Schulich Medicine Education Conference:

**Quality Improvement Basics to Help you Teach Residents and Students**

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Objectives

At the conclusion of this activity, participants will be able to:

1. Differentiate between Quality Improvement, Scientific Research, and Quality Assurance
2. Evaluate the completeness of an AIM statement in a resident quality improvement project
3. Explain Outcome, Process, and Balancing Measures as they relate to Quality Improvement

Quality Improvement Basics:

What is Quality Improvement?
Quality Improvement

A formal approach to the analysis of performance and systematic efforts to improve it.

DUKE University School of Medicine, Department of Community and Family Medicine
http://patientsafetyed.duhs.duke.edu/module_a/introduction/introduction.html
Accessed Sept 17, 2016

Quality Improvement is NOT…

Quality Assurance
Scientific Research
Improvement vs Assurance

- Aim to improve overall quality
- Focuses on increasing the “good” that happens and increase the frequency of it
- Aim to identify outliers below a certain standard and eliminate them
- Focus on a border between acceptable and unacceptable

Improvement vs Research

<table>
<thead>
<tr>
<th>Component</th>
<th>Quality Improvement</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose</td>
<td>Examine internal processes and guides actions toward improvement</td>
<td>Generates new knowledge and tests hypotheses</td>
</tr>
<tr>
<td>Scope</td>
<td>Examines internal institution/process specific issues</td>
<td>May be generalizable to other patients, situations, settings</td>
</tr>
<tr>
<td>Design</td>
<td>Focus on processes, often confounders</td>
<td>Scientific framework, well-controlled</td>
</tr>
</tbody>
</table>

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Improvement vs Research

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<tr>
<td>Subject Selection</td>
<td>Available patients or subpopulation of patients</td>
<td>Based on research purpose, design, power analysis and statistical models</td>
</tr>
<tr>
<td>Informed Consent &amp; Ethics</td>
<td>Generally not required</td>
<td>Required</td>
</tr>
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Quality Improvement Basics:

Institute for Healthcare Improvement’s Model for Improvement
Identify a gap or challenge in practice
Model for Improvement

How will we know that a change is an improvement?

Determine what you will measure

Model for Improvement

What change can we make that will result in improvement?

Complete a root cause analysis and come up with ideas
Example

Gap:
I am always late for class
Get to class on time

Model for Improvement

What are we trying to accomplish?

How will we know that a change is an improvement?

What change can we make that will result in improvement?

Act  Plan

Study  Do

- I will get my preferred seat
- I won’t have to copy others notes
- I will need to study less
- My marks will be better
• Take earlier bus
• Set alarm earlier
• Go to bed earlier
• Don’t stop for coffee
• Etc...

Aim

Measure(s)

Ideas!

Testing ideas and collecting data to determine success
Quality Improvement Basics:

AIM Statements

What are we trying to accomplish?

AIM STATEMENT

- Purpose is to CLEARLY explain what your QI project is in ONE sentence.

“By 2:30 PM today, 80% of the Faculty attending this session will understand how to write a ‘SMART’ AIM statement.”

TIP!
Always start any discussion about a QI project with the AIM statement.
Criteria for an AIM Statement

It must be **SMART!**

- Specific
- Measurable
- Achievable
- Realistic
- Timely

**Specific**

Must be precise on what is trying to be achieved

- “Infections in the hospital will decrease”
- “C. Difficile infections in the hospital will decrease”
- “C. Difficile infections on the surgical ward will decrease”
- “C. Difficile infections on the surgical ward will decrease by 50%”
- “C. Difficile infections on the surgical ward at LHSC - University Hospital will decrease by 50%”
Measurable

- Must have a clear, objective outcome measure to know if the change is an improvement

Achievable

- Must be doable
  - time frame
  - scope appropriate (to big or too small)
Realistic

- Do you have the appropriate resources?
  - Financial
  - Human

Timely

Must have a timeline identified

“C. Difficile infections on the surgical ward at LHSC - University Hospital will decrease by 50%”

“By July 31, 2017, C. Difficile infections on the surgical ward at LHSC - University Hospital will decrease by 50%”
### Assessing an AIM Statement

<table>
<thead>
<tr>
<th>Criteria</th>
<th>YES</th>
<th>No</th>
</tr>
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<tbody>
<tr>
<td>Is the AIM stated clearly?</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Does the AIM contain at least one numerical component?</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Does it include a time frame?</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Is it feasible?</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Will it be clear to others when the AIM is achieved?</td>
<td>✓</td>
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By July 1, 2015 the percentage of electronic discharge summaries available to primary care providers within 48 hours of patient discharge from the Internal Medicine Service at London Health Sciences Centre will increase by 50% from 30% to 45%.

