The In-hospital Implementation of the Pit Crew Resuscitation Model

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FINANCIAL DISCLOSURE:
We have no financial relationships to disclose.

UNLABELED/UNAPPROVED USES DISCLOSURE:
There will be no off-label or unapproved uses of medications or devices in this presentation.
Objectives

On completion of this presentation the participant will be able to…

1) Contrast the Pit Crew Resuscitation Model for in and out of hospital settings

2) Describe three techniques of Pit Crew Training for in hospital responders

3) Compare and contrast training drills to discovery exercises
Multidisciplinary Training
Learning from Mistakes
Why are we doing this?

• The patients
• The staff
• The teams
• The hospital
• The community

The Golden Circle

Start With Why
Book by Simon Sinek
“Code Blue”

- Respiratory and/or Cardiac Arrest
- Emergent need for additional assistance
- *Time Lost is Brain Lost*
The Pit Crew Concept
Improving the quality of cardiopulmonary resuscitation by training dedicated cardiac arrest teams incorporating a mechanical load-distributing device at the emergency department


Implementation of Pit Crew Approach and Cardiopulmonary Resuscitation Metrics for Out-of-Hospital Cardiac Arrest Improves Patient Survival and Neurological Outcome

Christy L. Hopkins, MD, Chris Burt, NREMT-P, Shane Moser, AAS, Jack Meersman, NREMT-P, Clair Baldwin, NREMT-P, Scott T. Youngquist, MD, MBA

How ‘pit crew’ procedures improve cardiac arrest resuscitations in the field

Our Reality

“How many people can we put in a room and the patient still live?”

“Who is in charge here?”

The escalating leadership model

“The specialists told me to do it!!!”
<table>
<thead>
<tr>
<th><strong>Emergency Medicine</strong></th>
<th><strong>Acute Care / In-patient</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient comes to the team or</td>
<td>Team runs to patient</td>
</tr>
<tr>
<td>The team members arrive in waves</td>
<td>Team forms from chaos</td>
</tr>
<tr>
<td>Space is often tight but can be modified</td>
<td>Space is limited and unchangeable</td>
</tr>
<tr>
<td>Set hierarchy of command</td>
<td>Unpredictable leadership structure</td>
</tr>
<tr>
<td>Organized Team</td>
<td>Ad Hoc Team</td>
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</tbody>
</table>
Ad Hoc Teams

An ad hoc team setting is one in which teammates must work together to obtain a common goal, but without any prior agreement regarding how to work together.

Genter, Agmon & Stone (2011)

A type of team created for a limited duration that is designed to address itself to resolving one particular problem.

Larson & LaFasto (1989)
Team Processes: Stages of Development

Tuckman (1965)
Tuckman & Jenson (1977)
Team Processes: Stages of Development

- Forming
- Storming
- Norming
- Performing
- Adjourning

Tuckman (1965)
Tuckman & Jenson (1977)
Possible Solutions

• Online training / lectures
• Dedicated Code Blue team
• Simulation Based Training
  – MOCK CODES!!!
History of Code Blue Drills

• Mishkin 1982 – “Simulated interdisciplinary role rehearsal”
• Stross 1983 – “Mock-arrest” used to test physician skill retention
• Baker 1986 – Reviewed mock arrests with pediatric residents using “video cassette recordings”
• Houstle 1988 – Described using annual mock arrest drills for all nurses
• Makrevis 1990 – Outlined how to prepare and conduct a mock code.
Code Drill Fatigue

- Alarm fatigue
- Dedicated code team
  - ICU nurses, MDs, other allied health providers
- Takes away from ICU patient care
- Scheduling of blocked vs single drills

Double the number of code calls (Cry Wolf Syndrome)

675+ beds
22+ nurses
stations
2500+ nurses

10 nurses per code
250 codes per year
Each nurse sees one drill
Purpose of the Drill

Training (experiences)

Discovery (human systems)
Sørensen, et al. (2017)

In Situ
- Unique for each nurse
- Keeps nurses on units
- Consistent simulation experience

