

Pediatric Mock Code Toolkit

Second Edition
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This second edition has been enhanced with additional resources and templates.

Introduction

In-hospital pediatric codes have dismal survival rates. Overall, pediatric patients only have a 27% survival rate to discharge following an in-hospital cardiopulmonary arrest (CPA) and 34% of those who do survive will have neurological deficits post arrest (1). Ten to sixteen percent of all newborns require some type of resuscitation assistance at birth (2). The initial actions of the staff that arrive first to the site of a pediatric patient in CPA or other crisis events are critical. Delays in providing the basic ABCs (airway, breathing, circulation) to pediatric patients lead to poorer outcomes*. If the pediatric CPA or crisis event occurs on a non-critical care unit in the hospital, the initial actions of the staff is even more crucial due to the time delay in the activation and arrival of a pediatric code team. One study found that the staff nurses in non-critical care units focused more on preparing the room for the code team instead of initiating basic life support (BLS) care and the ABCs for the pediatric patient (3). Since CPA in children occurs more infrequently than in adults, medical professionals may have limited contact or experience with unstable pediatric patients. In fact, at one tertiary care teaching hospital, seventy four percent of graduating pediatricians did not lead any resuscitation events during their residency (4).

CPA events elicit anxiety and fear in many health care professionals. Fear of not knowing what to do, where the equipment is and how to use the equipment were listed as the most common fears (5). Breakdowns in communication frequently occur in both mock codes and real resuscitation efforts. These difficulties cause delays and errors in the delivery of life saving interventions. Due to the complexity of calculating pediatric medication dosages, medication errors are common.

Simulation of pediatric mock codes and other crisis scenarios has demonstrated that there are significant delays in the ABC steps of resuscitation including application of oxygen, initiation of cardiopulmonary resuscitation (CPR) and defibrillation (3). These delays are detrimental to pediatric survival rates following in-hospital CPA. Common required certifications for pediatric health care providers include: basic life support (BLS), pediatric advanced life support (PALS), and neonatal resuscitation program (NRP). Typically these programs require recertification every two years. However, retention of the information from these classes has been shown to deteriorate after only four months. It has been observed that both physicians and nurses did not perform CPR correctly as soon as four months following a CPR class (2, 6). The literature has shown that lectures and one-time skills stations such as CPR and PALS classes are inadequate to properly prepare clinicians to provide optimal resuscitation efforts (7). Because of this, alternative approaches to training are necessary to maximize patient safety and positive outcomes.

Simulation is defined as a “set of techniques to replace or amplify real experiences with planned immersive experiences to evoke or replicate substantial aspects of the real world in an interactive fashion” (7). Using pediatric mock code simulation for training has been shown to decrease fears and anxiety related to CPA, improve communication between physician and nurses, and increase the knowledge and familiarity with pediatric resuscitation guidelines which translates directly to improved

*The American Heart Association (AHA) 2010 CPR guidelines for pediatric patients recommends following the C-A-B (circulation, airway, breathing) so chest compressions are started sooner. This is for CPR only. The assessment of the pediatric patient who does not require CPR still follows the A-B-C (airway, breathing, circulation) sequence.

performance of resuscitation skills (3, 5). Simulation-based mock codes have been found to correlate with improved neonatal and pediatric CPA survival rates (8). One study demonstrated a direct correlation between survival rates (increased fifty percent) and the increased number of mock code simulations performed (8). Simulation training exercises such as mock codes incorporate characteristics common to the ways adults learn: a more hands on approach to learning and being able to apply what is learned into real life (6). Accommodating the adult learners' needs increases the effectiveness of the educational experience which benefits patients through improved quality of care and safety (6). Therefore, it is recommended that simulation exercises including pediatric mock codes be incorporated into the training and education schedule for all facilities.

Typically pediatric mock codes are performed in the hospital setting. However, pre-hospital settings, clinics, and physician offices can also benefit from implementing pediatric mock codes into their training and education programs. The information in this document can be applied to any clinical setting for any health care professionals.

Objectives of Pediatric Mock Codes

- Improve confidence, comfort level, resuscitation skills, and knowledge of all staff by increasing exposure to pediatric resuscitation guidelines, equipment, and documentation techniques equal to their level of training and responsibility in a controlled, non-threatening environment.
- Decrease medication errors.
- Test the current system to find problems that may not be apparent without mock codes.
- Provide all staff with updates on current treatment recommendations and best practice standards on a more frequent basis versus the 2-4 year renewal of mandatory courses (e.g., PALS, ENPC, NRP, BLS).
- Facilitate team building by focusing on better communication and work relationships which aid in avoiding errors and decreasing delays in the delivery of care during resuscitation efforts.
- Develop the knowledge base and core clinical skills that will assist staff in caring for critically ill pediatric patients, especially in times of surge capacity and mass casualty incidents.

Aspects of a Pediatric Mock Code Training Program

Important components to consider in developing or enhancing a mock code training program include: who should be involved in the training, the frequency that it should occur, equipment necessary for the simulation exercises, the types of training exercises that exist, the length of time the exercise should run, and the importance of the debriefing or discussion afterward.

Who should be involved?

A multidisciplinary approach to pediatric mock codes is essential. All those involved in an actual CPA event should be included in pediatric mock code training. This provides opportunities to improve team dynamics and communication, and enhance the ability to work as a team in times of real emergencies. The Joint Commission identified barriers to effective communication and teamwork such as hierarchy, intimidation, failure to function as a team as contributing factors to

neonatal deaths during resuscitation efforts (9). Working on these issues in a non-emergent, non-threatening mock code environment can lead to adjustments without jeopardizing patient safety.

At every facility, the make-up of a code team may vary depending on size of the facility, available resources and staffing. The minimal requirements for a pediatric code team are: a PICU or Emergency Department (ED) physician, an ICU or ED RN (preferably PICU if available), other nursing staff, the nursing supervisor and a respiratory therapist. Below are other possible members of pediatric code teams: pediatric hospitalists, advanced practice providers, pharmacist, residents, anesthesiologist, patient care technicians, other nursing staff, chaplain, language interpreters, social workers, security, radiologist, and the nursing manager from the unit where the code is occurring. Regardless of the make-up of the code team in each facility, all those involved in actual pediatric codes should be involved in the mock code training. A moderator or facilitator is needed to run the mock code and if possible, an observer would also be beneficial to assist in the evaluation process.

How often should training occur?

There must be a balance between the need to train staff more frequently than the typical annual competency trainings and the limitations of time/resources that exist in every facility. Ideally, some type of simulation training should be conducted monthly. This can be a mix of reviewing specific components of the mock code such as equipment and medications commonly used in codes and full scale mock code events. Performing full mock code events is recommended quarterly since it has been shown that knowledge deterioration related to the resuscitation process begins at four months (2, 7). Mock codes need to occur on all shifts to ensure participation by all staff. The mock code training program schedule should include both scheduled and spontaneous trainings to mimic reality.

What equipment should be included?

Everything that would be used in a real pediatric code is necessary to have in a mock code. If resources allow for it, establish an 'education only' mock crash cart which is identical to crash carts used throughout the facility that can be opened and used during the mock codes. Expired equipment and medications can be stocked in these 'education only' carts to simulate a more realistic experience. If a dedicated 'education only' mock code cart is not feasible, utilize a real code cart to help staff familiarize themselves with where items are kept. Expired medication and supplies could be used as supplements during the mock code to allow for actual "hands-on" experience.

