Going the Extra MILE in Your Quality Improvement Curriculum: Integrating QI Assessment Tools and the Pediatric Milestones

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Outline

• The Milestones Project
  – Introduction
  – QI Specific competencies

• Quality Improvement Curriculum
  – QI evaluation tools
  – How do we use them to assess competencies?
  – Future directions
My Big Question

How does the Pediatric Milestone Project impact Quality Improvement education?
The Milestone Project

• Redefines the evaluation framework for trainees
  – Add critical subcompetencies not explicit in original ACGME competencies
  – Refine the competencies in the context of each specialty
  – Identify or develop tools for assessment of performance
Framework for Assessment

Knows
- Understands
  - Basic knowledge
Knows How
- Applies
  - Integrated knowledge
Shows
- Demonstrates
  - Competence (Workshop/Simulation)
Does
- Demonstrates in actual practice
  - Performance

Knowledge
Attitudes
Skills

**Domain of Competence**

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<th>PC1. Provide transfer of care that ensures seamless transitions</th>
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<td>Demonstrates variability in transfer of information (content, accuracy, efficiency, and synthesis) from one patient to the next; makes frequent errors of both omission and commission in the hand-off</td>
<td>Uses a standard template for the information provided during the hand-off; is unable to deviate from that template to adapt to more complex situations; may have errors of omission or commission, particularly when clinical information is not synthesized; neither anticipates nor attends to the needs of the receiver of information</td>
<td>Adapts and applies a standardized template, relevant to individual contexts, reliably and reproducibly, with minimal errors of omission or commission; allows ample opportunity for clarification and questions; is beginning to anticipate potential issues for the transferee</td>
<td>Adapts and applies a standard template to increasingly complex situations in a broad variety of settings and disciplines; ensures open communication, whether in the receiver- or the provider-of-information role, through deliberative inquiry, including readbacks, repeat-backs (provider), and clarifying questions (receivers)</td>
<td>Adapts and applies the template without error and regardless of setting or complexity; internalizes the professional responsibility aspect of hand-off communication, as evidenced by formal and explicit sharing of the conditions of transfer (e.g., time and place) and communication of those conditions to patients, families, and other members of the healthcare team</td>
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**Novice** to **Expert**
QI Sub competencies

Pediatrics

Problem-Based Learning 4 (PBLI4):
Systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement

System-Based Practice 4 (SBP4):
Advocate for quality patient care and optimal patient care systems

System-Based Practice 5 (SBP5):
Work in inter-professional teams to enhance patient safety and improve patient care quality
**QI Sub competencies**

**Pediatric Subspecialties**

**Problem-Based Learning 4 (PBLI4):**
Systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement.

**System-Based Practice 3 (SBP3):**
Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population based care as appropriate.

**System-Based Practice 5 (SBP5):**
Work in inter-professional teams to enhance patient safety and improve patient care quality.

**System-Based Practice 6 (SBP6):**
Participate in identifying system errors and implementing potential system solutions.

How do we evaluate these competencies and milestones?
Large Group Discussion

How are you currently assessing your quality improvement curriculum?
Kirkpatrick’s Evaluation of Training
QI Curriculum

Level 1: Reaction → Attitudes
Level 2: Learning → Knowledge
Level 3: Behavior → Process Measures
Level 4: Results → Outcome Measures
Level 5: Cost Effectiveness

Quality Improvement Educational Practices in Pediatric Residency Programs: Survey of Pediatric Program Directors

• Describe current QI educational practices, evaluation methods, and program director perceptions

• 46 question online survey with skip logic
  – Curricular design and content
  – Curriculum support
  – Program evaluation
  – PD perspectives

• Response rate 53% (104 of 197)

Quality Improvement Educational Practices in Pediatric Residency Programs: Survey of Pediatric Program Directors

• QI education programs present at 85% of pediatric residency programs
  – 83% contained didactics or formal lectures
  – 88% required project participation
  • Clinical care
  • Hospital operations
  • Residency program
  • Personal performance

Evaluation Within QI Curricula

• Participant Satisfaction
  – Individual lectures 32%
  – Entire curriculum 25%
• Self assessment of QI proficiency 24%
• Knowledge 11%
• Formal scoring of QI project 22%
• Patient Outcomes 35%
• No evaluation 17%

