Quality Improvement Across the Continuum

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We have no conflicts of interest or any financial disclosures.

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Workshop Objectives

Part 1: QI Practicum

1. Explain the importance of quality improvement (QI) processes in provision of patient care

2. Review the mandates from our professional organizations to teach QI

3. Apply QI methods to a demonstration problem:
   - Writing an aim statement
   - Constructing a fishbone diagram (cause and effect)
   - Analyzing a Pareto chart to decide upon a test of change
   - Evaluating a run chart to determine effectiveness of change
Part 2: QI Curriculum Development

1. Discuss how to implement a plan for a QI curriculum in an educational setting in the participant’s own institution using:
   – Identify where to place QI in curriculum
   – Identify barriers and solutions to QI implementation
   – Determine how to measure QI curriculum effectiveness

2. Identify resources for faculty development in QI

3. Identify potential scholarly productivity related to QI
Pre-test

Please take out your phones!
Patient Safety in the US

- Estimated 44,000-98,000 deaths per year from adverse events
- 8th leading cause of death
- National Costs $17- $29 billion
Quality Improvement

- Born in industry
  - Airlines
  - Auto
    - Toyota
- Healthcare systems bring it on board
- Educational leaders recognize its importance
ACGME: Pediatrics Residency Requirements

• GME is the first to adopt QI into its core requirements

Develop skills and habits to:
• Systematically analyze practice using QI methods

• Implement changes with the goal of practice improvement
Medical schools and teaching hospitals have committed to:

- Teach quality and patient safety to the next generation of doctors
- Research, evaluate, and share new and improved practices
LEARNING As Harvard medical students, Daniel Blumenthal and Ishani Ganguli are trying to develop good habits for safety. Two summers ago, as bright-eyed third-year medical students, we rushed into clinics and operating rooms, eager to apply our textbook knowledge at last to the daily practice of working with patients. To our untrained eyes, the system in which we were expected to deploy this knowledge was often baffling, with its unfamiliar rituals of scribbled notes and morning

Preventable medical mistakes and infections are responsible for about 200,000 deaths in the U.S. each year, according to an investigation by the Hearst media corporation. The report comes 10 years after the Institute of Medicine's "To Err Is Human" analysis, which found that 44,000 to 98,000 people were dying annually due to these errors and called for the medical community and government to cut that number in half by 2004.

The precise number of these deaths is still unknown because many states lack a standard or mandatory reporting system for injuries due to medical mistakes. The investigative team gathered disparate medical records, legal documents, personnel files and reports and analyzed databases to arrive at its estimate.

Many, including President Barack Obama, have advocated for a broader adoption of electronic medical records as both a life- and cost-saver. But not everyone is convinced that current technology will help doctors and nurses who already have set ways of handling patient information. "The systems as they stand now are still fairly clunky and user unfriendly," Robert Wachter, a professor of hospital medicine at the University of California, San Francisco, told Hearst. "In the last several years, we've seen a literature
Pediatrics Milestones Project

• Practice-Based Learning (Competency)
  – Systematically analyze practice using quality improvement methods with the goal of practice improvement (Milestone)

• Systems-based Practice (Competency)
  – Work in interprofessional teams to enhance patient safety and improve patient care quality (Milestone)
  – Participate in identifying system errors and implementing potential system solutions (Milestone)
American Board of Pediatrics Maintenance of Certification (MOC)

• Learn how to measure quality of care

• Effectively fill the gaps in their own practice
Quality Improvement is the Scientific Method

**Scientific Method**
- Review Literature
- Plan Experiment
- Find New Question
- Analyze Data
- Conduct Experiment

**Quality Improvement**
- PDSA
- Act
- Study
- Plan
- Do
Model for Improvement

• What are we trying to accomplish?
  – **AIM STATEMENT**

• How will we know that a change is an improvement?
  – **MEASURE**

• What changes will result in an improvement?
  – **PROCESS IMPROVEMENT TOOLS**

• Tests of change
  – **PLAN, DO, STUDY, ACT**
QI Practicum Overview

• Task 1: Create an aim statement
• Task 2: Determine what you will measure
• Task 3: Generate ideas that you think will result in improvement (Fishbone & Tally Sheet)
• Task 4: Create PDSA Cycle #1
• Task 5: Summarize lessons from Run Chart
• Task 6: Create PDSA Cycle #2
### Physician Scorecard

