Mock Code Training

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“Come quick, my husband, he’s not acting right, something is terribly wrong!” a desperate Mrs. Smith shouted to Joe, the new staff nurse. Joe’s heart started to pound. “I just left him, and he was fine,” he thought to himself. “Code 99, Medical 5, Code 99 Medical 5,” the operator announced overhead. Everything seemed to move in slow motion for Joe as he followed Mrs. Smith into her husband’s room. Mr. Smith, a 45-year-- old patient admitted the night before for chest pain, lay unconscious in the bed as the nursing assistant was trying to rouse him. Joe’s thoughts raced, “What do I do now? I am not ACLS certified. Where is that code team?” Joe tried to remember back to his training.

How does your facility prepare staff for these situations? When the patient’s life depends on the quality of your staff’s response, having competent staff is imperative. One way to maintain staff competency is through an annual review of equipment and procedure. This article will review code training, including mental preparation, content, tips for running mock codes and tools to assist in staff evaluation.

**Mental Preparation**

The old healthcare adage says, during a code check your own pulse first. This is said in jest, but also acknowledges the very real fear of freezing up in an emergency. By mentally preparing for code situations, and by training staff to deal with the uncertain nature and emotional aspects of resuscitation, some of the anxiety around codes can be decreased. Staff should be assured that it is normal for their hearts to race and their hands to shake as they feel the effects of adrenalin on their bodies during an emergency. They may feel as if they are frozen and unable to act when coming upon a patient who is in arrest. One way to overcome this is to simply take a deep breath. This small action can restore a sense of calm. Staff should be reassured that, once they summon help, it will arrive and they will not be alone. Encourage staff to use the techniques of visualization to remember what to do. Ask them to think about
their biggest fear during a code. For most, it is a fear of not knowing what to do, where equipment is, or how to use it. For some it is dealing with death or crisis or a specific population, such as pediatrics. Once they can identify what their obstacles are, they can work on addressing it. Even for those who do not have a fear of codes, mentally rehearsing the steps they would go through in a resuscitation situation will reinforce prior knowledge and build confidence.

For instance, ask, “What would you do if you found a patient unresponsive in the bathroom?” Now list the steps. Model the critical thinking out loud for the audience. Encourage active participation by asking questions. Do they know how to call for help? Does everyone know where the code cart and defibrillators are on the clinical units? Can everyone operate the defib and attached the electrode pads correctly?

Mentally rehearsing the steps ahead of time is a powerful antidote to fear. If staff members are afraid of a pediatric code in particular, have them list out loud what the initial steps would be if they found a child unresponsive. Does the facility use a pediatric system such as Broselow-Luten system? Does the staff know how to use a Broselow tape? Do they know to use the resuscitation equipment such as an oral airway and bag-valve mask? If the answers are “no,” it is time for hands-on mock code training. Visualization techniques are an easy way for the staff to practice on a routine basis on their own. Encourage staff to seek out the answers to the questions that arise during these mental rehearsals.

Eventually, all direct patient caregivers will have to deal with a resuscitation situation, and should be prepared to deal with end-of-life issues, as less than 17% of inpatient cardiac arrests survive (Howard & Steinmann, 2010). Discussing your hospital’s policy on family presence will open up the topic for further clarification and will identify your facility’s resources to help the patient & family. A few questions to consider would be:

- Does your hospital have spiritual counselors or clergy available?
- Does the staff know how to contact them to support the family through this time of crisis?
- Does your hospital conduct debriefing for the staff?
Debriefing sessions with a mental health counselor can help providers deal with the powerful emotions that arise from dealing with intense and sometimes tragic situations. If your hospital provides this service, make certain all staff are aware of the process. The following are a few scenarios that can assist in training staff to respond more effectively during an emergency.

**CPR: What’s that rate again?**

*The beat goes on*

“S.O.S. Somebody help me” are the chorus lyrics to Rihanna’s pop hit “S.O.S.(Rescue Me)”\(^2\). What do this song and The BeeGee’s classic 70’s hit “Stayin’ Alive”\(^3\) have in common with code training? Other than their resuscitation-related titles, both songs are musically written to contain approximately 100 beats-per-minute. Since 2005, 100 compressions per minute has been the AHA recommended rate of CPR. Most healthcare employees enroll in a BLS class as a requirement of their job, but often forget the rates soon after the class, as it is used infrequently. Performing CPR properly may increase survival rates for cardiac arrest three-fold (Matlock, Hafner, Brokewitz, Barker & Dewar, 2008)\(^4\).
Use these songs as a creative way to reinforce the proper rate for CPR. One pilot study has demonstrated that students who trained with the song “Staying Alive” performed CPR at the correct rate initially as well as long term (Matlock, Hafner, Brokewitz, Barker & Dewar, 2008). These two songs span our multi-generational workforce too, as most people are familiar with one or the other. Try tapping out the beat while practicing CPR on a mannequin. Encourage singing during training. Turn on the music when staff is practicing CPR, and it will soon liven up the room.

