

ACOG SIMULATION ECLAMPSIA FORMATIVE EVAL

Simulation: Eclamptic seizure

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Target Audience: OB/GYN and Family Medicine Faculty and Residents, L&D Nursing Staff, Anesthesia Providers

ACGME Competencies Addressed:

- Patient Care
- Medical Knowledge
- Interpersonal and Communication Skills

Learning Objectives*:

- Understand the criteria for the diagnosis of preeclampsia and eclampsia
- Be able to communicate and demonstrate the critical tasks that should be performed when an eclamptic seizure occurs
- Demonstrate the proper care of the patient immediately following an eclamptic seizure
- Be able to communicate effectively during and after an eclamptic seizure

***See ACOG Simulation Learning Objectives for complete list.**

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1.0 Example Case Scenarios

CLINICAL SCENARIO

17 y/o G1 @ 37 weeks presents to L&D c/o of not feeling well, c/o nausea.
Pt denies contractions, SROM, vaginal bleeding, and reports +FM

OB hx: uncomplicated pregnancy

Medical hx: Migraine headaches, controlled with tylenol

Surgical hx: Appendectomy at age 15

No personal or family history of any problems with general anesthesia.

Meds: PNV

Allergies: NKDA

Social: Non smoker, no alcohol or drug abuse

Physical Exam:

VS: BP 170/110, HR 72, RR 18, temp 37, O2=97%

Weight 220 lbs (100Kg), height 5'1" (1.55m), BMI 42

Airway: MP 2, teeth intact, normal mouth opening, TM distance >3 fingerbreadths, subluxation class B

Pulmonary: Clear

Cardiac: Clear

FHT: Category 2, Baseline: 130, no accelerations, decreased variability

Toco: No contractions

SVE: Long/Closed

After the patient's history is obtained and first blood pressure is taken the patient has a short self-terminating seizure. The patient has no IV access and no monitors other than an external fetal monitor. There is no respiratory compromise once seizure terminated and the patient appears confused and slightly drowsy

Her vital signs during seizure: 175/115 HR 120 RR10 sat 85% if on RA

FHT with minor variables and baseline change to 90 for 5 minutes and recovers to a baseline of 130.

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2.0 Pre-Simulation Briefing/Orientation:

- Do a thorough orientation to the room, equipment and mannequins. This should take approximately 20 minutes.
- *Explain that, if you are using staff actors as nurses, they will respond to requests but will not initiate actions.

** If you are conducting a multidisciplinary simulation, then the providers will work in their normal roles and you will not need staff actors.*

- Set the stage for the simulation by doing the following:
 - Discuss what the learning objectives are for the day i.e. closed loop, leadership in a crisis, diagnosis and management of eclampsia.
 - Explain basic Crisis Resource Management or TeamSTEPPS principles
- Read these basic instructions to all participants

You will be briefed by the simulation staff and then come to the room when requested.

You may ask questions if you have them, and please remember to:

1. Treat the scenario as real as possible
2. Use personal protection equipment (gloves, etc.) as needed
3. Request assistance if needed, utilizing your institutional systems (ie. Pagers, phones)
4. Ask for medications if you feel that you require them, indicating dose, route of administration as you would in an actual clinical situation
5. You may request to move the patient to the OR if you feel this is necessary
6. If using a standardize patient PLEASE do not start an IV, or give any injections.

3.0 Simulation Setup

Simulators to be used: A variety of simulators may be used for this simulation scenario:

1. Some of the newer high fidelity full body simulators such as Noelle®/Sim Mom® have eclampsia options built into the models
2. Standardized patient who can replicate a seizure
3. Seizure simulator (SimSeize®) that is placed under the mattress and will produce a seizure on any model

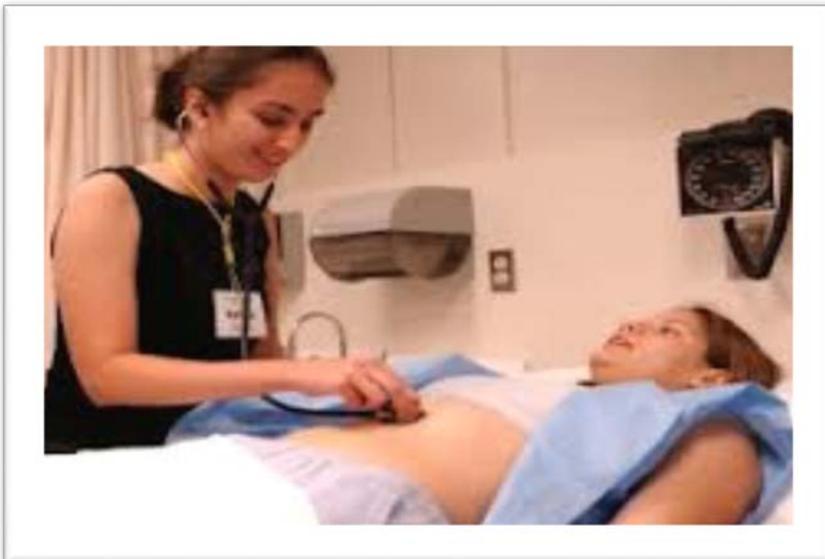
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Figures 1-3: Birthing Simulators

