $MgSO_4$ is 500 mg/mL, so 8 mL = 4 g), mix with diluent for IV, and explain how they'd give it. They also practice checking reflexes on each other or a mannequin and stating when they'd withhold a dose. A mock scenario could involve a patient who seized – students must go through ABCs, call for help, and state they'd start $MgSO_4$, etc.

Magnesium sulphate for hypertensive disorders in pregnancy


MgSO4 loading dose: 4-6 g mixed in 100 mL water, administered IV over 20-30 minutes, followed by a continuous infusion of 1-2 g/hour

Monitor

- Vital signs
- Deep tendon reflexes
- Mental status
- Respiratory status
- Total fluid intake
- Total urine output
- Fetal heart rate status

Magnesium levels (therapeutic range = 4.8-8.4 mg/dL) should be checked every 8 hours or as needed if renal dysfunction is present (elevated creatinine >0.9 mg/dL or decreased urine output <30 mL/h), loss of reflexes, or other symptoms of magnesium toxicity

IV = intravenous; MgSO4 = magnesium sulfate.

Session 8: Maternal Sepsis and Septic Shock

Learning Objectives :

Sepsis: In this final session, participants will learn to:

- Define **Maternal Sepsis** as a life-threatening organ dysfunction resulting from infection during pregnancy, childbirth, post-abortion, or postpartum period. Understand that maternal sepsis is a leading cause of maternal death worldwide
- Identify **common sources of infection** in obstetric sepsis: genital tract infections ,chorioamnionitis ,urinary tract infections in pregnancy, post C-section wound infections, retained products of conception leading to infection, or non-obstetric infections that become systemic (pneumonia, COVID-19, etc., in a pregnant/postpartum woman).
- Recognise **signs and symptoms of sepsis** in pregnancy: fever or hypothermia, chills, tachycardia > 110 (or >130 in labour), tachypnea, low blood pressure (systolic <90 is concerning), altered mental status (confusion, restlessness), oxygen saturation < 95%,
- **foul-smelling vaginal discharge** or wound discharge, uterine tenderness Understand that in pregnancy, heart rate and respiratory rate are normally a bit elevated, so use modified criteria (for example, HR > 110 or 120 may be more indicative of sepsis in a pregnant woman in labour, and fever > 38°C or persistent > 37.5°C with other signs).
- State the importance of **early intervention** in sepsis: outcomes improve if treatment (the "Sepsis Six") is started within **one hour** of recognition. Delay in antibiotics and fluids increases the risk of progression to septic shock and multi-organ failure.
- List the **"Sepsis Six" bundle** steps for initial management of sepsis (to be done in the first 1 hour): 1) Give high-flow oxygen (if hypoxic or saturation < 94%), 2) Obtain blood cultures (before antibiotics), 3) Start IV broad-spectrum antibiotics, 4) Start IV fluids (30 ml/kg crystalloid if hypotensive or lactate >4), 5) Check serum lactate and send other labs, 6) Monitor urine output (place Foley catheter). (These can be remembered as "BUFALO": Blood culture, Urine output, Fluids, Antibiotics, Lactate, and Oxygen.)
- Implement appropriate **antibiotic therapy** for common obstetric infections:
- Manage **septic shock** by aggressive fluid resuscitation and vasopressors if needed
- Emphasize **source control**: removing the source of infection is crucial.
- Outline preventive measures and **infection control**: hand hygiene, sterile technique during deliveries and procedures, prophylactic antibiotics for C-sections, timely treatment of UTIs, and vaccination (e.g. flu, COVID-19) during pregnancy to reduce sepsis risk.

Key Content:

Maternal sepsis is particularly dangerous because the normal physiological changes of pregnancy can mask early signs (heart rate and cardiac output are already high, so tachycardia may be attributed to pregnancy; mild shortness of breath could be normal, etc.), and when women are in labour or postpartum, fever or pain might be misattributed. Yet sepsis can progress quickly to septic shock and disseminated intravascular coagulation (DIC).

