Improving Quality in EMS

Measuring and Improving Your EMS System

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Conflict of Interest Disclosure

NONE

A conflict of interest exists when an individual is in a position to profit directly or indirectly through application of authority, influence, or knowledge in relation to the affairs of ABC. A conflict of interest also exists if a relative benefits or when the organization is adversely affected in any way.

Objectives

- "Can I Get a QA program?"
- Overview of Quality Concepts as they Relate to EMS
- Overview Quality Improvement elements and their use
- Discuss strategies for implementing a QI program

- "Judgment Comes Experience. Experience Comes From Bad Judgment!"
Quality in Health Care-History

- The Pharoah’s Physician
  - Buried with Pharoah
- Florence Nightingale, 1850’s
  - Documentation Too poor to evaluate Care
- Codman, Mass General, 1912
  - Thrown off Medical Staff for Asking Questions
- JCAH, 1950’s
- Medicare, 1960’s

Quality in Medicine

- Donebedian
- Juran
- Deming

<table>
<thead>
<tr>
<th>Image 206x406 to 248x459</th>
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<tbody>
<tr>
<td>Image 176x339 to 241x392</td>
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<td>Image 106x333 to 151x403</td>
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<tr>
<td>Image 86x107 to 254x233</td>
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Quality - What is It?

- “Conformance to a Standard of Excellence” - JCAHO
- Quality is Fitness for Use - Juran
- Like Pornography, We Know it when we see it?
- Quality is What the Customer says it Is

Safety

- Ensure processes are in Place to prevent Occurrence of Rare, Catastrophic Events
  - Operation on Wrong Side
  - Esophageal ET tube
- Focus on
  - Adverse Outcomes
  - Near Misses
  - Unsafe Conditions

Quality indicators for Out-of-hospital EMS: the Paramedics' Perspective


- Attributes
- Low Cost
- Quality training
- Patient Outcome
- Innovative Care
- Timely Care
- Public Confidence
- Job Satisfaction
- How to Measure?
- Expenses
- Objective evaluations
- Quantify outcomes
- Completed research
- Response time
- Surveys
- Staff turnover
Quality Improvement – Why?

- Improvement
  - Ethical Imperative
  - How are We Doing?
  - What Can we Improve?
- Preservation
  - Can we justify our existence/Our budget?
  - Compared to other EMS leaders?
  - Compared to other potential vendors?
- Economics
  - QI Activities Mandated for CMS For Hospital Medicare Reimbursement
  - Not Mandated as of yet for EMS

Keys to EMS QI

1. Get commitment for the top—QI the organization’s program.
2. Do your homework—statute, policy
3. Develop Your Partners
4. Define the scope of your program
5. Focus on Improving Structure
6. Ensure you can get data-
7. Blend process and outcome measures
8. Evaluate and Improve the QI Process.
9. Evolve a culture—Quality and Safety

Commitment from the Top

- Institution Commitment
  - Deming
Integrate QI into the fabric of the Organization- Peer Review

- Sample of cases
  - Runsheet
  - Radio call
- Rotating evaluation by front line medics
- Improved performance
  - All medics-22%
  - Auditing medics-62.5%


Do Your Homework

- Statutes
  - State Specific QI language; protection
  - Understand HIPPA
  - Understand Freedom of Information Act (FOIA)
- Policy
  - Current policies you have
  - Policy gaps

NAEMSO 2011 Survey
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Key Partners

- Agency Leadership
- Hospital Leadership
- He who has the Keys to the Kingdom ($$$)
- Service Line Leaders
  - Trauma, Stroke, Cardiology, Pediatrics
- Agency EMS/Clinical Coordinator

Data-Key Partners

- Agency QI/ Clinical/ EMS Coordinator
  - Key Point of Attachment to system
  - Information conduit
- Dispatch supervisor
- Hospital Data sources
  - Trauma Registrar
  - Cardiology Manager
  - Stroke Coordinator
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Define the Scope of Your Program

- EMS is more than ambulances and EMTs
- Scope should match your:
  - authority
  - Influence
  - Resources
  - Dispatch-Political and Policy challenges in Many Systems

Define The Scope of Your Program

- First Response
  - Can you get the data
- Paramedics
  - How much data do you want and need
    - Procedures
    - Assessments
- Hospitals-
  - Interests will drive your process-Stroke, STEMI, trauma

- Start with the End in Mind
Focus on Improving Structure - Most Bang for the Buck

- System Design
- Seattle EMS
- Credentials
- System Standards
  - facilities;
  - Equipment
  - Function – e.g. response

Credentialling

- Providers
  - Education+Licenses
  - Certifications-ACLS, PALS, PHTLS, etc
  - Testing-Initial and Re-certification (?)
  - Skill Assessment and Maintenance
- Agencies
  - Internal-System standards
  - External-CAAS; (?Fire service)
- Hospitals

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Data-How to Get It-How to Use It

- Not necessarily spreadsheets and graphs
- Qualitative Data crucial
  - Complaints
  - Incident investigations
    - Deming-“Every Defect is a Treasure”
  - Anecdotes
  - Adverse Outcomes- M&M?