**Quick CPR Review**

**Rate:** 100 compressions per minute: 5 cycles lasting approximately 2 minutes

**Compression to ventilation ratio:** Adult: 2 person HCP 30:2 Pediatric: 2 person HCP 15:2

*For adults with advanced airway in place: Asynchronous, compression 100 per minute, ventilation 1 breath every 5-6 seconds, delivers 10-12 breaths per minute.

**Know Your Equipment**

Do you have biphasic defibrillators, monophasic defibrillators, or a combination of both in your hospital? Most hospitals have upgraded to the biphasic models, but others may keep a mix of both types. If your hospital has both, make certain that ACLS trained staff understand the difference and the recommended joule settings for each.
For all ZOLL biphasic models, the initial energy setting starts at 120J, and then increases to 150J and 200J for subsequent shocks (refer to your specific model’s operating manual). Monophasic defibrillators require 360J for initial and subsequent shocks for adult patients (AHA, 2006). If you have multiple models of defibrillators and are unsure if they are monophasic or biphasic, call Biomed or the manufacturer. If you have multiple types of defibrillators, a quick way to visually remind staff of the appropriate settings is to label the units with the correct energy levels.

Remind learners of the need to remove any medication patches. If the patient has excessive chest hair and good skin contact cannot be achieved by pressing down firmly, remove the pads quickly as a depilatory and place on a second set.

It is helpful to review the most commonly used functions on your equipment. This is particularly helpful for staff in areas where codes are infrequent. Demonstrate how to select the energy (1), charge, (2) clear and (3) deliver the shock.
Review how to use defibrillation versus cardioversion functions. A helpful rhyme is “For V-fib, we defib.” If cardioversion is needed, point out that the user must remember to synchronize by pushing the synch button. Check your model to see if it automatically reverts to asynchronized mode after a synchronized shock. When using synchronized cardioversion, remind learners that they should see a marker at the top of each QRS complex. This is important to know in the event the patient enters V-fib after a synchronized shock and staff would have to switch to defibrillation quickly. For ACLS trained staff, also review use of transcutaneous pacing. This is indicated for patients with unstable bradyarrhythmias as a bridge device until a transvenous or permanent pacemaker can be inserted.

Demonstrate how to turn the pacer on (1) adjust rate(2) and mA (3). Refer to the diagram example below.
Remind staff to sedate the patient first, if able. Once capture has been acquired, check for a pulse. Reviewing the transcutaneous pacemaker is a good way to lead into reviewing temporary transvenous wires.

Does your defibrillator have AED capability too? If so, staff members need to know how to use this function. This is a point to stress to non-ACLS certified staff — that they have the tools to save a patient’s life, even before the code team arrives. Demonstrate how to use equipment, including: code carts and pediatric specific equipment, such as a Broselow tape, if applicable.

Every staff member should know how to set up suction, insert an oral airway, and use a bag-valve mask properly.

Reviewing all of the above psychomotor skills and allowing for stress-free, hands-on practice, prior to a mock code scenario, builds confidence and helps learners succeed.
Ask your pharmacy to save expired drugs and have a full complement of what your facility uses for resuscitation available for training. If your facility uses code carts or drug boxes, set them up exactly as they are in patient care areas. Make certain this equipment is clearly marked “EXPIRED, FOR EDUCATIONAL USE ONLY”. Do not store in any patient care areas to avoid confusion. By allowing the staff to handle the medications and see how they are packaged, they can become more familiar with the concentrations and location of drugs within the code cart. Pass around the Bristol-jets and demonstrate how to open the boxes. This can help reduce fumbling with medication boxes during a code. Identify correct drug doses and concentrations in pediatrics. Demonstrate the different concentrations in pediatrics for Dextrose, so they will be prepared and will know which one to administer for different age/weight groups. For example, Dextrose 10% is used for neonates, Dextrose 25% up to 50 kg and D50% for all above 50kg (PALS,2006). Is your staff aware of the differences? Are there multiple concentrations of epinephrine on your code carts? Does the staff know which concentration and route of epinephrine to use during a cardiac arrest (1:10,000, IV, IO, ET) versus the concentration used to treat an allergic reaction (1:1000 SC, IM)? Most Emergency Department clinicians know this as they routinely treat allergic reactions, but many inpatient providers do not. Reviewing this information can build confidence in staff and reduce fears when responding to these emergencies.

Review other adult dosages of commonly used code drugs: See below.