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Number</th>
<th>Percent</th>
<th>Peer Mean</th>
<th>Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albuterol Use</td>
<td>295</td>
<td>98%</td>
<td>98%</td>
<td>Green</td>
</tr>
<tr>
<td>Systemic corticosteroids</td>
<td>288</td>
<td>96%</td>
<td>96%</td>
<td>Green</td>
</tr>
<tr>
<td>Asthma Control</td>
<td>267</td>
<td>89%</td>
<td>93%</td>
<td>Yellow</td>
</tr>
<tr>
<td>Asthma Severity</td>
<td>273</td>
<td>91%</td>
<td>96%</td>
<td>Yellow</td>
</tr>
<tr>
<td>Trigger Control</td>
<td>203</td>
<td>68%</td>
<td>87%</td>
<td>Red</td>
</tr>
<tr>
<td>Inhaled Steroid Prescribed</td>
<td>264</td>
<td>88%</td>
<td>95%</td>
<td>Yellow</td>
</tr>
<tr>
<td>Asthma Action Plan Given</td>
<td>190</td>
<td>63%</td>
<td>75%</td>
<td>Red</td>
</tr>
<tr>
<td>Follow-up Visit Scheduled</td>
<td>161</td>
<td>54%</td>
<td>83%</td>
<td>Red</td>
</tr>
<tr>
<td>All Interventions Achieved</td>
<td>102</td>
<td>34%</td>
<td>43%</td>
<td>Red</td>
</tr>
</tbody>
</table>
Example

Getting physicians to identify triggers of asthma attacks.
Task 1

Create an **Aim Statement:**

- Quantifiable:  
  *Increase identification of asthma triggers to greater than 95%*

- Time-specific:  
  *In 6 months*

- Defined population:  
  *All patients with a diagnosis of asthma or reactive airway disease*
Task 2

What will you measure?

Percentage of asthmatics with their triggers identified in the medical record

– What is the numerator?
  • Number of asthmatics with triggers identified

– What is the denominator?
  • Total number of asthmatics assessed

How will you collect the data? Chart review

How frequently will you collect the data? Biweekly
Task 3:
Generate ideas that you think will result in an improvement

• High level flow chart/process map
• Cause and effect (Fishbone) diagram
• Tally sheet
• Pareto Chart
• Run chart
• Scatter plot
• Statistical process control chart
Task 3.  
Create a Cause & Effect Diagram
Task 3.
Create a Cause & Effect Diagram

Physician
1. Lack of time
2. Not Documenting
3. Forget to ask

Nurses & RTs
4. Lack of time
5. Responsibility not defined
6. Forget to ask

Patient
7. Don’t know triggers
8. Not educated about triggers
9. Not paying attention to triggers

System
10. No space on note to document
11. No dedicated training
12. Poor care team communication

Not identifying asthma triggers
<table>
<thead>
<tr>
<th>Item from Fishbone Diagram</th>
<th>Count (20 surveys or charts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1. Physician reports lack of time</td>
<td>5</td>
</tr>
<tr>
<td>Item 2. Physician not documenting</td>
<td>14</td>
</tr>
<tr>
<td>Item 3. Physician forgets to ask</td>
<td>3</td>
</tr>
<tr>
<td>Item 4. RN/RT reports lack of time</td>
<td>6</td>
</tr>
<tr>
<td>Item 5. RN/RT responsibility not defined</td>
<td>4</td>
</tr>
<tr>
<td>Item 6. RN/RT forgets to ask</td>
<td>2</td>
</tr>
<tr>
<td>Item 7. Patient doesn’t know triggers</td>
<td>8</td>
</tr>
<tr>
<td>Item 8. Patient is not educated about triggers</td>
<td>10</td>
</tr>
<tr>
<td>Item 9. Patient not attentive to triggers</td>
<td>4</td>
</tr>
<tr>
<td>Item 10. No space on note to document triggers</td>
<td>7</td>
</tr>
<tr>
<td>Item 11. No dedicated training</td>
<td>12</td>
</tr>
<tr>
<td>Item 12. Poor care team communication</td>
<td>16</td>
</tr>
</tbody>
</table>
Pareto Chart

