



# Simulation Implementation

2017

# Objectives

Examine current malpractice claims data

Discuss the benefits and objectives of simulation training

Review key considerations for planning a simulation training, including team members, scheduling, types of exercises, timing, and evaluation

Present contents of a simulation toolkit

Examine a sample simulation scenario

# Definition



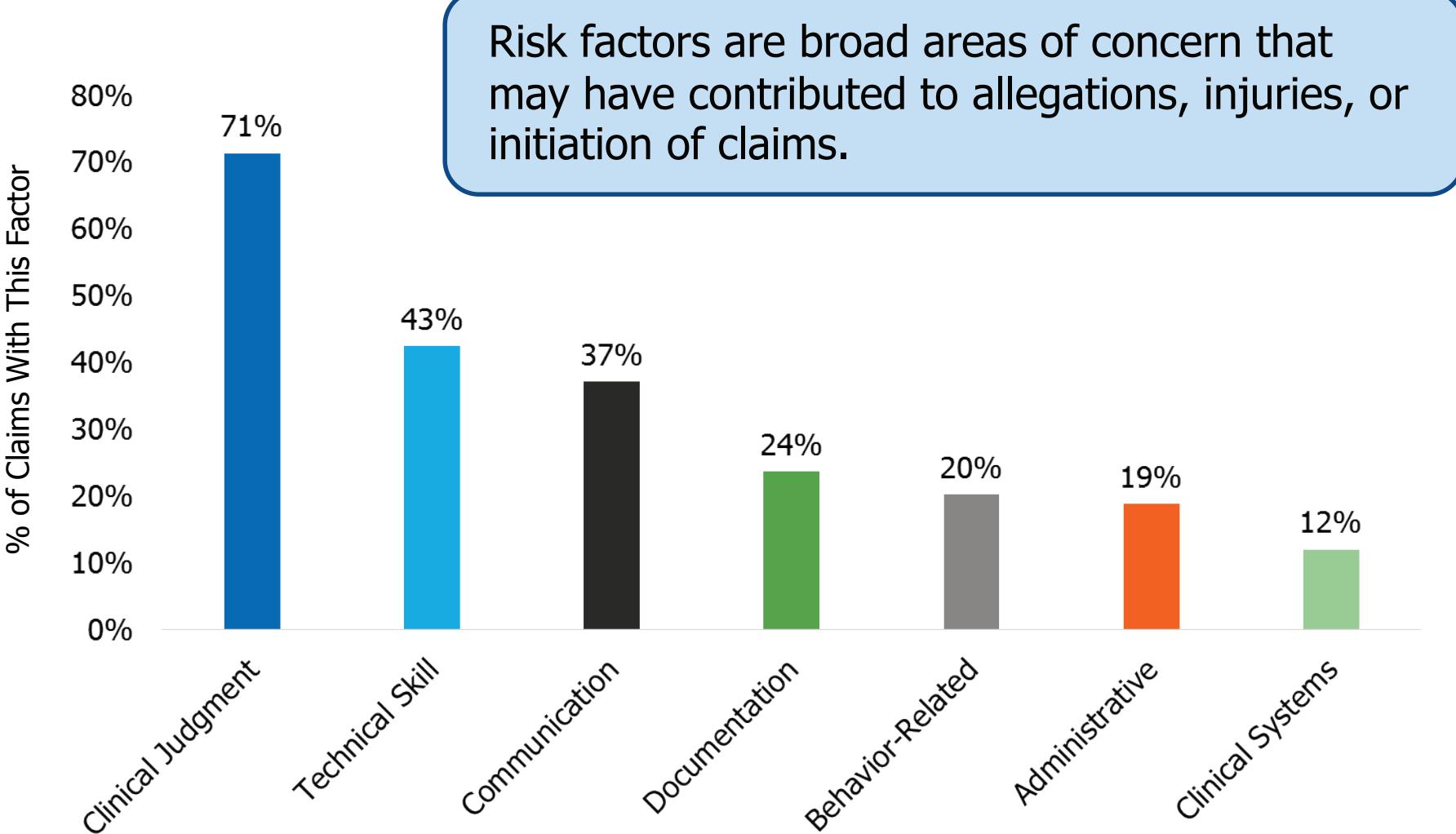
“A set of techniques to replace or amplify real experiences with planned experiences to evoke or replicate substantial aspects of the real world in an interactive fashion.”





