EmONC Seminar Series:
Managing Pre-Eclampsia/Eclampsia Module
The Maternal and Child Health Integrated Program (MCHIP) is the USAID Bureau for Global Health’s flagship maternal, neonatal and child health (MNCH) program. MCHIP supports programming in maternal, newborn and child health, immunization, family planning, malaria and HIV/AIDS, and strongly encourages opportunities for integration. Cross-cutting technical areas include water, sanitation, hygiene, urban health and health systems strengthening.

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Jhpiego is an international, non-profit health organization affiliated with The Johns Hopkins University. For almost 40 years, Jhpiego has empowered front-line health workers by designing and implementing effective, low-cost, hands-on solutions to strengthen the delivery of health care services for women and their families. By putting evidence-based health innovations into everyday practice, Jhpiego works to break down barriers to high-quality health care for the world’s most vulnerable populations.

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Introduction

FRAMEWORK
As part of the *Emergency Obstetric and Newborn Care (EmONC) Seminar Series*, this module will help you and your obstetric team use performance standards to guide your work on learning, strengthening, and continually assessing your skills in diagnosing and managing pre-eclampsia and eclampsia.

Performance standards describe expected behaviors and actions on the job. The quality assessment tool in this module includes the performance standards for the relevant skills; it is the basis of this seminar and of the related performance quality and improvement efforts that learners will engage in after they return to their facilities. The quality assessment tool:
- Describes not only *what to do*, but also *how to do it*;
- Breaks down each task into subtasks (steps); and
- Presents information in an objective way that can be easily verified and followed.

Each module in the EmONC Seminar Series presents a practical, skills-based intervention that is linked to the use of performance standards and designed to be implemented in a facility or simulation center. Ideally, learners are teams of health workers involved in providing obstetric care. If you are the facilitator, you will spend most of your time conducting practice activities and providing feedback. You will use the performance standards in the relevant area of the quality assessment tool to guide your training.

Module Materials and Goal
The module materials include guidance for the facilitator, learning activities, and assessment tools, including the related performance standards.

For each module, the goal is for the learners and the team in the facility to perform the skills in a manner that is consistent with the performance standards and the checklists provided with each module.

Underlying Assumptions
- The learning approach used in the module is competency-based.
- The focus of the module is on development of the skills required to diagnose and manage pre-eclampsia/eclampsia, including pre-referral management.
- The module is to be used by facilitators/teachers who are experienced in competency-based training and who have up-to-date knowledge and skills related to the module content.
- The module content reflects the related performance standards, against which learners’ performance will be measured.
- The module can and should be used at the clinical facility where learners work, preferably by a facilitator from the same facility. A “visiting” facilitator from a training center or another clinical facility could serve as a substitute, if no facilitator is available on-site.
- Learners should be “off duty” when attending the training—that is, they should not be responsible for patient care during the training period.
- Before they begin training, learners should be competent in the following basic skills:
  - Appropriate interpersonal communication skills
  - Assessing the client (measuring temperature, pulse, respirations, blood pressure)
  - Providing care (establishing an IV line and giving IV and IM injections)
- Appropriate infection prevention practices must be adhered to during and after training.
• The module can be implemented in less than a day, with follow-up approximately one month later to assess continuing compliance with related performance standards. The assessment can be conducted using the clinical simulation scenarios used during training.

LEARNING APPROACH AND METHODS
Jhpiego trainings are based upon these key learning theories and concepts:

• **Mastery learning:** Ensuring that 100% of those trained can demonstrate the desired performance by the end of the module

• **Adult learning principles:** Ensuring that training builds on the learners’ abilities; designing or revising training to ensure that it is efficient and relevant; involving the learners in their learning goals and assessment of their progress

• **Apprenticeship** (also called “cognitive apprenticeship”): Making complex skills easy for a learner to observe and learn. In the cognitive apprenticeship process:
  - The master (or trainer) demonstrates skills and models behaviors for the apprentice (or learner);
  - The master explains his/her decisions and thought processes while he/she works;
  - The apprentice practices alongside the master and receives continual mentoring/coaching; and
  - Over time, as the apprentice becomes more skilled, she/he performs more and more independently.

• **Humanistic learning:** Ensuring the safety and dignity of the learners and clients involved in the learning process. To reduce the risk of client harm or discomfort, and to increase learner confidence, students practice and master skills in simulation before working with clients.

Four **learning methods** are used most commonly in each of the modules in this package:

• **Case Studies:** Case studies help learners develop clinical decision-making skills and can be studied either individually or in small groups.

• **Clinical Simulations:** Simulation of a clinical event helps learners practice psychomotor and/or clinical decision-making skills. Simulations typically include the use of models.

• **Clinical Drill:** Simulating a clinical emergency helps learners practice managing emergencies by immersing the learners in situations in which they can practice critical life-saving skills.

• **Feedback:** Information about learners’ performance helps learners assess and improve their skills.

ASSESSING COMPETENCIES
Each module uses the following assessment tools:

• Performance standards, which outline desired performance

• A pre- and post-test questionnaire and a short case study

• Skill checklists that are consistent with the standards; these are used for both practice and assessment

Skills Assessment
You will use a checklist to evaluate each learner’s skills, and the learner will use it during practice. Each learner should be able to demonstrate the skills during a clinical drill or in simulation, according to the checklist. After a learner has performed a skill in a simulated situation, give feedback immediately using the checklist as a guide and following these steps:

• Always start with one or two positive comments on what was done correctly.
• Ask the learner to assess his/her performance and identify steps done well and steps he/she would like to improve the next time.
• Ask observers to give feedback.
• Give feedback on any missed steps and help the learner develop a plan to improve his/her performance.

Qualification
Learners must complete the post-module questionnaire and must be able to perform the skills according to the performance standards or the checklist provided with each module. To receive a certificate of qualification (see the Training Report Form), all learners must:
• Achieve a knowledge score of at least 5 out of 7, or 70%
• Be able to perform the following skills in simulation or with a client:
  • Evaluate diastolic blood pressure
  • Diagnose and manage pre-eclampsia/eclampsia
  • Prepare and administer magnesium sulfate in simulation

FACILITATOR GUIDANCE
Facilitator Responsibilities
If you have been selected as a facilitator, you are:
• Trained in competency-based training and participatory learning methods,
• Able to use learning principles (including those especially applicable to adult learners) for an effective clinical training program, and
• Proficient in performing the relevant clinical skill according to the checklist.

Before the Module Begins
Meet or communicate with co-facilitators or organizers before the module begins to discuss and assign the following administrative responsibilities:
• Facilitation of teaching sessions, demonstrations, return demonstrations, and clinical simulations (Each trainer/facilitator will be responsible for ensuring that all needed resources, equipment, supplies, and medications are available for any sessions assigned to him/her.)
• Set-up of the room to allow for practice and feedback
• Obtaining all supplies and equipment that are needed for the module (e.g., flip charts, markers, projector for presentations, blood pressure monitors, syringes, and related consumables) (Be sure to also have supplies such as magnesium sulfate and other consumables that the facility may not have available for practice sessions.)
• Review of the performance standards and checklist for the topic to be addressed
• Review of the Facilitator’s Guide for other preparation details (Be sure to review the session plan, activities, and assessment tools.)
• Making copies of the following items for each learner:
  • Related performance standards
  • Exercises and activities
  • Assessment tools
  • Skills checklist
After the Module
- Debrief the heads of departments and units, and schedule follow-up calls and visits.

Effective Facilitation
The main goal of facilitation is to make learning easier. Effective facilitation is more like coaching than traditional teaching. The key coaching techniques are questioning, providing feedback, and active listening. Use these throughout to provide feedback, check understanding, and keep learners’ attention.

Tips for Coaching
- Ask probing questions to help learners improve critical thinking and clinical decision-making skills.
- Explain your rationale for decisions or actions taken.
- Provide specific and constructive feedback.
- Coaches help learners self-assess. Ask learners to share what they felt they did well and what they would like to improve. Then reinforce and provide additional feedback.

Tips for Effective Facilitation of Learning Activities
- Introduce topics in a way that gets the learners’ attention and helps them recall what they already know about that topic. This will make it easier for them to remember the information and apply it.
- Keep the learners’ interest by making eye contact, using learners’ names, projecting your voice, moving around, and being energetic.
- Ask questions to check learners’ understanding, to provide a chance for learners to apply the information, and to make learning more effective. Content is more likely to be remembered if it is presented in lectures that include periodic questions.
- Summarize the information presented by asking questions that help reinforce key content, make the connection to the next topic, and address the learners’ roles in places where they work.

Tips for Effective Skills Demonstrations and Practice
- Have learners follow along with the skills checklist as you perform the skill.
- Perform the skill once, all the way through.
- Perform it again, focusing on one step at a time. Encourage learners to ask questions and provide feedback.
- Perform the skill again, all the way through.
- Ask learners if they have any questions. Clarify any steps, as needed.
- Have learners perform the skill individually (“return demonstration”) and/or ask them to divide into pairs (or small groups) and take turns practicing the skill while the others follow along with the checklist, making suggestions and providing feedback.

Make Feedback Useful by Being Specific
Poor feedback: “You did a good job of educating the client.”
Useful feedback: “You did an excellent job of summarizing the woman’s concerns and addressing them. You also used questions to ensure that she understood key points. Nice work.”
FACILITATOR TOOLS
Session Plan

This session plan for the management of the pre-eclampsia/eclampsia module may be facilitated as one session or as several short sessions. The session(s) should be followed by several days of coaching on a ward or in a facility to help learners to practice applying the skills according to the standards.

