Practice makes perfect: Implementing Mock Codes in Hospitals

Nicole Kupchik MN, RN, CCNS, CCRN, PCCN-CSC, CMC &
Chris Laux MSN, RN, ACNS-BC, CCRN, PCCN
Objectives

• Discuss the value of performing mock codes
• Describe the importance of getting “buy-in”
• Describe what it takes to implement mock codes
• Discuss the importance of delineating team roles
Background/Significance

- Code Blue teams consist of health care providers who may not know each other

- They may have limited knowledge of each others’ expertise

- Variability in role delineation often leads to confusion
Effective Code Blue Teams that are associated with improved patient outcomes:

- Rapid code team assembly
- High quality cardiac compressions/CPR
- Effective code team leadership
How is an Effective Code Blue Team Developed??

...LOTS OF RESEARCH ON THE TOPIC!!!
Ongoing multidisciplinary training program:

- Regular scheduled mock codes
- Initial & annual individual team role training
- Leadership training
- ACLS/BLS certification required for all members of the Code Blue Team

Is this enough?

- If CPR is performed infrequently, knowledge & skills are lost within weeks of training
- In-situ training programs every 3 months decreases median time to:
  - Start chest compressions (33 sec vs. 13 sec)
  - Defibrillation (157 sec vs. 109 sec)

Everett-Thomas, Nurse education in progress (2016)
Various types of Resuscitation Practice

- New staff orientation
- Critical Care & Progressive Care Orientation
- Unit-based (Evaluate first responders)
- System-based (Evaluate Code Blue Team)
- Simulation Center
- Resident orientation
Purpose of Resuscitation Drills

- Identify system issues
- Evaluate communication system
- Assess & evaluate team roles
- Evaluate quality measures:
  - How long does it take the code team to arrive?
  - Are essential people present?
  - Time to start chest compressions
  - Interruptions in chest compressions
  - Time to defibrillation
  - Airway management
Residents feel underprepared to lead cardiac arrest teams in teaching hospitals

Chris W. Hayes, MD, MSc; Andrew Schulman, MD; Daniel S. Goldstein, MD; Andrew P. C. Leblanc, PhD; Randy S. Wax, MD, MEd
Where do I begin?

Know your stats!

**Buy-in from essential people:**
- Administration
- Managers
- Physicians (Champion)
- Code team members
- Code Blue Committee
- Risk Management
- Patient Safety Officer

**Equipment**
- Functional mannequin
- Simulator (Rhythm generator)
- Agreement to use crash carts
Mock Codes

- Started in 2007
- Goal 4x/month, day & night shift
- Announced as a real code
- Started low fidelity
- Using “in-situ” code blue simulations with a high fidelity, full-scale simulation mannequin
- Adult & pediatric scenarios
- Resuscitation experts observe & evaluate the code using a standardized form
- Debriefing after simulations
Low vs. High Fidelity Simulation

Low fidelity

- Equipment less expensive, more mobile
- Not as many staff resources are needed to run simulation (1 – 2 people)
- Less planning time
- Coordination of personnel for the mock code is decreased
- More effort to collect data
- Manual data collection
High fidelity

- Obtain objective data on compression quality
- Equipment is expensive
- Equipment is heavy & not easily moved around
- Need tech and educator support
- Scenarios are more realistic & increases critical thinking
- Decreases time to staff initiating code blue interventions
Special Circumstances to drill

- Cath lab
- Isolation rooms
- TB isolation
- H1N1 Isolation
- Trauma braces (TLSO)
- Pediatrics
- Obstetrics
- Codes in public areas
- Clinic areas
Debriefing

“Thanks to everyone for participating”

*Three questions:*

• What went well?
• What could the team do differently next time?
• Any safety or equipment concerns?

• Safe environment, places no blame
• Challenges in debriefing
Evaluation Metrics

**Alert system**
- Paging operator
- Internal Unit
- Time to overhead or pagers

**First Responders/Code Team**
- Time of pulse check
- Time of compressions
- Time of 1st defibrillation
- Time of airway intervention

**Quality**
- Compression quality
- Defibrillation
- Ventilations

**Communication**
- Leadership
- Call-backs
- Roles
## Code Blue Drill

**Date:**

_________________________

**Unit:**

_________________________

### Key people to notify prior to mock code:

- **Anesthesia lead** (4-8800)
- **Nurse Manager of unit**
- **Nursing supervisor 4-3932**
- **Lead STAT RN 744-7134**
- **Charge RT 744-7501**

### Critical Elements

<table>
<thead>
<tr>
<th>Critical Element</th>
<th>Time</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code Blue called to operator</td>
<td></td>
<td></td>
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<tr>
<td>Code Blue announced overhead</td>
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<tr>
<td>Code Blue message reaches pager</td>
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<tr>
<td>Arrival of first responder</td>
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<tr>
<td>Arrival of MD</td>
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<td>Arrival of anesthesia</td>
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<td>Arrival of operations RN</td>
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<tr>
<td>Arrival of defib RN</td>
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<tr>
<td>Arrival of med RN (primary RN in ICU)</td>
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<td>Arrival of RT</td>
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<td>Arrival of pharmacy</td>
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<tr>
<td>Arrival of Lab</td>
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<tr>
<td>Assessment of airway &amp; breathing</td>
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<tr>
<td>Pulse check</td>
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<tr>
<td>Application of oxygen</td>
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<tr>
<td>Establish IV or IO line</td>
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<td></td>
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<tr>
<td>CPR initiated/CPR board used</td>
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<tr>
<td>Time to 1st defib (or N/A)</td>
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<td></td>
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<tr>
<td>First Epi or Vasopressin</td>
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<tr>
<td>Documentation started</td>
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<tr>
<td>Other evaluation areas</td>
<td></td>
<td></td>
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<tr>
<td>Overall communication</td>
<td></td>
<td></td>
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<tr>
<td>Identification of lead MD?</td>
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</tr>
</tbody>
</table>

