Developing a Hospital-Based Resuscitation Program

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

• Describe components of a high quality collaborative resuscitation program in a healthcare system
  – Committee structure
  – Committee leadership

• Discuss data collection strategies that can improve patient care outcomes
  – Training & feedback to teams
  – Development of team roles
  – The value of debriefing
Resuscitation Program Structure & Code Blue Committee support
Code Blue Committee Structure

**Develop a Charter that defines:**

- **Annual Code Blue Strategic Plan**
  - Goals and Objectives: Developed annually, reviewed quarterly
  - Who does the committee report (accountable) to?
- **Committee membership obligations/responsibilities**
- **Meeting schedule**
- **Decision making process for code blue committee**
- **Develops a training program**
- **Communication plan**
- **Crash cart maintenance program/equipment needs**
- **Evaluation process of Code Blue calls**
Code Blue Committee Leadership

- Administrative/nursing leadership
- Co-chair; Provider
- Physician leadership
- Co-chair; A clinical professional
Code Blue Committee Membership
Where do you stand?
Statistics, performance & staff satisfaction
“You will not improve what you do not measure”
How are hospitals doing?

Outcomes?
A. 8.6%
B. 25.5%
C. 42.6%
D. 58.4%

Types of arrests?
A. PEA & Asystole
B. Vfibr & PEA
C. Vtach & Vfibr
D. Asystole & Vfibr

Morrison et al (2013); Circulation
Incidence by Initial Rhythm

- VF / VT: 10%
- PEA: 70%
- Asystole: 20%
Definition of In-Hospital Cardiac Arrest

• Occurs in a hospital
  – Whether the patient is admitted or not
• Received chest compressions
• Received defibrillation
• Or, both!

• Exclude arrests in the ED
  – Track ED arrests separately
  – These should not include patients who had a pre-hospital arrest

• Exclude visitors, staff & outpatient status
Leadership survey: **69%** rated positive leadership qualities as always occurring and **27%** as sometimes occurring

**Q1.** Was it clear to you who the team leader(s) was during the code?

**Q2.** Did the team leader successfully communicate the course of action?

**Q3.** Did you know what your role and responsibilities were during the code?

**Q4.** Did you know who was serving in what roles on your team?

**Q5.** Did you feel empowered to speak up/contribute during the code if you had input with the plan?
Training
Maintenance of competency

The innovative competency-based training program for high-quality CPR and improved patient outcomes

http://www.heart.org/HEARTORG/General/Resuscitation-Quality-Improvement_UCM_459324_SubHomePage.jsp
Training Program

• Need an ongoing multidisciplinary training program
  – Regular scheduled mock codes
  – Initial & annual individual team role training
    • Code leader training
    • Operations Nurse
    • Defibrillation Nurse
    • Pharmacists
    • Recorders
    • First responders
  – Bi-annual ACLS certification required for all members of the code blue team
Mock Codes

- Goal 2x/month, day & night shift
- Announced as a real code
- Using “in-situ” code blue simulations
- 85% of mock codes were adult scenarios
- Resuscitation experts observe and evaluate the code using a standardized form
- Debriefing after simulations
What resources does this require?

- Low fidelity simulation
  - Minimum 2 people

- High fidelity simulation
  - Minimum 3 people
First Responders Responsibilities

• Prepare for code blue team arrival:
  – Locked units have someone at entrance door
  – Hard to find areas….unit staff to provide directions
  – Crash cart in room: Open top 2 drawers (Medications, IV supplies)
  – Open computer to latest labs
  – Set up suction & oxygen

• After code blue team arrival:
  – Primary RN stays in room & provide patient information to code leader
  – CN dismissed; makes sure primary RN assignment is covered
  – Assigns someone to assist with supplies
  – Support unit’s staff & patients
First Responder SBAR to ACLS Team

**Situation**
What occurred just prior to the patient coding and during the BLS portion of the code?

**Background**
Admitting diagnosis & pertinent past medical history

**Assessment**
Last vital signs & lab results

**Recommendation & Request**
Indicate you will stay in the room & ask if the team needs any additional information or equipment
Code Blue Roles
Are humans as important as NASCAR?
Other responders:
- Lab
- Nursing Supervisor
- Security
- Chaplain
- Family

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
High-Performing Teams

• Have clear roles & responsibilities
• Have strong team leadership
• Have clear, valued & shared vision
• Optimize resources
• Engage in a regular feedback
• Develop a strong sense of collective trust & confidence
• Manage & optimize performance outcomes
Code Blue Roles

• **Code team leader (MCICU R3)**
  – Establishes control and leads resuscitation efforts
  – If ICU fellow/attending, MCICU R3 stands by
  – Seeks input from other code team members during code
  – Officially announces end of code
  – Reports to accepting MD upon patient transfer, if relevant
  – Contacts family at end of code (if not primary team)
  – Writes code note

• **Anesthesia**
  – Establishes definitive airway and ventilation
  – Manages airway
  – Documents airway interventions
  – Assists with obtaining vascular access as necessary

• **Respiratory therapist**
  – Maintains airway prior to advanced airway placement
  – Assists anesthesiologist with advanced airway placement
  – Applies EtCO₂ device