Recognising Maternal Sepsis:

Any pregnant or postpartum woman who looks unwell should be evaluated for infection. **Fever** (>38°C) is an obvious sign, but in some cases (like septic shock or immune-compromised patients), temperature may be normal or low. **Tachycardia** out of proportion to fever is a red flag (e.g. pulse 130). **Tachypnea** or difficulty breathing might indicate sepsis-induced acidosis or acute respiratory distress syndrome. Blood pressure might be maintained initially, but a dropping pressure is very ominous. **Mental status changes** (confusion, agitation) are late signs. Localising signs help: uterine tenderness and foul lochia (endometritis), dysuria and back pain (pyelonephritis), productive cough (pneumonia), wound redness and discharge (surgical site infection). Also, look at lab results: high WBC count > 15,000 or conversely very low WBC, elevated lactate, elevated CRP, etc., support the diagnosis.

One useful set of criteria is the **"Sepsis Six / Sepsis 6",** which is a bundle of 6 actions; another is the **qSOFA** (quick Sequential Organ Failure Assessment: hypotension, altered mental state, RR >22). In pregnancy, modified criteria are used (since RR and HR are often elevated normally, and BP can drop with epidural, etc., one uses clinical judgment in context).

MODIFIED EARLY OBSTETRIC WARNING SCORING SYSTEM

Document actual reading unless otherwise stated

Contact Doctor for Early Intervention if patient triggers one red or two yellow score at any one time

Baseline BP in this pregnancy (at booking): _____

Physiological parameters	Normal values	Yellow alert	Red Alert
Respirator rate	10-20 breaths per minute	21-30 breaths per minute	< 10 or >30 breaths per minute
Oxygen saturation	96-100%		< 95 %
Temperature	36.0-37.4°C	35-36 or 37.5- 38°C	< 35 or > 38°C
Systolic blood pressure	100-139 mmHg	150 – 180 or 90 – 100 mmHg	>180 or < 90 mmHg
Diastolic blood pressure	50-89 mmHg	90–100 mmHg	>100 mmHg
Heart rate	50-99 beats per minute	100- 120 or 40 -50 beats per minute	>120 or < 40 beats per minute
Neurological response	Alert	Voice	Unresponsive, pain

Initial Management – The Sepsis Six within 1 hour: Early management is often tested and drilled because it saves lives. The key is to treat first, ask questions later.

1. **Oxygen:** If the patient's oxygen saturation is < 94% (or <92% outside pregnancy), give high-flow oxygen (15 L/min via non-rebreather mask). In pregnancy, we aim for >94% saturation to ensure fetal oxygenation. If she's already in respiratory distress or pulmonary oedema, she may need ventilatory support, but start with oxygen.
2. **Blood Cultures:** Draw blood cultures (at least 2 sets from different sites) **before** starting antibiotics, if no significant delay. This helps identify the organism later. If obtaining cultures will delay antibiotics significantly, don't wait – but usually it's quick. Also consider cultures from suspected sites: e.g., urine culture if UTI suspected, vaginal swab for culture (especially if foul discharge), placental cultures if retained placenta.
3. **IV Antibiotics:** Start broad-spectrum IV antibiotics **immediately after cultures** are drawn. For maternal sepsis, common regimens include:
    - **Ampicillin + Gentamicin + Metronidazole:** covers Gram-positives, Gram-negatives, and anaerobes (good for endometritis or sepsis after unsafe abortion).
    - **Clindamycin + Gentamicin:** traditional regimen for postpartum endometritis (covers anaerobes + Gram-negatives, but newer protocols often add ampicillin for better enterococcal coverage).
    - **Piperacillin-Tazobactam (Zosyn)** alone can cover many organisms, or **Carbapenems** (e.g. meropenem) in very severe cases.
    - Add **Vancomycin** if MRSA or streptococcal toxic shock is a concern (for instance, severe sepsis after C-section might be due to Group A Strep, which can cause toxic shock and needs clindamycin + penicillin).
    - In resource-limited settings, **ceftriaxone + metronidazole** is a reasonable combo if others aren't available. The key is **do not delay antibiotics** – each hour of delay increases mortality. Empiric broad coverage is started, then tailored when culture results return.
4. **IV Fluids:** If the patient is hypotensive (SBP < 90 or MAP < 65) or lactate is high (>4 mmol/L), begin aggressive fluid resuscitation. Typically give an initial bolus of 30 mL/kg of crystalloids. For an average woman (~60 kg), that is ~1.8 liters. In practice, 1-2 liters rapid infusion and then re-assess. Pregnant patients can often tolerate fluids, but be cautious in case of heart failure or if there is pulmonary edema – still, in septic shock, fluids are life-saving to improve perfusion. Continue to monitor blood pressure and urine output to gauge response.
5. **Measure Lactate:** A serum lactate level helps identify tissue hypo perfusion (lactate >2 is elevated; >4 is severe sepsis/shock). Also send other labs: CBC, CRP, kidney function, liver enzymes, coagulation (especially if DIC is suspected), and specific tests like COVID-19 if respiratory symptoms, or malarial parasite test if regionally relevant. But do not wait for results to treat.
6. **Monitor Urine Output:** Insert a Foley catheter to measure hourly urine output. Aim for >=30 mL/hour. Low output might indicate renal failure onset or inadequate resuscitation. Monitoring output helps guide fluid and indicates if shock is resolving. Also, output is one of the "take 3" in sepsis (lactate, urine output, cultures taken; and "give 3": antibiotics, oxygen, fluids).