**MODULE: MANAGING PRE-ECLAMPSIA/ECLAMPSIA**

**SESSION DURATION: 4½ HRS**

**Topic:** Pre-eclampsia/Eclampsia

**Session objectives:** By the end of this session, learners will be able to:
- Describe best practices in the management of pre-eclampsia and eclampsia, including pre-referral management when relevant
- Demonstrate how to prepare and administer magnesium sulfate in compliance with related performance standards
- Demonstrate the diagnosis and management of pre-eclampsia in compliance with related performance standards
- Demonstrate the diagnosis and management of eclampsia in compliance with related performance standards.

**Methods and Activities**

<table>
<thead>
<tr>
<th>Multiple choice questionnaire based on case scenario (15 mins):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administer the questionnaire as a pre-test.</td>
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</tbody>
</table>

**Review and discussion of performance standards for pre-eclampsia/eclampsia (45 mins):**
- Briefly review standards for pre-eclampsia/eclampsia (about 10 mins).
- Ask the group to identify the performance gaps based on their experience in clinical practice: According to these performance standards, what is done well in their facility? What is a common problem? How can it be solved? Review the pre-test findings: What common questions were answered incorrectly? Are they consistent with the gaps in performance identified in the group?
- Refer to the job aid on page 14 and review the key steps in management of pre-eclampsia/eclampsia.

**Skills Practice (60 mins):**
- Demonstrate preparation and administration of magnesium sulfate as the learners follow along using the checklist (10 mins).
- Give learners time to practice.
- Circulate and assess performance using the checklist.

**Case Studies 1 & 2 (60 mins):**
- Assign the case studies to the learners to complete in small groups, or go through them as a large group, depending on the number of learners.
- Reinforce key management steps by referring to the job aid on page 14.
- In the “Key Points” section, ask the checking questions to ensure that learners understand and can apply the key management steps.

**Clinical Simulation 1: Practice Clinical Decision-Making (45 mins):**
- Use this clinical simulation to give learners practice at diagnosing and managing pre-eclampsia/eclampsia in simulation. Stop and ask questions to assess the learners’ clinical decision-making skills.
- Provide feedback on performance through observation and discussion.

**Materials/Resources Included in this Module**

- Pre/Post-Test Questionnaire & Answer Key
- Managing Complications in Pregnancy and Childbirth (S-35 to S-50)
- Quality Assessment and Performance Tool: Performance Standards for Pre-eclampsia/Eclampsia
- Skills Practice Session: Preparation and Administration of Magnesium Sulfate (including list of resources required for activity)
- Checklist: Preparation and Administration of Magnesium Sulfate
- Case Studies 1 & 2: Diagnosis & Management of High Blood Pressure during Pregnancy & Answer Keys
- Clinical Simulations 1 & 2: Management of Severe Pre-eclampsia/Eclampsia (including list of resources required for activity)
- Guidelines for Induction of Labour (WHO, 2011)
### Clinical Simulation 2: Practice Managing an Emergency (60 mins)
- Have learners form emergency response teams and practice diagnosis and management of severe pre-eclampsia/eclampsia using an anatomic model or a peer/colleague as a standardized patient. This should be conducted as if it is a real emergency (i.e., no questions or feedback until the end).
- After practice, assess performance and provide feedback on decision-making and psychomotor skills.

### Summary (45 mins):
- Administer post-test (same as pre-test).
- Assess anyone who has not yet demonstrate competency in mixing magnesium sulfate using the Skill Assessment Tool on page 19.
- Discuss the results with respect to the performance gaps identified at the beginning of the session.
- Fill out the operational action plan and identify some quick fixes to address before the next follow-up visit.
- Arrange for follow-up in one month to assess continuing compliance with related performance standards.

### Self-Review/Evaluation
(key points from session, what worked/what did not, modifications for next session, and so on)
Assessment Tools

HANDOUT: QUALITY ASSESSMENT AND IMPROVEMENT TOOL INSTRUCTIONS

Introduction
This tool lists standards for managing pre-eclampsia and eclampsia. It includes standards for direct tasks related to service provision as well as the support functions required to improve the quality of services. Each standard has observable verification criteria, and observations must be recorded using the following options: Yes (Y), No (N), or Not Applicable (NA).

The Quality Assessment Tool can be used to:
• Establish the desired level of performance objectively using performance standards,
• Measure actual performance during the baseline as well as in the internal monitoring and external assessment visits, and
• Identify the gaps between actual and desired performance

The tool includes the following components:
• Instructions
• A summary of contents
• A form for consolidating the results (total and by sections)

Instructions for Using the Quality Assessment and Improvement Tool
Each standard has instructions for collecting information and the number of cases to be observed or reviewed. Collection of information is based upon:
• Direct structured observation,
• Review of administrative documents and medical histories/records, and
• Guided interviews

How to Complete the Quality Assessment Tool
1. Record observations immediately after they are made.
2. Write Yes (Y) or No (N) in the third column of the tool. (Note that all criteria must be completed using Y or N. Do not leave any criteria blank.)
3. Write Y if the item is performed correctly or meets the description of the verification criteria
4. Write N if the item is not performed or does not meet the description (incorrect or incomplete or required but not done). The following examples illustrate cases in which it would be appropriate to indicate N:
   • A required criterion was not performed: If you are observing a provider perform a task and he/she does not wash his or her hands after the procedure or client interaction, write N for this criterion.
   • The task is not consistent with the description of the verification criteria: If you are observing a provider and the person does not perform the task correctly, write N for this criterion.
   • An item has sub-items and one or more of sub-items is not performed: For example, if the provider correctly follows up the management of severe pre-eclampsia/eclampsia (PE/E), but the facility does not have the required urinary bag/urine measuring jar for assessing the urinary output of a client with PE/E, you should write N for each of the sub-items related to measurement of urinary output.
5. Record all relevant comments, clearly and briefly, highlighting any gaps and possible causes.
Scoring Performance on the Assessment

- To mark a standard as accomplished, all verification criteria must be marked with Y or NA. Even if one verification criterion is marked with an N, the standard cannot be marked as accomplished.
- Each accomplished standard is worth 1 point.

Operational Action Plan

Fill in the matrix Operational Action Plan:

1. List all the verification criteria marked with N (those are the gaps).
2. Select a few high priority gaps that the learner should correct first, if there are many.
3. Find the cause(s) of the gap (until you reach the more specific cause if possible).
4. Identify the proper intervention to decrease the gaps, the person responsible for implementing the intervention, and date by which the intervention is to be accomplished.
<table>
<thead>
<tr>
<th>STANDARD</th>
<th>VERIFICATION CRITERIA</th>
<th>OBSERVATION (Y, N, NA)</th>
<th>COMMENTS</th>
</tr>
</thead>
</table>
| EmONC-01: The health facility has, readily available and in working condition, the basic equipment and supplies for managing obstetric and neonatal emergencies | The provider shows equipment and supplies available in the emergency room for managing severe pre-eclampsia and eclampsia  
- Sphygmomanometer  
- Stethoscope  
- Rubber (tendon) hammer for assessing reflexes  
- Cannula gauge 16 or 18  
- IV giving set  
- Normal saline  
- Dipstick test for urinary protein (or available at laboratory)  
- Clean lab tubes  
- Acetic acid 2%  
- Magnesium sulfate, 20% and 50% solution  
- Diazepam 10 mg  
- Lignocaine 2%  
- Calcium gluconate 10% solution  
- Needles and syringes (20 mL, 10 mL, 2 mL)  
- Urinary catheter and bag  
- Ringer's lactate or normal saline  
- Clean gloves  
- Oxygen and face mask | | |
| | The provider shows equipment and supplies available in the emergency room for managing incomplete abortion  
- Manual vacuum aspiration (MVA) syringes (selection of cannula sizes)  
- Sterile surgical gloves  
- Personal protective barriers  
- Vaginal speculum  
- Single-toothed tenaculum or vulsellum forceps  
- Oxytocin  
- Ergometrine  
- Simple analgesia (diclofenac, paracetamol) | | |
Guided interview (only use the guided interview if you do not have a real case of shock during the assessment period)
Interview a provider who usually works in the emergency room or maternity ward and is likely to manage hypovolemic shock.