“Every Defect is a Treasure”
Errors in EMS

- Incidents
- Complaints
- Confidential Reporting systems
  - Aviation Safety Reporting System (ASRS)
  - PaSers
    - System/Protocol, human Error, medication, equipment
  - U. Rochester
  - EMS Voluntary Reporting System
    - [http://event.clirems.org/](http://event.clirems.org/)

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“A bad system will DEFEND a good person every time.”
W. Edwards Deming

Understanding Processes

Concept in EMS Quality Management

Quality Improvement

Figure 2-3: CQI works to improve performance of all providers, not just outliers at the low end of the curve.
Pareto Analysis of Unsuccessful Intubation

Measuring the System – Blend Process and Outcome Measures

- Evaluate your Key Processes
- Use Benchmarks
- Outcome Evaluations

Core Measures and Benchmarking

- NC Performance Improvement Center
- www.emspic.org

Trama:
- Acute coronary syndrome/Heart attack
- Cardiac arrest;
- Stroke;
- Respiratory;
- Pediatric;
- Pain intervention;
- Skill performance by EMS providers;
- EMS response and transport; and
- Public education of bystander CPR
EMS STEMI Patients - System Performance Measures

- EMS Function
  - Field EKGs Done?
  - Medics are trained to read STEMI?
  - System to communicate STEMI dx?

- EMS-Hospital Interface
  - Integrated System to Use Field EKG?
  - Field EKGs used?
  - EMS Contact to Reperfusion?

- Hospital process
  - Door to Reperfusion times?

EMS EKG Implementation Over Time (of EMS Transports)

<table>
<thead>
<tr>
<th>Year</th>
<th>% All EMS EKG</th>
<th>% EMS Activations</th>
<th>% D2B&lt; 90 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>54.1%</td>
<td>23.0%</td>
<td>59.1%</td>
</tr>
<tr>
<td>2006</td>
<td>50.0%</td>
<td>30.0%</td>
<td>60.3%</td>
</tr>
<tr>
<td>2007</td>
<td>70.0%</td>
<td>42.5%</td>
<td>73.8%</td>
</tr>
<tr>
<td>2008</td>
<td>75.0%</td>
<td>36.9%</td>
<td>82.4%</td>
</tr>
<tr>
<td>2009</td>
<td>81.4%</td>
<td>44.2%</td>
<td>83.1%</td>
</tr>
<tr>
<td>2010*</td>
<td>88.5%</td>
<td>63.9%</td>
<td>87.9%</td>
</tr>
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Measuring Outcome:

- Death
- Disability
- Disease
- Dissatisfaction
- Destitution
- Discomfort

Sudden Cardiac Death to Evaluate EMS Systems

1. Clearly Definable Clinical Entity
2. Treatment is Standardized
3. EMS shown to definitely improve outcome
4. Survival is time dependant
5. Clear outcome (dead or alive)
6. Standardized data Definitions
7. Comparison Literature available

Survival Rate and Incidence of Cardiac Arrest-ROC Consortium (N=11,895)

Nichol, et al. JAMA. 2008 Sep 24;300(12):1423-31
Optimal defibrillation response intervals for maximum out-of-hospital cardiac arrest survival rates

- Fig. 1. Actual survival by cumulative response interval with 95% CIs.


Arrest Analysis

- Asystole
- Arrival 10:04
- ET @ 10:16
  - (3 attempts)
  - 20 sec Pause before defib
  - 30 sec ET pause
  - 30:2 ratio?

Quality of CPR-Impact of Direct Feedback and CPR performance

<table>
<thead>
<tr>
<th></th>
<th>Pre-intervention 10/7-12/08</th>
<th>Post intervention 1/09-7/09</th>
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<tbody>
<tr>
<td>Compressions before intubation</td>
<td>67.2/min</td>
<td>80.5/min</td>
</tr>
<tr>
<td>Compressions after intubation</td>
<td>78.6/min</td>
<td>97.2/min</td>
</tr>
<tr>
<td># Pauses &gt;20 seconds</td>
<td>4.2</td>
<td>2.7</td>
</tr>
<tr>
<td>Pre Shock Pause</td>
<td>21.8 sec</td>
<td>11.1 sec</td>
</tr>
<tr>
<td>Post shock pause</td>
<td>14.5 sec</td>
<td>4.9 sec</td>
</tr>
<tr>
<td>Survival to Admit</td>
<td>26.9%</td>
<td>37.5%</td>
</tr>
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Customer satisfaction in a large urban fire department EMS system


- Telephone Survey-Customer Service reps
- 10% sample
- Well satisfied
- Major source of dissatisfaction perceived long response time


- EMS Adults transported with Lower Extremity Fractures
  - 22 received EMS analgesia
    - 911-Analgesia 28.4 minutes
  - 62 received ED analgesia
    - 911-Analgesia 146 minutes

  *Long Bone Fx Pain Management- Core Measure for EM

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Getting to Improvement

- Lines of Communication
  - What you Have?
  - What you Need?
  - Develop Partners that Can Effect Change

- Challenging in a 24/7/365 world
- Understanding the Limitations/Costs

Evaluating the Quality of the QI Process

- ACS Trauma Center Verification Process
- Chart Review
  - Deaths
  - Adverse events
  - Quality Issues Identified
- Reviews QI process
  - Monitoring
  - Feedback loop
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Develop The Culture

- EMS Culture of Safety. Org
- "Just Culture"
- “How Did the Organization Fail the Individual?”
- Separate Behaviors from Outcome
  - Console Human Error
  - Coach at Risk Behavior
  - Punish Reckless Behavior

QI Art and Science

- Data Collection
  - Science
- Improvement
  - Art
Conclusions

- Quality - Crucial Issue in EMS and All of Health Care
- Improvement requires organizational commitment, resources, culture
- Leadership Crucial
- Goal is Improvement not measurement