Rapid Response Systems: Data and QI

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Data Collection

- Core data: Impact of Afferent/Efferents
  - Crisis Events/1000 admissions
  - Outcomes/1000 admissions
    - Unexpected death outside ICU
    - Unexpected ICU admits
    - Cardiac arrests
- Supplemental data: Causes of crisis
  - Ask questions; follow concerns
  - Locations/time of day/service/disease/medications/staffing/demographics/?

If you can’t measure it

- You can’t change it!
- Therefore must figure out how to measure behaviors for every QI project. (PS: keep it easy!)
  - 1. Define a population

CRITERIA FOR INITIATING “CONDITION C” (CRISIS)

- **Respiratory:**
  - Rate <8 or >36
  - New onset difficulty breathing
  - New pulse oximeter reading less than 85% for more than 5 minutes (unless patient known to have chronic hypoxemia).
- **Heart Rate:**
  - <40 or >140 with new symptoms; or any rate >160
- **Blood Pressure:**
  - <80 or >200 systolic or 110 diastolic with symptoms (neurologic change, chest pain, difficulty breathing)
- **Acute Neurologic Change:**
  - Acute loss of consciousness,
  - New onset lethargy or difficulty waking,
  - Sudden collapse,
  - Seizure (outside of seizure monitoring unit)
  - Sudden loss of movement (or weakness) of face, arm or leg
**MET Mandatory Report**

- Operator log/call back
- No effort on part of staff
- Focused audit
- 48 hours before event
- Audit tool
- Errors & issues
- What can we Prevent?

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**If you can’t measure it**

- You can’t change it!
- Therefore must figure out how to measure behaviors for every QI project.
  - Define a population
  - Identify a behavior/outcome

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**Data Collection Form: Demographics/Overview**

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**Data Collection Form: Medical Details**

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**Data Collection Form: Event Details**

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**(MET) responses associated with medical “errors”**.

- MET responses not associated with errors (68.7%)
- MET responses associated with errors (31.3%)

Root Cause Analysis:

All Factors:
- Human
- Equipment
- Data management
- Environmental
- Leadership
- Communication

Effect

Equipment

What is an Error?

- Errors are recognized only as norms are established, and
- Deviations are associated with untoward outcome (Rosa Lynn Pinkus)
  - Surgery without aseptic technique
  - Heparin for acute myocardial infarction
  - Use of phenergan
  - Multiple defibrillators in a single institution
  - Not using standard order set for PCA

What can we do to prevent the adverse outcome from ever happening again?

This sometimes means cultural change

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- Therefore must figure out how to measure behaviors for every QI project.
  - Define a population
  - Identify a behavior/outcome
  - Create a change team

Detection variability increases as monitoring decreases

PCA Task Force Multidisciplinary Team

Project Team (UPMC-P PCA Task Force)
Colleen, RN; Robert, MD Co-Chairs

Darlene Paulk, RN  Victoria MD
Jeanne L, RN  Anne L, RN
Joanne, RPh  Kathy Dalesinger, RN
Peg Vale, RPh  Melanie szor, RN
Sue Skirvin, R.Ph  Sherry Sterns, RN
Moe S, Pharm D  Sissy Carter, RN
Michaela MD  Jennifer Eker, RN
Diane Ver, RN
If you can’t measure it

- You can’t change it!
- Therefore must figure out how to measure behaviors for every QI project.
  - Define a population
  - Identify a behavior/outcome
  - Create a change team
  - Make a change, measure impact

Baseline Data

<table>
<thead>
<tr>
<th>Month</th>
<th>% Conditions A &amp; C Involving PCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr</td>
<td>10.00</td>
</tr>
<tr>
<td>Jun</td>
<td>8.00</td>
</tr>
<tr>
<td>Aug</td>
<td>6.00</td>
</tr>
<tr>
<td>Oct</td>
<td>4.00</td>
</tr>
<tr>
<td>Dec</td>
<td>2.00</td>
</tr>
<tr>
<td>Feb</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Threshold = 0%

Continued Cardiac Arrest Rate Improvement: -38%

Diabetes Patient Safety Task Force

- Mary MD, Endocrine, Chair
- Monica, CRNP
- Amy, PharmD
- Carolyn, RN
- Janis, RN
- Patrick MD, Anesthesiology
- Michael MD, Patient safety
- Deborah PhD
- Linda, MSN, Diabetes Institute
- Ralph MD, IM

Diabetes Patient Safety Task Force

- Created to fix Cond C: hypoglycemia.
- Discovered 600 events/month, multiple methods treating.
- Developed: hypoglycemia order set, DKA treatment orders, Periop DM management, Insulin Pump management, nursing education.


**Phenergan induced METs**

<table>
<thead>
<tr>
<th></th>
<th>Pre interchange</th>
<th>Post interchange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promethazine Utilization</td>
<td></td>
<td>Increased (p=&lt;0.001)</td>
</tr>
<tr>
<td>Promethazine ADE rate</td>
<td>1 event</td>
<td>13 events</td>
</tr>
<tr>
<td>Opioids and/or sedatives</td>
<td></td>
<td>11/14</td>
</tr>
</tbody>
</table>


**Patient risk in isolation 2003-4**

- Condition A (n=308), C (n=2562)
- Isolation lower rate for C events, higher rate for arrests

<table>
<thead>
<tr>
<th></th>
<th>MET</th>
<th>No MET</th>
<th>Event rate (p=.002)</th>
<th>Arrest rate (p=.16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolation</td>
<td>253</td>
<td>7290</td>
<td>3.3/1000 admit</td>
<td>5.4/1000 admit</td>
</tr>
<tr>
<td>No isolation</td>
<td>2309</td>
<td>53968</td>
<td>4.1/1000 admits</td>
<td>4.7/1000 admit</td>
</tr>
</tbody>
</table>

Sheth H, Galhotra S. UPMC Personal communication

**Fewer restraints=more falls**

**Rapid Response Event Analysis**

- Data goldmine for harmful outcomes
- Analysis identifies groups of events that lead to harm
- Enables retargeting/reemphasis of safety efforts
- Enables motivating organizational responsiveness