These six steps are often memorized and executed as a bundle. In our course, we encourage students to recall BUFALO or another mnemonic to not forget any step.

Ongoing Management and Escalation: After the initial Sepsis Six, re-assess frequently (every 15-30 minutes). Is blood pressure improving? If still hypotensive after 2-3 liters of fluid, this is **septic shock**. Initiate vasopressor support – usually **norepinephrine** IV via infusion pump (requires ICU care). If in a setting without ICU, at least keep the patient supine, consider dopamine temporizing if noradrenaline not available, and arrange transfer to critical care. Maintain MAP ≥ 65 mmHg. If pulmonary edema develops, you may need to slow fluids and add pressors sooner, plus consider intubation for respiratory support. Correct any hypoglycemia or electrolyte imbalances.

Source Control: It is crucial to eliminate the source of infection. For example:

- If retained products of conception (incomplete abortion or retained placenta) are suspected, the uterus must be evacuated (D&C) as soon as the patient is stable enough (often within a few hours of starting antibiotics). Doing this too early in an unstable patient can be risky, but delaying too long means antibiotics might not fully penetrate necrotic tissue. Often within 6-12 hours of stabilization, a gentle vacuum aspiration is performed for retained placenta/products.
- If there is an abscess (e.g., pelvic abscess or infected hematoma), it needs drainage.
- In severe chorioamnionitis with a viable fetus, prompt **delivery** is part of source control – usually induction of labor (or C-section if needed) once antibiotics started. In fact, for **chorioamnionitis** (infection of the amniotic fluid), the management is antibiotics + deliver the baby, because leaving the infected uterus occupied will worsen outcomes. The document notes: "Delivery should be expedited if chorioamnionitis is the source of infection or if the maternal condition does not improve with treatment".
- Remove any infected device: e.g., remove an infected IV cannula or urinary catheter if it's possibly the source (after replacing lines at other sites).
- **Surgical consultation:** If suspect necrotizing fasciitis (very rare postpartum, but possible in C-section wound infection), or if uterine rupture with infection, surgical intervention (laparotomy) is needed.

Adjunctive Measures: Septic patients are at risk of DIC and clotting issues. Check coagulation; if DIC, treat with blood products as needed (packed RBCs, FFP, platelets – guided by labs). Also, pregnancy itself and sepsis both predispose to **thrombosis**, interestingly – once stable, these patients should get thromboprophylaxis with low molecular weight heparin unless contraindicated (usually after 12–24 hours, when bleeding risk is under control). Monitor for organ failures – e.g., if ARDS (acute respiratory distress syndrome) develops, they need ventilator; if kidneys fail, dialysis.

Recovery: If treated aggressively, many women recover. Provide ICU-level care if required. Continue antibiotics for at least 7-10 days (or as per source, e.g. endometritis usually 7 days IV then oral step down if improving). Switch to culture-directed antibiotics if cultures identify a bug. Educate on signs of sepsis on discharge and possibly schedule follow-up to discuss any implications for future pregnancies (e.g., if she had Group A strep sepsis, family should be educated to watch for sore throats etc., though that's general; or if she had a septic abortion, talk about family planning counseling, etc.). Emphasize preventing infections: e.g., good perineal hygiene, recognizing UTI early, etc.