Ex Situ
- Easy setup
- Consistent simulation
- Additional enhancements
Two learning groups
- First responders
- ACLS Code Team

Differing objectives
- BCLS and code initiation
- ACLS and full team management

Mob of responders with different levels of skills
- Nurses and technicians
- Plus ICU nurses, MDs, therapists, pharmacists, med students, “heros”
Methods

- **First responder drills – In Situ**
  - Video assisted debrief
  - Confederate/actor as ICU nurse/Physician leader
  - Focus on pre-ACLS treatment with continued care after team arrives

- **Ex Situ Simulations**
  - Focus on incorporating leadership with first responders
  - Confederates asked to play role of first responder

- **Training through Chaos**
  - Rapid team formation
  - Emphasis on “high energy”
Pit crew resuscitation Training

- Two forms:
  - Nursing staff
  - ACLS teams
- 3-4 per shift (15-30 participants)
- Finder sent to room for “assessment”...
- Finder triggered code activation.
- Each session took 20-25 minutes once started

Conclusions
1 – Many weaknesses found for BLS skills
2 – Enjoyed the experience and recommended it hospital wide.
3 – Discovered: finder confusion, first responder chaos, leaderless teams, equipment disorder, limited space, and disjointed integration.

Profile
- Scheduled
- Partial Team
- Training & Discovery
- Low fidelity
- In situ
Leaderless Role Assignment

1. Enter Room
2. Determine Situation
3. Recall list of roles
4. Determine if role is filled
5. Assume role if filled
6. Some else takes the role
Leader Based Role Assignment

1. Enter Room
2. Identify leader
   - If no leader, assume role
   - Take role assigned
   - Recall list of roles
   - Assign roles
Ex Situ Simulations

• Code blue residents
• *Interns as first responders*
  – Recognize code situation
  – *Initiate code blue efforts (BLS)*
  – *Hand off when leader arrives*
• *Upper levels as leaders*
  – *Directs team and ACLS efforts*
  – *Focus is on Pit Crew skills*

Profile
- Scheduled
- Partial team
- Training
- High fidelity
- Ex Situ

Conclusions
1 – As new clinicians, BCLS must be the starting point
2 – Using the Resident to teach his/her interns BCLS and teams was well received
Training in Chaos

• New nurse orientation
• A shift from lecture to active engagement
• 4 rotations:
  - *Total chaos*
  - *Assigned spots*
  - *Disorderly staff*
  - *Disorderly family*

Profile
- Scheduled
- Partial team
- Training
- Low fidelity
- In situ

Conclusions
1 – Students enjoy high energy events over lectures
2 – For new employees this was a great ice-breaker
Techniques

• Video Review

• Collection of themes

• Snowballing of debrief points
Observations

• Finder confusion = Do I call or do I run now?
• First responder chaos = Who’s on first?
• Leaderless teams = Who’s the boss?
• Equipment disorder = Tool or Obstruction
• Limited space = Just ONE MORE person
• Disjointed integration = New leader DANCE
If in doubt CALL A CODE BLUE

No pulse, START CPR immediately

Hands only…

Keep shouting until help arrives
FIRST RESPONDER CHAOS & LEADERLESS TEAMS

- Second person is the Leader
- Leader gives instructions
- Fill the crew fast... before ACLS
EQUIPMENT DISORDER & LIMITED SPACE

• Assign someone to clear the room

• The crash cart can be a problem

• The bed must be prepared or stool

• CPR is the priority

• Back-up CPR people remain outside
DISJOINTED INTEGRATION

- Leader stands at the foot of the bed
- Code Blue staff integrate without replacing
- An ACLS leader remains in charge until change is necessary
  - Needed for another task
  - Over his or her head
  - The senior person sees the need to replace
- PCR remain until replaced (but not by the code team)
Discussion

• Reception
  – Positive feedback

• Obstacles
  – Staffing the training team
  – Nursing workload

• Plans for the Future
  – Continue the push
  – Incorporate into orientation
  – Enhance ACLS and PALS training
Conclusion

• Training methods must change

• Pit Crew is different based on the setting and system

• Test the system and tweak

• Stick to the WHY!!!
References


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