# Claims data & simulation basics

# Top risk factors based on MedPro Group claims data



**Source:** MedPro Group closed claims, 2005–2014, N=>11,000. **Note:** More than one risk factor can be, and often is, attributed to each claim.

# What simulation training offers

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Safe learning environment for students and staff

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A place to demonstrate competencies

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An environment in which to learn and practice low-volume and/or high-risk situations

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An opportunity to improve outcomes

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No risk to a patient that could result in injury



# Objectives of simulation training

Develop necessary knowledge base and clinical skills

Facilitate teamwork

Improve confidence with skills

Improve medication familiarity and dosage calculations

Provide frequent updates on current treatments

Test the current process and look for areas to improve



**Source:** Agency for Healthcare Research and Quality. (2016, July). Patient safety primer: Simulation training. Retrieved from [psnet.ahrq.gov/primers/primer/25/simulation-training](http://psnet.ahrq.gov/primers/primer/25/simulation-training)



# Simulation considerations

# Key questions

Who should be part of the team?

How often should training occur?

What equipment should be included?

What types of training exercises should be done?

How long should simulations take?

What should be discussed in the debriefing session?

How should the activity be evaluated?



# Who should be part of the team?

The team members for the simulation training will depend on the type of simulation being done. Examples include the following:



Interdisciplinary team to improve team dynamics



Emergency medicine physician, ED/ICU nurse, patient care tech, supervisor, respiratory therapist, pharmacist



Hospitalist, advanced practice provider, anesthesia provider, chaplain, interpreter, security, social worker

# How often should training occur?

- Monthly
  - Full simulation or specific components identified as difficult by the leader or team; focused on common emergent practices — e.g., a code in a critical setting
- Quarterly
  - Full simulation for each shift; focused on new critical clinical processes or processes needing improvement — e.g., first responders to a code in a medical setting
- Annually
  - Focused on critical events mandated by accreditation or licensing organizations — e.g., environmental emergency drills

# What equipment should be included?

Equipment will depend on the type of simulation. Examples include:

- Crash cart
- Broselow tape
- Monitor
- Defibrillator
- Manikins/dolls
- Moulage
- Medications
- IV drips (needing mixing)
- Intubation supplies



# What types of training exercises should be done?

Training techniques

Full exercise (preferred)

