Quality Assurance and Continuous Quality Improvement
Rationale for Continuous Quality Improvement Programs

- Clinical quality cannot be improved unless it is measured.
Definitions

- What is “quality”? 

- OED defines quality as the degree of excellence of something as measured against other similar things.

- More generally, it’s how well we provide our services.
QUALITY ASSURANCE

• QA a process that focuses on individual weaknesses
• Retrospective
• Generally carries with it a negative connotation
Quality Assurance

- “Clinical offenders” are sought out
- Punitive actions taken against worst offenders
- Remainder of workforce motivated to perform “well enough”
- *Status quo*, rather than *improvement* is reinforced
Continuous Quality Improvement

- CQI focuses on system weaknesses
- System weaknesses are identified as golden opportunities for improvement
- Assumes the system, not the individual, is the root cause of the vast majority of quality problems
Continuous Quality Improvement

- Weaknesses and defects considered treasures
- Once identified, analyzed for root causes
- Improvement initiative tailored to address root causes and *elevate the performance of the entire system*
If the team identifies a performance gap applicable to a wider patient population, the team may design changes in processes with the potential for dramatic effect: improvement and standardization in processes reduces variation (narrows the curve) and raises quality of care for all (shifts entire curve toward better care). This radical change is what defines Quality Improvement.
Philosophy

What is the central focus of clinical QI?

THE PATIENT
Effect of IOM Report

• IOM report
  – 700K physicians in the USA
  – 120K deaths caused by medical errors
  – Rate of 0.171 deaths/physician

• National Rifle Association report
  – 80 M gun owners in USA
  – 1500 Accidental gun deaths/year
  – Rate of 0.00088 accidental gun deaths/owner

Conclusion: physicians are 9000 x more dangerous than gun owners
  – Taken from Noah Reiter  NCEMSF conference Feb 2005
Effects of the IOM report

• The image of all health care providers is tainted.
• Patients and family members questioned the quality of health care they received from their physicians.
• Physicians worked together with nurses, pharmacists and hospital administrators to improve the quality of health care and patient safety
CQI Prerequisites

- Believing we can always perform better than we do currently
- Being receptive to new concepts
- Realizing we must never stop learning
- Accurate and thorough documentation
CQI Requires Change

• Recognizing that every system is designed to get exactly the results it gets
• To improve the system, change the system
Less is More

• You cannot destroy productivity
• When changing the system, keep it simple
Engineering Change: What Variables Impact Quality Outcomes of Care?

**Structure**
- Inputs
  - Patients
  - Equipment
  - Supplies
  - Training
  - Environment

**Processes**
- Steps
  - Inventory Methods
  - Coordination
  - Physician orders
  - Nursing Care
  - Ancillary staff
  - Housekeeping
  - Transport

**Outcomes of Care**
- Outputs
  - Physiologic parameters
  - Functional status
  - Satisfaction
  - Cost
Engineering Change:
What Variables Impact Quality Outcomes of Care?

The two most dynamic levels impacting performance:

- Processes
  - Steps
    - Inventory Methods
    - Coordination
    - Physician orders
    - Nursing Care
  - Ancillary staff
  - Housekeeping
  - Transport
  - Personnel
Engineering Change

• **Processes**
  – all those affecting relevant aspects of patient care
    • clinical decision making, order writing, admission intake, medication delivery, direct patient care, discharge planning, PCP communication, discharge follow-up, etc
Engineering Change

• **Personnel**
  – anybody who touches the patient or a relevant process in the system
    • departments, physicians, clerks, pharmacy, nursing, RT, PT/OT/ST, care technicians, phlebotomist, patient transport, administration
CQI Process

**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)

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

**Do**
- Carry out the plan
- Document problems and unexpected observations
- Begin analysis of the data
## Identification of Key Data Sources

### Clinical Systems

Clinical systems support the documentation & management for direct patient care.

<table>
<thead>
<tr>
<th>Application</th>
<th>Function</th>
<th>Data Required</th>
<th>Data Uses</th>
</tr>
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</table>
| Nursing Care Planning        | • Clinical documentation  
                              • Care planning  
                              • Dosage calculation  
                              • Acuity classification | • Patient clinical data  
                              • Facility-defined care paths  
                              • Dosage stds | • UR/QA  
                              • Regulatory reporting and compliance  
                              • Provider profiling/case management |
| Critical Paths Protocols     | • Std trmt and procedures for similar cases  
                              • Variance tracking and alerts  
                              • Research support for clinical protocols | • Diagnosis and procedure data  
                              • Procedure drug cost data  
                              • Patient outcome data | • Physician profiling/ evaluation  
                              • Clinical cost Identification and control  
                              • RM |
| Order Entry and Results Reporting | • Automated order verification  
                              • Online inquires for orders  
                              • Prompts for “best practice”  
                              • Order set Maintenance  
                              • Order explosion  
                              • Automated results reporting | • Patient demographic and clinical information  
                              • Ordering physician information  
                              • Testing procedures, results  
                              • Clinical protocols | • Management reporting  
                              • Cost control  
                              • RM  
                              • QA/UR  
                              • Medical records |
## Identification of Key Data Sources
### Clinical Systems - con’t