Figure 1: NOELLE birthing mannequin (Gaumard Scientific, FL)



Figure 2. Standardized Patient



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Figure 3. Sim Seize – Can be used in conjunction with most simulators (SimAction Belmont, California)



Room Setup:

The room should be set up similar to an exam or triage room with the following equipment placed as it normally would be on the unit:

- IV start set and tubing
- Magnesium –as is available in your unit (e.g. premixed bags)
- IV pump
- Bag and mask
- Suction
- Pulse oximeter
- Medications: labetalol/nifedipine/hydralazine/mag/calcium gluconate
- Blood drawing tubes
- Fetal monitor
- Computer screen for displaying changing vital signs
- Foley catheter

The simulator or standardized patient is on an examination table, gurney, or bed with the lower torso draped

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Additional Equipment needed:

- Chronograph (may use watch with timer or a second hand)

Optional Equipment:

- Fetal Monitoring: The fetal heart rate monitors are used to demonstrate a bradycardia during the seizure. Incorporating this into the training to produce a fetal bradycardia during the seizure helps add to the realism of the scenario.
- Programmable fetal monitoring simulators are also commercially available.

If you do not have a fetal heart rate simulator other effective options include:

- o Verbalize the FHR to the residents/team during the scenario
- o Use your own fetal monitor and tap on the ultrasound (the one used to detect fetal heart tones) to recreate a bradycardia (be sure to place gel on the ultrasound monitor to enhance the sound)
- o Use a metronome app from a smart phone to reproduce the fetal heart sounds

Optional Set-up:

-The OR can be set up with the simulator on OR table with an overlying abdomen capable of an incision if you want to allow the option of actually doing the initial part of a cesarean section in the OR.

Personnel needed for Simulation Exercise:

- Staff to video record (if desired)
- Staff to control maternal VS
- Staff to manage fetal heart tones
- Standardized patient or voice for mannequin
- Optional: 2 Staff as nursing staff if not doing multidisciplinary simulation*

Expected Duration of Exercise:

-15 min

If videotaping is going to be done, then either a staff member will hold this or set up a tripod to the side of the bed. Any commercial camcorder can be used. Make sure that during briefing you explain that videotaping is for learning purposes only, and will be deleted upon completion of the debriefing.

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4.0 Basic Scenario Tips

Answers to common questions that come up:

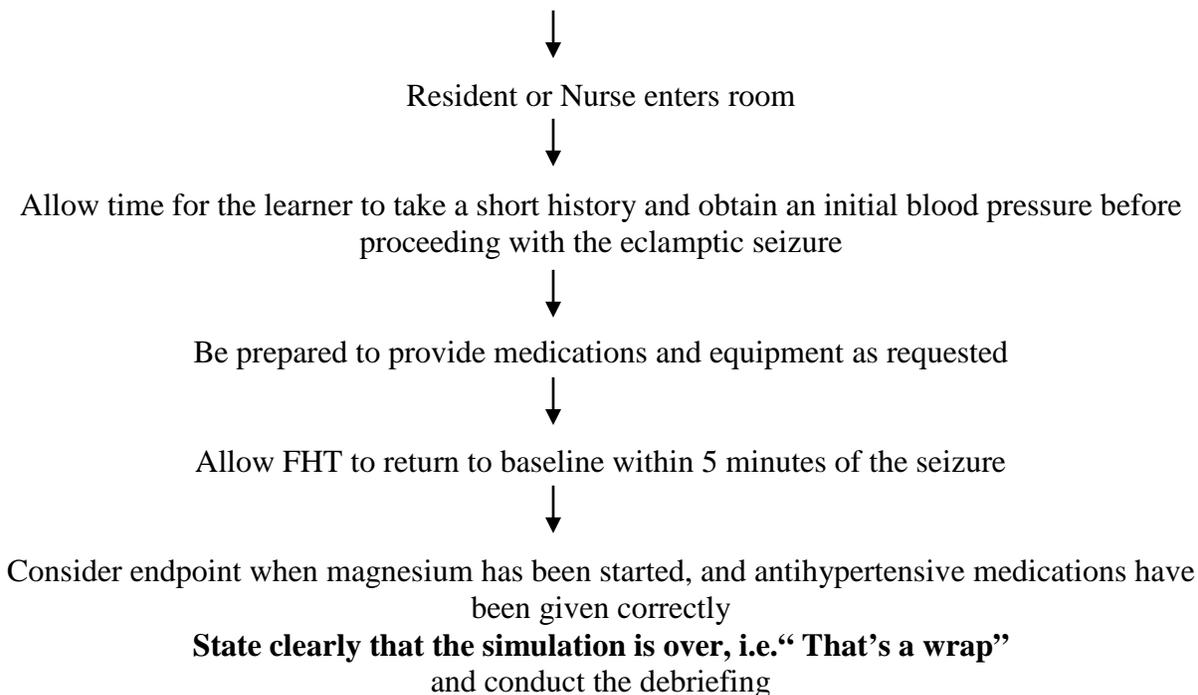
- The staff playing the nurse or family member role can help to increase the realism of the scenario by making comments like “why is she shaking” or “is the baby going to be ok?”
- Consider enlisting “actors” with some clinical experience. This will allow them to better answer clinical questions posed by learners as well as respond to spontaneous actions of learners that may be difficult to predict.