QI Evaluation Tools

QIPAT-7  MERIT

QIKAT
QIPAT-7

• Mayo Internal Residency Program
  – 144 residents participating in QI curriculum
  – Each month, 4 pairs of residents create QI proposal
• QIPAT-7 tool developed to evaluate the proposals
• Initial tool tested and adapted
• Final tool pilot tested and raters discussed scoring variations

QIPAT-7

**QI Proposal Assessment Tool**

- Definition of problem
- Identification of key stakeholders
- Evidence of root cause analysis
- Choice of QI project
- Potential interventions
- Proposed intervention
- Implementation and evaluation

### QIPAT-7

All bullets must be satisfied in each domain for a rating of 3 or higher

#### Definition of the problem
- Establishes problem magnitude/significance
- Identifies affected groups
- Clear statement of the problem

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#### Identification of key stakeholders
- Evidence of stakeholder consultation
- Description of impact of proposed intervention on stakeholders

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#### Evidence of root cause analysis
- Prioritizes causal factors
- Identified systems issues
- Utilizes at least one QI tool (e.g., fishbone, systems walk, mind map)

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#### Choice of quality improvement project
- Likely to result in meaningful improvement to patient care (e.g., clinical outcomes, safety, efficiency, or cost)
- Stimulates further inquiry

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#### Potential interventions
- Prioritization of multiple interventions
- Effort vs yield analysis

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#### Proposed intervention
- Directly addresses the problem
- Reasonable potential to change system for the better
- Impact on care captures ≥2 of the following (high yield/low effort, innovative, cost effective, sustainable)

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#### Implementation and evaluation of the intervention
- Clear plan and timeline for implementing the intervention
- Identifies measures of intervention success/effectiveness

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MERIT

Mayo Evaluation of Reflection on Improvement Tool

• Residents must be able to critically reflect on events in practice in order to develop meaningful QI interventions

• Residents keep improvement logs
  – Focused on clinical events
  – Evaluated with MERIT

MERIT

Reflection on Personal Characteristics of QI

- Resident questioned personal practice
- Quality of reflection
- Contributing personal factors identified
- Sufficient details to delineate contributing factors
- Multiple options for personal change considered
- Relevant new behaviors proposed
- Next steps towards personal change considered

MERIT

Reflection on System Characteristics of QI

• Quality of reflection on institution/health care system
• Current institutional practice/system questioned
• Contributing system factors identified
• Multiple options for system change considered
• Relevant changes to system proposed
• Next steps towards system change identified

Problem of Merit

• Event was patient centered
• Potential for event to effect other patients
• Event could cause negative clinical impact
• Overall problem of merit
• Event was evidence based in its description
• Overall improvement opportunity

QIKAT

Quality Improvement Knowledge Application Tool

• Assesses application of QI principles to clinical cases
  – Aim
  – Appropriate measures
  – Proposal for change via a potential QI project

• Designed for Internal Medicine residents

Pediatric QIKAT

Quality Improvement Scenarios

Instructions: Please read each of the following scenarios and then answer the questions that follow. We recognize that there may be many areas to improve. Be brief but complete. We request that you attempt each question, even if you are unsure.

Scenario #1
You are a primary care pediatrician in a three-person practice and have just finished a busy morning clinic session. Your last patient was a 14 year-old male with environmental allergies and poorly-controlled, severe persistent asthma. Despite his mother’s insistence that he is compliant with his medications, neither she nor the patient can tell you the names or doses of any of his medications other than his albuterol which he uses daily on a prn basis. You review his chart and see that he has been prescribed high-dose inhaled steroids, a leukotriene inhibitor, inhaled nasal steroids, a non-drowsy antihistamine, as well as a proton-pump inhibitor in case reflux is triggering his asthma. His social history is significant for a cat in the home and three adults who smoke. You are frustrated because even though he has had 5 hospitalizations in the past 6 months, you are seeing him in the clinic for the first time in the past 12 months.

As you sit down to ponder his case, you open a letter from one of the insurance plans that covers many of your patients. Enclosed is a summary of their review of a random number of asthmatics in your practice; this was done as part of their annual review for National Committee on Quality Assurance certification of their plan. The data shows that on several measures (including inhaled corticosteroid use, emergency department utilization, and asthma action plan use) more than 65% of your patients do not meet the target goals. This further adds to your level of frustration and ruins your appetite for lunch.