In our session, we might run a **table-top exercise**: present a scenario such as a woman 2 days post C-section with fever, rapid pulse, low BP. Students must say what immediate steps to take (we expect: call senior, oxygen, IV lines, blood cultures, antibiotics, fluids, etc.). We will have them physically practice drawing up a blood culture, hanging a saline drip, and picking appropriate antibiotics from a mock formulary.

By mastering the sepsis 6, students learn to act fast. This is a fitting final session as it ties together many skills: IV insertion (from earlier, shock session), oxygen therapy, teamwork, and

maternal monitoring. It reinforces that **"time saves lives"** – similar to PPH and eclampsia, early intervention is everything.

Visual Aids and Figures:

High-quality visual aids are used throughout the manual and course to reinforce learning. The following key figures are included or recommended:

- **Figure 1: Mechanism of Normal Labour (Cardinal Movements)** – A diagram or series of illustrations showing the seven cardinal movements of the fetal head during labour (engagement, descent, flexion, internal rotation, extension, restitution, external rotation, and expulsion). This helps students visualize how the baby navigates the pelvis. (Usually depicted as sequential positions of the fetus's head in the pelvis.)

- **Figure 2: Bimanual Uterine Compression for PPH** – An illustration (like an anatomical cross-section) demonstrating the hand positions for internal and external uterine compression to control atonic hemorrhage (as described in Session 3). *[Included above]* This visual is crucial for understanding a life-saving manual technique.

- **Figure 3: The "Sepsis Six" Bundle Chart** – A flowchart or boxed graphic outlining the six urgent actions in sepsis management and emphasizing **"Complete all within 1 Hour"**. *[Included above]* This serves as a checklist for students to memorize and apply in any suspected sepsis case.

- **Partograph Chart (Labour Monitoring Graph)** – An example of a WHO partograph that tracks cervical dilation, fetal heart rate, contractions, and vitals during labour. While not an emergency tool per se, it helps identify abnormal labour early. Students can be shown how a normal labour progresses on the graph versus an obstructed labour.

- **Eclampsia Management Algorithm** – A summary diagram showing the steps to manage eclampsia (left lateral position, magnesium sulfate administration, blood pressure control, delivery, etc.), possibly in flowchart form. This reinforces the protocol in a visual manner.

- **Shock Index Table or Graphic** – A simple table or colored chart showing ranges of Shock Index and their interpretation (normal <0.7, moderate >1, severe >1.4), which could be embedded in the Shock session for quick reference.

- **Uterotonic Medications Table** – A reference table listing common uterotonics (Oxytocin, Ergometrine, Carboprost, Misoprostol) with doses, routes, and contraindications, to support Session 3 on PPH.

- **Magnesium Sulfate Dosing Chart** – A small chart or box summarizing the loading and maintenance doses of $MgSO_4$ for eclampsia and signs of toxicity, to accompany the skill station in Session 4.

All figures/diagrams are presented at relevant points in the manual with captions explaining their content. They are also shown on slides during the course. These visual aids help translate theory into practice and cater to visual learners, making the information more memorable.

Suggested Reading and References:

Participants are encouraged to read the following resources for a deeper understanding and reinforcement of the course material. These texts and guidelines formed the basis of the course content and can serve as references for further study:

- **Emergency Obstetrical Care – Consolidated Document (2025)** – *[Uploaded course reference]* – A compiled guideline covering normal delivery, shock, PPH, eclampsia, and sepsis (prepared by Department of OBGYN, AIMC Lahore). This manual contains the detailed protocols summarized in the course.

- **Obstetrics by Ten Teachers, 20th Edition** – (Eds. Philip Baker & Louise Kenny). *CRC Press.* – Chapters on normal labour, third stage management, hypertensive disorders, and obstetric hemorrhage provide an excellent foundation with clear explanations for medical students.

- **NICE Guideline [NG*235*] – Intrapartum Care (2023)** – *National Institute for Health and Care Excellence (UK).* – Evidence-based guidance on managing labour, including recommendations on labour monitoring, definitions of labour stages, and active management practices.

- **WHO Labour Care Guide – User's Manual (2020)** – *World Health Organization.* – A practical guide on monitoring labour using the partograph and essential interventions to ensure safe childbirth.