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Dosage</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>Epinephrine</td>
<td>1mg IV/IO every 3-5 minutes for Pulseless arrest (VF/pulseless VT, Asystole/PEA)</td>
<td></td>
</tr>
<tr>
<td>Amiodarone</td>
<td>300 mg IV/IO once, then consider additional 150mg once, 3-5 minutes after 1st dose for VF/pulseless VT</td>
<td></td>
</tr>
<tr>
<td>Atropine</td>
<td>0.5mg for symptomatic bradycardia or consider for PEA/Asystole 1mg IV/IO Max dose 3mg</td>
<td></td>
</tr>
<tr>
<td>Lidocaine</td>
<td>1-1.5 mg/kg IV/IO 1st dose for VF/pulseless VT Then 0.5-0.75 mg/kg IV/IO Max 3 doses or 3mg/kg</td>
<td></td>
</tr>
<tr>
<td>Vasopressin</td>
<td>May give 1 doses 40 U IV/IO To replace first or second dose of epinephrine in Pulseless arrest.</td>
<td></td>
</tr>
</tbody>
</table>
The Joint Commission requires that staff be assessed for competency upon hire during the orientation process and then on an ongoing basis (Carney & Bistline, 2008). Competency is assessed by whether the clinical staff has the skills to perform the assigned job duties. Check with your quality department, but typically competency must be “Assessment of clinical skills and knowledge appropriate to the discipline and/or specialty at the time of hire/assignment and annually thereafter” (Joint Commission Manual, 2008). What are the defined expectations of your facility? Review your institution’s policies and procedures for emergency response when designing ongoing training in order to ensure the training program is aligned with the established policies. Review how to call a code in the hospital or activate the code team. Knowing what to dial or pull in order to get the members of the code team is important. For instance, if your hospital has a special number that staff can dial to get directly to the hospital operator, instead of dialing zero, to bypass the cue of callers remind the staff of this. If there are code buttons in every patient room, review how to activate them and what they look and sound like. This may seem very basic, but if they haven’t done it in a while, they may not remember. Use visual reminders such as laminated cards on ID badges to keep as a reference. Training for resuscitation, or a Mock Code, is based on the American Heart Association’s BCLS and ACLS Principals and algorithms, intertwined with the specific equipment, personnel, and population that your facility treats. It should aid the various members of the healthcare team to understand their roles and responsibilities during a code situation. Lecture, skills stations, and return demonstration are three traditional methods that can be used to effectively teach staff how to train for resuscitation. Adult learning theory emphasizes using teaching strategies that the students can apply and relate to their life and work experience. Many studies have demonstrated that active learning is key to effectively teaching adult learners (Billings & Halstead, 2009). Mini-lectures can be an effective tool to reach a large audience quickly and are a great way to quickly review cognitive knowledge such as facts about drugs,
algorithms, and dysrhythmia. Before psychomotor testing, review the material in order in order to reinforce knowledge. Try starting with a brief lecture and demonstration. Use as many audio and visual tools, videos, and hand-outs as you can during a lecture, and pass around props. Using multimedia and props address auditory, visual, and tactile learning styles. Don’t forget to document the evaluation in the staff member’s education file. Use a tool that includes clear learning objectives, teaching strategies, and evaluation method. Click on the link below for a sample of a competency checklist for an adult mock code, that can be modified for your organization.


**Simulation**

Studies of interactive computer technology have demonstrated that computerized simulations and case studies, “teach decision making skills and can facilitate learners understanding of broad core concepts” (Bolan, 2003)\(^\text{10}\). Patient simulators, such as SIMM man, are sophisticated computer systems that allow the mannequin to ‘respond’ to treatment. Patient simulators can be an excellent learning tool as they are more interactive than simple mannequins. Simulation can facilitate active learning, which “is more apt to stimualte higher cognitive processes such as those associated with critical thinking” (Billings & Halstead, 2009)\(^\text{9}\). A patient simulator also creates a more realistic training environment as the patient ‘responds’ and the instructor can assess how the team reacts. Try implementing actual patient cases to lend more credibility to scenarios. Focus on areas that your code team feel need improvement, such as response times, application of ACLS protocols, or any clinical errors that may have occurred in order to avoid repeating them. Learn from events that may not have not gone smoothly as well. Check with the risk management and quality department to see if there are any reoccurring trends that are being reported and use these case reviews in the training program.

In order to make the simulation as realistic as possible, bring hospital-specific equipment to the simulation site. Having the staff lay hands on the equipment with which they are familiar enhances their ability to suspend the disbelief of the simulation. Most simulators come with standardized scenarios based on ACLS protocols, but adding real details can make it more realistic. You may have specific
patient populations that your hospital treats such as Pediatrics, Maternity or Bariatrics. Incorporate use of special equipment, such as hover mats for obese patients, into the mock code training. Pediatrics should include a review of special pediatric code systems such as the Broselow-Luten tape and cart. If your facility does not have a patient simulator, find out if a local nursing school or fire department has one. Sharing local resources is one way to improve training for hospital staff and enhance positive relationships with neighboring EMS departments and the local academic community. If your facility does not have access to patient simulators, use a mannequin with all of the above suggestions. The emphasis is on hands-on, active participation from the learner.

