020 Pediatric Code Blue: Mock Code Development
July 11, 2013 8:00 a.m. – 4:00 p.m.

Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic/Activity</th>
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<tbody>
<tr>
<td>8:00 a.m. – 8:15 a.m.</td>
<td>Introductions</td>
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<tr>
<td>8:15 a.m. – 9:15 a.m.</td>
<td>Icebreaker activity</td>
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<tr>
<td>9:15 a.m. – 9:45 a.m.</td>
<td>Code Blue Education</td>
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<tr>
<td>9:45 a.m. – 10:00 a.m.</td>
<td>Break</td>
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<tr>
<td>10:00 a.m. – 10:45 a.m.</td>
<td>Instructional Design</td>
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<tr>
<td>10:45 a.m. – 11:30 a.m.</td>
<td>Learning Objectives (group activity)</td>
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<tr>
<td>11:30 a.m. – 12:30 p.m.</td>
<td>Lunch on your own</td>
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<tr>
<td>12:30 p.m. – 12:45 p.m.</td>
<td>Finish learning objectives (group activity)</td>
</tr>
<tr>
<td>12:45 p.m. – 2:00 p.m.</td>
<td>Scenario Development (group activity)</td>
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<tr>
<td>2:00 p.m. – 3:45 p.m.</td>
<td>Putting it into Action – Scenario Simulation</td>
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<tr>
<td>3:45 p.m. – 4:00 p.m.</td>
<td>Wrap up and Evaluations</td>
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*Timeframes within agenda tentative
Pediatric Code Blue: Mock Code Development

AnneMarie Monachino, MSN, RN, CPN; Roberta Hales, MHA, RRT, RN; & Grace Good, MA, BSN, RN
Disclaimers

The presenters have no real or perceived conflicts of interest that relate to this presentation. Any use of brand names is not in any way meant to be an endorsement of a specific product, but merely to illustrate a point of emphasis.
Workshop Objectives

1. Identify the need and importance of mock code education.

2. List the steps to beginning or enhancing a mock code program.

3. Discuss how to use simulation as a learning methodology.

4. Describe how the instructional design process can enhance scenario development.

5. Develop a simulation scenario utilizing the instructional design process.

6. Participate in a simulation based on the developed scenario.
Tell us about yourself

- What is your name?
- Where do you practice?
- What is your role?
- What is your experience level?
- How involved are you in mock code education?
- How much experience do you have with simulation?
Icebreaker

• Group activity
Let’s get started

CODE BLUE EDUCATION
Background and significance

- Pediatric cardiopulmonary arrest are rare events
- Hypoxia not treated and reversed will lead to respiratory failure and progress to cardiac arrest
- Prevention is imperative
- Requires immediate appropriate therapy
- Most children who arrest experience hours of subtle decline which are overlooked
- Improvement in outcomes related to prompt intervention
Review of literature

• Healthcare providers can successfully learn life saving skills: BLS, PALS, NRP, ACLS
• A deterioration in skill retention occurs across all professions
• Nurses and medical residents report lack of knowledge and confidence
• Increased exposure to practicing responding to pediatric emergency increases confidence and skill
Code blue education

How do you know this education is needed?

• Direct observation
• Noted inconsistencies in practice
• Individuals or group report skill decay
• Request from nursing staff
• Debriefing post event reveals gaps in knowledge
• Poor team performance during resuscitation
Why a mock code?

• Responding to a deteriorating pediatric patient is a team effort
  – Recognition of distress by individual
  – Activation of emergency response team
  – Team responds and resuscitates patient
• Team training contributes to safer pt care
• Addresses learning on several levels
  – Knowledge, comprehension, synthesis, application
Benefits and *challenges* of mock codes

- Allow practice of emergency situations in supportive but realistic environment
- Create a climate conducive to adult learning
- Improve teamwork and communication
- Discover inefficiencies in code response
- *Gaining buy-in from staff and support from leaders*
- *Overcoming competing clinical demands*
- *Obtaining the necessary resources: materials and people*
Steps to beginning a mock code program

- Know your target audience
- Develop your learning objectives
- Determine the best method of training
- Generate list of resources and potential costs
- Decide on time frame for mock code
- Create scenario based on objectives
- Establish criteria to evaluate learning
- Formulate proposal
Is simulation the best method of training?