Having the mock code take place in an unoccupied patient room will help familiarize staff with the room layout and equipment set up (2). Vary the location of the mock codes to include areas in which codes occur infrequently (such as the cafeteria, radiology, lobby, etc.) in order to further enrich the learning experience.

Manikins are available in different sizes with a variety of features. Using the most technologically advanced manikin available (e.g., SimMan® or SimBaby™) provides access to advanced capabilities. However, paper cut-outs or dolls can be just as effective in reaching the objectives of the mock code if scenario cues and the environment surrounding the mock code are adequate

(6). Those hospitals with limited resources may be able to establish partnerships with nursing schools, fire departments, larger hospitals, certified training centers, and other organizations in the community that may have access to a variety of types of manikins and other resources.

What are the types of mock codes training exercises?

Full mock codes are recommended whenever possible. Table top drills can be helpful if equipment to run a mock code is not available, and for rare scenarios that may be difficult to simulate. Computerized self-training modules are available. Another effective training method is to break down components of resuscitation efforts into monthly educational sessions (which can be done as a group or independently), ultimately building up to a full-scale mock code.

How long should mock codes take?

Mock codes should be brief. It has been shown that providers are more likely to get the most out of training exercises when they are short, frequent, and intense lessons with instruction and practice (6). Twenty minute sessions that include the actual event and debriefing are ideal (2). These short timeframes are also more conducive to conducting mock codes on the unit during work time.

What should be in the discussion/debriefing session?

Each mock code should include a facilitator whose role is to conduct a pre-briefing session, moderate the mock code, and lead the debriefing session. The pre-brief is conducted prior to the start of the mock code, and provides participants with an overview of simulation, sets expectations, defines limitations of the environment, and outlines the condition of the mock “patient.” During the mock code, the facilitator provides clinical updates and patient response to the team’s actions and procedures.

Immediately after conducting a mock code, the facilitator leads a debriefing session. The goal of debriefing is to allow the participants to integrate behavior change by discussion and self-realization. Debriefing includes adult learning concepts and follows a three phase process: description, analysis, and application/generalization of learning (10). The description phase involves a discussion of individual and team feelings, and developing a group understanding of what the mock code was about. The analysis phase involves a discussion by the participants of what was effective or ineffective on an individual and group level. The application/generalization phase completes the process by discussing the lessons learned in the mock code and how these will change both individual and group practice/dynamics. If possible, record a video of the mock code session and replay it during the debriefing session. This has been shown to be valuable for observing and critically analyzing the team’s performance by both the participants themselves and the moderators of the exercise (11). See a companion PowerPoint presentation entitled, *“Create Your Pediatric Mock Code Program”* on the [Illinois EMSC Web site](#).

The facilitator also provides performance feedback (if this has not been addressed during the debriefing). This feedback, especially related to the performance of the basic ABCs, is essential to the participants’ learning experiences (6). Reviewing positive aspects of the performance as well as identifying areas of improvement is important. Allowing participants to ask questions about events that occurred during the mock code is another aspect vital to the learning experience.

Another learning technique is “Repetitive Pediatric Simulation” which allows participants to refine their resuscitation behaviors and apply newly acquired knowledge which then leads to a more solid learning experience (4). Immediately following the debriefing session, the participants would run through the mock code again giving them the opportunity to reinforce what was done appropriately, as well as address any performance, communication, or team errors.

How should the process be evaluated?

Survey participants and moderators

- Assess how effective the participants feel the mock code training was in meeting the objectives and their educational needs. There are many varieties of surveys and evaluation forms that are available or can be designed to accomplish this task. Utilize information from both the survey and the evaluation tool from the mock code to monitor quality improvement and identify educational needs. See Appendix C for examples.

Evaluation tool

- Checklists are important tools for observers and facilitators to utilize during pediatric mock code training exercises. They provide a record keeping method to document skill assessment during the mock code. Information from a checklist provides an opportunity to give concrete feedback to the participants to aid in their learning experience; provides guidance and recommendations for any educational needs that may be necessary to address if deficiencies in the standards of care are discovered; provides an opportunity to identify processes that need improvement; and can serve as both patient safety and quality improvement indicators. There are many varieties of tools that exist and can be adapted to fit the goals and objectives of each individual facility. Tools can range from a simple list of objectives and skills that are then evaluated by an “achieve/did not achieve” format to more complex scoring methods. For example, the Lucile Packard Children’s Hospital *Mock Code Score Report* uses a point system based on the time to complete each intervention (12). One advantage of using a more complex scoring tool is that it provides a more concrete and detailed way to compare and evaluate the interventions completed during the mock code, as well as provides a tool for quality improvement to evaluate the effectiveness of the mock code training program (13). For example, knowing that it took staff three minutes to provide necessary oxygen during the resuscitation effort gives a greater understanding of potential learning needs. As a result, this can identify, in more detail, educational issues that need to be addressed. One disadvantage of using a more complex scoring system is that the mock code may be interpreted as a test instead of a non-threatening learning experience. Also, an additional person would be needed to ‘keep score’ during the pediatric mock code. See Appendix B for examples of different types of evaluation tools.
- Mock code results should always be kept anonymous to preserve the safety of the practice environment and be reported in the aggregate.

Implementing a Mock Code Training Program

Suggested steps to implementing a mock code training program

- Gain administrative support. Having administrative support is crucial for a successful training program. Leadership can assist with budget/resource needs, participation, staff compliance and quality improvement within the pediatric mock code program.
- Form a planning committee. A multidisciplinary group should be convened to provide guidance and direction in the development of the pediatric mock code program. Minimally include nursing, physician, and education representatives. Other key representatives to consider on the planning committee are respiratory therapy and pharmacy. At the very least, these additional representatives should be consulted during the development process. Also involve advanced practice providers if they are utilized. Forming a separate planning committee specific to pediatric mock codes may not be feasible at some hospitals due to staffing concerns and time commitments. Therefore, utilizing an existing committee such as a Hospital Code Blue Committee or Quality Improvement Committee is an option, as long as the key players, especially from administration, are involved and there is a pediatric focus.
- Perform a needs assessment. A needs assessment can be helpful in identifying the following key information: the comfort level of staff with caring for severely ill and injured children; staff experience with pediatric codes; suggested topics for mock code scenarios; and the preferred time to hold a pediatric mock code. The needs assessment should be conducted on a regular basis to assist with evaluating the effectiveness of the pediatric mock code program, and identifying opportunities for improvement. See Appendix E for a sample pediatric mock code needs assessment.
- Update staff. During physician and nursing staff meetings, provide progress updates on the program planning, expectations of the participants, and benefits of the program. These meeting updates will increase awareness and garner their support and interest in participating in mock codes. As mock codes are conducted, continue to update staff in order to educate those who were not able to participate regarding lessons learned during the mock codes.
- Develop mock code scenarios. See Appendix D for sample scenarios and Appendix E for scenario worksheets.
- Schedule date/times for mock codes. If performing a scheduled mock code, inform all involved disciplines of the date/time. If performing a spontaneous mock code, restrict schedule information to only the facilitators and other key individuals. When conducting a series of educational training sessions that focus on code components, map out the schedule on a month-by-month basis. Also schedule the date/time in which the full-scale mock code will be conducted. This helps staff to build on their core clinical skills and ready themselves for the all-inclusive mock code.