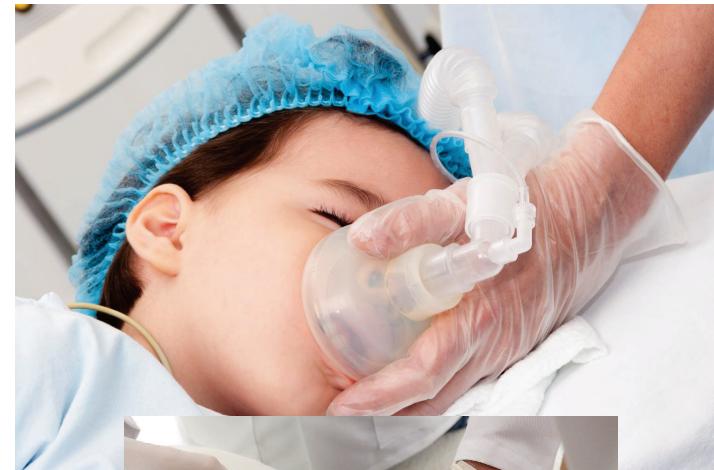


Table top drills

Computerized exercises

Simulation formats

Manikin



Team trainer

Role playing



Active discovery

# Simulation settings

Patient room

Bathroom

Hallway

Surgical suite

Elevator

Emergency department

Lobby

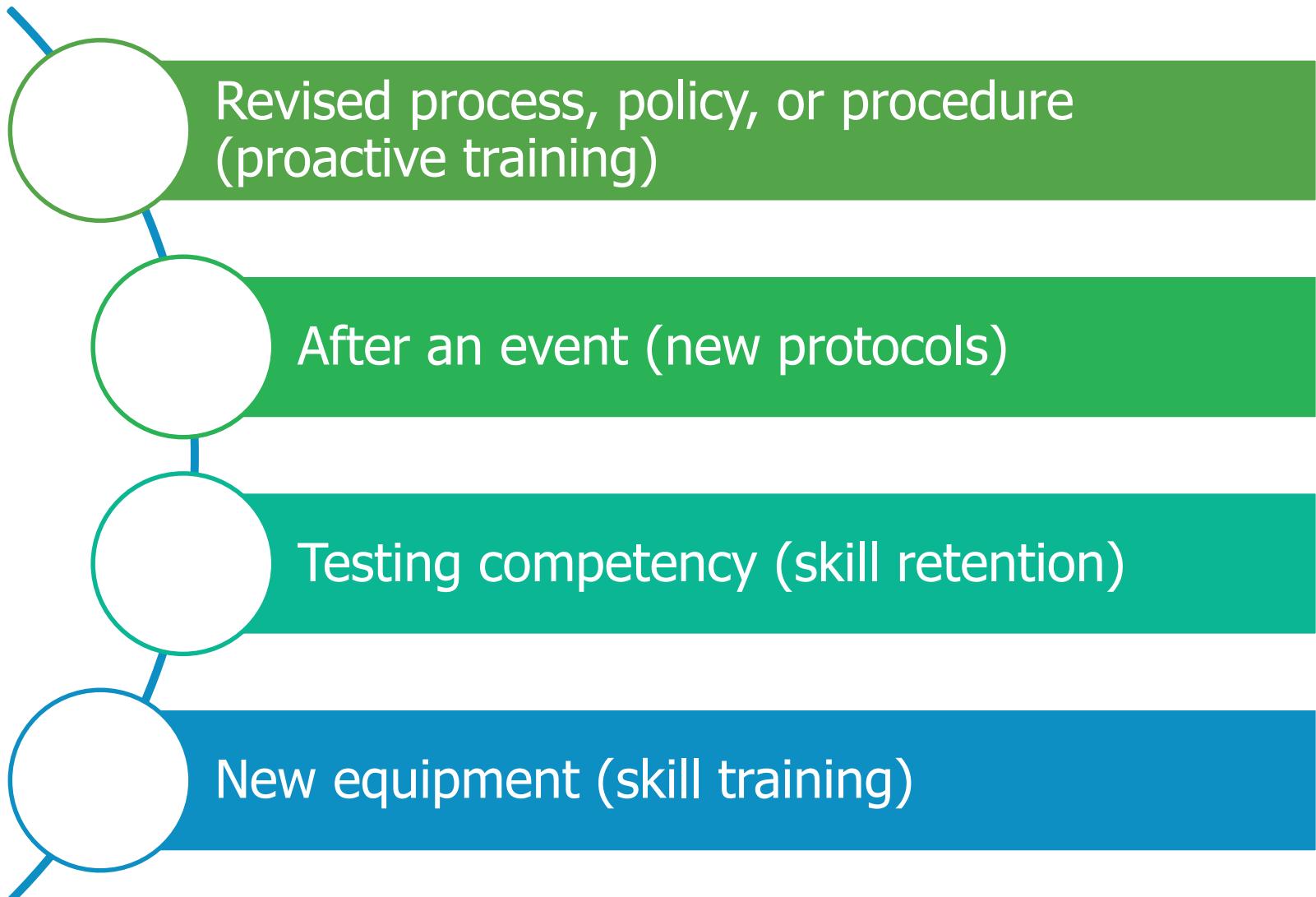
Parking lot/garage

Cafeteria

Boardroom



# Simulation scheduling



# How long should simulations take?

Will depend on the scenario, but generally:

Brief

Frequent

Intense with  
instruction and  
practice



# What should be discussed in the debriefing session?

Description of the simulated event

Analysis of what was effective and what was not

Application of learning

Review of the video recording

The positive aspects of the performance



# How should the simulation be evaluated?

## CHECKLIST

- List the objectives so the team is aware.
- Provide consistent evaluation.
- Offer concrete feedback.
- Provide guidance and recommendations.
- Identify process improvement needs.