Simulation is the recreation of an actual event that has previously occurred or could potentially occur.
Simulation as a teaching methodology

- Learner can repeatedly practice a range of clinical skills safely without endangering patients
- Offers parallel experience to real clinical practice
- Opportunity for debriefing/discussion of performance
- Variety of uses
  - Procedural skill training
  - Clinical competence
  - Training to promote and improve team communication

Ideal for pediatric code education
Benefits of using patient simulators

• Improved health outcomes
• Prepare for rare or unusual patients, conditions, or situations
• Reduce health care costs
• Enhance patient care quality
• Better productivity
• Reduce malpractice rates
• Reduce adverse events
Time for a coffee break
Enhancing mock code education

INSTRUCTIONAL DESIGN
CHOP Curriculum Development Process

Based on the model developed by Dick, Carey, & Carey


<table>
<thead>
<tr>
<th>STEP</th>
<th>PROCESS</th>
<th>ACTIONS</th>
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<tbody>
<tr>
<td>1</td>
<td>Needs Analysis</td>
<td>Establish rationale for conducting course</td>
</tr>
<tr>
<td>2</td>
<td>Establish Instructional Goal</td>
<td>Define the overall purpose for the course</td>
</tr>
<tr>
<td>3</td>
<td>Course Development Approval</td>
<td>Refer to other appropriate education developer</td>
</tr>
<tr>
<td>4</td>
<td>Instructional/Task Analysis</td>
<td>Analyze tasks, processes, knowledge, and attitudes needed to meet goal</td>
</tr>
<tr>
<td>5</td>
<td>Learner Analysis</td>
<td>Analyze learner entry behaviors and prerequisites for learning</td>
</tr>
<tr>
<td>6</td>
<td>Write Educational Objectives</td>
<td>Create specific learning objectives that support the instructional goal</td>
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<tr>
<td>7</td>
<td>Develop Assessment Strategy</td>
<td>Determine how to best evaluate if instructional goal is accomplished</td>
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<tr>
<td>8</td>
<td>Is simulation the best method to meet objectives?</td>
<td>Refer to other appropriate education developer</td>
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<tr>
<td>9</td>
<td>YES</td>
<td>Identify best simulation methodology to meet objectives</td>
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<tr>
<td>9</td>
<td>NO</td>
<td>Refer to other appropriate education developer</td>
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<tr>
<td>10</td>
<td>Develop Instructional Materials</td>
<td>Decide what type of simulation and/or simulator is best for achieving instructional goal</td>
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<tr>
<td>11</td>
<td>Conduct Dry Run or Pilot of Simulation</td>
<td>Develop simulation scenario and supporting material</td>
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<tr>
<td>12</td>
<td>Revise Simulation (if Needed)</td>
<td>Test scenario or education materials prior to implementation</td>
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<tr>
<td>13</td>
<td>Implement Course</td>
<td>Conduct course</td>
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<tr>
<td>14</td>
<td>Evaluate course impact on organization and/or learners</td>
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</table>
A systematic process to collect accurate and thorough information in order to determine the need and/or performance gap.
• Observed deficits
• Sentinel events
• New procedures/equipment/processes/locations
• New knowledge
• Organizational goals/initiatives
• Regulatory and accreditation requirements
• Self-assessment survey
• Change existing educational methodology
Instructional goal is derived from the needs analysis/assessment

What will the learners be able to do after they complete the course? In this case mock code?
Course Prioritization

Approved
- Link to the Strategic Plan
- High priority to institution
- System process testing

Declined
- High cost to develop and maintain course
- Low priority to institution
- Inappropriate educational tool
Identify what is required for the learner to achieve the instructional goal

How many skills are needed for the learners to achieve the instructional goal?

What are some entry behaviors and materials that the learners will need?
Learner profile

Who is your targeted audience?

What entry behaviors are required for this course?

What are the current skills required for this course?

Are there any prerequisites?
Context of the Learning

How will the learning be applied?