Micro-simulation is another ingenious tool if you do not have access or time to do a full simulation. These are multimedia DVDs that can be bought for very little money (laerdal.com). Individual or facility licenses can be purchased. They are meant for individuals to review core ACLS case scenarios in either the emergency, inpatient, or pre-hospital setting. Each computerized module requires the learner to type or click on the response and treat the patient. This is student-centered learning at its best as it allows staff to choose their patient, start, stop, and review the simulation at any time. Feedback on the student’s performance is almost instantaneous. These programs can even be projected onto a screen for a small group to use. This is a fun way to review as a group in a low-stress environment. Debriefing with an educator or clinical leader who is knowledgeable in the content is needed to answer any questions that may arise.

Cultural Sensitivity
Does your hospital treat patients of a particular cultural population more frequently than others? If so what are the views on death and healing for these populations? Can you incorporate this into your mock code training? Knowing about and understanding these cultural differences will help your staff be prepared for these situations with sensitivity. While the American culture may value stoicism after death, loud crying and wailing is a normal grief reaction for some Middle Eastern cultures. Wailing and crying is viewed as a necessary part of the death process in order for the dead person's soul to be released (Galanti, 2004). Other cultures may want a window opened to release the soul. Hispanic cultures value family presence during medical care and it is almost expected that extended family and friends would visit the ill patient (Libson, Dibble & Minorack, 1996). While realizing every member of a culture may not follow the same practices, knowing the accepted practices will aid the staff in caring for the families as they experience the crisis or death of a family member. Having at least two instructors is helpful so one can run the simulation and another can be a ‘family’ member with whom the staff have to interact at the same time. Is an interpreter available to help staff learn how to deal with these situations during your mock code? Ask the interpreter to act in your mock code allowing the staff to practice communicating during these situations. Having interpreters who are familiar with the language and culture is very helpful. Learners also need to know how to access interpreters 24/7. All these factors can be woven into a simulation scenario to paint as realistic a picture of a code as possible.

Assessment

Reviewing content is very helpful, but how does it assess competency as required by Joint Commission? Assessing how goals are met is part of the written goals and objectives. Questions and answers, either written or verbal, are acceptable ways to assess core content knowledge. Psychomotor skills such as basic airway management and CPR should be done by return demonstration. Good quality effective CPR is the foundation of any resuscitation effort. Assessment can be done very simply with a mannequin and rhythm generator in ten minutes or less. By giving a group of staff members a case scenario and using a simple checklist (see above link), you can monitor how they react and see if they achieve the goals set for them. Mock codes can travel from unit to unit with such simple tools,
but surprise mock codes, where a code is called and all respond, can be controversial if staffing is an issue. Patient care must not suffer and extra staffing should be allowed. Staff who truly cannot participate should be excused. The conductor of the mock code should answer questions while another educator completes the assessment of members of the team. After ten minutes the mock code scenario should be ended. Immediate, direct, and productive feedback is helpful. In a non-judgmental way review the code responses in a sequential manner as the checklist denotes. Praise the positive results of the team and identify areas that need to be improved. This is a team effort and it is helpful to review as a team. If a particular staff member seemed to have demonstrated real educational needs, approach them after the group has dispersed and offer to meet with them in private. At the very least, this type of spontaneous review will help identify clinicians that need additional training. “Providing opportunities for learners to assess, diagnose, and manage the patient’s care in a risk-free environment will facilitate the development of critical thinking skills” (Bolan, 2003).

...Now let’s return back to the scenario of Joe, the new nurse with unconscious patient.

*Joe took a deep breath and thought back to his orientation training. He quickly went to the patient and opened the airway and looked, listened, and felt for breathing. “He had just finished eating his dinner and then just passed out, so I called a code,” said the nursing assistant. A second nurse arrived. “Get the code cart and defibrillator,” said Joe to the second RN. Joe grabbed the bag valve mask from the bedside, hooked it up to the oxygen meter in the wall and gave 2 breaths to the patient. The patient’s chest rose and fell evenly with each breath. Joe checked for a pulse for 8-10 seconds. No pulse was present, and he asked the aide to start CPR at a rate of 100 compressions per minute as he deflated the bed into CPR mode. Shortly after, the code cart and AED arrived. Joe placed the electrode pads on Mr. Smith’s chest and followed the AED’s command. He cleared the patient and delivered a shock as advised. Shortly after, Mr. Smith started to moan. Joe palpated a strong pulse on Mr. Smith’s carotid artery as the code team arrived through the door. Joe exhaled and realized he knew what to do even before the code team arrived, and he had indeed helped Mr. Jones *Stay Alive.*
References


