# SIMULATION MODULE TEMPLATE[1-2]



*Created by Jean Pearce & Katie McDermott, members of the Pediatric Simulation Program*

## Introduction

This document will aid in the development of a simulation module/scenario for a human patient simulator. This template will guide you through the process of scripting out what you want your final product to look like. Text written in blue on the template is additional information to aid you.

## Simulation Personnel Definitions [3-4]

### Facilitator

- A trained individual who provides guidance, support, and structure at some or all stages of simulation-based learning including prebriefing, simulation, and/or debriefing.

### Operator

- An individual whose primary role is the implementation and delivery of a simulation activity through the application of simulation technologies, such as computers, audio-visual, or networking technologies. Often this person is manipulating the computer, manikin, and other technology during a simulation activity.

### Embedded Simulation Participant (ESP)

- An individual who is trained or scripted to play a role in a simulation encounter in order to guide the scenario and may be known or unknown to the participants.
- Guidance provided should be based on the learning objectives, level of the participants, and the needs of the scenario.

### Participant/Learner

- Individuals who engage in a simulation activity for the purpose of gaining or demonstrating mastery of knowledge, skills, and/or attitudes of professional practice (i.e. learners, students, orientees, trainees).

## Template Components

Descriptions below will help guide the design and development of your simulation module which is broken into the following components:

### 1. Case Information

- Includes scenario title, date created and/or last revised, activity duration, author name(s), author contact information, and identification of your target learners.

### 2. Curricular Information

- Includes a brief description of the activity/course, needs assessment, learning objectives, and relevant references used.

### 3. Preparation

- Includes a description of the environment, list of equipment required, embedded simulation persons (ESP) which are sometimes also referred to as "actors" or "confederates," supporting multimedia, and a pre-briefing script.
- Pre-briefing is an important part of the overall simulation experience. It is a brief verbal report shared with the learners at the start of the scenario. It serves four main purposes: 1) to clarify confidentiality, expectations and roles; 2) attends to logistical details; 3) conveys a commitment to respecting learners; and 4) to establish a "fiction contract."[5] A fiction contract is a shared agreement between the instructor/facilitator and the learners wherein the facilitator acknowledges that simulation is not real, however every effort is made to make it as realistic as possible. The learners agree to make the effort to engage and to focus on the situation not the limitations. We ask for learners to "meet us halfway" to promote a better learning experience. Lastly, we acknowledge that people may act differently in simulation than they would in real life, and that is okay.[6]
- Additionally, you will assign the intended time course for your case. An important note to consider: the debriefing portion is generally two times the duration of the simulation portion, and based on available evidence, the bulk of the learning occurs during the debrief.

## 4. Simulation Module Development and Design

Includes several components:

- Case stem: Includes the information you will provide the learner, either verbally or written, to "set up" the scenario.
- Baseline simulator state: The state the learner finds the simulation in at the onset of the module, reflects the "starting point" for vital signs and exam findings.
- Patient data: Should follow a traditional History & Physical (H&P) format with relevant information included. In some cases, all this information may be provided to the team while in others the team may need to ask specifically to obtain data depending on the goals and objectives of the case.
- Scenario progression states: There are two vital components to any simulation: 1) the patient and 2) the scenario. The scenario represents how the simulation plays out over time. Each scenario should be broken down into mini-scenarios (called "states"), and each state represents a progression of the simulation. Stepping from state to state is caused by a "trigger." Triggers may be time, drugs, or specific learner actions. Keep in mind, you do not know how participants will respond, and it is important to consider possible "branch points" of management. With this in mind, you can also outline "prompts" or "signals" that may cue your learners that an action is necessary.

## 5. Debrief

- A formal, collaborative, reflective process that is led by a facilitator, and follows a simulation experience. All people involved in the simulation experience – educators, instructors, facilitators, and learners – re-examine the simulation experience with the goal of fostering the development of clinical judgment and critical thinking skills. It is meant to encourage participants' reflective thinking and provides an opportunity for the exchange of feedback.[3]
- Things to consider when preparing for the debrief:
    - What teaching point(s) do you want the learners to take away?
    - How will you circle back to your learning outcomes/objectives?
    - Take a stance of *curiosity*, rather than *judgement*. Ask questions to get at what the learners were thinking. Rarely is a "mistake" related to a knowledge deficit – so *ask*, don't *assume*!