In what context does the learning need to take place? (in situ or laboratory)

Will this be a task, complex or full-team immersion simulation?
Basic Components

• Audience – individual or team
• Behavior – observable actions of the learner
• Condition – context of educational intervention
• Degree – behaviors must be measurable

Which is the most complete objective?

1. The learner will recognize a patient in respiratory distress.
2. The learner will perform bag-mask ventilation on a manikin obtaining chest rise.
3. The learner will understand how to perform bag-mask ventilation on a manikin.
4. The learner will perform bag-mask ventilations.
## Cognitive Objective Action Verbs


### Knowledge

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</thead>
<tbody>
<tr>
<td>arrange</td>
<td>order</td>
<td>define</td>
<td>recognize</td>
<td>duplicate</td>
</tr>
<tr>
<td>label</td>
<td>recall</td>
<td>list</td>
<td>repeat</td>
<td>memorize</td>
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<tr>
<td>name</td>
<td>state</td>
<td>relate</td>
<td>reproduce</td>
<td>acquire</td>
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### Comprehension

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<td>describe</td>
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<td>explain</td>
<td>restate</td>
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<td>review</td>
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<td>select</td>
<td>indicate</td>
<td>translate</td>
<td>extrapolate</td>
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<tr>
<td>convert</td>
<td>interpret</td>
<td>formulate</td>
<td>transform</td>
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### Best suited for simulation –

### Application

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<tbody>
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<td>apply</td>
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<td>choose</td>
<td>practice</td>
<td>demonstrate</td>
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<td>schedule</td>
<td>dramatize</td>
<td>sketch</td>
<td>employ</td>
<td>solve</td>
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<td>use</td>
<td>perform</td>
<td>write</td>
<td>prepare</td>
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<tr>
<td>instruct</td>
<td>implement</td>
<td>carry out</td>
<td>sequence</td>
<td>repair</td>
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### Analysis

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<tr>
<td>contrast</td>
<td>question</td>
<td>criticize</td>
<td>Test</td>
<td>detect</td>
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<td>catalog</td>
<td>investigate</td>
<td>determine</td>
<td>contrast</td>
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### Synthesis

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<td>theorize</td>
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### Evaluation

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<td>weigh</td>
<td>determine</td>
<td>justify</td>
<td>rank</td>
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Action Verbs for Psychomotor Objectives

• Imitation — copy, identify, follow, replicate, repeat
• Manipulation — recreate, build, perform, execute, implement
• Precision — demonstrate, practice, complete
• Articulation — improve, develop, formulate, solve
• Naturalization — design, specify, manage, project

Create specific learning objectives that support the instructional goal

Write Educational Objectives

The learner will *calculate* the appropriate dosage of epinephrine for the simulated patient.

The learner will *administer* the epinephrine to the simulated patient via IV push adhering to the CHOP medication administration procedure.

The learner will *evaluate* the effectiveness of the first dose of epinephrine given to the simulated patient.
How will a determination be made if the educational objectives have been met?

Is this assessment strategy at the course level or the individual learner level?

How will you determine a learner’s success?
• Objectives are higher level (application or higher)
• Simulator can provide necessary fidelity to meet objectives
• Learning objectives require some level of experimentation on part of learner
• Learning objectives require a contextual application of knowledge and skills
• Active reflection (debriefing) essential to meeting objectives and reinforcing learning
• Learning objectives include testing systems capabilities
• Group interaction and communication are key objectives

Is simulation the best method to meet objectives?

Yes

No

Refer to other appropriate education developer
More than one may apply

- High technology manikin (such as Sim Baby)
- Low technology manikin (such as Megacode Kid)
- Standardized patient or other actor
- Task trainer (such as IV insertion trainer)
- Hybrid simulation (such as real person combined with task trainer)
- Virtual skills trainer (such as Accutouch)
- Screen-based simulator (such as AHA Online PALS)
- Other
Resources and potential costs

- Do you have access to the simulator or is it routinely in use elsewhere?
- Will the training occur in the simulation lab or on a patient care unit (in-situ)?
- Will you be able to easily transport the simulator if you wish to bring the training to the point of patient care?
- What supplies will be needed to perform the mock code scenario?
- Can you use reuse materials, and if so, how will they be maintained?
- Where will you store the equipment and supplies?
- Who will pay for the disposable supplies?
- How many educators are needed to carry out the training?
- Who will ensure the educators are qualified to do the training?
Instructional Materials...