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- Complete pre-mock code preparations. Assign who will be responsible for setting up the area and ensuring all equipment is functioning and available. In addition to checking equipment, ensure one of the committee members reviews the dosage chart aids for accuracy and consistency with current standards. It is also beneficial to run a pilot mock code with those on the planning committee to identify any issues/challenges that exist before bringing the process to the staff. Also, assign a person who will be responsible for restocking the code cart after the mock code is completed. See Appendix E for sample mock code planning tools.
 - Ensure all members of the multidisciplinary team respond to the mock code. Encourage nurse managers to free up staff as much as possible and encourage physicians, advanced practice providers, and other disciplines to attend.
 - Run the mock code as realistically as possible so staff members: respond to the code call; perform interventions on the manikin as required by the scenario; participate in the post-code debriefing session; and complete a survey and evaluation form. Ensure staff rotates into all possible roles that they may be responsible for during a real pediatric event so they do not always perform the same role that they are most comfortable with.
 - Have the committee analyze the event and make adjustments as needed for future training exercises.

Appendix E contains forms that can assist in organizing the steps needed to develop a pediatric mock code program, including a Pediatric Mock Code Program Planner, a Pediatric Mock Code Resource Checklist, and a Pediatric Mock Code Scenario Worksheet.

Barriers and solutions to the implementation process

- **Barrier:** Funding and staffing issues, especially in smaller hospitals (i.e., Critical Access Hospitals) can influence whether or not mock codes are part of the education curriculum. **Solution:** Schedule mock codes during shift hours to avoid overtime. Compliance from nurses may also increase if done during scheduled work hours instead of having to come in on a day off. Utilize available community resources for training supplies such as manikins (i.e., local fire departments, nursing schools, AHA-certified training centers, other hospitals in the area). Break down the components of mock codes into monthly self-learning training exercises that staff can do independently. These components should be specific to the roles each discipline plays during the code process. Also, by limiting the pediatric mock code to the recommended twenty minutes, it is reasonable to schedule it without the need for increased staffing.
- **Barrier:** Perception that pediatric mock codes are not a priority due to low volume of pediatric patients seen at a facility. **Solution:** Studies on neonatal resuscitation have shown that there is a higher infant mortality rate in hospitals that have a low volume of deliveries compared to hospitals with a high volume of deliveries (14). Contributing factors for this disparity in outcomes are

likely related to staffing issues and a lack of preparedness (14). Therefore, pediatric mock codes should be a priority in all facilities, regardless of the volume of pediatric patients seen at the facility. Even if a facility does not have inpatient pediatric services, they may likely have outpatient services that treat children. In addition, children may be visitors and have the need for emergent care.

- **Barrier:** There is not a strong and supportive physician-nurse relationship at the facility.
Solution: Having administrative support for a mock code training program is key and can increase compliance. Performing mock codes has been shown to improve communication and teamwork, which translates directly into improved patient care (2).
- **Barrier:** There is resistance to change and the belief that experienced health care providers have nothing further to learn from participating in mock codes.
Solution: It has been demonstrated that even the most experienced clinicians neglect to perform essential resuscitation interventions. Therefore, all clinicians, regardless of how frequently they are involved in real life resuscitations, can benefit from mock codes (6). Encourage participation by all providers in mock codes and provide detailed suggestions after the event on opportunities for improvement. Sharing current literature detailing alarming deficits that occur during a simulation of a pediatric code with even the most experienced clinicians, and recommendations from professional organizations related to the need for mock codes may also help.
- **Barrier:** Latent conditions, such as physical infrastructure, adequacy of training, organizational culture (including managerial and employee beliefs), and hidden workplace factors can present barriers to communication and teamwork. These barriers have negative and potentially detrimental effects on resuscitation efforts (15).
Solution: Educate administration on how often systems errors occur during resuscitation efforts and how simulation training through mock codes can be effective. The Agency for Healthcare Research and Quality (AHRQ) published a guide called “*Will It Work Here? A Decisionmaker’s Guide to Adopting Innovations*” that may be a useful reference in adopting new programs or making changes to existing programs (16).

Scenarios

What should be included and emphasized in scenarios?

Scenarios should be brief, realistic, and the details of the scenario story line planned ahead of time. Scenarios should address all ages of the pediatric population. Each individual hospital, clinic, or agency should follow the age range they have defined for pediatrics (Illinois EMSC defines the pediatric patient as age 0 to 15 years). Vary and rotate scenarios so they do not become predictable to the staff. Lastly, scenarios should be appropriate for the clinical area the mock code is occurring in (6).

Incorporate three aspects of learning into every scenario: cognitive (knowledge), behavioral (how to react to situations), and psychomotor (skills, ability) (2). Difficult and possibly controversial

issues that may take place during actual resuscitation efforts within each unit or facility should be addressed in the scenarios. Examples include: cultural differences and family presence during a code.

Family presence during resuscitation can be successfully incorporated into mock code scenarios. Studies have shown that parents believe their presence during resuscitation efforts is comforting to their child. In addition, parental presence can help the parent cope with the loss of their child (17). If a hospital has a policy in place that allows parents to be present during resuscitation efforts, ensure that this is incorporated into the pediatric mock code scenarios by assigning a staff member to act as a parent during the exercise.

Consider adding variety to the scenarios by conducting the mock codes outside the patient unit (e.g., in the cafeteria, radiology department or a stairwell to simulate possible places in the facility where real life events could occur). This allows for learning opportunities such as where to access and how to transport equipment. In order to make the situation surrounding the mock code more realistic, the facilitator should limit his/her interaction with the participants and only provide key clinical information as needed (3).

Each facility should base their scenario selection on results from needs assessment surveys as well as their low volume/high risk pediatric population. The following is a list of sample topics for pediatric mock code scenarios. See Appendix D for detailed scenario examples.

- Altered Level of Consciousness (seizure, hypoglycemia, hypothermia)
- Bradycardia with hypotension
- Break down of code components
- Burns
- Cardiopulmonary arrest
- Chemical, Biological, Radiological, Nuclear and Explosive (CBRNE) agents
- Disaster (examples can be found in *The Disaster Preparedness Exercises Addressing the Pediatric Patient* (18))
- Neonatal resuscitation
- Seizure
- Shock (e.g., hypovolemic, septic, and circulatory)
- Respiratory distress/failure requiring airway management
- Trauma

What skills should be addressed?

Assessing for and performing the ABCs should be the highest priority. Other skills that also need to be addressed include, but are not limited to: communication, team leadership; IV/IO placement and fluid management; the correct type, dosage, and the actual drawing up of medications; use of pediatric weight-based emergency reference tools (e.g., Broselow™ tape); assessment of glucose levels and implementing proper treatment protocols; ECG interpretation; and reassessment skills.

Practicing documentation on the same code recorder sheet that is used throughout the facility is recommended. The debriefing session should include a review of the code as well as code-related documentation. Effective debriefing provides staff with feedback, identifying both positive observation, as well as areas for improvement.