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<tbody>
<tr>
<td>Clinical Process Improvement</td>
<td>• Rules based processing alerts</td>
<td>• Patient clinical data</td>
<td>• QA</td>
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<td></td>
<td>• Diagnostic and treatment prompts</td>
<td>• External databases</td>
<td>• RM</td>
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<tr>
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<td>• Critical paths and protocols</td>
<td>• Cost Control</td>
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<td>• Clinician education and awareness</td>
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<tr>
<td>Physician/Provider Profiling</td>
<td>• Treatment patterns</td>
<td>• Clinical diagnosis and procedure data</td>
<td>• Variance reports</td>
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<tr>
<td></td>
<td>• Case-mix</td>
<td>• Severity, risk adjustment methods</td>
<td>• Clinical cost identification and control</td>
</tr>
<tr>
<td></td>
<td>• Outcomes</td>
<td>• Standard protocols</td>
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</table>
Tools for Engineering Change: Cause-and-Effect Diagram

- sometimes also called a ‘fishbone’ or Ishikawa diagram
- graphically displays list of possible factors, focused on one topic or objective
- used to quickly organize and categorize ideas during a brainstorming session, often as an interactive part of the session itself (the added organization can help produce balanced ideas during a brainstorming session)
- Cause-and-Effect Diagram (a.k.a. “Fishbone” or Ishikawa Diagram) is very versatile & is an effective tool for retrospective (Root Cause Analysis) or prospective analyses of patient safety issues (Failure Modes Effect Analysis).
Tools for Engineering Change: Cause-and-Effect Diagram

Example: Adverse Drug Events (ADE)

Drug Administration Errors
- Nurse
- Physician
- Pharmacist
- Rate
- Dilution
- Route
- Time
- Wrong
- Dose

Ordering Errors
- Physician
- Pharmacy
- Nurse/Clerk
- Transcribing
- Spelling
- Dosage
- Route
- Scheduling
- Order Missed

Physiologic Factors
- Age
- Weight
- Gender
- Renal
- Electrolyte
- Hepatic
- Allergic
- Absorption
- Race

Pharmacologic Factors
- Patient
- Drug/Drug
- Expected
- Drug/Food
- Pharmacokinetics
- Drug/Lab
- Pharmacodynamics

Patient Errors
- Psychiatric
- Cognitive
- Compliance

Pharmacist
- Patient
- Physician
- Dietician

Place outcome here
Tools for Engineering Change: Macro Process Map

Example: Heart Failure Core Measures 2-3

1. The patient is admitted to the hospital
2. The patient is clinically identified as having heart failure
3. The ejection fraction is evaluated
4. The ejection fraction is documented in the chart
5. The ejection fraction:
   - < 40%
   - > 39%
6. The patient is prescribed an ACEI in hospital
7. The patient is not prescribed an ACEI in hospital
8. The contraindication for an ACEI is documented in the chart
9. The patient is excluded from the target population
10. The patient is prescribed an ACEI at discharge
For iatrogenic infections, any given type of infection can be dissected into the hierarchy of contributing layers.

Calling out the contributing layers helps the team think through the steps ripest for change.
Tools for Engineering Change: Run Charts
Engineering Change

Improve incrementally. Learn through action.

Plan Do Study Act

Test your changes. Assess their effect.
Then re-work the changes and do it again…and again…
Engineering Change

**What do we want to achieve?**

Set an outcome aim.
(It should be ambitious, must be measurable and must specify a time-period and a definite population in your hospital.)

List the outcome aim again, then:

- ask “why” three times,
- ask “how” three times,
- look at the new aim statements, and
- pick the best one

modified from: *The Foundation of Improvement* by Thomas W. Nolan *etal, ihi.org*
Engineering Change

**What changes will drive our progress?**
Select change(s) to your system, the one(s) most likely to improve outcomes.
(Recognize that not all changes improve outcomes or offer balance.)

modified from: *The Foundation of Improvement* by Thomas W. Nolan *etal*, ihi.org
Engineering Change

**Principles of Measurement:**
Seek usefulness, not perfection.
Integrate measurement into the daily routine.
Use qualitative and quantitative data.
Use sampling.
Plot data over time.

**How will we measure our progress?**
Define what you will measure quantitatively.
(Collect data, chart measures regularly over specified time-period, and chart against benchmarks & goal lines.)

**Three Types of Measures:**
1) Outcomes
2) Process
3) Balancing measures
   (Use a balanced set of measures for all improvement efforts.)

modified from: *The Foundation of Improvement* by Thomas W. Nolan *etal, ihi.org*
Tips for effective measures

- Plot data over time
- Seek usefulness – not perfection
- Use sampling
- Integrate measurement into daily routine
- Use qualitative and quantitative data
- Use balancing measures
- Use process and outcome measures

– Tom Nolan “The Improvement Guide” (ihi.org)
Acknowledgments

• http://www.ncemsf.org/about/conf2005/lectures/Reiter%20-%20Clinical%20Quality%20in%20EMS.pdf


• www.hospitalmedicine.org/AM/Template.cfm?Section=Q...
The End

• Please proceed to the post test
• Complete the post test and return to Dr. SK Oliver at TAMU-II 407i
Post test

- Identify one concern in your subspecialty
- Design an intervention to address the concern
- Design a method to measure the effect of the intervention on the concern