- There are many styles of evidence-based debriefing. Here are just few common methods:
    - Debriefing with Good Judgement using Advocacy-Inquiry[1, 7]
    - Debriefing for Meaningful Learning (DML)[8]
    - Plus-Delta approach
    - PEARLS (Promoting Excellence and Reflective Learning in Simulation)[9]
- General Debrief Structure[1]
    1. Preview: Sets the stage and prepares the learners for the debriefing activity.
        - *"I'd like to take the next 30 minutes to talk as a group about this scenario. We'll start with your initial reactions, then discuss the case in more detail, and end with a summary and key take-aways."*
    2. Reactions: Provides the opportunity for learners to voice feelings and "clear the air," which in turn will allow participants to move on toward further discussion and provide a better environment for learning to occur.
        - *"How do you feel?"*
        - *"Initial reactions?"*
        - *"First thing off the top of your head?"*
    3. Description: It is important to make sure everyone is on the same page in order to avoid confusion and facilitate learning.
        - *"Can someone please summarize the case?"*
        - *"To summarize, this case was …"*
    4. Analysis/Understanding: The objectives of this phase are to explore participants' perspectives on the scenario and help them move to a new understanding and develop new skills. There are many different debriefing approaches and styles that can be employed for this stage.
        - *"Tell me more…"*
        - *"I wonder what you were thinking when …"*
        - *"I'm curious about …"*
    5. Summary/Application: The goal of this stage is to identify key take-aways and tie them back to clinical applications.
        - *"During this debrief we've talked about 'X' and 'Y', and I'd like to end with your key takeaways."*

## 6. Evaluation

- It is very important for both the simulation facilitator and the participants to have an evaluation of the simulation to inform future improvement to the activity. While you may have your own evaluation you prefer to use, a general evaluation form is included.

## 7. References:

1- Center for Medical Simulation. 2019. https://harvardmedsim.org/
2- MedEdPORTAL Educational Summary Report Template: Simulation Cases. 2017. https://www.mededportal.org/filer/media/1505927902/5996/
3- Lopreiato JO (Ed). (2016). *Healthcare simulation dictionary*. Rockville, MD: Agency for Healthcare Research and Quality; 2016. AHRQ Publication No. 16(17)-0043.
4- INASCL Standards of Best Practice: Simulation[SM] Simulation Glossary*. Clinical Simulation in Nursing*. 2016. 12: S39-47.
5- Rudolph JW, Raemer DB, Simon, R. Establishing a Safe Container for Learning in Simulation: The Role of the Presimulation Briefing. *Simulation in Healthcare*. 2014. 9(6):339-349.
6- Massachusetts General Hospital, Learning Laboratory. Pre-briefing Outline. https://www.massgeneral.org/learninglab/simulation-education/assets/Pre-Briefing-Outline.pdf
7- Rudolph JW, Simon R, Rivard P, Dufresne RL, Raemer DB. There's No Such Things as "Nonjudgemental" Debriefing: A Theory and Method for Debriefing with Good Judgement. *Simulation in Healthcare*. 2006. 1(1): 49-55.
8- Dreifuerst KT. Getting Started with Debriefing for Meaningful Learning. *Clinical Simulation in Nursing*. 2015. 11(5): 268-275.
9- Eppich W, Cheng A. Promoting Excellence and Reflective Learning in Simulation (PEARLS): Development and Rationale for a Blended Approach to Health Care Simulation Debriefing. *Simulation in Healthcare*. 2015. 10: 106-115.

# 1. CASE INFORMATION

| Scenario Title |
|---|
| *Choose a descriptive title that provides users with an understanding of your case. For example: "Septic Shock: A Simulation Case for Pediatric Residents."* |

| Date created/last revised | Activity duration |
|---|---|
| | |

| Author(s) | Contact information |
|---|---|
| 1.<br>2. | *Provide preferred method of contact for a corresponding author.* |

| Target Learners |
|---|
| *List all types of learners (residents, fellows, nursing, students, etc.) and disciplines (critical care, surgery, neonatology, etc.) this case is primarily designed for.* |

# 2. CURRICULAR INFORMATION

| Brief description of the activity/course |
|---|
| *Provide a brief description of the overall scenario events including presenting chief complaint and goals for the learners. For example: "In this case the team is presented with a 6-month-old female who presented to the emergency department with fever and irritability. The patient is initially tachycardic, febrile and normotensive. The team should perform a history and physical exam and order antipyretics, IV fluids, antibiotics and labs. The patient will become hypotensive ultimately requiring pressors and develop altered mental status requiring advanced airway management. Following intubation, the team should determine disposition to the ICU and the scenario will end."* |

| Needs assessment |
|---|
| *Provide the rationale for the educational activity—i.e. how do you know this course is necessary? This can include an official needs/gap analysis, curricular regulatory requirements, expert assessment, learner request or other factors.* |

