Code Blue Emergencies: A team task analysis & educational initiative

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Dr. James W. Price BSc., MD, MMEd, FRCPC
Anesthesiologist, Clinical Assistant Professor
UBC Department of Anesthesiology, Pharmacology and Therapeutics
Vancouver General Hospital
Disclosures

• None
Objectives

- Understand the basics of crisis resource management (CRM).
- See examples of CRM principles being used (effectively and ineffectively).
- Learn strategies to become a more effective code blue team member.
- Introduction to a multi-disciplinary code blue training program and evidence supporting it.
Video #1
Video #1: Flight 401 over the Everglades

- 101 fatalities
- Blackbox recorder recreation of the crash
- Multiple examples of poor crisis resource management
“A dozen people die when First Air Flight 6560 slammed into hillside near Resolute Arctic (Aug 20 2011)”

March 25, 2014 Press release:

- Captain did not likely have overview of the situation while attempting to reconcile conflicting navigational readings.
- No concrete suggestion by co-pilot to abort landing
- Autopilot likely disengaged by inadvertently tapping steering wheel.
- Same captain had navigational problems 1 month earlier at same airport that was not reported.
- Crew did not receive adequate training in communication during in-flight emergencies.
- Federal government does not have updated standards or accreditation for flight instructors.
Video #2
Video #2: Visual illusion-attention experiment

• Fixation error

• Sometimes we’re looking for the wrong thing!

• Key is to prevent fixation error in the leader and team members during code blue
Video #3
Video #3: Gradual Change Scene river

- Our eyes are good at picking up change
- Not so good when the change happens gradually
- We can over analyze and miss the obvious
Its all about teamwork!
Introducing the team.....

- MD Code Blue leader
- 1st MD helper
- 2nd MD Helper
- CPR Team: the most important job!!!!
- Drug nurse/MD
- Defibrillator nurse/MD
- Events recorder
- Extra Help.....1-2 people max...
The MD Leader

- Takes charge
- Clearly announces problem and plan
- Coordinates code and assigns appropriate roles
- All communication goes through leader

- Does not get distracted
- Constantly re-evaluating situation and look for input
MD (# 2 in the room)

• Take over leading code vs. help run it?

• Job description comes from code leader: secure airway, draw up drugs, secure IV access etc.

• “I have completed task “X”, what can I help with now?”
Followership

• Just as important as leadership

• Re-inforces team leader to other team members

• Foundation remains in clear, closed-loop communication
CPR Team (2+)

- Once assigned role, confirm with leader and stick with it!
- Hard and fast
- Make sure you switch up!
- Rest of team should constantly be evaluating adequacy of compressions and fatigue of CPR team.
Defibrillator (Nurse/MD)

- Get the pads on while continuing CPR – fight through the crowd and the CPR!

- Keep clear and constant communication with code leader

- Tell code leader when pads are on – ensure they hear you and close the communication loop!
Drug (Nurse/MD)

- Open crash cart and be in constant communication with the code leader.
  i.e: “What drug would you like now?”

- Announce when drug is in loud and clear - close the loop of communication with leader and recorder

- Ask for next drug from code leader
1-2 pairs of extra hands for:

- Patient history
- Sending blood gases, checking lab values
  - I.e.: “Dr. X, the blood gas has been sent...the K+ is 7.1.....what can I do now?”
- Checking blood for transfusion
- Making sure code leader hears you is your responsibility!
Bottom Line: Sound medical and technical knowledge is not enough!!

“Now open even wider, Mr. Stevens…. Just out of curiosity, we’re going to see if we can also cram in this tennis ball.”
Example of a mock PAR scenario
Scenario

- Otherwise well 60 year old lady
- No allergies, no medication
- Previously investigated for “racing heart” a few years ago but negative work up
- Hysterectomy today, uneventful OR
Scenario (cont)

- acute onset “racing heart and feeling faint” in PAR
- Vitals:
  - NIBP 70/40, O2 sat 97% F/M, HR = 140,
  - temp 36.9C
What happened and what do we need to do?
Atrial Fibrillation with rapid ventricular response
Treatment in PAR

- Follow ACLS Guidelines
- Stable vs. Unstable atrial fibrillation
- Cardioversion vs. Pharmacotherapy
- Monitored bed required
- Cardiology follow-up
Is there any evidence for mock code training?