# What skills should be assessed?

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Team leadership and team communication

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Monitoring of ABCs

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IV/central line placement

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Intubation

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Use of weight-based emergency reference tools

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Medications

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Implementation of proper treatment protocols

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ECG interpretation

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Frequent reassessments

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Communication with family



# General scenarios

Cognitive

Behavioral

Psychomotor

Cardiac arrest

Croup —  
respiratory  
arrest

Anaphylactic  
shock

Medication/  
opioid  
overdose

Seizure

Shock —  
hypovolemic,  
septic

Traumatic head  
injury

Teamwork  
training

Patient safety  
skills

Adverse  
outcome  
disclosure

Usability  
testing/testing  
new equipment

# Barriers to simulation implementation

Lack of leadership support



Poor organizational culture



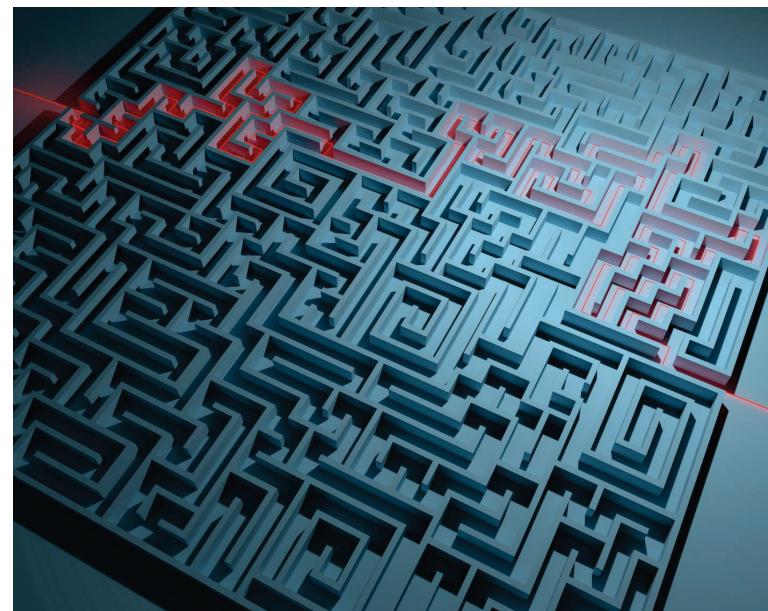
Funding and staffing issues



Belief that simulations aren't needed



Credentials, licenses, and certifications — Are they enough?





# Simulation resources

# Simulation toolkit

Simulation needs assessment

Simulation planner

Resource list

Observation form

Simulation evaluation

Illinois Emergency Medical Services for Children, Illinois Department of Public Health, Loyola University Health System

Pediatric Mock Code Resources



# Sample needs assessment for pediatric code

<b>Pediatric Mock Code Program Needs Assessment</b>							
<b>Please circle your answer:</b>							
<b>Current role</b>	APN Other:	RN	LPN	MD/DO	Pharm	PCT	RT
<b>Number of pediatric mock codes attended in past year</b>	1	2	3	4	5	≥6	
<b>Number of actual pediatric codes participated in past year</b>	1	2	3	4	5	≥6	
<b>Identify which of these course you are currently certified in (circle all that apply):</b>	CPR	APLS		PALS		ENPC	
	NRP	Other:					
<b>Which age group of children do you have the least clinical experience with? (circle all that apply)</b>	Infant	Toddler	School age	Adolescent			
<b>Which of the following would you prefer for a pediatric mock code scenario? (circle all that apply)</b>	Anaphylaxis			Respiratory			
	Cardiac arrest			Shock			
	DKA			Status Epilepticus			
	Drowning			SVT			
	Poisoning			Trauma			
	Other:						
		Mon	Tue	Wed	Thurs	Fri	Sat
<b>My preferred day(s) for Pediatric Mock codes is (are)</b>							
<b>My preferred time(s) for Pediatric Mock Codes is (are)</b>	List 2 preferred times below:						
<b>Please rate the items below on the following 1-5 scale (circle one response only):</b>							
<b>1=strongly disagree    2=somewhat disagree    3=neither agree or disagree    4= somewhat agree    5 =strongly agree</b>							
<b>Pediatric codes are frightening to me.</b>	1	2	3	4	5		
<b>I need more knowledge about pediatric codes.</b>	1	2	3	4	5		
<b>I need more experience with pediatric codes.</b>	1	2	3	4	5		
<b>I need more confidence in my ability to participate in pediatric codes.</b>	1	2	3	4	5		
<b>I'm interested in planning/assisting with pediatric mock codes.</b>	Yes (Include your name below)			No			

**Source:** Illinois Emergency Medical Services for Children. (2012, March). Pediatric mock code toolkit. Retrieved from <http://ssom.luc.edu/emergency-medicine/children/resourcesguidelines/guidelinestoolsandotherresources/practiceguidelinestools/pediatricmockcoderesources/>