| Educational Objectives |
|---|
| *What should the learners gain in terms of knowledge and skill from this case? Ideally should be S.M.A.R.T. (Specific, Measurable, Achievable, Relevant/Realistic, Timely)*[3] *and include no more than 3-5 objectives.*<br><br>By the end of this activity, learners will demonstrate the following:<br>1.<br>2.<br>3. |

| References Used |
|---|
| 1.<br>2.<br>3. |

# 3. PREPARATION

| Description of Environment |
| --- |
| *Description of the simulated environment including room appearance when the team enters. For example: "This case takes place in the emergency/trauma room using a high-fidelity pediatric mannequin placed in a gown on a gurney. The bedside nurse is present with the patient. Monitors are placed on the patient including a pulse oximeter and a BP cuff with corresponding values shown on the screen.* |

| Equipment Required |
| --- |
| *List any necessary supplies/equipment for running the simulation case.*<br><br>*For example:*<br>• *Sim Jr mannequin*<br>• *Monitors: pulse oximeter, BP cuff, cardiorespiratory monitor, temperature probe*<br>• *Medications: normal saline, ceftriaxone, epinephrine drip and code dose, ketamine, rocuronium, atropine*<br>• *Airway supplies: 3.5 and 4.0 cuffed ETT with stylet, Miller 1 and 2 laryngoscopes, BVM with oxygen tubing, suction tubing and cannister*<br>• *IV supplies: 20- and 22-gauge IV needles and IV tubing, tourniquet, 3 cc saline flushes* |

| Embedded Simulated Persons |
| --- |
| *This section should include all ESP roles with instructions including any prompts, actions and emotions displayed. For example:*<br><br>• *Paramedic: Brings the patient into the exam room and provides the team with a patient handoff. Provides accurate but concise details, should appear rushed and leave the room immediately after handoff is completed.*<br>• *Parent: Arrives with the patient and is able to provide a history. After the IV is placed she/he will become more upset, crying and distraught that her child is so ill requiring the team to address her/his concerns after which she/he will become calm.* |

| Supporting multimedia |
|---|
| *Provide a description of included multimedia for the case. Remember to include the multimedia as well with labels corresponding to the descriptions (i.e.—Appendix A, Appendix B)*<br><br>• *Appendix A—Chest x-ray showing a right lower lobe infiltrate*<br>• *Appendix B—ECG showing sinus tachycardia* |

| Pre-briefing |
|---|
| *Four primary goals are: clarify confidentiality, expectations and roles; attend to logistical details; convey a commitment to respecting learners; and establish a "fiction contract." For example:*<br><br>*"Hello, welcome to simulation! We are all here to learn, we believe everyone here is intelligent and cares about doing their best. With that in mind, this setting is confidential, and I would ask you not to discuss any team member's performance outside the sim lab.*<br><br>*We also realize that although we try to make this as real as possible, simulation is a fictitious environment. However, we would ask you to try and suspend your disbelief and engage as you would in a real life setting so we can all have a better learning experience.*<br><br>*Now for some specifics about the simulation; today you are the code team in the hospital responding to a code blue on a 6-month-old female with respiratory distress. This mannequin has heart sounds, pulses and breath sounds. The monitor here should display vital signs. If you have questions about an exam finding I can clarify or provide details that are not visible on the mannequin. Supplies you may need are on this table over here. We will have one participant volunteer as team leader who can then assign roles to the remaining participants. Our simulation will last about 15 minutes followed by 30 minutes of debriefing.*<br><br>*Does anyone have any questions before we get started?"* |

| Time Course | |
|---|---|
| **Set-up** | *Example: 10 minutes* |
| **Pre-briefing** | *5 minutes* |
| **Simulation** | *15 minutes* |
| **Debrief** | *30 minutes* |

# 4. SIMULATION MODULE DESIGN & DEVELOPMENT

| Case Stem |
|---|
| *Include pertinent patient and scenario information to "set up" the simulation.*<br><br>*For example: "You are working as a pediatric resident in the emergency department at a children's hospital. The paramedics bring in a 6-month-old female for fever and irritability. She is accompanied by her mother. You are in the exam room with the bedside nurse upon the patient's arrival. Your attending physician is currently unavailable in another room with a critically ill patient."* |

| Background Information |
|---|
| *For facilitator ONLY: include any other relevant information that will aid the facilitator.* |