- **RCOG Green-top Guideline No. 52: Prevention and Management of Postpartum Haemorrhage (2016)** – *Royal College of Obstetricians & Gynaecologists.* – A comprehensive guideline on PPH, including causes, medical and surgical management, which underpins many of the PPH steps taught.

- **ACOG Practice Bulletin No. 222: Gestational Hypertension and Preeclampsia (2020)** – *American College of Obstetricians and Gynecologists.* – Offers detailed diagnostic criteria and management plans for preeclampsia and eclampsia, consistent with what was taught (magnesium sulfate use, blood pressure control, timing of delivery).

- **Surviving Sepsis Campaign: International Guidelines (2021)** – While not obstetric-specific, the general sepsis management guidelines (from SCCM/ESICM) provide the basis for sepsis bundles and protocols, which are adapted in obstetric care (e.g., Sepsis-3 definitions, early goal-directed therapy).

- **WHO Recommendations for Prevention and Treatment of Maternal Peripartum Infections (2015)** – Covers identification and management of maternal sepsis and includes the "Sepsis Six" concept adapted for low-resource settings.

- **Advanced Life Support in Obstetrics (ALSO) Manual** – A training manual that includes emergency drills for PPH, eclampsia, and maternal resuscitation (including modifed CPR in pregnancy), providing another perspective and practice exercises.

OSCE Skills Stations (Emergency Obstetrics):

To reinforce hands-on skills, the following OSCE-style stations are incorporated. These simulate critical tasks the participants should be able to perform after the course. Each station is a 5-10 minute scenario or task with a checklist of required steps. While these are practiced during the course, they can also be used later for formal assessment or self-practice.

1. **Active Management of Third Stage of Labour (AMTSL) Station:** The student is presented with a scenario of a woman who just delivered a baby. The task is to demonstrate active third stage management – administer a uterotonic (show how to draw up and give Oxytocin IM), perform controlled cord traction with counter-pressure on the uterus, and then perform uterine massage once the placenta is out. The student should also verbalize examining the placenta for completeness and monitoring the mother's vitals. *Skills assessed:* correct drug dosage and route, proper technique in cord traction to avoid inversion, and fundal massage.
2. **Uterine Fundal Massage & Bimanual Compression Station:** Using a postpartum uterus model or simulator, the student must manage an atonic uterus (simulated scenario: "The uterus is boggy and the mother is bleeding heavily 10 minutes after delivery."). They should perform continuous fundal massage and then demonstrate **bimanual compression** of the uterus. This involves inserting one gloved hand into the vaginal canal (on a model) and forming a fist inside while the other hand presses from above, as in **Figure 1**, and explaining how this helps control hemorrhage. *Skills assessed:* knowledge of when to do massage vs. when to escalate to internal compression, and correct hand positioning for compression without causing trauma.
3. **Magnesium Sulfate Administration Station:** The student is given a mock order for treating eclampsia (e.g. "Administer $MgSO_4$ 4 g IV and 5 g IM ×2 now, then prepare maintenance dose"). They must demonstrate preparing the IV magnesium sulfate solution (calculating volume if it's a 50% solution, diluting appropriately for IV infusion) and describe the IM injection technique (deep IM in upper outer quadrant of buttock with lignocaine to reduce pain). They should also state the monitoring required (respiratory rate, reflexes, urine output) and when to withhold or antidote. Optionally, a dummy medication chart can be filled out by the student. *Skills assessed:* dosage calculation, injection preparation and knowledge of magnesium protocol and safety.
4. **Eclamptic Seizure Management Station:** This is a scenario station where a mannequin or actor simulates a seizure. The student must describe and demonstrate the actions during and after a convulsion: call for help, protect the patient from injury, position her in left lateral position, clear the airway and give oxygen, and then proceed to give magnesium sulfate (which might link to station 3 or be combined). They should also mention checking blood pressure and giving an antihypertensive if very high. *Skills assessed:* prioritization under pressure (safety and ABCs before drugs), and correct application of the eclampsia protocol steps.
5. **Maternal Shock Resuscitation Station:** The student is faced with a postpartum hemorrhage scenario where the patient is pale, with weak pulse and BP 80/50. They must demonstrate the initial resuscitation: lie the patient flat, elevate legs, left lateral tilt if pregnant, start two IV lines (they can verbalize and demonstrate on a model arm for IV insertion), begin rapid fluids, and state they would call for blood and help. They should also mention uterotonics for hemorrhage. This station could involve a high-fidelity mannequin that the student needs to resuscitate. *Skills assessed:* adherence to ABCs (Airway, Breathing, Circulation) in correct order, proper positioning, fluid resuscitation technique, and understanding of urgent referral (communication skills – telling someone to call for help).