<table>
<thead>
<tr>
<th>STANDARD</th>
<th>VERIFICATION CRITERIA</th>
<th>OBSERVATION (Y, N, NA)</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EmONC-02: The health provider demonstrates appropriate knowledge and decisions for managing shock</td>
<td>The provider recognizes and classifies as shock the condition of the client in the case study: A 32-year-old woman arrives unconscious at the emergency room. Her husband says that she delivered a healthy baby at home two hours ago. The delivery was attended by her mother-in-law. After the delivery, they noticed that vaginal bleeding did not stop. This is her fourth baby. The husband says that his mother looked at the placenta and it was complete. Findings during the clinical examination: patient unconscious; pallor around the mouth, conjunctiva, and palms of hands; weak pulse (120 beats per minute); low blood pressure (60/40); respiration 30 breaths per minute. How do you classify the condition of this woman? Expected response: severe shock, probably due to postpartum hemorrhage (PPH) and hypovolemia.</td>
<td>(Y)</td>
<td></td>
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<tr>
<td>EmONC-02: The provider’s immediate treatment plan is based on rapid IV fluid replacement and ensuring circulation</td>
<td>The provider describes the key signs of the woman’s response to the immediate treatment</td>
<td>(Y)</td>
<td></td>
</tr>
<tr>
<td>The provider’s immediate treatment plan is based on rapid IV fluid replacement and ensuring circulation</td>
<td>The provider describes the key signs of the woman’s response to the immediate treatment</td>
<td>(Y)</td>
<td></td>
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<tr>
<td>— Call for help</td>
<td>— Reassess the woman every 15 minutes for:</td>
<td>(Y)</td>
<td></td>
</tr>
<tr>
<td>— Maintain airways</td>
<td>— Pulse</td>
<td>(Y)</td>
<td></td>
</tr>
<tr>
<td>— Turn on side</td>
<td>— Blood pressure (BP)</td>
<td>(Y)</td>
<td></td>
</tr>
<tr>
<td>— Administer oxygen 6–8 L per minute by cannula or mask</td>
<td>— Temperature</td>
<td>(Y)</td>
<td></td>
</tr>
<tr>
<td>— Cover with a blanket(s) to keep warm</td>
<td>— Mental state/level of consciousness</td>
<td>(Y)</td>
<td></td>
</tr>
<tr>
<td>— Elevate legs</td>
<td>— Fluid balance</td>
<td>(Y)</td>
<td></td>
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<tr>
<td>— Starts two IV lines using a 16- or 18-gauge cannula with saline or Ringer’s lactate solution</td>
<td>The provider correctly identifies, based on the case study, that the woman’s condition is improving and describes the appropriate management decisions (Thirty minutes after starting the treatment the woman’s pulse is 80 per minute, her systolic blood pressure is 100 mm Hg, there is 30 mL of urine, and the woman is awake but confused.)</td>
<td>(Y)</td>
<td></td>
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<tr>
<td>— Take a blood sample for checking hemoglobin, coagulation, and blood group and Rh (cross-matching)</td>
<td></td>
<td>(Y)</td>
<td></td>
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<tr>
<td>— Request blood and starts transfusion</td>
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<td>(Y)</td>
<td></td>
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<tr>
<td>— Administer IV fluids: 1 L over a 15–20 minute period (wide open rate) in each line</td>
<td></td>
<td>(Y)</td>
<td></td>
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<tr>
<td>— Label IV bags with name and medications added, if any</td>
<td></td>
<td>(Y)</td>
<td></td>
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<tr>
<td>— Administer at least two additional liters of IVF during the first hour</td>
<td></td>
<td>(Y)</td>
<td></td>
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<tr>
<td>— Continue to replace volume IV in accordance with the loss of blood (two or three times the estimated loss)</td>
<td></td>
<td>(Y)</td>
<td></td>
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<tr>
<td>— Assess woman’s need for transfusion based on signs and symptoms of shock or impending shock due to amount of blood lost</td>
<td></td>
<td>(Y)</td>
<td></td>
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<tr>
<td>— Perform bladder catheterization and monitors input and output</td>
<td></td>
<td>(Y)</td>
<td></td>
</tr>
<tr>
<td>— Check uterus and vaginal blood loss</td>
<td></td>
<td>(Y)</td>
<td></td>
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<tr>
<td>STANDARD</td>
<td>VERIFICATION CRITERIA</td>
<td>OBSERVATION (Y, N, NA)</td>
<td>COMMENTS</td>
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<tr>
<td></td>
<td>Adjust IV infusion to 1 L over a six-hour period (60 drops/minute)</td>
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<tr>
<td></td>
<td>Continue to monitor vital signs and loss of blood every 30 minutes</td>
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<td></td>
<td>Indicate that this is a PPH and manage accordingly</td>
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<tr>
<td></td>
<td>Administer oxytocin 1.0 units IM stat</td>
<td></td>
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<tr>
<td></td>
<td>Massage uterus</td>
<td></td>
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<tr>
<td></td>
<td>Manage cause of bleeding</td>
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<tr>
<td></td>
<td>Commence oxytocin 20 units in 1 L normal saline IV</td>
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<tr>
<td></td>
<td>Decide to refer to specialty treatment</td>
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The provider correctly identifies, based on the case study, that the woman’s condition is not improving and describes the appropriate management decisions. (Thirty minutes after starting the treatment the woman’s pulse is still weak at 110 beats per minute, her blood pressure is 40/60, and there is no collected urine.)

- Continue IV solution 1 L over a six-hour period (60 drops/minute)
- Continue to administer oxygen 6–8 L per minute
- Continue to monitor vital signs and fluid balance
- Seek assistance to review cause of bleeding

Provider includes the recording of the diagnosis, procedures, and treatments.

Guided interview (only use the guided interview if you do not have a real case of severe pre-eclampsia/eclampsia during the assessment period)

Interview a provider who usually works in the maternity ward and is likely to manage pre-eclampsia/eclampsia.

**EmONC-03:** The health provider demonstrates appropriate knowledge and judgment for managing severe pre-eclampsia and eclampsia (PE/E)

The provider recognizes the condition of the client in the case study and classifies the condition as severe pre-eclampsia

A 24-year-old woman is examined during her third prenatal care visit. She is now in the 36th week of pregnancy and complains about blurred vision, headache, and upper abdominal pain during the last week. The clinical record shows no similar symptoms during the woman’s previous visits, and normal blood pressure was registered at each visit. The clinical examination reveals a blood pressure of 150/115 mm Hg. **How do you classify the woman’s condition?** Expected response: possible severe pre-eclampsia **What would you do to confirm your suspicion?** Expected response: Look for proteinuria and assess other signs such as severe headache, visual disturbance, epigastric pain. If the provider responds correctly, tell him/her the result of the proteinuria test (3+) and ask, **What is the woman’s condition?** Expected response: severe pre-eclampsia

The provider’s immediate action plan is based on the administration of magnesium sulfate and reducing high BP

- Admit client to ward and makes her comfortable in a bed
- Explain all aspects of care to woman and family
- Give 20% magnesium sulfate solution 4 g IV over 5 minutes
- Follow promptly with 50% magnesium sulfate solution 5 g in each buttock with 2% lignocaine 1 mL in the same syringe
- If in a hospital or health center with comprehensive emergency obstetric and newborn care (CEmONC), provider should continue management; if in a dispensary or health center without CEmONC, provider should refer client
- Give maintenance dose of 50% magnesium sulfate solution 5 g + 2% lignocaine 1 mL IM into alternate buttocks every 4 hours
- Continue treatment with magnesium sulfate for 24 hours after delivery
- Observe caution with the use of magnesium sulfate, ensuring that it is administered only if:
  - Respiratory rate is at least 16 per minute,
  - Patellar reflexes are present, and
  - Urinary output is at least 30 mL per hour over 4 hours.
- In case of respiratory arrest, assist ventilation and give calcium gluconate 1 g (or 10 mL of 10% solution) IV slowly until respiration begins to antagonize the effects of magnesium sulfate
- Induce delivery within 24 hours of onset of symptoms
- Give one of the antihypertensives to reduce and maintain BP at diastolic 90–100:
  - Hydralazine 5 mg IV slowly over 3–4 minutes (repeat at 30 minute intervals but do not give more than 20 mg total) or 12.5 mg IM every 2 hours
  OR
  - Nifedipine 5 mg sublingual, repeating the dose if the diastolic BP is still more than 110 after 10 minutes
  OR
  - Labetalol Give 10–20 mg IV (over 1 minute)/200 mg by mouth
  - If response is inadequate (diastolic blood pressure remains above 110 mmHg) after 10–20 minutes
  - Repeat 20–80 mg IV boluses (doubling previous dose) every 10–20 minutes as needed, until a maximum cumulative dosage of 300 mg (or at least 220 mg)

**Provider describes the general support management to be given**
- Start an IV infusion and infuse IV fluid
- Maintain a strict fluid balance chart and monitor the amount of fluids administered and urine output to avoid fluid overload
- Catheterize the bladder to monitor urine output and test for proteinuria
- Monitor for the development of pulmonary edema
- Monitor vital signs, reflexes, and fetal heart rate hourly
- Assess clotting to rule out coagulopathy
- Explain all interventions to woman and family

**Provider recognizes and classifies as eclampsia the condition of the client in the case study**
A 30-year-old woman arrives unconscious at the emergency room. She is now in the 38th week of pregnancy. Her husband refers to sudden convulsions an hour ago. The clinical examination reveals a blood pressure of 160/120 mm Hg and there is proteinuria of 3+. How do you classify the woman’s condition? Expected answer: eclampsia.

**Provider follows similar case management procedures as those used for severe pre-eclampsia but ensures delivery within 12 hours of onset of symptoms**

---

1 WHO’s Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice, 2006, targeted for primary health facilities, cites a urinary output cut-off of 25 mL.
<table>
<thead>
<tr>
<th>STANDARD</th>
<th>VERIFICATION CRITERIA</th>
<th>OBSERVATION (Y, N, NA)</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider includes the recording of diagnosis, procedures, and treatments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Guided interview (only use the guided interview if you do not have a real case of incomplete abortion during the assessment period)</strong></td>
<td>Interview a provider who usually works in the emergency/maternity ward and is likely to manage incomplete abortion.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **EmONC-04:** The health provider demonstrates appropriate knowledge and judgment for managing incomplete abortion | Provider recognizes the condition of the client in the case study as uncomplicated incomplete abortion  
A 20-year-old woman arrives at the hospital with vaginal bleeding for the last 8 hours. She denies any abortion attempt. The woman is alert and complains of low abdominal cramps. Her blood pressure is 90/60, pulse is 102 per minute, and temperature is 37.5°C. Her last menstrual period started 14 weeks ago. The physical examination confirms vaginal bleeding with opened cervical os and no signs of pelvic inflammation.  