Questions for Scenario #1
Please answer each of the following questions as if you were developing a program to investigate and improve the problem presented above.

1) What would be the aim?

2) What would you measure to assess the situation?

3) Identify one change that might be worth testing:
Pediatric QIKAT

• Version #1 (2010-2011)
  – Poor inter-rater reliability

• Revised (Spring 2012)

• Version # 2
  – Face validity, content validity
    – Cincinnati Children’s AIM Course directors
  – Internal structure
    • Internal consistency
    • Inter-rater reliability
  – External validity
Scenario #1:

Resident A is concerned about the number of head CT scans that are done on pediatric patients in the Emergency Department. She, along with her inpatient team and radiologists, often question the indication during radiology rounds the next day. She reviews the literature and notes the following study: Kuppermann, N. et al. Identification of children at very low risk of clinically-important brain injuries after head trauma: a prospective cohort study. Encompassing 25 sites nationally, this Pediatric Emergency Care Research Network study enrolled over 25,000 patients between the age of 2 years and 18 years. The authors established a prediction rule for patients 2 years or older (with normal mental status, no loss of consciousness, no vomiting, non-severe injury mechanism, no signs of basilar skull fracture, and no severe headache) that had a negative predictive value of >99.9% (3798/3800).

Resident A is interested in implementing the evidence-based literature into practice by performing a quality improvement project in the Emergency Department. She needs your assistance as a quality improvement expert.

1. List 2 stakeholders who should be included early in the process
2. Create a global aim statement for this project
3. What might be her specific “SMART” aim statement?
4. What would be an example of a process measure?
5. What would be an example of an outcome measure?
6. What would be an example of a balancing measure?
7. List one initial intervention to test
Both Pediatrics/Subspecialties

Problem-Based Learning 4 (PBL4)

Systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement
PBL12. Systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement

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<td>Unable to gain insight from encounters due to a lack of reflection on practice; does not understand the principles of quality improvement methodology or change management; is defensive when faced with data on performance improvement opportunities within one's practice</td>
<td>Able to gain insight from reflection on individual patient encounters, but potential improvements are limited by a lack of systematic improvement strategies and the approach is dependent upon external prompts to define improvement opportunities at the population level</td>
<td>Able to gain insight for improvement opportunities from reflection on both individual patients and populations; grasps improvement methodologies enough to apply to populations; is still reliant on external prompts to inform and prioritize improvement opportunities at the population level</td>
<td>Able to use both individual encounters and population data to drive improvement using improvement methodology and analysis to achieve a continuous basis, without reliance on external forces, to prioritize improvement efforts and use the analysis to inform the process for improvement; is able to lead a team in improvement</td>
<td>In addition to demonstrating continuous improvement activities and appropriately utilizing quality improvement methodologies, thinks and acts systemically to try to use one's own successes to benefit other practices, systems, or populations; is adept at analysis that at times requires course correction to optimize improvement</td>
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Comments:
Use QI assessment tools to evaluate provided QI projects/scenarios
# Quality Improvement Evaluation Tools Overview

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<th>Tool</th>
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| **QIKAT** | Quality Improvement Knowledge Application Tool  
*Use* - Assesses application of basic QI principles to clinical cases  
*Scoring* –  
  *Pediatric QIKAT* – answer sheet outlines possible correct responses for each question |
| **QIPAT - 7** | QI Proposal Assessment Tool  
*Use* – Assesses quality Improvement project proposals; evaluates 7 elements of the proposal  
*Scoring* – Scale of 1 – 5.  
  *1* = needs improvement  
  *3* = meets expectations  
  *5* = exceeds expectations.  
  *All descriptive anchors for each project element must be met in order to score a 3.*  
| **MERIT** | Mayo Evaluation of Reflection on Improvement Tool  
*Use* – Evaluates resident reflection on clinical events written in an improvement log  
*Scoring* – Scale of 1 – 4.  
  *1* = “no” or “bottom quartile”  
  *2* = “somewhat” or “second quartile”  
  *3* = “almost” or “third quartile”  
  *4* = “yes” or “top quartile” |
What were the pros and cons of the tool your group used?
Large Group Activity

Construct a key driver diagram
Aim - to improve your curriculum with integration of evaluation tools and Pediatric Milestones.
By July 2014, we will implement one QI evaluation tool to inform reporting in December 2014 in our residency QI curriculum.

