DO RESUSCITATION TEAMS AT TOP HOSPITALS FOR IN-HOSPITAL CARDIAC ARREST DIFFER?

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IHCA OUTCOMES VARY ACROSS HOSPITALS

What Distinguishes these Top-Performing Hospitals?
Most demonstrate structural factors differ between top-performing hospitals and others

- Size
- Geography
- Teaching status

Surveys find resuscitation practices differ but modestly explain outcomes variability

WHAT HOSPITALS DO BETTER?
Survey of 150 U.S. hospitals followed by a qualitative phase consisting of semi-structured, in-person interviews and site visits at 9 hospitals across the U.S.

My presentation focuses on the role of resuscitation teams during IHCA.
# Hospital Selection

GWTS-R hospital selection, 2012-2014:

- At least 20 IHCAs during this period
- Selected based on risk-standardized survival; positive deviance approach
- 5 “Top”, 1 “Middle”, & 3 “Bottom” Hospitals
- Also considered geography, size, & teaching
- 12 hospitals approached; 9 accepted

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Region</th>
<th>Staffed Beds</th>
<th>RSSR, percentile, 2014</th>
<th>Teaching Status</th>
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<tbody>
<tr>
<td>1</td>
<td>Midwest</td>
<td>&gt;800</td>
<td>92.7</td>
<td>Major</td>
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<td>&gt;400 to 800</td>
<td>97.8</td>
<td>Non-Teaching</td>
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<tr>
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<td>Northeast</td>
<td>&gt;400 to 800</td>
<td>10.3</td>
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</table>

RSSR = risk-standardized survival rate
DATA COLLECTION

- 158 interviews performed between 2016-2017
  - CEOs, Chiefs of Staff, VPs, Directors, QI Staff
  - Hospitalists, Critical Care & Emergency Medicine Docs, Anesthesiologists, & Residents
  - Nurses (NPs, ICU nurses, floor nurses), RT, PAs, Pharmacy, IV Team, ACLS Staff, Security, Spiritual Services, & Biomed Engineering
- 78 hours 29 mins; 778,482 transcribed words
METHODS: INTERVIEWS

- Interviewees used semi-structured interview guide

- 1 Clinician:1 Methods Expert paired in interviews; only 2 PIs “unblinded” to hospital performance

Pre-IHCA  |  During IHCA  |  Post-IHCA
METHODS: ANALYSIS

- Transcripts coded by 4 team members
- Analyzed using MAXQDA software
- Summary reports generated for each site and reviewed together
- Team members met regularly to question, discuss, and document interpretations and findings
- Key themes identified through rigorous analytic process and based on our conceptual framework
Results
FOUR THEMES DISTINGUISHED RESUSCITATION TEAMS

DESIGN

COMPOSITION & ROLES

COMMUNICATION & LEADERSHIP

QI
Theme #1: Team Design

• Two axes (for Nursing)
  • **Dedicated Teams**: Were members specifically tasked to teams?
  • **Designated Teams**: Were members assigned to teams prior to IHCA?

• Top hospitals: Dedicated or Designated teams

• Middle & bottom hospitals did **not**
DEDICATED TEAM

• "You have the ‘team’…a dedicated team… That’s this is all they’re doing, waiting, like having a fire service…”

• Critical Care Doc, Hospital A
Designated Team

• “They come up with a plan beforehand, on who’s going to assume that role so they’re not doing it in the moment, during the crisis.”

• Nurse Supervisor, Hospital B
• “We’ve tried to say, ‘okay, at the beginning of the shift, you're the code nurse,’ but it never…very rarely happened…so usually, we don’t assign code nurses anymore. As soon as we hear it called, you will see if there’s people in the hallway, or a head sticking out doors”

• Critical Care Nurse Hospital G
Theme #2: Team Composition & Roles

- Composition did not differ across hospitals for key staff: docs, nurses, RT, anesthesia

- More variable around pharmacy, IV, EKG, spiritual services, security but this was not consistent across hospitals
• Top hospitals had roles & responsibilities for team members delineated prior to an IHCA

• Often trained to perform specific functions (including empowerment of frontline nursing)

• Bottom hospitals assigned roles after arrival leading to possible delays and confusion
“15 years ago when I started it was a free for all…. So when (Medical Director) took over and, and kind of structured everything…You just show up and you know what you’re supposed to do, and there’s no screaming and there’s no yelling.”

• Critical Care Nurse; Hospital B
OTHER FACTORS RELATED TO ROLES

• Universal complaint of “crowd control”

• Major differences in Residents at hospitals with teaching programs
  • Top Hospitals appeared to support residents with senior staff also available
  • Bottom hospitals less support for HOs
“I don't mean they [residents] suck, but look at what we give 'em. They come in as first years, they don't know anything. They come in as second years, they sort of know what's going on. By the third year, their starting their stride. They start to get good at what they do, and then they graduate and leave, and then we're back to the people that are being fed through the PEZ container…”

• ACLS Instructor, Hospital I
• Top hospitals emphasized communication & mutual interdisciplinary respect with corrective mechanisms for dealing with problems

• Bottom hospitals struggled with communication and frequently described codes as “chaos”
Theme #4: QI Efforts

- “Mock Codes” universally praised but treated differently at top hospitals
  - Multidisciplinary
  - “Unplanned”
  - Focused with debriefs (“less than 20 mins”)

“I imagine an orchestra that never practices…”
WHAT DIDN’T DISTINGUISH TOP HOSPITALS?

• ACLS Certification Requirements

• Technology
  • Ultrasound
  • Mechanical Chest Compression
  • Bedside Laboratory Tests
DISCUSSION
STUDY LIMITATIONS

• No estimates of effect size or statistical significance (as with quantitative evaluation)

• Extending our findings to the ~6000 US hospitals complicated by unique local contexts of each

• We focused on resuscitation teams only
CONCLUSIONS

- Key themes distinguish top hospitals’ resuscitation teams from middle- & bottom hospitals
- Adopting approaches that address these themes may help hospitals to improve IHCA outcomes
- Additional work will need to confirm these findings in a larger and generalizable cohort of hospitals
HUMILITY
THANK YOU