Resuscitation—Improvement beyond the ABCs

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The case for improvement

Improvement domains

Putting the pieces together: CQI
So what?

OHCA: 20-140/100,000
2-11% survival

CPA-US: >500,000/yr
<15% survival
Canada: ~40,000/yr
85% OHCA, <5%
Why bother?

“They all die anyway, don’t they?..”
Outcomes: It’s more than just the patients

ROC: Survival 3-16%
NHS: 2-12%

GWTG: Adult 18% (IQR 12-22%)
Pedi 36% (IQR 33-49%)
What is quality CPR?

CPR Quality: Improving Cardiac Resuscitation Outcomes Both Inside and Outside the Hospital: A Consensus Statement From the American Heart Association
Peter A. Meaney, Bentley J. Bobrow, Mary E. Mancini, Jim Christenson, Allan R. de Caen, Farhan Bhanji, Benjamin S. Abella, Monica E. Kleinman, Dana P. Edelson, Robert A. Berg, Tom P. Aufderheide, Venu Menon and Marion Leary

*Circulation.* published online June 25, 2013;

Part 8: Education, Implementation, and Teams
2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations
Farhan Bhanji, Co-Chair*; Judith C. Finn, Co-Chair*; Andrew Lockey; Koenraad Monsieurs; Robei Frengley; Taku Iwami; Eddy Lang; Matthew Huei-Ming Ma; Mary E. Mancini; Mary Ann McNeil Robert Greif; John E. Billi; Vinay M. Nadkarni; Blair Bigham; on behalf of the Education, Implementation, and Teams Chapter Collaborators
Quality CPR: More than the ABCs

- Optimize outcomes
- Increase safety
- Decrease harm

Team
Systems
Provider
Team Performance

- Challenges:
  - Skill differentiation
  - Temporal instability
- Expectation states
- Hierarchies
  - Formal/informal rules
  - Action & communication barriers
  - Here & now + history
- Ad hoc teams more at risk
- Tied to task performance & outcomes

Team of experts → expert team

Hunziker S. JACC 2011; 57:2381-2388.
Team Performance: Communication

- Errors start at handover
- Breakdowns associated with morbidity and mortality
- Counter measures:
  - Voice specific concerns
  - “Talk to the room”
  - Periodic review
- Dual loop communication pattern
  - Role of a “first assist” or event manager

Taylor K. Resuscitation 2014; 85: 1342-7
Crisis Resource Management (CRM)

- a.k.a Crew Resource Management
- Non-technical skills, e.g.
  - Task management
  - Teamwork
  - Leadership
  - Situational awareness
- Definitional ambiguity
- Simulation-based > didactic
- “Makes sense”; data lacking

Rall M. Air Rescue Mag. 2013;3:35-40
Systems performance

Taxonomy of Systems of Care: SPSO
Structure Process System Outcome

Structure
- People
- Education
- Equipment

Process
- Protocols
- Policies
- Procedures

System
- Programs
- Organization
- Culture

Patient Outcome
- Safety
- Quality
- Satisfaction

Continuous Quality Improvement
- Integration, Collaboration, Measurement, Benchmarking, Feedback

Kronick SL. Circulation. 2015;132:S397-S413
Systems matter

Safety Reporting in Danish CPR (2004-2006)

- Calling team: 26%
- Human Performance: 18%
- Equipment failure: 16%
- Equipment missing: 11%
- Physical Env: 11%
- Med Error: 7%
- Insufficient Monitoring: 11%
Errors

- Medication administration
- Defibrillation
- Airway
- Alerting (hosp communications)
- Vascular access
- Compressions
- Leadership
- Protocol deviation
- Equipment issues

Ornato JP. Resuscitation 83 (2012) 63–69

* p=.0001
CQI in Resuscitation

Code Quality Review Process

Data collection and entry
1. Real-time
2. Delayed chart review
3. Database entry

Code Review Committee
1. Standardized presentation
2. QI discussion
3. Data entry-QI components

Quality indicators
• Excess noise
• Identified leader
• Equipment failure

• Closed loop communication
• Systems failure
• Technical error
“Poor quality CPR should be considered a preventable harm.”
Quality Review: Closing the loop

**Code**

1. Real-time
2. Delayed chart review
3. Database entry

**Follow Up**

1. Education
2. Team feedback
3. Serial presentation

**Data collection and entry**

- 1. Real-time
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**Code Review Committee**

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CQI: Performance is a dynamic
Quality Review: Focus on the frontline

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Code

Hot Wash
• High risk-high stakes industries
• High reliability organizations
• Mainstay of simulation medical education
• Cheap, effective
• On average, acute debriefing enhances performance by 25%
Take home points

• Patient outcomes after CPR remain disappointing.
• Improvement requires knowledge of individual, team and systems performance.
• Methods developed in other high risk-high stakes environments can be utilized in resuscitation programs.
• Data-driven improvement utilizing CQI principles can identify gaps and track ongoing performance.
Thank You

Patient-initiated CPR: The next frontier?