- Pre-event readings
- Cognitive aids
- Textbooks assignments
- Policy and procedure review
- Video
- Online program
Building the scenario

• Everything relates to the objectives
  • If the scenario includes actions that do not relate to the objectives, you need to ask why?
  • Common pitfalls...

• It goes on paper before it goes into the simulator
  • Use a template for scenario creation
  • Involve content expert
Templates

• Use something that is already out there or build your own...Whatever works best for you
Templates

- Set-up information
  - What simulator is being used
  - Moulage/clothing
  - Setting/location
  - Medical equipment needed (including meds)
  - Paperwork or other documentation
  - X-rays or other studies, labs, other clinical documents
  - Monitor

Develop Instructional Materials

Develop simulation scenario and supporting material
Templates

- Patient Background
  - Name
  - Age, Sex, Height, Weight
  - SAMPLE History
  - Medical Record Number (ID band?)

Develop Instructional Materials

Develop simulation scenario and supporting material
Templates

- Learner Information
  - What information is given to learner at start of scenario?
Templates

- Actor/Confederate Roles
  - Script
  - Expected actions
Templates

- Baseline Physiological Data
  - Vital Signs
  - Respiratory effort
  - Heart/Lung sounds
  - Pulse quality
  - Eyes
  - Responsiveness
  - And everything else ...

Develop Instructional Materials
Develop simulation scenario and supporting material
Templates

- Scenario progression
  - The story of how this case unfolds
  - Often a series of If/Then statements

- Gave Epinephrine
  - Heart rate and BP increase
    - Yes
  - Continues decline in HR and BP
    - No
Templates

• Debriefing Guide
  • Organization
  • Time
  • Key Points (related to objectives)

Develop Instructional Materials

Develop simulation scenario and supporting material
Always test the scenario on the simulator

- Missed physiological parameters
- Unexpected responses
- Missing equipment/supplies
Revise as needed

- Retest

- Epinephrine

- Patient Baseline

- Atropine

- CPR

- Defibrillation
IMPACT

• Did it meet the objectives?
• Did it meet the instructional goal?
• Did it make a difference?
Learning Objectives

APPLYING THE INSTRUCTIONAL DESIGN PROCESS
Course Intake Form

- Developed by educators at CHOP
- Used to process request for simulation based education
- Will help you with planning and logistics for your pediatric code blue education
Group activity

• Break up into 2 groups
• Use a completed course intake form to develop learning objectives appropriate for simulation
Lunch on your own
Enjoy!
Welcome Back

Groups will finish creating learning objectives
It all starts with a plan

SCENARIO DEVELOPMENT
Group Activity

• The next step in the process is for each group to develop a simulation based scenario
• Base it on the learning objectives identified on the course intake form
• Work together using the supplied template to construct the scenario
  – Identify roles
  – Choose appropriate simulator, equipment
Short break

• When we return, the 2 groups will run the scenarios using either Sim Baby or 5 year old Pediatric Hal

• Each scenario to be followed by a debriefing and an evaluation of learning based on the objectives
Participate in your scenario

PUTTING IT INTO ACTION
How did you do?

• Did the team perform as expected?
• Was the team able to identify the learning objectives?
• Did the scenario fit the bill?
How to enhance an existing program

• Assess the impact of the training
• Use feedback and evaluations to make changes to improve the program
• Study patient outcomes for any correlation to team training
• Survey learners to see if any increase in knowledge or confidence following mock codes
Follow-up survey

• Have you responded to any code calls since the mock code simulation?

• If so, do you feel practicing team skills in the simulation had any affect on your performance in the actual code? Explain.

• Would you like another opportunity to participate in a mock code simulation?
References


• Dave, R. H., 1970, Developing and Writing Behavioral Objectives (R J Armstrong, ed.). Educational Innovators Press, Tucson, AZ.


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