Physicians not Identifying Asthma Triggers

<table>
<thead>
<tr>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 12. Poor care, team communication</td>
</tr>
<tr>
<td>Item 2. Physician not documenting</td>
</tr>
<tr>
<td>Item 11. No dedicated training</td>
</tr>
<tr>
<td>Item 8. Patient is not educated about...</td>
</tr>
<tr>
<td>Item 7. Patient doesn’t know triggers</td>
</tr>
<tr>
<td>Item 10. No space on note to document...</td>
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</tr>
<tr>
<td>Item 6. RN/RT forgets to ask</td>
</tr>
</tbody>
</table>

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
<table>
<thead>
<tr>
<th>Element</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe the test of change:</td>
<td>Institute a weekly care team meeting to review and discuss asthma patients seen in clinic</td>
</tr>
<tr>
<td>Who will do the test of change?</td>
<td>Physicians, RNs, RTs, Clerk</td>
</tr>
<tr>
<td>When?</td>
<td>Friday 4:00 pm</td>
</tr>
<tr>
<td>Where?</td>
<td>Clinic Conference Room</td>
</tr>
<tr>
<td>How?</td>
<td>Care team meeting</td>
</tr>
<tr>
<td>With what?</td>
<td>Discuss and document asthma quality measures for a sampling of charts</td>
</tr>
</tbody>
</table>
| How will data be collected?   | Who: Dr. Davison; Karen Marks, RT  
What: Documentation of triggers in chart  
When: Bimonthly, for Friday meeting  
How: Review of 10 charts, spreadsheet |
Run Charts

Task 5. Discuss PDSA Cycle 1 Results

<table>
<thead>
<tr>
<th></th>
<th>1-Mar Baseline</th>
<th>15-Mar PDSA 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of Asthmatics with Triggers Documented</td>
<td>68%</td>
<td>82%</td>
</tr>
</tbody>
</table>

Triggers
Task 5. Analysis of PDSA Cycle 1

• Were the results as you predicted?
  – Increase was not as high as expected

• What did you learn from this PDSA cycle?
  – Weekly meeting helped with communication of asthma quality measures
  – Still having a problem with consistent physician documentation
## Task 6: PDSA # 2

### Plan-Do-Study-Act

<table>
<thead>
<tr>
<th>Element</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Describe the test of change:</td>
<td>Introduce an electronic prompt to document triggers when a diagnosis of asthma or RAD is charted.</td>
</tr>
<tr>
<td>Who will do the test of change?</td>
<td>Physicians, RNs, RTs, Clerk</td>
</tr>
<tr>
<td>When?</td>
<td>Monday through Friday, next 2 weeks</td>
</tr>
<tr>
<td>Where?</td>
<td>Continuity Clinic</td>
</tr>
<tr>
<td>How/With what?</td>
<td>Prompt via Electronic Medical Record</td>
</tr>
</tbody>
</table>
| How will data be collected?         | Who: Practice Manager, Dr. Grunwell  
What: Documentation of triggers  
When: Friday afternoon; bimonthly  
How: Review of 10 charts              |
Run Chart

<table>
<thead>
<tr>
<th>Percentage of Asthmatics with Triggers Documented</th>
<th>1-Mar Baseline</th>
<th>15-Mar PDSA 1</th>
<th>1-Apr PDSA 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triggers</td>
<td>68%</td>
<td>82%</td>
<td>90%</td>
</tr>
</tbody>
</table>
# Physician Scorecard

