Diagnostics for Patient Safety and Quality of Care

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This presenter has nothing to disclose.

Vulnerable System Syndrome

- Three core pathologies:
  - Blame
  - Denial
  - And the pursuit of (the wrong kind of) excellence
How can we learn about our system performance?

Diagnostic Journey

• Do people die unnecessarily every day in our hospitals?

• In order for us to understand this, we need a diagnostic journey that moves out of a model for judgment and into a model for learning.
Move Your Dot™: Measuring, Evaluating, and Reducing Hospital Mortality Rates (Part 1)

The Mortality Diagnostic – 2x2 Matrix

- Review most recent 50 consecutive deaths.
- Place them into a two by two matrix based on:
  - Was the patient admitted for palliative care?
  - Was the patient admitted to the ICU?
- Focus your work initially on boxes that have at least 20% of your mortality.
Diagnostic – The 2 x 2 Matrix

Admitted to the ICU?

Yes  No

Admitted for Palliative Care Only?

Yes  Box #1  Box #2

No  Box #3  Box #4

The Mortality Diagnostic
Failure to Recognize, Plan, Communicate

• Analyze deaths in box 3 and 4 for evidence of failure to: recognize, communicate, plan.

• This will help you understand the local environment.
Recognize, Communicate, Plan

- **Failure to Recognize**: Any situation in which a patient has died and there was evidence that an intervention could have been made anytime prior to the patient’s death. 
  **Example**: the staff was worried, change in heart rate, change in respiratory rate, change in blood pressure, change in O2 saturation or change in consciousness or neurological status that was not responded to.

- **Failure to Plan**: such as: diagnosis, treatment, or calling a rescue team.

- **Failure to Communicate**: Patient to staff, clinician to clinician, inadequate documentation, inadequate supervisor, leadership (no quarterback for the team), etc.

The Mortality Diagnostic

The Impact of Care

Evaluate ALL deaths in box 3 and box 4 to assess the estimated impact of our care on mortality:

*As you review the deaths in box 3 & 4, ask yourself the questions honestly (focusing on learning, not judgment):
  – **Was perfect care rendered?**
  – If perfect care wasn’t rendered, could the outcome of death have been prevented if the care had been better?
    > What number of deaths could have been prevented?
The Mortality Diagnostic
Evidence of Adverse Events

- Analyze deaths in box 3 and 4 for evidence of adverse events using the Global Trigger Tool.

- This will give some further direction to local problems.

IHI Global Trigger Tool for Measuring Adverse Events
Global Trigger Tool

- Review chart for triggers that are sensitive and specific for harm.
- Find a trigger – was there harm?
- Not all triggers mean there was harm!

Global Trigger Tool Modules

- Cares (General)
- Critical Care
- Medication
- Surgery
- L&D
- ED
<table>
<thead>
<tr>
<th>Cares Module Triggers</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1  Transfusion or use of blood products</td>
</tr>
<tr>
<td>C2  Any Code or arrest</td>
</tr>
<tr>
<td>C3  Dialysis</td>
</tr>
<tr>
<td>C4  Positive blood culture</td>
</tr>
<tr>
<td>C5  X-Ray or Doppler studies for emboli</td>
</tr>
<tr>
<td>C6  Abrupt drop of greater than 25% in Hg or Hemtocrit</td>
</tr>
<tr>
<td>C7  Patient fall</td>
</tr>
<tr>
<td>C8  Decubiti</td>
</tr>
<tr>
<td>C9  Readmission within 30 days</td>
</tr>
<tr>
<td>C10 Restraint use</td>
</tr>
<tr>
<td>C11 Infection of any kind</td>
</tr>
<tr>
<td>C12 In hospital Stroke</td>
</tr>
<tr>
<td>C13 Transfer to higher level of care</td>
</tr>
<tr>
<td>C14 Any procedure complication</td>
</tr>
<tr>
<td>C15 Other</td>
</tr>
</tbody>
</table>

### How it is Actually Done

1. Set your timer for 20 minutes
2. Review the coding summary (look for e-codes and obvious events)
3. Review the discharge summary
4. Review the lab
5. Review the x-ray reports
6. Review the procedure notes
7. Any time left over, review nurse notes
Example of a trigger: Transfer to higher level of care

- Endoscopy
- Post procedure somnolent and hypotensive (BP 80) transferred to ICU
- Placed on Bi-Pap
- Received standard Demerol and Versed for procedure
- Given Romazicon; stayed in unit 12 hours.

Global Trigger Tool Examples

- Readmit within 30 days with recurrence of abscess right hip.
- Readmit next day w/ileus s/p exp lap for tumor.
- Stopped lasix-acute renal failure.
- Readmitted in 30 days for wound revision due to incisional seroma.
- Readmit related with wound infection.
- Volume depletion with altered mental status caused by Lasix -resulted in hospital admission.
- ARF due to nephrotoxicity due to combination of ACE and NSAIDS taken at home.
- Ischemic colitis had rt hemicolecotomy. New onset CP=MI. Unresponsive, coded. Decreased Ioć & sats on Morphine PCA. Rec’d Narcan.
Consecutive Adverse Events