### CPR quality:

- % of hands on time
- Depth of compressions
- Compression rate
- How many times was CPR interrupted? (Total time if possible)
- Rate of breaths (not too fast)
- Proper rhythm identification?
- If PEA, was differential diagnosis/cause discussed?

### Other issues:

- Supplies
- Too many people in the room?
- Not enough essential people in the room?
What did we learn?
We needed to focus on the basics

- CPR Quality
- Defibrillation
- Application of Capnography
- SLOW down assisted ventilation rate
- Leadership
Ideal Defibrillation
How many combinations of teams could one hospital possibly have?

MICU Attendings + MICU residents: 60 people
MCICU RNs: 40 people
Anesthesiologists: 50 people
RTs: 50 people
Pharmacists: 25 people
3 East RNs (Recorder): 28 people
5 East RNs (Defib): 22 people
STAT RNs: 18 people

Over 1 BILLION different combinations of Code Blue teams!!!!
Are humans as important as NASCAR?
**Other responders:**
- Lab
- Nursing Supervisor
- Security
- Chaplain
- Family

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**Code Blue Response Team & Responsibilities**

- **Anesthesiologist**
  - Stands at the head of the bed
  - Establishes artificial airway
  - May assist with vascular access

- **ICU Nurse or STAT Nurse (acute care)**
  - Stands on side of bed closest to IV
  - Administers medications
  - Inserting IO line (Peds ICU RN or STAT RN only)

- **MCICU Nurse**
  - Stands on side of bed
  - Defibrillation
  - Inserting IO line

- **Respiratory Therapist**
  - Stands at the head of the bed
  - Secures airway
  - Provides ventilation
  - Transports patient if needed

- **Compression Provider**
  - Stands on side of bed
  - Provides a maximum of 2 minutes of chest compressions

- **3 East Telemetry Nurse**
  - Stands at foot of bed
  - Documents events in the code
  - Reminds team when meds or pulse checks are needed

- **Pharmacist**
  - Stands at crash cart
  - Prepares medications
  - Calculates medication IV dosages

- **Attending or Senior MICU Resident**
  - Stands at foot of bed
  - Directs the resuscitation
  - Signs the resuscitation form
  - Delegates tasks as needed

- **1st Year Resident**
  - Stays in room
  - Provides history & events preceding arrest

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**Other Code Blue Team Members:**
- Lab: Performs blood gas analysis ensures the team is aware of the results; Spiritual Care: Stays with family during resuscitation; Nursing Supervisor: Ensures adequate staff on unit; assigns ICU bed if needed.
Rapid Team Assembly
Predetermined Roles

CODE BLUE RESPONSE TEAM

- Anesthesia
- Respiratory Therapist
- Med Admin RN
- Defib RN
- Pharmacist
- Procedure MD
- Operations RN
- Code Leader
- Supervising MD
- Primary RN
- Compression Providers
- Bedside RN
- Recorder

COLOR KEY
- LEADERSHIP
- HANDS-ON NURSING
- COMPRESSION
- SPECIALISTS
- INDIRECT PATIENT CARE
Effective Code Team Leadership

- Ability to coordinate activities of the members
- Give concise explanations
- Take charge: Announce they are the code leader
- Shared mental model
  - Think out loud
  - Summarize code process
  - Ask for suggestions

- Good communication skills
  - Assertive
  - Respectful communication tools
  - Closed loop communication
    - Give an order
    - Acknowledgement of order by team member
    - Indicate when intervention is completed
Who shows up to your resuscitations?!
The Nursing Supervisor is responsible for crowd control.
Potential problems with Mock Codes

- High fidelity vs. low fidelity
- Taking the mock code seriously
- Administration buy-in
- Taking providers away from their patients
- Covering all shifts
- Data collected realistic?
Mock Code Programs

Positive

- Training increases staff satisfaction
- Simulation training increases compliance to AHA resuscitation standards
- Leadership training improves team dynamics & increases skill performance

Negative

- Training takes resources: educators, equipment, staff time which increases non-productive costs
- Need to get administration & leadership buy-in
- Data collection – additional resources needed
- Do staff treat a mock code like a real code?
- Need to cover all shifts

Cooper & Wakelam, Resuscitation (1999)
Take home points…

- This can be done at any facility!
- You need to do what works for your facility
- Need to practice low volume, high risk procedures

Focus on:
- CPR Quality
- Defibrillation time
- Ventilation
- Documentation
- Team dynamics & leadership
- Communication
- Debriefing
Contact info:

Nicole Kupchik:
nkupchik@gmail.com
👍 Nicole Kupchik Consulting & Education
📸 @nicolekupchik

Chris Laux:
Christine.laux@overlakehospital.org