The provider correctly describes the administration of general support measures  
- Start an IV infusion and infuse IV fluid  
- Maintain a strict fluid balance chart and monitor the amount of fluids administered and urine output to avoid fluid overload  
- Monitor vital signs  
- Take a blood sample for performing hemoglobin, coagulation, and blood group and Rh (cross-matching)  
- Assess woman’s need for transfusion based on signs and symptoms of shock or impending shock due to amount of blood lost  
- Keep the woman warm  

The provider correctly selects manual vacuum aspiration as the appropriate method for evacuating the uterus of the woman in the case study  

The provider correctly describes the key manual vacuum aspiration procedures  
- Provide pre-procedure orientation for the woman  
- Prepare equipment and supplies  
- Confirm uterus size and position and cervical os dilation  
- Administer paracervical anesthesia (optional)  
- Evacuate uterus evacuation with corresponding cannula  
- Administer post-procedure pain control  
- Continuously check for vaginal bleeding  
- Offer immediate psychological support  

Provider includes contraceptive counseling before discharge  

Provider includes counseling on danger signs and when to seek immediate care  

Provider includes the recording of diagnosis, procedures, and treatments |  |  |  |
EmONC-03: Antihypertensive Treatment (if diastolic BP is ≥ 110 mm Hg)
- Plan 1: Hydralazine 5 mg IV slowly over 3-4 minutes (repeat at 30 minute intervals and do not give more than 20 mg in total) or 12.5 mg IM every 2 hours, until diastolic BP stabilizes at 90–100 mm Hg
- OR
- Plan 2: Nifedipine 5 mg sublingual, repeating the dose if the diastolic BP is still > 110 after 10 minutes

EmONC-03: Required Information for Supporting an Eclampsia or Pre-eclampsia Diagnosis
- Severe pre-eclampsia:
  - BP ≥ 160/110 mm Hg
  - 20 weeks or more gestation
  - Proteinuria of 3+
- Eclampsia:
  - Convulsions
  - Diastolic ≥ BP 90 mm Hg
  - 20 weeks or more gestation
  - Proteinuria of 2+ or more
Documentation of initial dose of magnesium sulfate:
- Administer 20% magnesium sulfate solution (20 mL) 4 g IV over 5 minutes
- Administer 50% magnesium sulfate solution (20 mL) 5 g with 2% lignocaine 1 mL IM deep in each buttock (total 10 g)
- In the event of a second convolution after 15 minutes, administer 50% magnesium sulfate in solution (4 mL) 2 g IV over a 5-minute period

EmONC-03: Correctly Administer the Loading Dosing of Magnesium Sulfate
- Administer 20% magnesium sulfate solution (20 mL) 4 g IV over a 20-minute period
- Administer 50% magnesium sulfate solution (20 mL) 5 g with 2% lignocaine 1 mL IM deep in each buttock (10 g total)

EmONC-03: Documentation of Maintenance Dose of Magnesium Sulfate
- Before administering maintenance dose, records show:
  - Respiration more than 16 per minute
  - Patellar reflexes are present
  - Urine output > 30 mL per hour
- Administer 50% magnesium sulfate solution 5 g with 2% lignocaine 1 mL IM alternately in each buttock every 4 hours, providing there are no complications
- Continue with magnesium sulfate for 24 hours following birth or the most recent convolution
- Simultaneously, there is record of:
  - Bladder catheterization
  - Intake and output monitoring every shift
  - Monitoring of vital signs (i.e., BP, pulse, breathing)
  - Monitoring of fetal heart rate
  - Performance and evaluation of clotting tests
  - If there were convulsions, birth took place within 12 hours following the convolution or, in the absence of convulsions, within 24 hours

EmONC-03: Hourly Monitoring of Magnesium Sulfate Toxicity
Monitoring should include the following:
- Patellar reflexes
- Urinary output
- Signs and symptoms of pulmonary edema

MCLD-11 (04): Procedures in the event of respiratory arrest:
- Perform assisted ventilation
- Administer calcium gluconate (10 mL of a 10% solution); give IV slowly until respiration begins/improves
PRE-/POST-TEST QUESTIONNAIRE: MANAGING PRE-ECLAMPSIA/ECLAMPSIA (PROMPT)

Instructions: Read the following case scenario carefully and then answer the questions below by placing a circle around the letter of the single best answer.

Mrs. A is 24 years old. She is 36 weeks pregnant and has come to the hospital this morning complaining of severe headache and blurred vision. She has had these symptoms for about 8 hours. Mrs. A attended the antenatal clinic two weeks ago and there were no problems detected at that time. On examination, you find that her diastolic blood pressure is 115 mm Hg and she has proteinuria of 3+.

1. What is Mrs. A’s probable diagnosis?
   a) Mild pre-eclampsia
   b) Severe pre-eclampsia
   c) Eclampsia

2. Which of the following is the most important step in managing Mrs. A?
   a) Quickly give antihypertensive
   b) Call for help and give oxygen via face mask
   c) Call for help and give loading dose of magnesium sulfate

3. What is the correct loading dose of magnesium sulfate?
   a) 4 g 20% IV slowly over 5 minutes and 5 g of 50% solution IM into each buttock
   b) 4 g 20% IV slowly over 20 minutes and 2 g of 50% solution IM into each buttock
   c) 4 g 50% IV slowly over 20 minutes and 5 g of 50% solution IM into one buttock

4. What is the correct maintenance dose of magnesium sulfate?
   a) 4 g of 20% solution IM every 4 hours into alternate buttocks until 24 hours after birth or the last convulsion (whichever is later)
   b) 4 g of 50% solution IM every 4 hours into alternate buttocks until 24 hours after birth or the last convulsion (whichever is later)
   c) 5 g of 20% solution IM every 4 hours into alternate buttocks until 24 hours after birth or the last convulsion (whichever is later)

5. What criteria are used to determine if a maintenance dose of magnesium sulfate should be given?
   a) A respiratory rate of more than 20/minute, patellar reflexes present, and urine output of more than 40 mL/hour
   b) A respiratory rate of more than 16/minute, patellar reflexes present, and urine output of more than 30 mL/hour
   c) A respiratory rate of more than 18/minute, patellar reflexes absent, and urine output of more than 20 mL/hour

6. What, if any, antihypertensive drug should be given to Mrs. A?
   a) Hydralazine 5 mg IV slowly over 3–4 minutes
   b) Nifedipine 5 mg IV slowly over 5–10 minutes
   c) Hydralazine 10 mg sublingual

7. If Mrs. A does not have convulsions, when should birth take place?
   a) Within 12 hours of the onset of symptoms
   b) Within 24 hours of the onset of symptoms
   c) Within 12 hours of admission to hospital
PRE-/POST-TEST QUESTIONNAIRE: MANAGING PRE-ECLAMPSIA/ECLAMPSIA (ANSWER KEY)

Instructions: Read the following case scenario carefully and then answer the questions below by placing a circle around the letter of the single best answer.

Mrs. A is 24 years old. She is 36 weeks pregnant and has come to the hospital this morning complaining of severe headache and blurred vision. She has had these symptoms for about 8 hours. Mrs. A attended the antenatal clinic two weeks ago and there were no problems detected at that time. On examination, you find that her diastolic blood pressure is 115 mm Hg and she has proteinuria of 3+.

1. What is Mrs. A’s probable diagnosis?
   a) Mild pre-eclampsia
   b) Severe pre-eclampsia
   c) Eclampsia

2. Which of the following is the most important step in managing Mrs. A?
   a) Quickly give antihypertensive
   b) Call for help and give oxygen via face mask
   c) Call for help and give loading dose of magnesium sulfate

3. What is the correct loading dose of magnesium sulfate?
   a) 4 g 20% IV slowly over 5 minutes and 5 g of 50% solution IM into each buttock
   b) 4 g 20% IV slowly over 20 minutes and 2 g of 50% solution IM into each buttock
   c) 4 g 50% IV slowly over 20 minutes and 5 g of 50% solution IM into one buttock

4. What is the correct maintenance dose of magnesium sulfate?
   a) 4 g of 20% solution IM every 4 hours into alternate buttocks until 24 hours after birth or the last convulsion (whichever is later)
   b) 4 g of 50% solution IM every 4 hours into alternate buttocks until 24 hours after birth or the last convulsion (whichever is later)
   c) 5 g of 20% solution IM every 4 hours into alternate buttocks until 24 hours after birth or the last convulsion (whichever is later)

5. What criteria are used to determine if a maintenance dose of magnesium sulfate should be given?
   a) A respiratory rate of more than 20/minute, patellar reflexes present, and urine output of more than 40 mL/hour
   b) A respiratory rate of more than 16/minute, patellar reflexes present, and urine output of more than 30 mL/hour
   c) A respiratory rate of more than 18/minute, patellar reflexes absent, and urine output of more than 20 mL/hour

6. What, if any, antihypertensive drug should be given to Mrs. A?
   a) Hydralazine 5 mg IV slowly over 3–4 minutes
   b) Nifedipine 5 mg IV slowly over 5–10 minutes
   c) Hydralazine 10 mg sublingual

7. If Mrs. A does not have convulsions, when should birth take place?
   a) Within 12 hours of the onset of symptoms
   b) Within 24 hours of the onset of symptoms
   c) Within 12 hours of admission to hospital
CHECKLIST: PREPARATION AND ADMINISTRATION OF MAGNESIUM SULFATE
(For use by learner and facilitator/teacher)

Place a “✓” in case box if the step or task is performed satisfactorily, an “✗” if it is not performed satisfactorily, or N/O if it is not observed.