| Baseline Simulator State | |
|---|---|
| **Initial Vitals**<br>*Include initial vital signs for mannequin which may include additional or less parameters than listed.*<br><br>**HR:**<br>**RR:**<br>**BP:**<br>**Temp:**<br>**SpO2:** | **Initial appearance**<br>*Include underlying initial physiological alterations to the mannequin.*<br><br>*For example: The mannequin will have decreased breath sounds on the right and weak peripheral pulses in the extremities. There will be an IV in place in the left foot. The mannequin will be intermittently crying.* |

| Patient Data | | | |
|---|---|---|---|
| **Name:** | **Age:** | **Weight:** | **Gender:** |
| **Past History:**<br>*Include relevant historical details. Depending on the case this could be past medical history, past surgical history, birth history, maternal/pregnancy history, current medications, allergies, social history, family history, immunizations, etc.* | | | |
| **HPI:** | | | |
| **Physical Exam**<br>*Include pertinent negative and positive exam findings specific to your case.* | | | |

| Scenario Progression States | | | |
|---|---|---|---|
| **State** | **Patient status** | **Student learning outcomes or actions desired and trigger to move to next state** | |
| 1. Baseline | | Learner Actions:<br>• | Operator Actions:<br>•<br><br>Teaching Points:<br>•<br><br>Trigger: |
| *2. Seizure* | *Patient has a generalized tonic-clonic seizure.* | Learner Actions:<br>• Obtain vascular access<br>• *Administer benzodiazepines to stop seizure*<br>• *Administer supplemental oxygen*<br>• *Obtain a POC blood glucose* | Operator Actions:<br>• *Facilitator should cause mannequin to have tonic-clonic movements.*<br>• *If team does not recognize seizure, can have "mother" ask "why is she shaking like that?"*<br>• *Increase HR to 150, decrease SpO2 to 93% and RR to 20.*<br>• *Provide the team with POC glucose if requested (Appendix A).*<br>• *Tonic-clonic movements stop after benzodiazepines are given.*<br><br>Teaching Points:<br>• *Benzodiazepines for seizure management*<br><br>Trigger: *5 minutes into the case.* |
| *3. Apnea* | *Patient develops apnea and cyanosis.* | Learner Actions: | Operator Actions:<br>• *Decrease SpO2 to 82% and RR to 0.* |

| | | | |
|---|---|---|---|
| | | • Administer positive pressure ventilation (PPV) with a bag-valve-mask<br>• Perform endotracheal intubation<br>• Confirm endotracheal tube placement with EtCO2 and/or chest x-ray | • *When team starts PPV, increase SpO2 to 100% but apnea persists.*<br>• *After intubation, if EtCO2 is set up display reading of 35 on the monitor.*<br>• *Provide the team with chest x-ray if requested (Appendix B)*<br><br>Teaching Points:<br>• *BVM technique*<br>• *Advanced airway management*<br><br>Trigger: *2 minutes after benzodiazepines are administered* |
| 4. | | Learner Actions:<br>• | Operator Actions:<br>•<br><br>Teaching Points:<br>•<br><br>Trigger: |
| 5. | | Learner Actions:<br>• | Operator Actions:<br>•<br><br>Teaching Points:<br>•<br><br>Trigger: |

# 5. DEBRIEF

| Debrief Planning |
| --- |
| **Key Learning Pearls:**<br>1. *These are the key learning points you hope your learners walk away remembering.*<br><br>2.<br><br>3.<br><br>**Prompts to encourage discussion:**<br>*1. Topics to consider: Role Clarity (Leader established? Roles assigned?)*<br>*Communication (Conflict resolution? Closed-loop?)*<br>*Personnel support (Appropriate call for help? Task delegation?)*<br>*Resource utilization (Proper use of equipment? Troubleshooting?)*<br>2.<br><br>3. |

## Facilitator Notes:

# 6. SIMULATION EVALUATION

Date: _____ Simulation Case: _____ Facilitator: _____

Please answer each question below by checking the box next to how you feel based on your simulation experience today.

| | **Strongly disagree** | **Disagree** | **Neutral** | **Agree** | **Strongly agree** |
|---|---|---|---|---|---|
| The simulation was a valuable learning experience. | | | | | |
| The simulation scenario was realistic | | | | | |
| The simulation will help me improve my performance in a clinical setting. | | | | | |
| The debriefing was a valuable learning experience. | | | | | |
| The debrief session was a safe and supportive environment. | | | | | |
| I would recommend this simulation to others. | | | | | |
| Additional simulation training would be valuable to me. | | | | | |

How could the simulation be changed to make it better for your learning?

_____

_____

What is one learning point that you will take away from the simulation?

_____

_____

Do you have any additional comments about the simulation?

_____

_____