ADEs: Utilizing Measurement as a Foundation for Change

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Learning Objectives

• Describe why continuous quality improvement (CQI) is essential for healthcare professionals

• Identify key components of the CQI process, focusing on the importance of measurement

• Apply CQI and measurement tools in improving processes related to adverse drug events
About Quality

• The Quality and Safety Conundrum
  – What’s the difference?
  – How are they related?

“Quality is not an act, it is a habit”
-Aristotle
Continuous Quality Improvement

- Rooted in the idea that we can always do better
- Toolkit
  - Flowchart
  - Cause and Effect Diagram (Fishbone)
  - Run Chart
  - Control Chart
  - Pareto Chart
  - Root Cause Analysis
  - Failure Modes and Effects Analysis
  - Scorecards and Dashboards
The PDSA Cycle for Learning and Improvement

Act
- What changes are to be made?
- Next cycle?

Plan
- Objective
- Questions and predictions (why)
- Plan to carry out the cycle (who, what, where, when)
- Plan for data collection

Do
- Carry out the plan
- Document problems and unexpected observations
- Begin analysis of the data

Study
- Complete the analysis of the data
- Compare data to predictions
- Summarize what was learned

Center for Medication Safety Advancement
Measuring: Why Metrics, Dashboards, and Scorecards?! 

• Tools for measurement of our performance improvement activities 
• How do we know if we are successful? 
• Measure throughout process 
  – Baseline 
  – During 
  – After
Traditional Examples
What’s the difference?

• Balanced Scorecard
  – usually strategic; aligns organizational behavior with goals, objectives
  – measures are defined, detailed

• Dashboard
  – usually operational; monitors and measures processes
  – measurement is visual; can lack details behind why something is important
<table>
<thead>
<tr>
<th>Key Directives</th>
<th>Performance Measures</th>
<th>MTD February 09</th>
<th>YTD OCT08-FEB 09</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>FY09 FY08 Var.</td>
<td>FY09 FY08 Var.</td>
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<tr>
<td><strong>Provider Satisfaction</strong></td>
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<td># of sterile products produced</td>
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<td># of doses dispensed</td>
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<td># of prescriptions filled</td>
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<td># of orders reviewed</td>
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<td># of vaccinations Administered</td>
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<td>Avg time to medication order approval (minutes)</td>
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<td><strong>Patient Satisfaction</strong></td>
<td>Patient Satisfaction AMS</td>
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<td>Patient Satisfaction Outpatient</td>
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<tr>
<td><strong>Patient Safety</strong></td>
<td># of prevented ADEs from ADE Monitor</td>
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<td></td>
<td># of clinical interventions by Pharmacists</td>
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<td></td>
<td>% of clinical interventions accepted</td>
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<td># of avoided dispensing errors</td>
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<td><strong>Human Resources</strong></td>
<td>Turnover rate</td>
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<td></td>
<td># of Board Certified Pharmacotherapy Specialists</td>
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<td></td>
<td># of certified technicians</td>
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<td><strong>Research/Education</strong></td>
<td># of Regional/National Presentations</td>
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<td># of peer-reviewed publications</td>
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<td><strong>Teaching</strong></td>
<td># of students precepted</td>
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<td># of multidisciplinary teaching seminars</td>
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<td><strong>Financial Performance</strong></td>
<td>Total inpatient pharmacy expense per CMAD</td>
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<td>Inpatient drug expense per CMAD</td>
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<td>Inpatient labor expense per CMAD</td>
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<td></td>
<td>Drug expense per OR procedure</td>
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<td>Drug expense per prescription filled</td>
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<td></td>
<td>Drug Expense Performance Versus budget</td>
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<td>Labor Expense Performance versus Budget</td>
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<td></td>
<td>Total hours worked per CMAD</td>
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<td></td>
<td>Total hours worked per prescription filled</td>
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Developing and Implementing a Safety Dashboard
Approach to Developing and Implementing a Safety and Quality Dashboard

1. Define
2. Data
3. Design
4. Do Over
5. Document
6. Targets

Courtesy of: M. Thoma
Get Ready! Assemble Dashboard Team Members

- Facilitator
- Managers
- Staff members
- Hospital or department quality representative
- Data analyst and/or informatics
- Clinical Engineering
- Other key stakeholders
Step 1: Define the Dashboard

- The most important (and time consuming!) step for successful development and implementation of a safety dashboard
  - Establish the dashboard name
  - Establish dashboard categories
  - Establish measures/indicators
  - Establish targets/goals
Step 2: Establish Measures/Indicators

- May be pre-defined
  - Partnership for Patients (encyclopedia of measures)
  - Center for Medicare and Medicaid Services
  - National Patient Safety Goals
  - Etc...