**Satisfactory:** Performs the step or task according to the standard procedure or guidelines

**Unsatisfactory:** Unable to perform the step or task according to the standard procedure or guidelines

**Not Observed:** Step, task, or skill not performed by learner during evaluation by teacher

Learner ___________________________ Date ___________________________

| CHECKLIST FOR THE PREPARATION AND ADMINISTRATION OF MAGNESIUM SULFATE |
| (Some of the following steps/tasks should be performed simultaneously.) |

<table>
<thead>
<tr>
<th>STEP/TASK</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PREPARATION OF 20% SOLUTION OF MAGNESIUM SULFATE</strong></td>
<td></td>
</tr>
<tr>
<td>1. Wash hands thoroughly with soap and water and dry with a clean, dry cloth or air dry or use alcohol hand rub and air dry.</td>
<td></td>
</tr>
<tr>
<td>2. Use a 20 mL syringe, draw 12 mL of sterile water for injection.</td>
<td></td>
</tr>
<tr>
<td>3. <strong>Prepare 4 grams of 20% magnesium sulfate solution.</strong> If 50% magnesium sulfate available - add 8 mL of magnesium sulfate 50% solution* to the 12 mL of water for injection to make 20 mL of 20% solution (4 g per 20 mL). If the concentration is different, correctly mixes 4 gm of magnesium sulfate.</td>
<td></td>
</tr>
<tr>
<td>* vial containing 5 g in 10 mL (1 g/2 mL)</td>
<td></td>
</tr>
<tr>
<td><strong>ADMINISTRATION OF LOADING DOSE OF MAGNESIUM SULFATE</strong></td>
<td></td>
</tr>
<tr>
<td>1. Establish an IV line using normal saline or Ringer’s lactate solution.</td>
<td></td>
</tr>
<tr>
<td>2. Tell the woman she may feel warm when the medicine is given; continue to explain your actions to the woman.</td>
<td></td>
</tr>
<tr>
<td>3. Give 4 grams of <strong>20% magnesium sulfate solution</strong> (20 mL of 20% solution) IV slowly over 5 minutes.</td>
<td></td>
</tr>
<tr>
<td>4. Using a 20 mL syringe, draw 10 g of 50% magnesium sulfate solution (20 mL).</td>
<td></td>
</tr>
<tr>
<td>5. Add 1 mL of 2% lignocaine to the SAME syringe.</td>
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</tr>
<tr>
<td>6. Give 5 g (10 mL of 50% solution) by deep IM injection into one buttock.</td>
<td></td>
</tr>
<tr>
<td>7. Remove the needle on the syringe and put a new sterile needle on the syringe.</td>
<td></td>
</tr>
<tr>
<td>8. Inject the remaining 5 g (10 mL of 50% solution) by deep IM injection into the other buttock.</td>
<td></td>
</tr>
<tr>
<td>9. Decontaminate or dispose of syringes and needles:</td>
<td></td>
</tr>
<tr>
<td>− Flush needle and syringe with 0.5% chlorine solution three times; then place in a puncture-proof container.</td>
<td></td>
</tr>
<tr>
<td>10. Remove gloves and discard them in a leakproof container or plastic bag.</td>
<td></td>
</tr>
<tr>
<td>11. Wash hands thoroughly with soap and water and either dry with a clean, dry cloth or air dry.</td>
<td></td>
</tr>
<tr>
<td>12. <strong>If convulsions recur after 5 minutes,</strong> give 2 g of 50% magnesium sulfate solution by IV over 5 minutes.</td>
<td></td>
</tr>
<tr>
<td><strong>MONITORING FOR SIGNS OF TOXICITY</strong></td>
<td></td>
</tr>
<tr>
<td>1. Count respiration rate for 1 minute every hour.</td>
<td></td>
</tr>
<tr>
<td>2. Check patella reflexes every hour:</td>
<td></td>
</tr>
<tr>
<td>− Place one hand under woman’s knee and lift leg off bed.</td>
<td></td>
</tr>
<tr>
<td>− Tap patellar tendon directly with a reflex hammer, just below kneecap (leg should extend if patella reflex present).</td>
<td></td>
</tr>
<tr>
<td>3. Insert an indwelling urinary catheter and measure urinary output hourly.</td>
<td></td>
</tr>
</tbody>
</table>

EmONC Series: Pre-Eclampsia/Eclampsia 17
### CHECKLIST FOR THE PREPARATION AND ADMINISTRATION OF MAGNESIUM SULFATE

*(Some of the following steps/tasks should be performed simultaneously.)*

<table>
<thead>
<tr>
<th>STEP/TASK</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADMINISTRATION OF MAINTENANCE DOSE OF MAGNESIUM SULFATE</strong></td>
<td></td>
</tr>
<tr>
<td>1. Before repeating administration of magnesium sulfate, check that:</td>
<td></td>
</tr>
<tr>
<td>– Respiratory rate is at least 16 per minute.</td>
<td></td>
</tr>
<tr>
<td>– Patellar reflexes are present.</td>
<td></td>
</tr>
<tr>
<td>– Urinary output is at least 30 mL per hour over 4 hours.</td>
<td></td>
</tr>
<tr>
<td>2. Give 5 grams of magnesium sulfate 50% solution, together with 1 mL of 2% lignocaine in the same syringe, by deep IM injection into alternate buttocks (every 4 hours).</td>
<td></td>
</tr>
<tr>
<td>3. WITHHOLD or DELAY drug if:</td>
<td></td>
</tr>
<tr>
<td>– Respiratory rate falls below 16 per minute.</td>
<td></td>
</tr>
<tr>
<td>– Patellar reflexes are absent.</td>
<td></td>
</tr>
<tr>
<td>– Urinary output has fallen below 30 mL per hour over the preceding 4 hours.</td>
<td></td>
</tr>
<tr>
<td>4. In case of respiratory arrest:</td>
<td></td>
</tr>
<tr>
<td>– Assist ventilation with mask and bag</td>
<td></td>
</tr>
<tr>
<td>– Give calcium gluconate 1 g (10 mL of 10% solution) IV slowly until respiration begins</td>
<td></td>
</tr>
<tr>
<td>5. Record drug administration and other relevant details on the woman’s records.</td>
<td></td>
</tr>
</tbody>
</table>
SKILL ASSESSMENT TOOL
(For use by facilitator to assess learners’ mastery of administration of magnesium sulfate)

Instructions: Set up a station to assess the learner with the needed supplies and equipment for administering magnesium sulfate (see skills practice session guidance). Read the case study to the learner:

A woman has come to the labor unit with contractions at 38 weeks and says that she has had a bad headache all day. She also says that she cannot see properly. While she is getting up from the examination table she falls back onto the pillow and begins convulsing.

Tell the participant to manage this case using magnesium sulfate, and to start by preparing and administering magnesium sulfate. Tell the participant that she/he has already washed her/his hands and should explain what she/he is doing at each step. At the following times, ask the probing questions listed here and document their completion using the checklist.

- Step 2: Ask them to describe how to administer magnesium sulfate loading dose. After their response, ask them what to do next after they have given the IV loading dose.
- Step 5: Ask the participant how to dispose of the needle if there is not a sharps container.
- Step 6: Tell the participant that convulsions reoccur after 5 minutes-what do they do then?
- Step 7: Ask the participant to tell you how long magnesium sulfate should be given if no side effects occur.
- Step 8: Ask the participant for the dose of the additional magnesium sulfate for maintenance.
- Step 9: Ask the participant to tell you the signs of magnesium sulfate toxicity that would cause them to withhold a dose.
- Step 10: Ask them to demonstrate how to check a patellar reflex; they can either do it on you, or on another participant.

<table>
<thead>
<tr>
<th>TASK</th>
<th>SAFE/EFFECTIVE COMPLETION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>1. Mixes magnesium sulfate to administer dose of 4 grams (12 mL sterile water plus 8 mL 50% mag sulfate solution)</td>
<td>1</td>
</tr>
<tr>
<td>2. Responds correctly – 4 grams IV over 5 minutes</td>
<td>1</td>
</tr>
<tr>
<td>3. Mixes magnesium sulfate to administer 5 gm (10 mL 50% solution) and 1 mL of 2% lidocaine deep IM into one buttock</td>
<td>1</td>
</tr>
<tr>
<td>4. Repeats this dose in other buttock, replacing the needle between doses</td>
<td>1</td>
</tr>
<tr>
<td>5. Disposes or describes how to dispose of the used needles correctly</td>
<td>1</td>
</tr>
<tr>
<td>6. Responds correctly about what to do if convulsions recur after 5 minutes (give 2 gms 50% magnesium sulfate IV over 5 minutes)</td>
<td>1</td>
</tr>
<tr>
<td>7. Responds correctly about how long magnesium sulfate is given (every 4 hours until 24 hours after the woman delivers or 24 hours after the most recent convulsion)</td>
<td>1</td>
</tr>
<tr>
<td>8. Responds correctly about the magnesium sulfate maintenance dose (5 gm with 1 ml 2% lidocaine IM every 4 hours in alternate buttocks)</td>
<td>1</td>
</tr>
<tr>
<td>9. Responds correctly regarding the signs of magnesium toxicity (RR under 16, UO under 30 (25 also ok), patella reflex absent)</td>
<td>1</td>
</tr>
<tr>
<td>10. Correctly demonstrates how to check a patellar reflex</td>
<td>1</td>
</tr>
</tbody>
</table>
One point for each step performed correctly, or each question answered correctly.

Pass Score 8/10

Student Score ________

Pass Fail

Comments/ Remediation Plan:

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
Session Activities

SKILLS PRACTICE SESSION: PREPARATION AND ADMINISTRATION OF MAGNESIUM SULFATE

Purpose
The purpose of this activity is to enable learners to practice and become competent in preparing and administering magnesium sulfate.

Instructions
- This activity should be conducted in a simulation center or facility, using an appropriate anatomical model (or suitable substitute).
- Learners will review Checklist for Preparation and Administration of Magnesium Sulfate before beginning the activity.
- Using an anatomic model (or suitable substitute), the facilitator/teacher will demonstrate the steps and tasks in the checklist, explaining each step as she/he proceeds and answering any questions that learners may have. Under the guidance of the facilitator/teacher, learners will then work in pairs to practice the steps and tasks and observe each other’s performance, using the checklist.
- Learners should be able to perform the steps in the checklist before skills competency is assessed by the facilitator/teacher.