6. **Sepsis Six Implementation Station:** A case is given (e.g., "A 28-year-old, 2 days postpartum, has a fever of 39°C, pulse 130, BP 90/60, is confused"). The student must state or demonstrate the six actions of the Sepsis 6 bundle: give oxygen, take blood cultures, start IV antibiotics, start IV fluids, check lactate (or order labs), insert Foley catheter to monitor output. They might need to actually select the appropriate antibiotics from a provided selection and hang an IV bag of saline on a dummy IV pole. *Skills assessed:* knowledge of sepsis protocol (did they recall all six?), speed of execution (though in OSCE it's talk-through, in real life time matters), and choosing an antibiotic regimen appropriate for the scenario.
7. **Shoulder Dystocia Drill (Optional Bonus Station):** Although not explicitly covered in the main sessions, an optional station could be included for completeness of obstetric emergencies: the student manages a shoulder dystocia simulation with maneuvers like McRoberts position and suprapubic pressure. This station emphasizes teamwork and algorithmic approach under stress.

Each station has a checklist so students know the expected steps. During the course, these stations are used as practice with coaching. In an exam setting, they could be assessed formally. We focus on stations 1–6 as they directly relate to the five core topics covered. These OSCE stations ensure that knowledge has been translated into practical competencies.

ANNEXURE 1

Emergency Obstetric Care (EMOC) OSCE Stations

OSCE Station 1: Active Management of Third Stage of Labour (AMTSL)

Task: Perform the steps of AMTSL on a mannequin following delivery of the baby.

Checklist:

Step	Performed Correctly	Comments
Administer uterotonic (Oxytocin 10 IU IM) immediately	☐	
Clamps and cuts the umbilical cord after 1–3 minutes	☐	
Performs controlled cord traction	☐	
Supports the uterus during placental delivery	☐	
Examines placenta and membranes for completeness	☐	
Performs uterine fundal massage after placenta delivery	☐	
Monitors maternal vitals post-delivery	☐	
Assesses bleeding and uterine tone	☐	
Document procedure accurately	☐	
Communicates effectively with the team	☐	

Analytic Rubric (for each step):

3 = Excellent – Performs step correctly without prompting.

2 = Satisfactory – Performs step with minor prompt or correction.

1 = Unsatisfactory – Fails to perform or requires major correction.

OSCE Station 2: Uterine Massage and Bimanual Compression for PPH

Task: Demonstrate uterine massage and, if needed, bimanual compression on a simulator.

Checklist:

Step	Performed Correctly	Comments
Identifies atonic uterus correctly	☐	
Performs external fundal massage with proper technique	☐	
Assesses bleeding response	☐	
Initiates bimanual compression correctly (with gloves)	☐	
Maintains correct hand position and pressure	☐	
Calls for help/escalates care	☐	
Administers appropriate uterotonics	☐	
Ensures documentation and continued monitoring	☐	

Analytic Rubric (for each step):

3 = Excellent – Performs step correctly without prompting.

2 = Satisfactory – Performs step with minor prompt or correction.

1 = Unsatisfactory – Fails to perform or requires major correction.

OSCE Station 3: Shoulder Dystocia Management

Task: Manage a simulated shoulder dystocia using maneuvers on a mannequin.

Checklist:

Step	Performed Correctly	Comments
Recognizes shoulder dystocia (e.g., turtle sign)	☐	
Calls for help immediately	☐	
Performs McRoberts maneuver	☐	
Applies suprapubic pressure	☐	
Avoids fundal pressure	☐	
States additional maneuvers (e.g., posterior arm, roll)	☐	
Maintains calm, effective communication	☐	

Analytic Rubric (for each step):

3 = Excellent – Performs step correctly without prompting.

2 = Satisfactory – Performs step with minor prompt or correction.