**SMART AIM**

- Have an evaluation tool
- Buy-in for use of tool (resident and faculty)
- Identify faculty who will use the tool; location for use
- Identify milestones to assess

**KEY DRIVERS**

**INTERVENTIONS**

- MERIT (milestone PBLI2 levels 1-3)
- Include in goals/objectives for curriculum
- Location—PL1s can complete in continuity clinic; plan time during conference

**PBLI2 😊**

*An effective tool for breaking down complex questions or improvement goals and structuring them into smaller, more focused “drivers”*
Great...
What about the other sub competencies?
Pediatric Subspecialties

System-Based Practice 6 (SBP6):
Participate in identifying system errors and implementing potential system solutions
### SBP5. Participate in identifying system errors and implementing potential systems solutions

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<td>Defensive or blaming when encountering medical error; no perception of personal responsibility for individual or systems error correction; not open to discussion of error or identification of the type of error; approaches error prevention from an individual case perspective only</td>
<td>Occasionally open to discussion of error without a defensive or blaming approach; some awareness of personal responsibility for individual or systems error correction, but cannot identify the type (active versus latent) of error; begins to perceive that error may be more than the mistake of an individual</td>
<td>Usually open to a discussion of error; actively identifies medical error events and seeks to determine the type of error; occasionally identifies the element of personal responsibility for individual or systems error correction; sees examination and analysis of error as an important part of the preventive process</td>
<td>Usually encourages open and safe discussion of error; actively identifies medical error events; accepts personal responsibility for individual or systems error correction, regularly determining the type of error and beginning to seek system causes of error</td>
<td>Consistently encourages open and safe discussion of error; characteristically identifies and analyzes error events, habitually approaching medical error with a system solution methodology; actively and proactively engaged with teams and processes through which systems are modified to prevent medical error</td>
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Comments:
Participate in identifying system errors and implementing potential system solutions

• Ideas:
  – Participate in Hospital-wide system-focused M&M
  – Participate in microsystem root cause analysis
  – Work with hospital QI/PI teams in project development

• But how do you evaluate the ability to discuss and acknowledge errors?
System-Based Practice 4 (SBP4):

Advocate for quality patient care and optimal patient care systems
### SBP2. Advocate for quality patient care and optimal patient care systems

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<td>Attends to medical needs of individual patient(s): wants to take good care of patients and takes action for individual patients’ health care needs.</td>
<td>Demonstrates recognition that an individual patient’s issues are shared by other patients, that there are systems at play, and that there is a need for quality improvement of those systems; acts on the observed need to assess and improve quality of care.</td>
<td>Acts within the defined medical role to address an issue or problem that is confronting a cohort of patients; may enlist colleagues to help with this problem.</td>
<td>Actively participates in hospital-initiated quality improvement and safety actions; demonstrates a desire to have an impact beyond the hospital walls.</td>
<td>Identifies and acts to begin the process of improvement projects both inside the hospital and within one’s practice community.</td>
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<td>Example:</td>
<td>See a child with a firearm injury and provides good care.</td>
<td>Example: A physician notes on rounds, “We have sent home four-to-five firearm-injury patients and one has come back with repeated injury. We need to do something about that.”</td>
<td>Example: The physician works with colleagues to develop an approach, protocol, or procedure for improving care for penetrating trauma injury in children and measures the outcomes of system changes.</td>
<td>Example: The physician attends a hospital symposium on gun-related trauma and what can be done about it and then arranges to speak on gun safety at the local meeting of the parent-teachers association.</td>
<td>Example: Upon completion of quality improvement project, the physician works on new proposed legislation and testifies in City Council.</td>
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**Comments:**
Patient Tracer Activity

- **Objectives/strategies:**
  - Observe patient encounters in the sick clinic, primary pediatrics clinic, and ambulatory pediatric clinics paying particular attention to:
    - Patient wait times
    - Response to patients with limited English proficiency
    - Response to patients with limited health literacy
    - Response to parental frustration
    - Overall customer service
  