• **ICU fellow/attending**
  – **Resource to code leader** on ACLS standards
  – Initiates and coordinates debrief session post-code
Code Blue Roles

• **Pharmacist**
  – Prepares & hands-off meds and other supplies from the code cart to the team
  – Provides guidance for med dosing / administration
  – Offers clinical judgment on emergency med usage
  – Reviews patient’s current meds / labs for contributing factors

• **Recorder RN**
  – Documents assessments and interventions during code
  – Code Narrator: Keeps time between interventions, communicates time intervals, summarizes code process when requested

• **Operations RN (MCICU RN)**
  – Ensures each person is at the correct position
  – Ensures that room is set up correctly
  – Ensures that needed supplies are present and being used correctly
  – Encourages calm, quiet, and teamwork
  – Clinical resource/mentor to code blue team members

• **Defibrillation RN**
  – Sets up for defibrillation if not done, switch from AED to ALS defibrillator
  – Performs defibrillation/cardioversion/TCP
  – Rhythm awareness
ICU RN Role—Operations RN

• Overview scene continuously
• The “lead RN” of the Code Blue Team
• Promotes communication between roles, close loop communication
• Gives suggestions to code leader on treatment course
• Verifies that procedures are being done correctly (i.e. IO insertion)
• Assesses compression quality; backboard, compression fraction
• Requests additional equipment/supplies from floor staff
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
Leadership

- Leadership training should be required
- Team strategies & tools to enhance performance & patient safety

Team STEPPS

- Strategies
- Tools
- Enhance
- Performance
- Patient
- Safety

Communication Loops

1. CALL OUT
   Sender initiates message

2. CROSS-CHECK
   Receiver accepts message, provides feedback confirmation

3. CHECK-BACK
   Sender notified of task completion
Who shows up to your resuscitations?!
Code Blue Team Identifiers

The Nursing Supervisor is responsible for crowd control
Debriefing & Feedback to Teams
How & where to provide feedback?

- Intra-arrest
- Post-arrest debriefing
- Post-event review
- Training feedback
Debriefings Improve ROSC!

- Baseline (n = 101): 45%
- Rapid (n = 123): 59%

$P = .03$
“Hot Debrief”

• Ideal situation: Correct bad CPR as it happens
• Download data from devices used during the arrest
• Immediate post-event review

3 questions:
1) What went well?
2) What can we do DIFFERENT next time?
3) Were there any safety or equipment concerns?
“Poor quality CPR should be considered a preventable harm”
Compression Quality Feedback
Variables that affect compression depth:

- Bed Height
- Arm angle to chest
- Step stool utilization
- Rescuer’s height, weight, gender

“I can never find a step stool!!!!”
“...resuscitation data from the defibrillator or any other device or source documentation that captures data at the scene should be used for feedback to the team.”
Post Event Debriefing – “Cold” Debriefs

• Data automatically downloads from the defibrillator
• Evaluate CPR quality
  – Rate
  – Depth
  – Chest Compression Fraction
• Time to defibrillation
• Peri-shock pauses
• Assisted ventilation rate
“Cold” Debriefing Improves performance

Resuscitation with Actual Performance Integrated Debriefing

- Ventilation Rate: Baseline 38, RAPID 49
- Compression Rate: Baseline 65, RAPID 82
- Compression Depth: Baseline 70, RAPID 86

Edelsohn, 2008
Does debriefing post-event improve outcomes?

Pediatric patients 8 years or older
119 cardiac arrest events
   60 Control, 59 Intervention
Prospective quality improvement interventional trial

Debriefing: **Safe environment**
- Patient history
- Pre-arrest studies (radiographs, CT scans, labs)
- Quantitative resuscitation data
- Patient Outcome & Summary

Wolfe et al. (2014) Critical Care Medicine 42(7)
Four Targets: “Excellent CPR”

- Depth $\geq 38$ mm
- Rate $\geq 100$/min
- CPR Fraction $> 90$
- Leaning $< 10$

Wolfe et al. (2014) Critical Care Medicine 42(7)
Post-Event Review

Compression fraction
Goal: at least 80%!
2 months after giving feedback

- ED patient with STEMI
- PEA arrest
- Compression fraction?
- What do you think about the rate?
Pre shock pause issues

38 second pre-shock pause
Ideal Defibrillation
Decreasing time to defibrillation?

- Code team assignment
- Analyze the rhythm quickly, do not waste time!
- Have the defibrillator charged and ready to go before the end of the 2 minute compression cycle OR,
- Performing CPR while a defibrillator is readied for use is strongly recommended for all patients in cardiac arrest (AHA - Class I, LOE B)
- “Hover technique”
- Compressions will deliver oxygen to the heart likely increasing the likelihood of shock success
The Pause

- If the patient does not survive the code
- Silent recognition of the lost life
- Gives staff a moment to contemplate the passage
- Creates closure
- Slows racing minds

Bartels (2014) Critical Care Nurse
To improve patient resuscitation outcomes…

- Strong Code Blue Committee with appointed leadership
- Effective code team leadership
- Rapid code team assembly: Pre-assigned roles
- Using positive team communication tools
- High quality cardiac compressions: Use feedback devices
- Structured training program
Contact info:

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

Chris Laux:
Christine.laux@overlakehospital.org