Communication and interactions between all members of the team is a component to incorporate into all pediatric mock codes. Breakdowns in communication are known to cause delays and errors in the delivery of life saving interventions. One way to improve communication is to practice repeating back verbal orders and clarifying incomplete orders during the mock code similar to what would occur in an actual resuscitation event.

Role identification is a key component to both effective communication and efficient teamwork, and should be clearly communicated at the outset of a mock code. Examples of roles include: physician code team leader, code cart RN, recording RN, bedside RN, and other support personnel. An observer should be assigned to each mock code that is not directly participating in the code, but rather captures key information about flow, teamwork, and group dynamics. A post-code role that should be identified by participants during a mock code is who is responsible for restocking the code cart. Staff should rotate through all these possible roles to increase their comfort level and ensure a comprehensive knowledge base during a real event.

One final skill area to consider addressing in the scenarios is disaster preparedness. In 2007, the American Academy of Pediatrics recommended that disaster preparedness scenarios be included in pediatric mock codes (19, 20). Literature supports frequent practice of the ABCs to improve the retention of these critical skills. Likewise, by including aspects of pediatric emergency/disaster preparedness in mock code scenarios, staff can become better prepared to care for multiple pediatric patients during a mass casualty incident.

Conclusion

The resources in this toolkit, as well as others available on the [Illinois EMSC Web site](#) and through other professional organizations can assist in the efforts to launch a program. Taking the steps to develop a pediatric mock code program is commendable, and will have long-lasting effects. These include improved performance, increased confidence, and better outcomes when faced with actual pediatric code situations.

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Appendix B: Sample Mock Code Evaluation Forms

B-1 (Sample Form)

Mock Code Evaluation Form

	Yes	No	Comments
Clinical			
Airway assessed initially			
Breathing assessed			
Circulation assessed			
Initial interventions			
Protocol followed for the chosen "case"			
Patient reassessed frequently			
Secondary Survey			
Organization			
All supplies requested were available			
Supplies were found quickly when requested			
Broselow tape used			
Documentation form available and/or used			
Personnel knew how to use equipment properly (O ₂ tanks, etc.)			
Protocols available and/or used			
Communication			
Leader communicated effectively			
Events recorded accurately			
Roles were assigned			
Office staff reported to EMS			
EMS communicated needs/plans with office staff			
Other comments			

This form was used with the permission of the NC DHHS, DHSR, OEMS, EMSC program.

B-2 (Sample Form)

Pediatric Mock Code Template

Learning Objective	Learning Strategy	Facilitator	Learning Evaluation/Initials
1. Participants will describe how to activate the pediatric code team	Lecture Discussion		Q & A Initials _____
2. Participants identify and explain their roles and responsibilities during a pediatric code	Lecture Discussion Review of Policy & Procedure handouts		Q & A Initials _____
3. Participants will locate pediatric code cart and equipment and demonstrate proper use of equipment (i.e. defibrillator, BVM, length based dosing tool like Broselow™)	Demonstration Lecture Discussion Video (if applicable)		Q & A Return demonstration Initials _____
4. Participants will demonstrate the correct CPR sequence and rates	Demonstration Lecture Discussion Video (if applicable) Biofeedback device (if applicable)		Q & A Return demonstration Simulation Initials _____
5. Participate in mock code scenario following criteria checklist	Simulation		Return demonstration Simulation Initials _____

Pediatric Mock Code Checklist Criteria

	YES	NO
1. Recognize the cardiopulmonary arrest	_____	_____
2. Activates the pediatric code team	_____	_____
3. CPR is initiated on a hard surface using C-A-B sequence	_____	_____
4. Turns on the AED(monitor) and attaches the pads (electrodes)	_____	_____
5. Proper function/energy dose is used based on weight/scenario	_____	_____
6. Clears patient and others prior to delivering shock	_____	_____
7. Delivers shock	_____	_____
8. CPR resumes at a compression: breath ratio of 30:2 for 1 responder or 15:2 for 2 responder	_____	_____
9. Opens airway and demonstrate correct use of bag-mask	_____	_____
10. After 2 minutes (5 cycles) of CPR, reanalyze rhythm	_____	_____
11. Selects/calculates appropriate drugs/IV fluid bolus dosages and other appropriate interventions based on length based dosing tool (i.e. Broselow™) if applicable	_____	_____
12. Confirms proper placement of ETT if needed	_____	_____
13. Communicates clearly during scenario	_____	_____

Participant: _____

Evaluator: _____

Date: _____

Adapted by Illinois EMSC

B-3 (Sample Form)

<i>Shock-Hypovolemia</i> Task Group	BASICS Task			
<i>History</i>	<u>Elicits essential information about patient and situation including:</u>			
	Age and weight	Y	N	
	Signs and symptoms	Y	N	
	Allergies	Y	N	
	Medications	Y	N	
	Past medical history	Y	N	
	Last meal	Y	N	
<i>Physical</i>	<u>Performs initial general assessment as they walk in the room including:</u>			
	Appearance (MS, interactions)	Y	N	
	Breathing (effort, rate)	Y	N	
	Circulation (skin color)	Y	N	
	Performs Primary assessment including:			
	Airway (patency) < 2min	Y	N	done late
	Breathing (rate, pulse ox, auscultation) < 2min	Y	N	done late
	Circulation (HR, BP, pulses, CR)	Y	N	
	Disability (AVPU neuro exam)	Y	N	
	Exposure (temperature, rashes)	Y	N	
Performs/directs head to toe physical exam as part of Secondary assessment	Y	N		
<i>Monitors</i>	Places patient on cardiac monitor <2min	Y	N	
	Checks pulse-ox <2min	Y	N	
<i>Access</i>	Attempts / directs team member to attempt IV access <2min	Y	N	done late
	Attempts access / directs team member to attempt IO access if IV access is unattainable	Y	N	N/A
<i>Labs</i>	Orders appropriate laboratory testing if indicated	Y	N	N/A
<i>Professionalism</i>	Has professional attitude towards patient/family	Y	N	
	Has professional attitude team members	Y	N	
<i>Leadership</i>	Team leader is designated <1min	Y	N	
	Team leader assigns roles <2 min	Y	N	
	Closed-loop communication	Y	N	
	Reevaluation and summarizing	Y	N	
	Clear messages	Y	N	
	Knowledge sharing	Y	N	

Continued:

Task Group	Airway and Breathing Task			
<i>Assessment</i>	Recognize/Verbalize respiratory distress	Y	N	
<i>Basic Intervention</i>	Performs general airway maneuvers-positions patient	Y	N	N/A
	Provides any oxygen support	Y	N	
	Provides optimal level of oxygen	Y	N	
Task Group	Circulation and Arrhythmias Task			
<i>Assessment</i>	Assesses blood pressure <1min	Y	N	done late
	Palpate central pulses <2min	Y	N	done late
	Recognize/Verbalize compensated shock	Y	N	
<i>Basic Intervention</i>	Directs administration of IV fluids:	Y	N	
	type: Isotonic	Y	N	
	amount: 20-30cc/kg	Y	N	
	rate: wide open bolus (or over 5-10 minutes)	Y	N	
	Directs reassessment	Y	N	
Task Group	Other Task			
	Checks accucheck	Y	N	
	Directs administration of glucose	Y	N	
	Directs appropriate dose of glucose (0.5-1 gm/kg, 1-2 cc/kg D50 or 2-4 cc/kg D25)			
	Reassesses patient status after glucose administration	Y	N	
	Reassesses glucose level	Y	N	
Task group	Task Other			
	Identify therapeutic endpoint	Y	N	with prompting
	Identify appropriate patient disposition	Y	N	with prompting

Used with permission from developers Nandini Calamur, MD and Trent Reed, DO from Loyola University Health System.