- VGH/UBC Study
- Leadership training
- Teamwork training
VGH/UBC Study

- 2009/10
- 49 OR/PAR nurses, 19 anesthesiologists
- 10 minute questionnaire on code blue experience
- Multiple choice + open ended responses
<table>
<thead>
<tr>
<th>Questions</th>
<th>OR Nurses (n= 22)</th>
<th>PAR Nurses (n= 25)</th>
<th>Anesthesiologists (n= 19)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td>20 female, 2 male</td>
<td>23 female, 2 male</td>
<td>2 female, 17 male</td>
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<tr>
<td><strong>Age</strong></td>
<td>44</td>
<td>42</td>
<td>49</td>
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<td><strong># of codes involved with</strong></td>
<td>11.6</td>
<td>11.1</td>
<td>16.4</td>
</tr>
<tr>
<td><strong>Ideal # code blue practice sessions/year</strong></td>
<td>1.6</td>
<td>1.7</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Nurses Responses

• Strongly supported:
  • mandatory code blue training exercises
  • anesthesiologists leading code
  • debriefing after critical events in OR/PAR

• Few had previously participated in mock code training

• Anxious about participating in training with colleagues watching

Nurses Responses

• Roles:
  • most comfortable as events recorder, drug administrator
  • least comfortable using defibrillator

• Areas of improvement:
  • difficult to identify the lead anesthesiologist
  • anesthesiologist clearly announcing of drugs given during code
Anesthesiologists Responses

• Few had previously participated in mock code training

• Believed that:
  • clearly identified themselves as leading the code
  • debriefing took place more often than nurses

• Areas of Improvement
  • nurses improving communication of their role during a crisis situation

James W. Price, Oliver Applegarth, Mark Vu and John R. Price
Keys to a successful code team (nurses & anesthesiologists)

- Identifiable Code Leader
- Clear Communication
- Crowd Control
- Access to mock code blue training
- Debriefing after critical events

Leadership

- A 10 minute period of instructions in leadership skills improve resuscitation skills of medical students in a simulated code blue environment

Leadership Instructions

• Decide what to do
• Tell your colleagues what to do
• Make short, clear statements
• Adhere to ACLS.

• Medical students at graduation vs. general practitioners in a mock code blue scenario.

Results

• Medical students were significantly slower at:
  • Time to defibrillation
  • Calling for help

• Leadership skills of general practitioners compared to medical students was “far superior”

Improving leadership at code blues

• Use “SBAR”?
  • Situation
  • Background
  • Assessment
  • Recommendations

Code Blue “SBAR”:

• Situation:
  • “I need everyone’s attention, we have a life threatening emergency here, my name is James, the anesthesiologist, I will be the team leader.”

• Background:
  • “We have a 60 year old lady who is post-op for a TAH. History of a racing heart rate but otherwise well. She is currently hypotensive and has symptoms of a racing heart”.

• Assessment:
  • “This arrhythmia looks like unstable, rapid atrial fibrillation”

• Recommendation:
  • “This lady requires urgent cardioversion. Jenny (Nurse 1): please get the crash cart and place the cardiac pads on her – let me know when you are finished. Jeff (Nurse 2): please bring the drug cart to the bedside and draw up 2 mg of midazolam for sedation - let me know when you are ready. Patrick (Anesthesiology resident): please get a #3 MacIntosh laryngoscope and #7.5 endotracheal tube ready – let me know when you have them”
Team training: Salas et al.

- cross-discipline meta-analysis examining whether team training translates into improved team performance
- 2650 teams (military, aviation and the business sector).
- 80 of the teams from medicine.

Salas:

“Team training accounted for approximately 12% to 19% of the variance in examined outcomes”

“given the heightened interest in team training in health care, change agents in health care institutions should utilize this information to bolster their argument for implementing such training”
Nurse Training

- 24 studies

“nurses benefited from practicing commonly seen arrest scenarios using simulation”

Nurses (cont.)

- all critical care nurses should be ACLS trained
- refresher courses and multi-disciplinary mock codes using simulation technology help prevent skill degradation
- “surprise” mock codes are key to improving team performance during actual emergency situations

What we do

• Regular mock codes (OR, PAR)
• Held during nursing education/rounds time
• Staff involvement as code leaders, code team members
• Critical event experience in a safe learning environment
Keys…remember the videos!!!

• Need a code blue leader AND a keen, loud, communicative team

• Appropriate designation of roles:
  • once assigned stick with them.

• Close the loops of communication
  • i.e. announce the task you are given back to the leader and again once you have completed task

• Speak up if you have a suggestion

  We’re all in it for the patient
Objectives Revisited...

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The End

I'll tell you what this means, Norm -- no size restrictions and screw the limit.
Questions/Comments?