- Could be “generally accepted as safe”
  - Smart pump usage
  - BCMA

- Engage staff in defining measures
- Better to use rates and percentages; not numbers; define measure so numerator and denominator are both obtainable and quantifiable
- Be “SMART”
Medication-Related Quality Measures

- Antibiotic selection (ICU/Non-ICU)
- Pneumococcal vaccination
- Influenza vaccination
- Blood cultures prior to antibiotic
- Pre-op antibiotic selection
- Antibiotic discontinued within 24 hours
- Thrombolytic administration
- Peri-operative beta-blocker administration
- VTE prophylaxis ordered
- VTE prophylaxis administered
- ACE/ARB for LVSD
- Discharge Medication Instructions
- Aspirin on arrival
- Aspirin on discharge
Step 3: Establish Targets and Goals

• Consider your ability to meet and/or exceed
• Start with measures with well defined targets based on best practice, industry standards, literature review, quality measures
  – Internal and external benchmarking
• Alignment is important
  – Peer institutions
  – National initiatives
• Use retrospective data, strive for 10% improvement over last year average
Benchmarking

• Where are we now?
• Where do we want to be?
• How do we get there?
• How do we know when we have arrived?
• Types
  – Internal: measuring performance against ourselves
  – External: measuring performance against others
External Benchmarking
Guidelines for External Benchmarking

- Compares internal data against data of other institutions
- Helps assess how one organization is doing compared to external peer groups
- Can be utilized to help drive improvement projects and development of internal benchmarks
Guidelines for External Benchmarking

• May not be as completely accurate
  – External reporting is sometimes filtered or reported inconsistently

• Very important to pick an appropriate comparison group
  – Bed size
  – Location
  – Affiliation
  – Specialty
  – Care mix

• Inappropriate peer group comparison can lead to incorrect strategic planning and frustration!
Guidelines for External Benchmarking

• Develop a specific peer group
• May change depending on what is being measured
  – i.e., heart failure rates vs. local Heart Hospital
  – i.e., orthopedic infection rates vs. local Trauma Center
• Use national resources to gather data
  – American Hospital Association
  – University Health-System Consortium
Internal Benchmarking
Guidelines for Internal Benchmarking

- Compares timely (e.g., monthly, quarterly) data elements against themselves
- Measures can be defined so they meet the needs of the organization; more controlled
- Can be utilized to support or dispute external benchmarking data
- More reflective of true clinical workload
Guidelines for Internal Benchmarking

- Measures should be validated, accurate and applied consistently over time.
- Consider both volume and time.
- Consider separating functional areas or patient care units.
- Design with the end in mind!
Guidelines for Internal Benchmarking

- Clinical Workload Examples
  - the % of patients where medication reconciliation is documented as completed within 24 hours of admission
  - % of interventions/recommendations accepted (route interchange, renal dosing, therapeutic and formulary interchange, pharmacokinetic consults, TPN adjustments)
  - % patients receiving heart failure discharge instructions
  - % patients returning for subsequent ambulatory visits
Step 4: Document

• For each measure, document:
  – Category in which it resides
  – Definition (numerator and denominator) and targets
  – Purpose
  – “Owner” and/or accountable party
  – Data Collection method
  – Reporting frequency and “due date”
    • Weekly, monthly, quarterly, biannually
  – Data submission method
Steps 5: Design the Dashboard

• **Purpose**
  - To communicate to end users
  - Consider sharing with non-end users, survey for potential conflicting messages (pharmacy, nursing, quality/risk, physicians, c-suite, etc.)

• **Use simple visual cues**

• **Include at a minimum**
  - Dashboard name
  - Dashboard categories
  - Dashboard measures
  - Dashboard display tool
## VUH Pharmacy Executive Scorecard