Resources and Supplies
- Checklist for Preparation and Administration of Magnesium Sulfate
- Equipment for starting an IV line
- Needles and syringes
- Magnesium sulfate, 20% and 50%
- Lignocaine 2%
- Calcium gluconate 10%
- Sterile water for injection
- Alcohol swabs
- Anatomic model (or suitable substitute) to simulate starting an IV and giving injections
- Leakproof container or plastic bag
- Puncture-proof container for sharps

CASE STUDY 1: ELEVATED BLOOD PRESSURE DURING PREGNANCY (PROMPT)

Directions
Read and analyze this case study by yourself. When the others in your group have finished reading it, answer the case study questions together. Consider the steps in clinical decision-making as you answer the questions. The other groups in the room are working on either the same case study or a similar one. When all groups have finished working, we will discuss the case studies and each group’s answers.

Case Study
Mrs. B is 18 years old. She is 34 weeks pregnant and has attended the antenatal clinic three times. The results of all of her exams were within normal limits until her last antenatal visit one week ago. At that visit her blood pressure was 130/90 mm Hg. Her urine was negative
for protein. The fetal heart sounds were normal; the fetus was active; and Mrs. B’s uterine size was consistent with the date of her pregnancy. She has come to the clinic today, as requested, for follow-up.

**Assessment (History, Physical Examination, and Screening Procedures and Laboratory Tests)**

1. What will you include in your initial assessment of Mrs. B, and why?
2. What particular aspects of Mrs. B’s physical examination will help you make a diagnosis, and why?
3. What screening procedures and laboratory tests will you include (if available) in your assessment of Mrs. B, and why?

**Diagnosis (Identification of Problems and Needs)**

You have completed your assessment of Mrs. B and your main findings include the following:

- Mrs. B’s blood pressure is 130/90 mm Hg, and she has proteinuria of 1+.
- She has no adverse symptoms (headache, visual disturbance, upper abdominal pain, convulsions, or loss of consciousness).
- The fetus is active and fetal heart sounds are normal. Uterine size is consistent with the date of her pregnancy.

1. Based on these findings, what is Mrs. B’s diagnosis, and why?

**Care Provision (Planning and Intervention)**

1. Based on your diagnosis, what is your plan of care for Mrs. B, and why?

**Evaluation**

- Mrs. B attends antenatal clinic on a twice-weekly basis, as requested.
- Her blood pressure remains the same; she continues to have proteinuria of 1+; and the fetal growth is normal.
- Four weeks later, now at 39 weeks, Mrs. B has not suffered headache, blurred vision, upper abdominal pain, convulsions, or loss of consciousness, and she says that she feels well. She is experiencing irregular tightening and has a backache.

1. Based on these findings, what is your continuing plan of care for Mrs. B, and why?

**CASE STUDY 1: ELEVATED BLOOD PRESSURE DURING PREGNANCY (ANSWER KEY)**

Mrs. B is 18 years old. She is 34 weeks pregnant and has attended the antenatal clinic three times. The results of all of her exams were within normal limits until her last antenatal visit one week ago. At that visit her blood pressure was 130/90 mm Hg. Her urine was negative for protein. The fetal heart sounds were normal; the fetus was active; and Mrs. B’s uterine size was consistent with the length of her pregnancy. She has come to the clinic today, as requested, for follow-up.
**Assessment (History, Physical Examination, and Screening Procedures and Laboratory Tests)**

1. What will you include in your initial assessment of Mrs. B, and why?
   - Mrs. B. should be greeted respectfully and with kindness.
   - She should be told what is going to be done and listened to carefully. In addition, her questions should be answered in a calm and reassuring manner.
   - Mrs. B. should be asked how she is feeling and whether she has had headache, blurred vision, or upper abdominal pain since her last clinic visit.
   - She should be asked whether fetal activity has changed since her last visit.
   - Her blood pressure should be checked and her urine tested for protein. (The presence of proteinuria, together with diastolic blood pressure greater than 90 mm Hg, is indicative of pre-eclampsia.)

2. What particular aspects of Mrs. B’s physical examination will help you make a diagnosis, and why?
   - Blood pressure should be measured.
   - An abdominal examination should be done to check fetal growth and to listen for fetal heart sounds. (In cases of pre-eclampsia/eclampsia, reduced placental function may lead to low birth weight. There is also an increased risk of hypoxia in both the antenatal and intranatal periods and an increased risk of placental abruption).

3. What screening procedures and laboratory tests will you include (if available) in your assessment of Mrs. B., and why?
   - Urine should be checked for protein.

**Diagnosis (Identification of Problems and Needs)**

You have completed your assessment of Mrs. B and your main findings include the following:

- Mrs. B’s blood pressure is 130/90 mm Hg, and she has proteinuria of 1+.
- She has no adverse symptoms (headache, visual disturbance, upper abdominal pain, convulsions, or loss of consciousness).
- The fetus is active and fetal heart sounds are normal. Uterine size is consistent with the length of her pregnancy.

1. Based on these findings, what is Mrs. B’s diagnosis, and why?
   - Mrs. B’s signs and symptoms (e.g., diastolic blood pressure 90–110 mm Hg after 20 weeks’ gestation and proteinuria up to 2+) are consistent with mild pre-eclampsia.

**Care Provision (Planning and Intervention)**

1. Based on your diagnosis, what is your plan of care for Mrs. B, and why?
   - No anticonvulsants, antihypertensives, sedatives, or tranquilizers (these should not be given unless the blood pressure or urinary protein level increases)
   - Demonstrate professionalism: Communicate clearly and educate Mrs. B about the following:
     - How to recognize danger signs related to severe pre-eclampsia and eclampsia (severe headache, blurred vision, upper abdominal pain, and convulsions or loss of consciousness) and the importance of seeking help immediately if any of these occur
     - The importance of rest and a normal diet (salt restriction should be discouraged as this does not prevent pregnancy-induced hypertension)
     - The need to return to the clinic twice weekly to have her blood pressure, urine, and fetal condition monitored and to get basic antenatal care
Evaluation

- Mrs. B attends antenatal clinic on a twice-weekly basis, as requested.
- Her blood pressure remains the same, she continues to have proteinuria of 1+, and the fetal growth is normal.
- Four weeks later, now at 39 weeks, Mrs. B has not suffered headache, blurred vision, upper abdominal pain, convulsions, or loss of consciousness, and she says that she feels well. She is experiencing irregular tightening and has a backache.

1. Based on these findings, what is your continuing plan of care for Mrs. B, and why?
   - Demonstrate professionalism: Communicate clearly and provide reassurance.
   - Admit Mrs. B to the district hospital and undertake a full assessment.
   - Her hospital care includes:
     - Blood pressure and fetal monitoring hourly until labor begins; at that time, a partograph should be started
     - Urine test for protein
     - Spontaneous labor and delivery if condition remains stable
     - Encouragement of a family member/support person to be with Mrs. B while she is in labor

Key Points

The facilitator/teacher should ask the students to discuss these questions:

- **Demonstrating professionalism**: How can you demonstrate professional behavior in this situation?
- **Appropriate monitoring**: What is the monitoring plan for this patient? Do any drugs need to be administered?

REFERENCES


CASE STUDY 2: ELEVATED BLOOD PRESSURE DURING PREGNANCY
(PROMPT)
Directions
Read and analyze this case study by yourself. When the others in your group have finished
reading it, answer the case study questions together. Consider the steps in clinical decision-
making as you answer the questions. The other groups in the room are working on either the
same case study or a similar one. When all of the groups have finished, we will discuss the
case studies and each group’s answers.

Case Study
Mrs. C is 23 years old. She is 37 weeks pregnant and has attended the antenatal clinic four
times. No abnormal findings were detected during her antenatal visits, the last of which was
one week ago. Mrs. C has been counseled about danger signs in pregnancy and what to do
about them. Her husband has brought her to the emergency department of the district
department because she developed a severe headache and blurred vision this morning.

Assessment (History, Physical Examination, and Screening Procedures and
Laboratory Tests)
1. What will you include in your initial assessment of Mrs. C, and why?
2. What particular aspects of Mrs. C’s physical examination will help you make a diagnosis
   or identify her problems and needs, and why?
3. What screening procedures and laboratory tests will you include (if available) in your
   assessment of Mrs. C, and why?

Diagnosis (Identification of Problems and Needs)
You have completed your assessment of Mrs. C and your main findings include the following:
• Mrs. C’s blood pressure is 160/110 mm Hg, and she has proteinuria of 3+.
• She has a severe headache that started 3 hours ago.
• Her vision became blurred 2 hours after the onset of the headache.
• She has no upper abdominal pain and has not suffered convulsions or loss of consciousness.
• Her reflexes are normal.
• The fetus is active and fetal heart sounds are normal.
• Her uterine size is consistent with the length of her pregnancy.
1. Based on these findings, what is Mrs. C’s diagnosis, and why?

Care Provision (Planning and Intervention)
1. Based on your diagnosis, what is your plan of care for Mrs. C., and why?

Evaluation
• Two hours following the initiation of treatment, Mrs. C’s diastolic blood pressure is 100 mm
  Hg.
• She has not had a convulsion, but she still has a headache.
• She does not have coagulopathy.
• During the past 2 hours, however, Mrs. C’s urinary output has dropped to 20 mL/hour.
• The fetal heart rate has ranged between 120 and 140 beats/minute.
1. Based on these findings, what is your continuing plan of care for Mrs. C, and why?
CASE STUDY 2: ELEVATED BLOOD PRESSURE DURING PREGNANCY
(ANSWER KEY)

Case Study
Mrs. C is 23 years old. She is 37 weeks pregnant and has attended the antenatal clinic four times. No abnormal findings were detected during her antenatal visits, the last of which was one week ago. Mrs. C has been counseled about danger signs in pregnancy and what to do about them. Her husband has brought her to the emergency department of the provincial hospital because she developed a severe headache and blurred vision this morning.