<table>
<thead>
<tr>
<th>Condition: Asthma</th>
<th>Number with condition: 300</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention</strong></td>
<td><strong>Number</strong></td>
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<td>102</td>
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</tbody>
</table>
Practicum Activity

Getting physicians to give an asthma action plan at discharge.
Task 1

- Create an **Aim Statement**:
  - Quantifiable:
  - Time-specific:
  - Defined population:
Task 2

- What will you measure?
- How will you collect the data?
- How frequently will you collect the data?
Task 3.
Create a Cause & Effect Diagram

Physicians

1.  
2.  
3.  
4.  
5.  
6.  
7.  
8.  
9.  

Nurses/Respiratory Therapists

What you are trying to avoid

Patient

System

12.

11.

10.

9.

8.

7.

6.

5.

4.

3.

2.

1.
Pareto Chart

No Asthma Action Plan Given

- RN/RT can't find information to prepare
- No standard action plan forms
- Physician not documenting AP given
- Forms are inaccessible
- RN/RT reports lack of time
- Physician reports lack of time
- Patient misunderstands action plan
- Can’t fill prescriptions
- Patient has no outpatient pediatrician

Contribution

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

0 2 4 6 8 10 12 14 16 18 20
## Task 4. PDSA # 1

<table>
<thead>
<tr>
<th>Element</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe the test of change:</td>
<td></td>
</tr>
<tr>
<td>Who will do the test of change?</td>
<td></td>
</tr>
<tr>
<td>When?</td>
<td></td>
</tr>
<tr>
<td>Where?</td>
<td></td>
</tr>
<tr>
<td>How?</td>
<td></td>
</tr>
<tr>
<td>With what?</td>
<td></td>
</tr>
<tr>
<td>How will data be collected?</td>
<td>Who:</td>
</tr>
<tr>
<td></td>
<td>What:</td>
</tr>
<tr>
<td></td>
<td>When:</td>
</tr>
<tr>
<td></td>
<td>How:</td>
</tr>
</tbody>
</table>
Post-test

Please take out your phones!
QI Curriculum Development
Overview

1. Identify where to place QI in your program’s curriculum

2. Identify barriers and solutions to QI implementation

3. Determine how to measure QI curriculum effectiveness
What is your goal?

**Patient Care**
- Healthcare Teams
  - Hospitalists
  - Best Practice Teams
- Chief Quality Officer
  - May be outside academia & within healthcare system
- Patient Safety Officer
- Pediatrician-in-Chief

**Education**
- Didactics
- Workshops
- Participation in projects or existing healthcare teams

**Both**
- Group Projects
- Individual Projects/Electives
- Institute for Healthcare Improvement Open School Certificates
Task 1.
Identify where your program can implement a QI curriculum

• Do you have a specific project in mind?
• Does the project need to be sustainable?
• Who are your QI experts?
• Where are your QI experts located?
M3 Course - Workshop

- Case-based, small groups format with faculty facilitators
- Powerpoint structure
- Given real-time data for tests of change
- Presentations by small groups
- Posttest (same as pretest)
# The Emory IM QI Experience