### PERFORMANCE INDICATORS

<table>
<thead>
<tr>
<th></th>
<th>Monthly Goal</th>
<th>JUL</th>
<th>AUG</th>
<th>SEP</th>
<th>OCT</th>
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<tbody>
<tr>
<td><strong>PEOPLE</strong></td>
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<tr>
<td>Retention (previous 18 months)</td>
<td>Inpatient 65%</td>
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<td></td>
<td>Clinic 65%</td>
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<tr>
<td></td>
<td>Retail 65%</td>
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<td><strong>SERVICE</strong></td>
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<tr>
<td>ADC Stockouts</td>
<td>Inpatient &lt;1.5% total refill lines</td>
<td></td>
<td></td>
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<td></td>
<td>Clinic &lt;1.5% total refill lines</td>
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<tr>
<td>Order Processing Time:</td>
<td>Inpatient CPOE Order Processing Time for STAT 90% in &lt; 10 min</td>
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<td></td>
<td>Inpatient CPOE Order Processing Time for NOW 90% in &lt; 15 min</td>
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<td></td>
<td>Inpatient CPOE Order Processing Time for ROUTINE 90% in &lt; 30 min</td>
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<tr>
<td><strong>QUALITY AND SAFETY</strong></td>
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<tr>
<td>ADC Overrides</td>
<td>Inpatient ≤5%</td>
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<td>Bio ID Utilization with AcuDose</td>
<td>Inpatient 90%</td>
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<td></td>
<td>Clinic 90%</td>
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<tr>
<td>BIO ID Success Rate With AcuDose</td>
<td>Inpatient 90%</td>
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<td></td>
<td>Clinic 90%</td>
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<td><strong>GROWTH</strong></td>
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<tr>
<td>Pharmacy Items</td>
<td>Inpatient VARIES</td>
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<td></td>
<td>Clinic VARIES</td>
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<td></td>
<td>Retail VARIES</td>
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<tr>
<td>Orders Processed</td>
<td>Inpatient (includes VPH) TBD</td>
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<td></td>
<td>Clinic TBD</td>
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<td>100 Oaks TBD</td>
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<td></td>
<td>Retail TBD</td>
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Step 6: Do Over
Changes That Result in Improvement

Implementation of Change

P: Plan
D: Do
S: Study
A: Act

Learn and Improve

APSD

DATA

APSD

Very Small Scale Test

Follow-up Tests

Wide-Scale Tests of Change

Center for Medication Safety Advancement

Courtesy: Kim Voss, MD
Remember to...Make it Visible!

• Make the measures everyone’s responsibility
  – Encourage accountability
• Post publicly reported data
• Reward and share successes
  – Communicate feedback often
  – Present at regularly scheduled intervals
• Work together to overcome challenges
• Review dashboards and scorecards at least annually
Summary

• Apply a team-based, “plan, do, study, act” approach to designing and implementing a safety and quality dashboard

• Focus on developing and benchmarking measures to evaluate and communicate the positive outcomes of safety work
  – Share with others
  – Align with national standards and initiatives (i.e., PfP)
The Indiana Experience: Indiana Hospital Association and CMSA Collaboration
Eleven regional safety coalitions

Members agree not to compete on patient safety

Layered model of regional coalitions and affinity groups supports transformation, learning and spread

Benefits:
- Innovate at the front lines
- Align with state and national efforts, and standardize when beneficial
- Builds local and hospital-specific capacity for improvement and innovation
- Encourages safety leadership at all levels across multiple professions
Medication Safety Alliance Overview

• Purpose
• Framework
• Partnerships
  – Over 30 hospitals
  – More than 45 health-professionals
• Path for involvement
Indiana Medication Safety Alliance

• Conference on Readmissions and ADEs
  – Held November 8th 2012, and sponsored by Indiana Hospital Association
    • “Readmissions and ADEs: Causal Links and Strategies for Action”
    – Engaged hospitals and state organizations

• Medication Safety Continuing Education Program
  – Launched on September 17th 2012
  – On-line, on-demand course
  – 7 CE hours for physicians, nurses and pharmacists
  – 10 spots per hospital for inter-professional medication safety education
  – 645 modules completed
Indiana Medication Safety Alliance

• Self-assessment tool
  – Focused on high-risk medications leading to readmissions
  – Help identify areas for additional research and root-cause analysis

• Coaching webinars and strategies

• Online web portal for members only

• Statewide ADE measures initiative
State Measures Initiative

• Nationally, ADE measure reporting is lowest of all harm categories
• Measures have been adopted as the statewide areas of emphasis for reporting adverse drug events for 2013 as part of the MSA
• Purpose is to identify best practices and share improvement strategies throughout the State
• Develop our statewide ADE “safety dashboard”
State Measures - Outcome

- Highest priority – correlate directly to harm
- Select at least one to report

1) Manifestations of Poor Glycemic Control
   - Definition: Inpatients who experienced manifestations of poor glycemic control during hospitalization

2) Excessive Anticoagulation with Warfarin – Inpatients
   - Definition: All inpatients who had excessive anticoagulation with warfarin
State Measures - Process

• Important for performance improvement efforts!

1) Maintenance of Active Medication Allergy List

2) Heart Failure Discharge Instruction (HF-1)

3) Automated Dispensing Cabinets Override Rates

• Others?
Measuring for Success

- Measures used to identify and statewide ADE trends
- Help drive statewide continuous quality improvement efforts
- Feedback and data provided via web portal
- Share successes and challenges, resulting in sustainable, ongoing, improvement
Conclusion – Keys to Success

• Partnerships
  – Multidisciplinary collaboration

• Strategic Measurement
  – Specific strategies and events
  – Focus on delivery with purpose: VALUE!

• Keeping the Momentum!
  – Make it meaningful and visible
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