# Sample simulation planner for pediatric code

Go Live Date \_\_\_\_\_

TASK	Responsible person(s)	Completion Date
1. Create Pediatric Mock Code Program purpose including benefits to the organization for discussion with management		
2. Meet with appropriate management to discuss the idea and seek their support		
3. Decide on strategy with manager to incorporate staff		
4. Meet with staff at meetings or during change of shift to discuss program		
5. Create a needs assessment. Distribute to staff		
6. Engage additional team members		
7. Collect needs assessment and analyze results		
8. Create scenarios based on needs assessment		
9. Create a mock code observer form		
10. Create a mock code evaluation form		
11. Schedule mock code based on preferred days and shifts		
12. Complete resource checklist		
13. Define facilitator role and expectations		
14. Secure facilitator, observer and equipment		
15. Conduct pediatric mock code		
16. Meet to review oral and written feedback from mock code		
17. Report outcomes to staff and management		
18. Ask management to include planning team representative in mortality and code review reporting loop for further program development		



# Sample resource list for pediatric code

Resource	Storage Location	Method to Obtain Item
Pediatric code cart		
Simulated patient (options below)		
Paper cut-out figure		
Infant doll		
Child doll		
CPR baby manikin		
CPR child manikin		
Infant manikin with arrhythmia simulator		
Child manikin with arrhythmia simulator		
Medications		
Weight based tool (i.e. Broselow Tape)		
Oxygen		
Monitor/Defibrillator/Pulse-ox		
IV pumps		
Forms:		
Observer Form		
Evaluation Form		
Other:		
Optional Resources:		
Dry Erase board or alternative		
Video recorder		



# Sample observation form for pediatric code

## Examples of Challenges and Corresponding Objectives

Challenges	Corresponding Objectives
No team leader was identified	Team leader identifies self upon arrival
Team members are intimidated by team leader	Team leader empowers team members to speak up and challenge appropriately
Team member feels overwhelmed by assigned tasks	Team member asks for assistance from other team members
Communication is disorganized	Team leader and members use communication methods, i.e. SBAR
Delay in starting compressions	Compressions are started within 10 seconds of pulse check
Wrong sized equipment used on patient	A weight/length-based tool is used to identify appropriately sized equipment
Abnormal vital signs not communicated	Team member notifies team leader of abnormal vital signs within appropriate timeframe (insert time per hospital policy)
Four attempts made to obtain IV access	IO is inserted after two IV attempts or 90 seconds
Mass casualty incident results in arrival of 6 pediatric patients simultaneously	JumpSTART triage algorithm is used to identify critical patients and prioritize care
Child needs multiple IV medications	Medications are calculated based on kilogram weight



# Sample staff evaluation for pediatric code

Hospital Department/Unit:			
Title of educational activity:	Pediatric Mock Code		
Date:			

Please assist us in evaluating this educational activity and planning future activities by completing this evaluation form.

## OBJECTIVES

Please use the following rating scale to evaluate the objectives by circling the corresponding number below.

To a Great Extent = 4

To a Moderate Extent = 3

To a Slight Extent = 2

Not at All = 1

The following objectives were achieved during this pediatric mock code educational activity:

Objective # 1:	Example objective – Compressions are started within 10 seconds of pulse check			
4	3	2	1	

Objective # 2:	Example objective – Team leader empowers team members to speak up and challenge appropriately			
4	3	2	1	

Objective # 3:	Example objective – A weight/length-based tool is used to identify appropriately sized equipment			
4	3	2	1	

## PROFESSIONAL GROWTH

Please use the following rating scale to respond the statements below by circling the corresponding number below.

To a Great Extent = 4

To a Moderate Extent = 3

To a Slight Extent = 2

Not at All = 1

Having participated in this pediatric mock code, please rate your response to the following statements:

1. Pediatric codes are less frightening to me				
4	3	2	1	

2. I have more confidence in my ability to participate in pediatric codes				
4	3	2	1	

3. I feel more comfortable caring for children				
4	3	2	1	





# Sample simulation scenario

# Emergency department: pediatric patient scenario

## Scenario background

A 4-month-old male patient is transported from home by his parents to the local ED. The patient has had an upper respiratory infection over the past 24 hours with a moist cough and runny nose. Within the past few hours, the patient has become febrile, listless, and has audible rhonchi. The parents and the patient are immediately escorted to an exam room upon arrival at the hospital. The baby has slight circumoral cyanosis, flaring nostrils, and chest retractions. Upon arrival, the baby's vital signs are BP 74/palp, pulse 110, respirations 34 and shallow, and temperature 39.5° C (103.1° F). The baby becomes unresponsive as providers are administering care to him.