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>QI Didactics</strong></td>
<td></td>
</tr>
<tr>
<td>July</td>
<td>QI Workshop for PGY-1 Residents</td>
</tr>
<tr>
<td>August</td>
<td>PGY 2-3 Core Conferences:</td>
</tr>
<tr>
<td></td>
<td>Model for Improvement</td>
</tr>
<tr>
<td></td>
<td>Human Factors</td>
</tr>
<tr>
<td></td>
<td>Reliability</td>
</tr>
<tr>
<td></td>
<td>Measurement</td>
</tr>
<tr>
<td><strong>Team Projects</strong></td>
<td></td>
</tr>
<tr>
<td>September</td>
<td>Team Responsibilities/Aim Statement</td>
</tr>
<tr>
<td>October</td>
<td>Measure</td>
</tr>
<tr>
<td>November</td>
<td>Flowchart/Fishbone/Tally Sheet</td>
</tr>
<tr>
<td>December</td>
<td>PDSA</td>
</tr>
<tr>
<td>January</td>
<td>PDSA</td>
</tr>
<tr>
<td>February</td>
<td>Annotated Run Chart</td>
</tr>
<tr>
<td><strong>Poster Development</strong></td>
<td></td>
</tr>
<tr>
<td>March</td>
<td></td>
</tr>
<tr>
<td>April</td>
<td></td>
</tr>
<tr>
<td><strong>Annual Resident QI Conference</strong></td>
<td></td>
</tr>
<tr>
<td>May</td>
<td>Poster Presentation and Competition</td>
</tr>
</tbody>
</table>
Emory Pediatrics Timeline

- **Didactic Series**
  - Faculty Development Workshop
  - Workshops

- **Grand Rounds:** QI Posters/Presentations

- **Individual Projects: QI/Research Electives**

- **July**
  - Workshops

- **October**
  - Residency Project

- **January**
  - Small Group Projects

- **April**
  - Assign residents to hospital QI teams
QI Curriculum Development
Overview

1. Identify where to place QI in your program’s curriculum

2. Identify barriers and solutions to QI implementation

3. How will you measure QI curriculum effectiveness
Task 2.
Identify Barriers

1. Teacher
2. Not implementing a QI curriculum
3. Learner
4. Project
5. System
6.  
7.  
8.  
9.  
10.  
11.  
12.  

Not implementing a QI curriculum
QI Curriculum Development Overview

1. Identify where to place QI in your program’s curriculum

2. Identify barriers and solutions to QI implementation

3. How will you measure QI curriculum effectiveness
Task 3.
Measuring Curriculum Effectiveness

**Didactics/Workshops**
- Pre/Post Tests
- Surveys of attitudes and knowledge
- IHI Certificate

**Projects**
- Annual Research/QI Day
  - Poster sessions
  - 20 min research talks highlighting best projects
- Small Group/Individual portfolios
  - AIM statement
  - Methods
  - Conduct 3 PDSA cycles
  - Run chart

**Scholarship**
- Publications
Faculty Development

Training Faculty to Guide and Supervise Residents and Medical Students

– Residency QI project leaders
  • Impact/opportunity of Primary Care Medical Home

– Medical student workshop leaders
  • Community physicians involved in ambulatory care
Faculty Pneumococcal Vaccine Project

- To engage clinician-educators in the process of performance improvement
- To create a project to serve as a model for teaching residents the basic principles of quality improvement

**AIM:** To increase the rate of pneumococcal vaccination in eligible Grady Primary Care Center patients to 80% by March 31, 2008.

**MEASURE:** Documentation of vaccine administration in clinic charts of eligible patients.

**SELECTING CHANGES:**
1. High level flow chart
2. Fishbone diagram
3. Review of literature

**TESTING CHANGES:** Conducted 9 tests of change over a 21 week period and collected data weekly to monitor progress.
Scholarly Output: Internal Medicine Residents
Scholarly Output: Emory Medical Students

Projects vary by topic and are allowed in any office setting:

- Hand washing!
- Clinic flow
- Increased immunizations
- Improved core measures
Resources

1. IHI Quality Academy Webinars/Certificates
   - http://www.ihi.org
2. The Improvement Guide
3. ABP MOC Part IV
4. Pedialink/AAP Website
5. Internal Hospital Quality Improvement
   - http://www.nichq.org/
Workshop Summary

**Part 1: QI Practicum**
- Explain the importance of QI
- Review the mandates from ACGME
- Apply QI methods to a demonstration problem

**Part 2: QI Curriculum Development**
- Implement a plan
- Faculty development
- Scholarly productivity
Contacts

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