- 1-Iatrogenic pneumothorax
- 2-Sternal wound infection
- 3-Thrombophlebitis
- 4-Post Surgical bleed
- 5-ICU delirium
- 6-Nosocomial pneumonia
- 7-Theophyline toxicity/arrhythmia
- 8-GI bleed
- 9-Iatrogenic pneumothorax
- 10-ICU delirium
- 11-Fluid overload
- 12-Oversedation
- 13-Urinary obstruction
- 14-ICU delirium
- 15-Rash
- 16-Aspiration pneumonia
- 17-Nausea
- 18-Pulmonary embolus
- 19-Nosocomial pneumonia
- 20-Sternal wound dehiscence
- 21-Dialysis induced hypotension
- 22-Severe hypotension with NTG
- 23-Renal failure post surgery
- 24-ICU delirium
- 25-Sternal wound infection

Cost Analysis

<table>
<thead>
<tr>
<th>Pt. # Impact</th>
<th>Charge Impact</th>
<th>Net Revenue Impact</th>
<th>Variable Direct Cost Impact</th>
<th>Favorable/(Unfavorable) NOI Impact</th>
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<tbody>
<tr>
<td>1611504 entire stay</td>
<td>$57,484</td>
<td>$15,525</td>
<td>$16,700</td>
<td>($1,175)</td>
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<tr>
<td>1614049 2 extra hospital days</td>
<td>$3,429</td>
<td>$0</td>
<td>$1,170</td>
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<tr>
<td>1610409 2 extra ICU days</td>
<td>$10,422</td>
<td>$0</td>
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<td>1612904 2 extra ICU days</td>
<td>$7,930</td>
<td>$0</td>
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<tr>
<td>1615479 Total ICU costs</td>
<td>$1,502</td>
<td>$0</td>
<td>$865</td>
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<tr>
<td>1612683 Total Hospital Costs</td>
<td>$21,500</td>
<td>$3,958</td>
<td>$6,430</td>
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<td>1616004 3 extra ICU days</td>
<td>$2,592</td>
<td>$0</td>
<td>$2,695</td>
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<tr>
<td>Indwelling Cath. 8 vent</td>
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<tr>
<td>7025810 hours, 1 critical care day</td>
<td>$6,758</td>
<td>$0</td>
<td>$3,245</td>
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<tr>
<td>1610401 2 extra ICU days</td>
<td>$9,180</td>
<td>$0</td>
<td>$2,345</td>
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<tr>
<td>1615100 4 days ICU care</td>
<td>$13,756</td>
<td>$0</td>
<td>$4,485</td>
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<tr>
<td>1574521 No additional cost</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
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<tr>
<td>1555036 5 extra ICU days</td>
<td>$19,341</td>
<td>$0</td>
<td>$7,150</td>
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<tr>
<td>1560036 3 extra ICU days</td>
<td>$19,032</td>
<td>$0</td>
<td>$3,730</td>
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<tr>
<td>2 extra ICU days and</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1561070 return to OR</td>
<td>$16,436</td>
<td>$0</td>
<td>$5,125</td>
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<tr>
<td>1560964 3 extra ICU days</td>
<td>$15,090</td>
<td>$0</td>
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<tr>
<td>1566180 no additional cost</td>
<td>n/a</td>
<td>n/a</td>
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<tr>
<td>1550201 2 extra ICU days</td>
<td>$4,086</td>
<td>$0</td>
<td>$1,619</td>
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Concurrent Review

- Definition of Concurrent Review:
  - Real-time view of patient care related to the specific quality indicator being measured.
- Goal:
  - Improve quality of care during present patient admission.
- Reviewer Qualifications:
  - Adequate (clinical) knowledge/experience of subject matter and ability to synthesize and provide feedback.

Concurrent Review Process

- Identify patients with a need for daily review
  - This can be the most challenging piece
  - Use IT/administrative systems when possible
- Review specifics of chart
- Analyze and synthesize information
- Provide feedback (with the potential for an intervention …)
  - One-on-one dialogue
  - Weekly Reports/feedback from leadership
    - Stats
    - Outliers
    - Review of guideline in question
    - Documentation issues
    - Staff kudos!

Pneumonia Performance: ED Measures
Pneumonia Performance:
Vaccine Measures

Reliability is failure free operation over time.
Failure Free Operation Over Time
The Bath Tub Curve

Failures: readmissions within 31 days related dx

Patient Safety Executive Development Program
Institute for Healthcare Improvement
31 Day Readmission Analysis

- 100 random charts reviewed (total of 244 readmissions within 31 days for the year).
- Charts reviewed by physicians with a standard chart review worksheet.
- Worksheets reviewed and data for production defects, environmental defects extracted.

Production Defects

- Poor Discharge: 37.50%
- Surgical Complications: 22.50%
- Poor Hospital Care: 15%
- Procedure/Rx not successful: 12.50%
- Infection: 10%
- Other: 2.50%
Environmental Defects

Poor Outpatient Management

- Poor outpatient pain control program (31%)
- Poor CHF outpatient follow up program (31%)
- Multiple other issues (37.5%)
Defects arise from access to care, medication, self care strategies

Primary care

CHF

Reliability: failure free operation over time for a patient

ED

Direct admit transfer

Med-surg. unit

Defects that arise over the LOS: variation from best care,

Defects that arise from factors that affect care over time: Nutrition, environment, medication availability, poor discharge planning

Home/rehab/nursing home

High reliability organizations are continually on the lookout for novel types of system failure and have several contingency plans.
Take a moment to reflect on your own work. What will you incorporate from this session into your plans?