# Emergency department: pediatric patient scenario

## Target participants

ED staff, physicians, anesthesia providers, and respiratory therapy staff

## Equipment and Supplies

- Infant simulator with endotracheal tube (ETT) intubation capability
- ED bed/stretcher and bed sheet
- Cardiac monitor with pulse oximetry
- IV fluid, tubing, and cannula (infant)
- Paper tape (to secure IV and IV cannula)
- Syringes labeled epinephrine and amiodarone
- Pediatric ETT with lubricant and ETT holder
- Telephone or other communication device

## Scenario setup

### *Patient*

Street clothes

### *Room setup*

- If possible, use an actual ED room. This setup will be most beneficial during this scenario.
- Place bed sheet on bed.
- Position patient (simulator) on bed.

# Emergency department: pediatric patient scenario

Scenario steps			
Time	Patient condition/response	Participant actions	Tasks completed
1900	BP: 74/palp Pulse: 110 Respirations: 34/shallow Temperature: 39.5° C (103.1° F)	<ul style="list-style-type: none"><li>Participants establish a team leader</li><li>Team leader discusses patient status and concerns with team members</li></ul>	Team leader established? Yes or No  Patient status and concerns discussed with team members? Yes or No
1905	BP: 70/palp Pulse: 110 Respirations: 36/shallow	<ul style="list-style-type: none"><li>Tasks are delegated to and confirmed by all team members</li></ul>	Effective communication performed? Yes or No

# Emergency department: pediatric patient scenario

Scenario steps			
Time	Patient condition/ response	Participant actions	Tasks completed
1907	BP: 68/palp Pulse: 110 Respirations: 36/shallow	<ul style="list-style-type: none"><li>Team members actively monitor the event and provide feedback as needed</li><li>Team leader reviews which tasks have been completed and asks for team member input</li></ul>	Event monitored and feedback provided? Yes or No  Review of tasks completed is conducted? Yes or No
1910	BP: 0 Pulse: 0 Respirations: 0	<ul style="list-style-type: none"><li>Team members assist in task performance</li></ul>	Assistance in task performance occurs? Yes or No

# Emergency department: pediatric patient scenario

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## Facilitator notes

The purpose of this scenario is for participants to (a) quickly assess and determine appropriate treatment for an infant in respiratory distress, and (b) identify opportunities to apply effective communication and efficient teamwork skills.

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During the critical patient event, participants should establish a leader to delegate tasks and coordinate the team's efforts in caring for the patient. Prior to initiating interventions, the team leader should discuss the patient's status and plan of care with the team members.

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To avoid delays in, duplications of, or deviations in tasks, team members should restate the team leader's instructions. At some point during the emergency response, team members should review all tasks that have been done to confirm that nothing was forgotten and to determine other courses of action.

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# Emergency department: pediatric patient scenario

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## Facilitator notes

To prevent any patient mishaps, all team members should continually observe the ongoing event and provide necessary feedback and assistance to the team — particularly when performing CPR, as responder fatigue can occur quickly.

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It is recommended that participants perform this scenario twice in the same training session so that learning and reinforcement of communication and teamwork skills can be applied to their clinical practice.

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Throughout the scenario, the facilitator will need to provide data for the patient's vital signs. The data should be displayed on a card, paper, or placard located near the actual monitor.

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To facilitate the time needed for each scenario session, the facilitator has the option to compress (speed up) time as needed. Make the participants aware of the time by either displaying the time in a visible location or stating the time throughout the scenario.

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# Emergency department: pediatric patient scenario

## Debrief



- What did you think was happening?
- What did you do and why?
- Do you think your interventions were helpful? Describe how. If not, explain why.
- Did the team members communicate effectively with each other? Provide examples.
- Did the team members communicate effectively with the patient's parents? Provide examples.
- How efficient was the teamwork? Provide examples.
- What aspects of this scenario exercise can you apply to your clinical practice? How might you apply those aspects?

# Summary



Performance



Confidence



Teamwork