Assessment (History, Physical Examination, and Screening Procedures and Laboratory Tests)
1. What will you include in your initial assessment of Mrs. C, and why?
   - Mrs. C and her husband should be greeted respectfully and with kindness.
   - They should be told what is going to be done and listened to carefully. In addition, their questions should be answered in a calm and reassuring manner.
   - A rapid assessment should be done to check Mrs. C’s level of consciousness and blood pressure. Her temperature and respiration rate should also be checked. Mrs. C should be asked how she is feeling, when her headache and blurred vision began, whether she has had upper abdominal pain, and whether there has been a decrease in urinary output during the past 24 hours.
   - Mrs. C’s urine should be tested for protein.

2. What particular aspects of Mrs. C’s physical examination will help you make a diagnosis or identify her problems/needs, and why?
   - Mrs. C should be checked for elevated blood pressure and protein in her urine. (The presence of proteinuria, together with a diastolic blood pressure greater than 90 mm Hg, is indicative of pre-eclampsia.)
   - An abdominal examination should be done to check fetal condition and to listen for fetal heart sounds. (In cases of pre-eclampsia/eclampsia, reduced placental function may lead to low birth weight. There is an increased risk of hypoxia in both the antenatal and intranatal periods and an increased risk of placental abruption.)
   - Note that a diagnosis should be made rapidly, within a few minutes.

3. What screening procedures and laboratory tests will you include (if available) in your assessment of Mrs. C, and why?
   - Urine should be checked for protein.

Diagnosis (Identification of Problems and Needs)
You have completed your assessment of Mrs. C and your main findings include the following:
- Mrs. C’s blood pressure is 160/110 mm Hg, and she has proteinuria of 3+.
- She has a severe headache that started 3 hours ago.
- Her vision became blurred 2 hours after the onset of the headache.
- She has no upper abdominal pain and has not suffered convulsions or loss of consciousness.
- Her reflexes are normal.
- The fetus is active and fetal heart sounds are normal.
- Her uterine size is consistent with the length of her pregnancy.

1. Based on these findings, what is Mrs. C’s diagnosis, and why?
   - Mrs. C’s symptoms and signs (i.e., diastolic blood pressure 110 mm Hg or more after 20 weeks’ gestation and proteinuria up to 3+) are consistent with severe pre-eclampsia.
Care Provision (Planning and Intervention)

1. Based on your diagnosis, what is your plan of care for Mrs. C, and why?
   - Demonstrate professionalism: Communicate respectfully with Mrs. C and her husband or family throughout.
   - Start magnesium sulfate to prevent and treat convulsions in severe pre-eclampsia and eclampsia. Prepare for an emergency: start an IV and prepare equipment to respond to a convolution. (Airway, suction, mask and bag, and oxygen should be available at her bedside.)
   - Control blood pressure: Give hydralazine, an antihypertensive drug, to keep the diastolic blood pressure between 90 mm Hg and 100 mm Hg to prevent cerebral hemorrhage.
   - Insert an indwelling catheter to strictly monitor urine output and test for proteinuria.
   - Send or perform a clotting test to rule out coagulopathy (coagulopathy can be triggered by eclampsia).
   - Monitor vital signs (blood pressure and respiration rate, in particular), reflexes, and fetal heart rate every hour.

Evaluation

- Two hours following the initiation of treatment, Mrs. C’s diastolic blood pressure is 100 mm Hg.
- She has not had a convolution, but she still has a headache.
- She does not have coagulopathy.
- During the past 2 hours, however, Mrs. C’s urinary output has dropped to 20 mL/hour.
- The fetal heart rate has ranged between 120 and 140 beats per minute.

1. Based on these findings, what is your continuing plan of care for Mrs. C, and why?
   - Maintain professional communication throughout.
   - The repeat dose of magnesium sulfate should be withheld until the urine output is greater than 30 mL/hour. Plans for delivery should be made:
     - If the cervix is favorable (soft, thin, and partly dilated), membranes should be ruptured and labor should be induced using oxytocin or prostaglandins.
     - If vaginal delivery is not anticipated within 24 hours, if there are fetal heart abnormalities (less than 100 or more than 180 beats/minute), or if the cervix is unfavorable, a cesarean section should be performed.
   - After childbirth:
     - Anticonvulsive therapy should be continued for 24 hours.
     - Antihypertensive drugs should be continued if Mrs. C’s diastolic blood pressure is higher than 110 mm Hg, and her urinary output should continue to be monitored.

Key Points

The facilitator/teacher should ask the students to discuss these questions:

- **Demonstrating professionalism**: How can you demonstrate professionalism during an emergency?
- **Controlling blood pressure**: What are the dosages and timing for the drugs of choice?
- **Preparing for an emergency**: What should be available at the patient’s bedside? What two items will you insert if you have not already done so? Which lab test will you order?
- **Monitoring the patient**: What will you monitor, and how often, when giving magnesium sulfate? What are the indications for a second dose? What are the indications for withholding additional dosages?
REFERENCE

CLINICAL SIMULATIONS FOR MANAGEMENT OF SEVERE PRE-ECLAMPSIA/ECLAMPSIA: GUIDANCE ON CONDUCTING THE ACTIVITY

Purpose
The purpose of this activity is to provide learners with a simulated experience in which they can practice problem-solving and decision-making skills in the management of severe pre-eclampsia/eclampsia, with an emphasis on thinking quickly and reacting (intervening) rapidly.

Resources Needed
The following resources are needed: sphygmomanometer, stethoscope, equipment for starting an IV infusion, syringes and needles, magnesium sulfate, sterile water for injection, hydralazine, oxygen cylinder, gauge, mask and tubing, equipment for bladder catheterization, reflex hammer (or similar device), high-level disinfected or sterile surgical gloves, examination gloves, 0.5% chlorine solution for decontamination, leakproof container or plastic bag, puncture-proof container for sharps. An anatomic model that allows for the practice of clinical procedures is required for the clinical drill.

Instructions
Both simulations should be conducted in the most realistic setting possible, such as the labor and delivery area of a hospital, clinic, or maternity center, where equipment and supplies are available for emergency interventions.

Clinical Simulation 1
- Note that Scenario 1 is to be used practice in making clinical decisions, and opportunities provided for questions and demonstrations.
- One learner should play the role of patient and a second learner the role of skilled provider. Other learners may be called on to assist the provider.
- The facilitator will give information about the patient’s condition to the learner who is playing the role of provider and ask the learner pertinent questions, as indicated in the left-hand column of Scenario 1.
- The learner will be expected to think quickly and react (intervene) rapidly when the facilitator provides information and asks questions. The reactions/responses that are expected from the learner are provided in the right-hand column of Scenario 1.
- The learners should role-play procedures such as starting an IV, giving magnesium sulfate, and giving oxygen, using the appropriate equipment.
- Initially, the facilitator and learners will discuss what is happening during the simulation in order to develop problem-solving and decision-making skills. The activity should move quickly, as though an emergency were taking place.
- On completion of the simulation, the facilitator will discuss the decisions made by learners and the rationale for each decision.

Clinical Simulation 2
- Note that Scenario 2 is to be used as a simulation to practice managing an emergency. Do not stop to provide feedback; the learners should act just as they would in an emergency.
The facilitator will appoint learners to the roles on an emergency response team. The roles should be consistent with those of the staff at the facility at which the activity is being conducted (e.g., midwife, nurse or second midwife, physician, and ward assistant).

The facilitator will then brief learners regarding their assigned roles, as follows:

- Role 1 (midwife-in-charge): Goes directly to the patient’s bedside and begins rapid initial assessment
- Role 2 (nurse or second midwife): Telephones the physician on call; then goes to bedside to assist
- Role 3 (ward assistant): Brings emergency tray/trolley to the patient’s bedside, escorts family members away from the bed, and keeps them informed of situation
- Role 4 (physician): Goes directly to bedside and takes over from midwife-in-charge. If no physician is available (i.e., there is not a physician participating in the training activity), the learners assuming Roles 1 and 2 continue with the interventions outlined in Scenario 2.

The simulation will begin when the facilitator rings a small bell. The facilitator will provide information about the patient’s condition. The activities outlined under Roles 1, 2, and 3 will then begin simultaneously. During the simulation, the facilitator will ask pertinent questions, as outlined in the left-hand column of Scenario 2.

An anatomic model is to be used as the patient, and procedures such as starting an IV, giving oxygen, and preparing and administering magnesium sulfate are to be practiced on the model.

The drill is to be conducted as though an emergency were taking place. The facilitator should not stop to discuss the decisions made by learners unless they are incorrect to the extent that they would be life-threatening to the patient.