B-4 (Sample Form)

Sample Pediatric Mock Code Observer Form

Date _____ Time: _____ Scenario Topic _____

Common Pediatric Mock Code Elements		Met Yes/No/NA		Time observed	Comments
Primary survey completed		Yes	No		
Airway assessed		Yes	No		
Breathing assessed		Yes	No		
Circulation assessed		Yes	No		
Recognized life threat		Yes	No		
Code Button/call system used (if applicable)		Yes	No	NA	
Overhead Code Blue heard (if applicable)		Yes	No	NA	
Code Team Arrives (if applicable)		Yes	No	NA	
MD arrival		Yes	No	NA	
RN arrival		Yes	No	NA	
RT arrival		Yes	No	NA	
Pharmacist arrival		Yes	No	NA	
Other:		Yes	No	NA	
Weight in kilograms acknowledged		Yes	No		
Airway secured		Yes	No		
Breathing supported		Yes	No		
Circulation assisted		Yes	No		
Monitor applied		Yes	No		
IV initiated		Yes	No		
Followed a logical approach		Yes	No		
Reassessed after every intervention		Yes	No		
Patient safety maintained		Yes	No		
Specific Challenge	Objective	Met		Comments	
		Yes	No		
		Yes	No		
		Yes	No		

Developed by Illinois EMSC

Appendix C: Sample Mock Code Survey Forms

C-1 (Sample Form)

Sample Evaluation Survey: Newborn Mock Codes

Department	Job Description
<input type="checkbox"/> OB	<input type="checkbox"/> Attending
<input type="checkbox"/> Family Practice	<input type="checkbox"/> Resident
<input type="checkbox"/> Peds	<input type="checkbox"/> Nurse Practitioner
<input type="checkbox"/> Midwifery	<input type="checkbox"/> Midwife
<input type="checkbox"/> Nursing	<input type="checkbox"/> Nurse
	<input type="checkbox"/> Tech
	<input type="checkbox"/> Student

(1) Did you learn something you did not previously know?

No Yes (please describe)

(2) How would you best describe the learning environment that was created?

(a) Positive, encouraging

(b) Neutral

(c) Negative, threatening

Comments:

(3) General Comments:

Used with permission from developer T. G. Blakely

C-2 (Sample Form)

Please complete this survey and return to the instructor

1. Please subjectively evaluate the following parts of the course:

	Poor		fair		average		good		superb	
Overall	1	2	3	4	5	6	7	8	9	10
EMS role	1	2	3	4	5	6	7	8	9	10
Instructors	1	2	3	4	5	6	7	8	9	10
Value to office	1	2	3	4	5	6	7	8	9	10

2. What parts of the course did you find particularly valuable for your practice?

3. What parts of the course were not particularly valuable for your practice?

4. What changes in the course could be made that would make it more useful to your practice?

5. Was the time of the course at your convenience?

6. Was the time allotted adequate for the course?

This form modified after being given permission from the NC DHHS, DHSR, OEMS, EMSC program.

C-3 (Sample Form)

Sample Pediatric Mock Code Evaluation Form

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

Continued:

PRESENTERS

Rate the teaching effectiveness/expertise of **EACH** presenter:

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

Excellent = 4

Good = 3

Fair = 2

Poor = 1

Presenter				
	4	3	2	1

Presenter				
	4	3	2	1

What part of this program did you find particularly valuable?	
--	--

What part of this program should be improved for future pediatric mock codes?	
--	--

Comment on how participating today will help improve your patient care.	
--	--

Please comment on any system/process concerns you have after participating in this mock code.	
--	--

Adapted by Illinois EMSC

Appendix D: Sample Scenarios

There are a variety of scenarios that can be used in pediatric mock codes. Examples of scenario subjects include trauma, respiratory distress/failure requiring airway management, shock (e.g., hypovolemic, septic, and/or circulatory), full CPA, newborn resuscitation, bradycardia with hypotension, and altered level of consciousness from seizure, hypoglycemia, or hypothermia. Illinois EMSC has created sample scenarios that can be used during pediatric mock code trainings and are included in this Appendix. First, there is a list of examples for educational sessions that break down the code components into self-learning modules that can be done monthly and be used to build up to the quarterly mock code scenarios. Next, four examples of scenarios with the general outline of the event, the moderator's information, and skills that will be reviewed during the mock code are provided.

D-1: Breakdown of Code Components

Broselow™ tape usage

Set out a Broselow™ tape with a manikin, cut out, or doll and allow staff to practice setting it up next to the manikin and familiarizing themselves with the information provided on the tape.

Common medications used in pediatric resuscitation

Provide established reference cards that have the dosages of common medications used in pediatric resuscitation. Include expired medications in the education sessions so staff can become more familiar with calculating, drawing up and administering the medications. A manikin (if available) with a Broselow™ Tape could be added to this Code Component to allow staff to practice obtaining dosages and preparing the medication based on the tape.

Airway station

Set out pediatric airway equipment, including bag-valve-mask (BVM), nasal pharyngeal airways (NPAs), oral pharyngeal airways (OPAs), capnometry, capnography (if available), suction equipment, other oxygen administering devices like non-rebreather mask (NRB) or nasal canulas, endotracheal (ET) tubes, and tracheostomy tubes (for Children with Special Health Care Needs (CSHCN) who may come in with a tracheostomy already in place). Include a manikin if available so staff can practice insertion of airways and suction of ET tubes while in place. Be sure to include all sizes of pediatric airway equipment.

OB/Newborn Supplies

Set out all OB/Newborn supplies including the birth kit, resuscitation supplies, bulb and wall suction, infant warmers and/or isolettes, documentation forms that are specific to deliveries and patient id/tracking bands that are specific to the facility.

Pediatric Crash Cart/Broselow™ Cart

Have cart available for staff to look through and identify the color system or organizational system that exists in the facility. Allowing staff to look through the drawers to identify what is in the cart will assist with finding the supplies during an emergent situation.

IV/IO in Children

Have intraosseous (IO) and intravenous (IV) start supplies available to staff along with a manikin, training bone or other device to practice the insertion and use of both access types.

Trauma Supplies

Set out infrequently used trauma supplies such as chest tubes so staff can review set up and insertion procedures as well as care for the patient after tube is inserted.

JumpSTART Pediatric MCI Triage Tool®

Give staff a group of brief patient scenarios that relays just enough information to perform a rapid triage assessment. Have staff triage patients using the JumpSTART Pediatric MCI Triage Tool®. Provide the tool, instructions on how to use it, as well as feedback based on the triage decisions made for each patient.