1 = Unsatisfactory – Fails to perform or requires major correction.

OSCE Station 4: Magnesium Sulfate Administration in Eclampsia
Task: Prepare and administer a magnesium sulfate loading dose and explain monitoring steps.
Checklist:

Step	Performed Correctly	Comments
Draws up correct dose: 4g IV over 20 min / 5g IM each buttock	☐	
Identifies correct concentration (50% = 500 mg/mL)	☐	
Dilutes properly for IV route	☐	
Uses aseptic technique	☐	
Monitors reflexes, RR, and urine output	☐	
States antidote (Calcium gluconate) and indications	☐	
Labels syringe and checks patient ID	☐	
Informs patient and gains consent	☐	
Documents dose, route, and time	☐	

Analytic Rubric (for each step):
3 = Excellent – Performs step correctly without prompting.
2 = Satisfactory – Performs step with minor prompt or correction.
1 = Unsatisfactory – Fails to perform or requires major correction.

OSCE Station 5: Sepsis Six Bundle

Task: Demonstrate initiation of Sepsis Six steps on a simulated septic postpartum patient.

Checklist:

Step	Performed Correctly	Comments
Gives high-flow oxygen	☐	
Takes blood cultures before antibiotics	☐	
Starts IV broad-spectrum antibiotics	☐	
Begins fluid resuscitation (30 ml/kg)	☐	
Checks serum lactate	☐	
Monitors urine output (Foley catheter insertion)	☐	

Analytic Rubric (for each step):

3 = Excellent – Performs step correctly without prompting.

2 = Satisfactory – Performs step with minor prompt or correction.

1 = Unsatisfactory – Fails to perform or requires major correction.

ANEXURE 2

PRETEST, POST TEST

Name of Candidate: _____Signature: _____

Date: _____Venue: _____

CNIC						-								-	

Total 15 Questions Time Allowed: 15 Minutes	Correct Answers	Marks per Question	Obtained Marks
		1	

No	Question	Record your answer by filling the circle ●
1	Which of the following is one of the management of Post-partum haemorrhage?	O Wait and Observe O Amputation O Raise head-end O Uterotonic Drugs
2	Prolonged lab our can be assessed by?	O Partograph O Breathing Rate O Haemorrhage O Date of Admission
3	According to the new WHO guidelines, what is the advised number of antenatal visits?	O 4 O 6 O 8 O 10
4	Which is NOT part of Antenatal Serology?	O Rubella O HIV O Influenza O Hepatitis
5	What substance is contraindicated during Pregnancy?	O Tobacco O Chicken O Medications (Class A) O Wheat
6	What is Recommended daily Folic Acid intake?	O 0.4 mg O 2 mg O 100 mg O 5 g

7	5 emergency obstetric care facilities including 1 comprehensive facility is required for	○ 5000 people ○ 50000 people ○ 500000 people ○ 5000000 people
8	Proposed Post-partum sepsis management includes all of the following except	○ Parenteral Antibiotics ○ Removing ROP ○ Surgery for Pelvic Abscess ○ Hysterectomy
9	Retained object Placenta can cause all of the following except	○ Haemorrhage ○ Pregnancy ○ Infection ○ Sepsis
10	A disorder of pregnancy characterized by the onset of high blood pressure and often a significant amount of protein in the urine	○ Eclampsia ○ Pre-Eclampsia ○ Cardiomyopathy ○ Renal Calculi
11	What is Ectopic pregnancy?	○ More than 40 weeks of pregnancy ○ Implantation outside the uterus ○ Increase in fat cells ○ Hormonal Imbalance
12	What are the advised supplements during Pregnancy?	○ Magnesium & Calcium ○ Calcium & Folic Acid ○ Folic Acid & Iron ○ Magnesium & Calcium
13	B in ABC stands for	○ Build ○ Breathing ○ Base ○ Broad
14	What vaccination is recommended in Pregnancy?	○ HIV ○ Rubella ○ Hepatitis ○ Tetanus
15	What is final step of controlling Post-partum haemorrhage?	○ Removing ROP ○ Uterine Packing ○ Hysterectomy ○ Antibiotics

UNIVERSITY OF HEALTH SCIENCES LAHORE, PAKISTAN

EMOC TRAINER'S MANUAL 2025