Common pitfalls to monitor for:

- Incorrect dosing of magnesium or antihypertensive medications is given - a recurrent seizure or unstable VS should occur accordingly
- If Anesthesia responds to seizure by immediate intubation, VS should demonstrate severe hypertension

5.0 Case Flow/Algorithm with branch point and completion criteria:

- 1) Setup the delivery simulator as described above
- 2) Brief the initial provider (nurse or resident) on the clinical scenario



**Examples of different endpoints you may also use:*

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- If simulation proceeds to the OR for stat cesarean section, endpoint is at time of incision
- For a longer simulation, you can add management of magnesium toxicity

6.0 Post-Simulation Actions:

- Gather the resident and/or team together to debrief and review performance.
- Use the ACOG Sim consortium evaluation form for debriefing purposes

7.0 Evaluation Form

Provider # / Name _____ Date _____

Training Site _____ Grader _____

Training Level: (Circle One)

PGY-1	PGY-2	PGY-3	PGY-4
		Staff	Fellow

Number of eclamptic seizures learner has managed in the past (circle one)

0 1 to 3 4 to 7 >7

TASK EVALUATION

Assess actual performance during eclamptic seizure drill:

INITIAL TASKS:

- | | | | |
|---|-----|----|----|
| 1) Clearly verbalizes diagnosis of a seizure to team members | Yes | No | NA |
| 2) Positions the pt in a left lateral decubitus position | Yes | No | NA |
| 3) Raises bed rails | Yes | No | NA |
| 4) Calls for additional help including anesthesia | Yes | No | NA |
| 5) Provides O2 by mask | Yes | No | NA |
| 6) Places pulse oximetry | Yes | No | NA |
| 7) Obtains iv access | Yes | No | NA |
| 8) Continuous toco and FHR monitoring | Yes | No | NA |
| 9) Confirms pt has no contraindications or precautions to magnesium | Yes | No | NA |
| 10) Orders correct initial antiseizure medications | | | |
| • Mag IV 6 grams over 15-20 min if IV access | Yes | No | NA |
| • 10mg IM (5 mg each buttocks)if no IV access | | | |
| 11) Orders correct antihypertensive medications as indicated (> or =160/105); | | | |

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- Hydralzine IV (see attached table for dosing schedule) Yes No NA
- Labetalol IV (see attached table for dosing schedule) Yes No NA

ADDITIONAL TASKS

- 1. Orders magnesium 2 grams/hr IV after loading dose Yes No NA
- 2. Orders appropriate labs stat Yes No NA
- 3. Treats continued hypertension appropriately Yes No NA

INAPPROPRIATE ACTIONS:

- 1. Proceeds to stat c/s despite normal FHT Yes No NA
- 2. Delays c/s despite fht bradycardia >10 min Yes No NA
- 3. Uses an anti-seizure medication other than magnesium
for initial self-limited seizure Yes No NA

Global Rating Scale

OVERALL SKILL LEVEL

Please rate the performance level of this provider based on the following scale (CIRCLE CHOICE):**

Novice	Advanced Beginner	Competent	Proficient	Expert
<ul style="list-style-type: none"> • rigid adherence to taught rules or plans without consideration of unique aspects of the situation • no exercise of discretionary judgment 	<ul style="list-style-type: none"> • limited situational awareness • all aspects of work treated separately with equal importance 	<ul style="list-style-type: none"> • Able to cope with multiple activities, accumulation of information • some perception of actions in relation to goals • demonstrates deliberate planning 	<ul style="list-style-type: none"> • holistic view of situation • prioritizes importance of aspects • perceives deviations from the normal pattern • employs <u>maxims</u> for guidance, able to adapt to the situation at hand 	<ul style="list-style-type: none"> • transcends reliance on rules, guidelines, and maxims • intuitive grasp of situation based on deep, tacit understanding • uses "analytical approaches" in new situations or when case becomes more complicated

Overall, on this task, should this candidate: **PASS** _____ **FAIL** _____

**Modified from: [Cheetham](#), Graham; [Chivers](#), Geoff (2005). *Professions, Competence and Informal Learning*. Cheltenham: Edward Elgar Publishing, p. 337. Reprinted from Eraut, Michael (1994). *Developing Professional Knowledge and Competence*. London: Falmer Press. p. 124.

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