Scavenger Hunt

Design a scavenger hunt for staff to identify where both resuscitation equipment and other less frequently used pediatric equipment is in the unit and/or hospital.

D-2: Hypovolemic Shock

A 6-month-old female is brought to the Emergency Department (ED) by her mother who states the infant has been vomiting and having diarrhea for two days. Mother is unsure when the last wet diaper was and states the patient vomits all oral intake. The patient was born full term, has no previous medical history, is up to date with immunizations, has allergy to penicillin and is on no medications at home. The infant is wrapped up in several blankets and appears to be sleeping.

General code outline:

1. Infant received by triage nurse in ED and is to be identified as a severely ill child and brought directly into treatment room, notifying physician and other nurses. Staff will expose the patient and assess airway, breathing, circulation (ABCs). More information will be gathered from mother.
2. Patient has poor skin tone and the skin is dry and cool to touch. Capillary refill is delayed at 4-5 seconds. Patient is lethargic and arouses to painful stimuli. Patient is not crying tears and mucous membranes are dry. Patient is tachycardic with a heart rate of 180s and tachypneic with respiration rate of 40-50s. Pulses are thready distally but palpable centrally. Patient is somewhat mottled. Resuscitation supplies should be gathered. Supplemental oxygen will be

- applied. Broselow™ tape will be utilized and patient is to be placed on monitoring equipment. Glucose reading is obtained and is 85.
3. Staff will reassess after application of oxygen and find that the patient's heart rate in the 120s, respiratory rate in the 30s and the patient is having decreased level of consciousness. Patient's extremities are cool, mottled with delayed capillary refill. Staff will attempt peripheral intravenous (IV) access. This will be unsuccessful and an intraosseus (IO) line will be necessary.
 4. During IO placement, the patient becomes bradycardic (heart rate drops to 60) and begins having apneic episodes. Pulses are weak centrally and patient has peripheral cyanosis.
 5. Staff will provide assisted ventilations with bag-valve mask with 100% O₂ at a rate of 20 breaths per minute and assess for good rise and fall of chest during ventilation. Circulation is reassessed and bradycardia responds to bag/mask ventilation and patient becomes tachycardic again with a heart rate in 180s. Patient is not breathing spontaneously so staff continues to assist with ventilation. Cyanosis is resolving but perfusion is poor.
 6. While ventilation of patient continues, IO placement is completed and IVF bolus of isotonic crystalloid fluids (0.9 Normal Saline) is started at 20mL/kg rapidly.
 7. Patient is reassessed after first IVF bolus. Infant is having spontaneous respirations and her heart rate is 160. Capillary refill continues to be delayed and extremities are pale and cool. Supplemental O₂ of 15L NRB is placed.
 8. Mild improvement is seen after the first IVF bolus. Two more IVF bolus should be initiated. Temperature is taken on patient and is found to be 95.0 degree Fahrenheit (35 degree Celsius). Warming measures will be initiated.
 9. As treatment continues, appropriate arrangements for either admission or transfer are made.

Skills reviewed:

ABCs (airway, breathing, circulation) including airway maintenance with bag/mask respirations
 General assessment
 Use of Broselow™ tape or other aid
 Knowledge of location of resuscitation equipment
 IV and IO placement and proper dosage and speed of infusion for IVF bolus
 Reassessment after procedures
 Knowledge of recommended resuscitation guidelines
 Knowledge of admission/transfer protocols
 Knowledge of warming measures used in children

Event/Assessment	Action Required
Infant is brought into triage by parent.	Patient identified as ill and brought into treatment room immediately.
Patient is brought into treatment room.	Expose patient. Assess the ABCs quickly. Examine the patient's capillary refill. Gather more information from mother.
Patient found to be lethargic but arouses to painful stimuli, limp with skin that is dry and cool to touch and has poor skin tone. Lungs clear bilaterally. Airway patent. Capillary refill	Pediatric specific code supplies should be gathered. Glucose reading is obtained. Broselow™ tape is utilized. Apply 100% oxygen by face mask.

is 4-5 seconds. Patient is tachycardic in the 180s and tachypneic in the 50s. Pulses are thready peripherally but strong centrally.	Place patient on monitoring equipment. Reassess patient
Patient's heart rate is in the 120s and respiratory rate in the 30s with a decreased level of consciousness. Glucose level is 85. Extremities are mottled with delayed capillary refill.	Attempt IV placement.
Unable to establish IV due to poor skin perfusion.	Attempt IO placement.
During IO placement, patient becomes bradycardic into the 60s and begins having apneic episodes. Pulses are weak centrally and patient has peripheral cyanosis.	Bag-valve mask (BVM) is used to provide respirations to patient at a rate of 20 breaths per minute, assessing for good rise and fall of chest, and lung sounds. Circulation is reassessed.
Heart rate increases to the 180s with no spontaneous respirations. Cyanosis is resolving but perfusion is poor.	Bagging patient continues while IO placement is obtained. Once IO is placed, IVF bolus of crystalloid fluids is started at 20mL/kg rapidly. Participants should calculate and state amount. IV fluids should be warmed.
Heart rate is now 160 after first IVF bolus. Infant is having spontaneous respirations but capillary refill continues to be delayed and extremities are pale and cool.	Reassess after interventions. Second IVF bolus of crystalloids at 20mL/kg infused. Participants should calculate and state amount. Oxygen converted back to 100% via mask.
Temperature is taken and is 95.0 degrees Fahrenheit (35 degrees Celsius).	Warming measures are initiated on child.
Heart rate in the 140s at the end of the second IVF bolus. Spontaneous respirations are present at a rate in the 40s. Peripheral pulses palpable with capillary refill of 3 seconds. Patient responsive to mild tactile stimuli.	IVF continues with third IVF bolus of 20mL/kg as preparations for admission/transfer are made. Participants should calculate and state amount.

D-3: Neonatal Resuscitation

A woman who is 40 weeks pregnant presents to the Emergency Department in labor. She is G4 P3 and has had prenatal care throughout her pregnancy. Upon exam, the infant is crowning and delivery is imminent.

General code outline

1. As newborn is presenting, the cord is found to be wrapped around its neck. The physician unwinds the cord before the delivery of the patient. Infant is delivered by physician and has poor tone, minimal respiratory effort and central cyanosis. The cord is cut by the physician and the patient is placed in the infant warmer. Other staff are assigned to care for the mother.

2. The newborn is floppy with occasional gasping breaths. Resuscitation supplies are gathered by the staff. The patient is dried and stimulated and placed in the sniffing position to open the airway. The APGAR score is determined to be 3.
3. The patient is reassessed and found to have only occasional gasping respirations with a heart rate of 90. Skin color is cyanotic with poor muscle tone. Positive pressure ventilation with bag-valve-mask should be initiated utilizing room air. This should continue for a full 30 seconds. Re-evaluate the APGAR and ABCs.
4. The patient is having minimal shallow respirations with a heart rate of 50. Skin is cyanotic. Chest compressions should be initiated and positive pressure ventilation should continue with the BVM on 100% oxygen while preparing to intubate patient.
5. Reassess after intubation and verify placement. Lung sounds are equal bilaterally with good rise and fall of the chest. Heart rate is 50. Continue chest compressions and prepare to medicate with epinephrine after umbilical vein is accessed. If an umbilical vein is unable to be accessed, consider administering the medication via IV/IO/ETT.
6. Ventilation via ET tube continues and the heart rate responds to epinephrine and oxygenation. Heart rate is now in the 130s. Color is improving.
7. Prepare for transfer to NICU or transfer to another facility.