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By March 2017, emergency department visits by palliative care patients will drop by half.
Revise, revise, revise….

By March 2017, emergency department visits by palliative care patients will drop by half.

By September 1, 2017, unplanned emergency department visits by palliative care patients followed by the Community Care Access Centre, will decrease by 50% from an average of 6 per week to 3 per week.

Quality Improvement Basics:

Root Cause Analysis
Root Cause Analysis

- QI focuses on *causes* *BEFORE* solutions

- Cause-and-effect (fishbone) diagrams are a tool to identify causes

Fishbone Diagrams
Fishbone Diagrams

- Each “fishbone” is labeled with a category to help identify causes

4 Ss
5 Ps
6 Ms
Fishbone Diagrams - Categories

5 Ps
- Patients
- Providers
- Policies
- Processes/Procedures
- Place/Equipment

4 Ss
- Surroundings
- Suppliers
- Systems
- Skills

6 Ms
- Machine
- Method
- Materials
- Measurement
- Man
- Mother Nature

Fishbone Diagram Example
Source: https://www.moresteam.com/toolbox/fishbone-diagram.cfm
Pareto Chart

- Tool to help focus on the key problems
- Combination bar and line graph
- Based on 80/20 rule (Pareto Principle)

Vilfredo Pareto
1848 - 1923

Pareto Chart

- Helps to focus on causes that will have greatest impact if solved
- Displays relative importance of problems
- Bar graph of individual causes (ordered most to least)
- Line graph is cumulative percentage of total (always gets to 100%)
Quality Improvement Basics:

Measures:
Outcome, Process, & Balancing
Outcome Measure

• Measure of what you are trying to achieve
• Aligned with your AIM
• Usually only have ONE

Example:
• Percentage of made free throws

Process Measures

• Measures things you are doing to achieve your AIM
• Can be activities, tasks, processes
• Often have many
• Can be *DIFFERENT* for each PDSA cycle

Examples:
• Number of free throws attempted, ball air pressure, rim height, games won
Balancing Measures

- Measures of other parts of the system as we affect processes and outcomes
- May measure unintended consequences/trade-offs

Examples:
- Three-pointers made, Duration of Practice, Canceled Games

Quality Improvement Basics:

PDSA Cycles
Testing Change Ideas

- Trial and error learning
- Develop change, find a way to test on a small scale to minimize risks, observe how the system reacts to the change OVER TIME

If at first you don't succeed, call it version 1.0

Testing Change Ideas

Change ideas may be:
1. Fine just the way they are
2. May need to be modified
3. May need to be discarded

Something learned no matter what!
How to test changes…

- Changes can be over tested/evaluated - i.e., scientific R&D
- Changes can be under tested/evaluated - i.e., implemented and never reflected on at all

- PLAN-DO-STUDY-ACT (PDSA) Cycles
  - Used in Quality Improvement to turn ideas into action and connect action to learning (i.e., test a change)
PLAN, DO, STUDY, ACT

- **PDSAs** use data acquired in daily work to evaluate change
- Data can be “unsophisticated” like subjective impressions of people affected by the change
  - or
  - Data can be numerical data
Principles for testing a change

• If possible, keep your tests on a small scale initially and increase the scale of the test on the basis of learning
  - Small scale does not equal small change

• As the scale of the test is expanded, include differing conditions in your test

• Plan the test, including the collection of data
  - Who will do what, when and where and who/how the data will be collected

An Iterative Process

Slide courtesy of Joe Mauti, Health Quality Ontario
After each PDSA...

- Implement as is (adopt)*
- Drop/Abandon*
- Modify/adapt
- Increase in scope/expand
- Test under other conditions

*don’t move quickly to these options
Reactive vs fundamental changes

- Reactive change solves a problem

- Fundamental change prevents problems

Fundamental Change

Required to improve a system beyond historical levels

Important aspects:

1. Result from design or re-design of a system or part of a system
2. Necessary for the improvement of a system that does not have frequent problems
3. Alter how the system works/what people do
4. Improve several measures at once
5. Impact is felt into the future
All improvement requires change, but not every change is an improvement

Misguided Changes

• Making change only in response to problems
  - never will achieve fundamental change

• Developing “more of the same” changes
  - More people, more time, more money, more equipment
Misguided Changes

- Trying to develop the perfect change
  - Does continued analysis and debate find the perfect changes?
  - Always unanticipated side effects and possible objections to change
  - Can lead to change based on planning rather than testing

“Every system is perfectly designed to get the results it gets.”

- Dr. Paul Batalden
Questions and discussion

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