When the simulation has been completed, the facilitator will discuss the decisions made by learners and the rationale for each decision.
## CLINICAL SIMULATION 1: PROMPTS AND ANSWER KEY

<table>
<thead>
<tr>
<th>SCENARIO 1 PROMPTS (Information provided and questions asked by the facilitator)</th>
<th>KEY REACTIONS/RESPONSES (Expected from learners)</th>
</tr>
</thead>
</table>
| 1. Mrs. D is 20 years old. She is 38 weeks pregnant. Her mother-in-law has brought Mrs. D to the health center this morning because she has had a severe headache and blurred vision for the past 6 hours. Mrs. D says she feels very ill.  
- What will you do? | ▪ Shout for help to urgently mobilize all available personnel.  
- Place Mrs. D on the examination table on her left side.  
- Make a rapid evaluation of Mrs. D’s condition, including vital signs (temperature, pulse, blood pressure, and respiration rate), level of consciousness, and color and temperature of skin.  
- Simultaneously ask about the history of Mrs. D’s present illness. |
| 2. Mrs. D’s diastolic blood pressure is 96 mm Hg; her pulse is 100 beats/minute; and her respiration rate is 20 breaths/minute. She has hyper-reflexia. Her mother-in-law tells you that Mrs. D has had no symptoms or signs of the onset of labor.  
- What is Mrs. D’s problem?  
- What will you do now?  
- What is your main concern at the moment? | ▪ State that Mrs. D’s symptoms and signs are consistent with severe pre-eclampsia.  
- Have one of the staff who responded to her shout for help and start oxygen at 4–6 L/minute.  
- Start an IV infusion of normal saline or Ringer’s lactate.  
- Prepare and give magnesium sulfate 20% solution, 4 g IV over 5 minutes.  
- Follow promptly with 10 g of magnesium sulfate 50% solution, 5 g in each buttock deep IM injection with 1 mL of 2% lignocaine in the same syringe.  
- At the same time, tell Mrs. D (and her mother-in-law) what is going to be done, listen to them, and respond attentively to their questions and concerns.  
- State that the main concern at the moment is to prevent Mrs. D from convulsing. |
| 3. After 15 minutes, Mrs. D is resting quietly. She still has a headache and hyper-reflexia.  
- What will you do now?  
- What will you do during the next hour? | ▪ Have one of the staff assisting with the emergency insert an indwelling catheter to monitor urinary output and proteinuria.  
- Listen to the fetal heart.  
- State that during the next hour you will continue to monitor vital signs, reflexes, and fetal heart, and maintain a strict fluid balance chart. |
| 4. It is now 1 hour since treatment for Mrs. D was started. Her diastolic blood pressure is still 96 mm Hg; her pulse is 100 beats/minute; and her respiration rate is 20 breaths/minute. She still has hyper-reflexia.  
- What is your main concern now?  
- What will you do now? | ▪ State that the main concern now is to induce labor and deliver the baby within 24 hours and continue to monitor Mrs. D’s condition closely, giving the maintenance dose of magnesium sulfate as her condition permits.  
- State that Mrs. D should be assessed (including the condition of her cervix) and that labor will be induced according to findings.  
- A partograph should be commenced when labor established.  
- Maintain diastolic BP below 100.  
- Tell Mrs. D (and her mother-in-law) what is happening, listen to their concerns, and provide reassurance. |
<table>
<thead>
<tr>
<th>SCENARIO 2 PROMPTS (Information provided and questions asked by the facilitator)</th>
<th>KEY REACTIONS/RESPONSES (Expected from learners)</th>
</tr>
</thead>
</table>
| 1. Mrs. E is 16 years old and 37 weeks pregnant. This is her first pregnancy. She has come to the labor unit with contractions and says that she has had a bad headache all day. She also says that she cannot see properly. While she is getting up from the examination table she falls back onto the pillow and begins convulsing.  
  − What will you do? |
|  • Shout for help to urgently mobilize all available personnel.  
  • Check airway to ensure that it is open, and turn Mrs. E onto her left side.  
  • Protect her from injuries (fall) but do not attempt to restrain her.  
  • Have one of the staff members who responded to her shout for help, take Mrs. E’s vital signs (temperature, pulse, blood pressure, and respiration rate), and check her level of consciousness, and color and temperature of skin.  
  • Have another staff member start oxygen at 4–6 L/minute.  
  • Start an IV infusion of normal saline or Ringer’s lactate.  
  • Prepare and give magnesium sulfate 20% solution, 4 g IV over 5 minutes.  
  • Follow promptly with 10 g of magnesium sulfate 50% solution, 5 g in each buttock deep IM injection with 1 mL of 2% lignocaine in the same syringe.  
  • At the same time, explain to the family what is happening and talk to Mrs. E as appropriate. |
| 2. After 5 minutes, Mrs. E is no longer convulsing. Her diastolic blood pressure is 115 mm Hg and her respiration rate is 20 breaths/minute.  
  − What is Mrs. E’s problem?  
  − What will you do next?  
  − What should the aim be with respect to controlling Mrs. E’s blood pressure?  
  − What other care does Mrs. E require now? |
|  • State that Mrs. E’s symptoms and signs are consistent with eclampsia.  
  • Give hydralazine 5 mg IV slowly over 3-4 minutes; repeat the dose at 30 minute intervals until diastolic blood pressure is lowered to 90–100 mm Hg.  
  • State that the aim should be to keep Mrs. E’s diastolic blood pressure between 90 mm Hg and 100 mm Hg to prevent cerebral hemorrhage.  
  • Have one of the staff assisting with the emergency insert an indwelling catheter to monitor urinary output and proteinuria.  
  • Have a second staff member draw blood to assess clotting status using a bedside clotting test.  
  • Maintain a strict fluid balance chart. |
| 3. After another 15 minutes, Mrs. E’s blood pressure is 98 mm Hg and her respiration rate is 16 breaths/minute.  
  − What will you do now? |
|  • Stay with Mrs. E continuously and monitor blood pressure, pulse, respiration rate, patella reflexes, and fetal heart.  
  • Check whether Mrs. E has had any further contractions. |
| 4. It is now 1 hour since treatment was started for Mrs. E. She is sleeping but is easily roused. Her blood pressure is now 90 mm Hg and her respiration rate is still 16 breaths/minute. She has had several more contractions, each lasting less than 20 seconds.  
  − What will you do now? |
|  • Continue to monitor blood pressure, pulse, respiration rate, reflexes, and fetal heart.  
  • Monitor urine output and IV fluid intake.  
  • Monitor for the development of pulmonary edema by auscultating lung bases for rales.  
  • Assess Mrs. E’s cervix to determine whether it is favorable or unfavorable. |
| 5. It is now 2 hours since treatment was started for Mrs. E. Her blood pressure is still 90 mm Hg and her respiration rate is still 16 breaths/minute. All other observations are within expected range. She continues to sleep and rouses when she has a contraction. Contractions are occurring more frequently but still last less than 20 seconds. Mrs. E’s cervix is 100% effaced and 3 cm dilated. There are no fetal heart abnormalities.  
  − What will you do now?  
  − When should childbirth occur? |
|  • Continue to monitor Mrs. E as indicated above.  
  • State that membranes should be ruptured using an amniotic hook or a Kocher clamp and that labor should be induced using oxytocin or prostaglandins.  
  • State that childbirth should occur within 12 hours of the onset of Mrs. E’s convulsions. |
# Magnesium Sulfate Monitoring Sheet

**Note:** This sheet should be used to monitor patients who receive magnesium sulfate. The monitoring sheet should be used along with the partograph.

<table>
<thead>
<tr>
<th>HOUR</th>
<th>MgSO4 Dose</th>
<th>Reflexes (Present/Absent; if absent, DO NOT GIVE MgSO4. CONSULT.)</th>
<th>Blood Pressure</th>
<th>Urine Output (if &lt;30 mL/hour, DO NOT GIVE MgSO4. CONSULT.)</th>
<th>Respiration (if &lt;16/min, DO NOT GIVE MgSO4. CONSULT.)</th>
<th>Convulsions (Yes/No)</th>
<th>Other Drugs</th>
<th>Observations</th>
<th>Initials</th>
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<tr>
<td>HOUR</td>
<td>MgSO4 DOSE</td>
<td>REFLEXES (Present/Absent; if absent, DO NOT GIVE MgSO4, CONSULT.)</td>
<td>BLOOD PRESSURE</td>
<td>URINE OUTPUT (If &lt;30 mL/hour, DO NOT GIVE MgSO4, CONSULT.)</td>
<td>RESPIRATION (If &lt;16/min, DO NOT GIVE MgSO4, CONSULT.)</td>
<td>CONVULSIONS (Yes/No)</td>
<td>OTHER DRUGS</td>
<td>OBSERVATIONS</td>
<td>INITIALS</td>
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Additional notes:
## Training Report Form

**Learners and Results**

<table>
<thead>
<tr>
<th>NAME</th>
<th>PROFESSION/QUALIFICATION</th>
<th>KNOWLEDGE ASSESSMENT</th>
<th>SKILL ASSESSMENT</th>
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<tbody>
<tr>
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<td>Pre-Course</td>
<td>Final</td>
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**Training Dates:** ___/___/___ - ___/___/___
<table>
<thead>
<tr>
<th>ACTION</th>
<th>PERSON RESPONSIBLE</th>
<th>DEADLINE</th>
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</table>
Final Evaluation Form (Sample)

Please evaluate the following by ticking (√) the box that most closely matches how you feel about each statement. Feel free to comment below and use the back for more writing space.

<table>
<thead>
<tr>
<th>STATEMENT</th>
<th>STRONGLY AGREE</th>
<th>AGREE</th>
<th>NOT DECIDED</th>
<th>DISAGREE</th>
<th>STRONGLY DISAGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Training was appropriate for the work I do.</td>
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<td>2. Training was useful for the work I do.</td>
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<td>3. Training facilities and arrangements were satisfactory.</td>
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<td>4. The Learner’s Guide and other reading materials were easy to understand.</td>
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<td>5. The Reference Manual and other reading materials helped me to learn.</td>
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<td>6. Teaching aids (demonstrations, slide presentations, etc.) were useful.</td>
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<td>7. The methods used for teaching were helpful (case studies, role plays, clinical simulations).</td>
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<td>8. The facilitators were knowledgeable and skilled.</td>
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<td>9. The facilitators were fair and friendly.</td>
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<td>10. The facilitators communicated clearly and simply.</td>
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<td>11. The objectives of the training were met.</td>
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</table>

1. What was most useful to you?

2. What was NOT useful to you?

3. What would you change about the training?

Other comments (please use back of paper if needed)