Skills reviewed:

ABCs including airway maintenance with bag-valve-mask respirations
 General assessment
 Knowledge of possible delivery complications
 Knowledge of location of resuscitation equipment
 Knowledge of umbilical line placement
 Reassessment after procedures
 Knowledge of recommended neonatal resuscitation guidelines
 Knowledge of admission/transfer protocols

Event/Assessment	Action Required
Patient delivered by physician after cord unwrapped from patient's neck. Patient has poor tone, minimal respiratory effort and central cyanosis. The cord is cut and patient placed in infant warmer.	Assess ABCs in patient. Patient is dried by staff and stimulated. Airway should be opened and suctioned. Resuscitation equipment should be gathered. APGAR score should be determined.
Patient is having occasional gasping respirations with a heart rate of 90 beats per minute. Skin color is cyanotic with poor muscle tone.	Positive pressure ventilation with a bag-valve-mask should be initiated on room air. Respirations should be provided at 40-60 breaths per minute. Continue for 30 seconds. Assess the need for suctioning.
Patient having minimal shallow respirations with a heart rate of 50 beats per minutes. Skin is cyanotic.	Chest compressions should be initiated with positive pressure ventilation via BVM with 100% oxygen while preparing for endotracheal intubation. Rate of compressions to respirations is 3:1 (90 compression/30 ventilations per minutes). Participants should prepare all equipment needed for intubation. After intubation, confirm placement by having

	visualized the ETT passing through the cords, by auscultation of lung sounds bilaterally, equal rise and fall of the chest, capnometry, the absence of gastric sounds, chest x-ray, and with the use of capnography (if available). ETT should be secured per facility protocol. Continue compression/bagging patient for 30 seconds.
Endotracheal intubation is completed and position is verified. Lung sounds are equal bilaterally with good rise and fall of chest. Heart rate is 50 beats per minutes.	Chest compressions and ventilations should continue. Umbilical vein should be accessed. If unable to establish umbilical access, establish IV/IO access. Administer epinephrine at 0.1-0.3 mL/kg of 1:10000 solution via umbilical vein or IV/IO. If unable to establish access, consider ETT route. Participants should calculate and draw up the medication. Continue compressions/ventilations for 30 seconds after administering epinephrine.
Patient's heart rate is 130 beats per minute. Color is improving. Central pulses are palpable.	Prepare patient for admission to the NICU or for transfer to another facility with NICU capabilities.

D-4: Respiratory Distress/Failure

A 6-year-old male was admitted to the Pediatric Inpatient Unit (non-PICU) with a two day history of cough, fever, and increased shortness of breath, unrelieved by his inhaler. He has been diagnosed with pneumonia. The patient has a history of asthma, has no known allergies to medications, and takes Albuterol and Singulair at home. The patient weighs 20 kg. His mother has just returned to the patient's room and calls the nurse because the patient is having increased shortness of breath.

General code outline

1. Nurse performs ABC assessment on patient. The patient is anxious and sitting on the side of the bed in a tripod position. Audible wheezing is noted, intercostal retractions are present and the patient is able to speak only one word per breath.
2. Oxygen is applied to patient. Rapid response team is called. Primary nurse initiates Albuterol and Atrovent nebulizer treatment as ordered previously. Patient is placed on portable monitor and pulse-ox.
3. SpO2 is 85% room air and increases to 90% with neb treatment in progress. The rapid response team arrives and reassesses the patient now that the first nebulizer treatment is almost complete. Patient is in severe distress with minimal air movement throughout lung fields.
4. Patient is started on a continuous nebulizer treatment and administered corticosteroids. BIPAP is attempted with patient. Administering Magnesium, Terbutaline and/or subcutaneous Epinephrine is considered as indicated and appropriate. If not already done, gather resuscitation equipment.
5. Patient is unable to tolerate BIPAP. Patient continues to deteriorate despite nebulizer treatments and other medications. Patient has a decreased level of consciousness and minimal air movement.

6. Prepare for rapid sequence intubation, including proper ET tube size and preparation of proper medication dosages. While equipment is being prepared, staff provides 100% O₂ via bag-valve-mask.
7. Patient is intubated and placement is verified by auscultation, capnometry, rise and fall of chest and chest x-ray. Use capnography if available. Obtain arterial blood gas (ABG) after intubation.
8. Inline nebulizer treatments initiated. Transfer either to the PICU if available in the hospital or arrange for the patient to be transferred to another facility.

Skills reviewed:

ABCs including airway maintenance with bag/mask respirations
 General assessment
 Knowledge of location of resuscitation equipment
 Knowledge of use of rapid response teams
 Proper dosage and preparation of medications
 Reassessment after procedures
 Knowledge of recommended resuscitation guidelines
 Knowledge of transfer protocols

Event/Assessment	Action Required
Mother calls nurse into room because patient is having increased respiratory distress.	Nurse performs assessment including ABCs.
The patient is anxious and sitting on the side of the bed in a tripod position. Audible wheezing is noted, intercostal retractions are present and the patient is able to speak only one word per breath.	Oxygen applied to patient. Patient placed on portable monitor and pulse-ox. Rapid response team is called. Primary nurse initiates Albuterol and Atrovent nebulizer treatment as ordered previously.
Rapid response team arrives and reassesses the patient now that first neb treatment is almost completed. SpO ₂ is 85% room air and increases to 90% with neb treatment in progress. Patient with diminished breath sounds bilaterally, increased work of breathing, intercostal retractions.	Patient is started on a continuous nebulizer treatment and administered corticosteroids. Attempt CPAP or BIPAP. Consider administering Magnesium, Terbutaline and/or subcutaneous Epinephrine as indicated and appropriate. If utilized, participants should calculate and prepare medications.
Patient is unable to tolerate BIPAP. Patient continues to deteriorate despite nebulizer treatments and other medications. Patient has decreased level of consciousness, minimal air movement and tracheal tugging.	Prepare for rapid sequence intubation. Participants should prepare all equipment needed for intubation and calculate and prepare medication dosages. While equipment is being prepared, staff provides 100% O ₂ via bag-valve-mask.
Patient is intubated.	Verify placement by visualizing the ETT passing through the cords, auscultation of lung sounds bilaterally, the absence of gastric sounds, capnometry, equal rise and fall of the chest and chest x-ray. Obtain ABG after intubation.

	Use capnography if available.
Placement of the ETT is verified by equal but diminished breath sounds with expiratory wheezes throughout, colorimetric end tidal CO2 detector, and equal rise and fall of the chest. Chest x-ray shows placement of ETT is appropriate.	Inline nebulizer treatments initiated. Transfer either to the PICU if available in the hospital or arrange for the patient to be transferred to another facility.

D-5: Seizure

An 11-year-old male is transferred from a local community hospital to the Pediatric Trauma Emergency Department for treatment following a head injury. He was playing football and collided head first with another player. He had a loss of consciousness (LOC) for 2 minutes after the incident. Initial CT scan at the sending facility was negative for intracranial bleeding. Patient continues to ask repetitive questions and is amnesic to the event. CT scan of neck was also negative and patient denies neck or back pain. The report received was that the pupils are PERRL at 3mm and patient has no deficits other than the memory loss. The patient has a history of diabetes, has no known allergies to medicine, and has an implanted insulin pump. The patient weighs 45kg. Following the patient's arrival to the unit as a report is being given by the transport team, the patient begins to have a generalized or tonic-clonic seizure.

General code outline

1. Nurse proceeds to the bedside and assesses the patient. Patient is having generalized tonic clonic seizure activity, is unresponsive and has snoring respirations.
2. Staff initiates the rapid response team/code team (facility dependent). Staff performs ABCs and applies 100% O2 via non-rebreather (NRB) mask. Gather resuscitation equipment. Seizure precautions are put in place to protect patient from harm. Patient is placed on cardiac, blood pressure and pulse-ox monitors.
3. Transport team informs the nurse of patient's diabetic history. PIV has already been established by the transport team. The patient's blood glucose level is checked and is 45. Rapid response team begins to administer dextrose (dose appropriate for weight) but the IV is nonfunctional. Attempt another IV placement if accessible. Otherwise, IO placement is necessary.
4. IO placement established and dextrose is given.
5. Reassess ABCs and blood glucose level. Seizure activity continues unchanged after administering glucose. Repeat glucose is 185. Patient is having snoring respirations and generalized seizure activity. Staff are unable to read the pulse-ox due to seizure activity.
6. ABCs continue to be monitored. Orders for medication to stop seizure activity are received, prepared and administered by staff.
7. Patient's seizure activity slows down but continues. Staff should prepare another dose of medication to stop seizure activity as ordered by attending physician.
8. Patient's seizure activity has ceased. Patient is unresponsive and has snoring respirations. Patient's airway suctioned and repositioned. SpO2 91% on 100% NRB. Patient's gag reflex intact. A nasal pharyngeal airway (NPA) is placed.
9. Reassess and monitor ABCs. Continue with complete exam. Evaluate studies done at sending facility. Consider repeating CT scan to detect change in status. Consult neurology.

Skills reviewed:

- ABCs including airway maintenance including NPA use and suction equipment
- General assessment
- Knowledge of location of resuscitation equipment
- Knowledge of use of rapid response teams
- Proper dosage and preparation of medications
- Reassessment after procedures
- Knowledge of recommended resuscitation guidelines
- Knowledge of altered mental status, diabetic and seizure precaution treatment protocols

Event/Assessment	Action Required
Patient is having generalized tonic clonic seizure activity, is unresponsive and has snoring respirations.	Nurse will initiate the rapid response team/code team (facility dependent). Perform assessment of ABCs and applies 100% O2 via non-breather mask. Gather resuscitation equipment. Initiate seizure precautions to protect patient from harm. Place patient on cardiac, blood pressure and pulse-ox monitors.
Transport team informs the nurse of patient's diabetic history. PIV has already been established by the transport team.	Blood glucose level is checked due to history of diabetes.
Blood glucose is 45.	Rapid response team begins to administer dextrose but the IV is nonfunctional. Participants should calculate dosage and prepare medication. Attempt another IV placement if accessible. Otherwise, IO placement is necessary.
IO placement established and dextrose is given.	Reassess patient and glucose level. ABCs continue to be monitored.
Seizure activity continues unchanged after administering glucose. Repeat glucose is 185. Unable to read pulse-ox due to seizure activity. Patient continues to have snoring respirations and generalized seizure activity.	Orders for medication to stop seizure activity are ordered (as per facility protocol), prepared and administered. Participants should calculate dosage and prepare medication.
Patient's seizure activity slows down but continues	Second order for medication to stop seizure activity given by physician. Participants should calculate dosage and prepare medication.
Patient's seizure activity has ceased. Patient is unresponsive and has snoring respirations. SpO2 91% on 100% NRB. Patient's gag reflex intact.	Patient's airway suctioned and repositioned. Patient's gag reflex is tested and is present. NPA placed.
Patient's SpO2 at 96% with NPA in place. Patient's ABCs maintained.	Reassess and monitor ABCs. Continue with complete exam. Evaluate studies done at sending facility. Consider repeat CT scan to detect changes. Consult neurology.

Appendix E: Additional Forms and Templates

The following forms and templates can be used to assist in the development of a health care organization's pediatric mock code program. These forms are available on the Illinois EMSC Web site (www.luhs.org/emsc) and can be adapted to fit the specific needs of a health care organization.

E-1: Sample Pediatric Mock Code Program Planner

Sample Pediatric Mock Code Program Planner

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		

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E-2: Sample Pediatric Mock Code Needs Assessment

Sample Pediatric Mock Code Needs Assessment

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

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E-3: Sample Pediatric Mock Code Scenario Worksheet (Blank)

Sample Pediatric Mock Code Scenario Worksheet

Identify the overall goal/aim for this pediatric mock code:

Identify challenge #1: _____

- List the corresponding objective: _____

Identify challenge # 2: _____

- List the corresponding objective: _____

Identify challenge # 3: _____

- List the corresponding objective: _____

Outline the pediatric mock code scenario:

Identify any distractions that will be incorporated: _____

Identify the participants and their experience level:

Identify where the mock code will occur: _____

Determine the date/time: _____

Determine the supplies needed: _____

Continued:

Sample Pediatric Mock Code Scenario Worksheet

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

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E-4: Sample Pediatric Mock Code Scenario Worksheet (Completed)

Sample Pediatric Mock Code Scenario Worksheet

Identify the overall goal/aim for this pediatric mock code: The management of a child during cardiopulmonary resuscitation

Identify challenge #1: Chest compressions are ineffective.

- **List the corresponding objective:** Chest compressions are performed at a rate of 100 per minute.

Identify challenge # 2: Patient arrives to the emergency department without peripheral access.

- **List the corresponding objective:** IO is inserted to establish rapid vascular access.

Identify challenge # 3: Resuscitation equipment (i.e. CPR board) was not utilized initially.

- **List the corresponding objective:** Team members will locate and utilized appropriate resuscitative equipment to provide care to patient.

Outline the pediatric mock code scenario: An eight-year-old child collapsed in the baseball field after being struck in the chest with a ball. EMS brings him in with CPR in progress. EMS attempted defibrillation with an AED prior to arrival to the emergency department. Patient was intubated prior to arrival.

Identify any distractions that will be incorporated: Weight/length-based tool is missing from code cart

Identify the participants and their experience level: One physician, 2 nurses and 1 RT; experience level varies between participants; pediatric codes are infrequent at this hospital

Identify where the mock code will occur: Emergency Department Treatment Room

Determine the date/time: March 8, 2012; 1025

Determine the supplies needed: Code cart, airway equipment (BVM, oxygen), Broselow Tape, monitor (cardiac & pulse-ox), defibrillator, resuscitation medications and dosing guides, IO set up, IV fluids and supplies, CPR backboard, observer form

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E-5: Sample Pediatric Mock Code Resource Checklist

Sample Pediatric Mock Code Resource Checklist

Consider the equipment needed for a pediatric mock code and how to access each item.

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		