- Identify three aspects of the overall patient experience in which our clinics perform better than you would have expected

- List three aspects of the overall patient experience in which our clinics perform in a manner that are (in your opinion), below acceptable

- Describe three quality improvement projects that could be implemented to improve the overall quality of the patient experience within the CCAH outpatient practices.
Pediatric Subspecialties

System-Based Practice 3 (SBP3):

Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population based care as appropriate
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<td>Unaware of costs issues in evaluation and management of patients; has difficulty processing cost and risk-benefit information in a way that results in cost-containment actions or appropriate risk-benefit analysis; frustrated by cost containment efforts that are viewed as primarily externally mandated</td>
<td>Uses externally provided information (e.g., prescribing information, test ordering patterns, or research around a treatment) to inform cost-containing action and/or preliminary risk-benefit analysis; demonstrates inadequate skills in critical appraisal that may result in inappropriate cost containment activities and/or risk-benefit counseling</td>
<td>Critically appraises information available on an evaluation test or treatment to allow optimization of cost issues and risk-benefit for an individual patient; adopts strategies that decrease cost and risk and optimize benefits for individuals, with less attention to those outcomes for populations</td>
<td>Critically appraises information in the context of not only the individual patient, but also the broader population/system; ascribes value to cost and risk-benefit decisions based on this broad understanding of the information</td>
<td>Consistently integrates cost analysis into one’s practice while minimizing risk and optimizing benefits for whole systems or populations</td>
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Comments:
Antibiotics should not be used for apparent viral respiratory illnesses (sinusitis, pharyngitis, bronchitis).
Although overall antibiotic prescription rates for children have fallen, they still remain alarmingly high. Unnecessary medication use for viral respiratory illnesses can lead to antibiotic resistance and contributes to higher health care costs and the risks of adverse events.

Cough and cold medicines should not be prescribed or recommended for respiratory illnesses in children under four years of age.
Research has shown these products offer little benefit to young children and can have potentially serious side effects. Many cough and cold products for children have more than one ingredient, increasing the chance of accidental overdose if combined with another product.

Computed tomography (CT) scans are not necessary in the immediate evaluation of minor head injuries; clinical observation/Pediatric Emergency Care Applied Research Network (PECARN) criteria should be used to determine whether imaging is indicated.
Minor head injuries occur commonly in children and adolescents. Approximately 50% of children who visit hospital emergency departments with a head injury are given a CT scan, many of which may be unnecessary. Unnecessary exposure to x-rays poses considerable danger to children including increasing the lifetime risk of cancer because a child’s brain tissue is more sensitive to ionizing radiation. Unnecessary CT scans impose undue costs to the health care system. Clinical observation prior to CT decision-making for children with minor head injuries is an effective approach.

Neuroimaging (CT, MRI) is not necessary in a child with simple febrile seizure.
CT scanning is associated with radiation exposure that may escalate future cancer risk. MRI also is associated with risks from required sedation and high cost. The literature does not support the use of skull films in the evaluation of a child with a febrile seizure. Clinicians evaluating infants or young children after a simple febrile seizure should direct their attention toward identifying the cause of the child’s fever.

Computed tomography (CT) scans are not necessary in the routine evaluation of children with headache.
CT scans are frequently ordered for the evaluation of headache in children. However, the vast majority of headaches in children are due to benign causes. CT scans increase the risks of radiation and sedation, have not been shown to improve patient care, and are not cost-effective.
Evaluating Cost Awareness and Risk-Benefit Analysis

• New curriculum under design for addition into QI curriculum
  – Goal 2014-2015

• Didactic and exercise/project components
  – Evaluation tool for project?
  – Area for study and publication
Both Pediatrics/Subspecialities

System-Based Practice 5 (SBP5):

Work in inter-professional teams to enhance patient safety and improve patient care quality
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<td>Seeks answers and responds to authority from only intra-professional colleagues; does not recognize other members of the interdisciplinary team as being important or making significant contributions to the team; tends to dismiss input from other professionals aside from other physicians.</td>
<td>Is beginning to have an understanding of the other professionals on the team, especially their unique knowledge base, and is open to their input, however, still acquiesces to physician authorities to resolve conflict and provide answers in the face of ambiguity; is not dismissive of other health care professionals, but is unlikely to seek out those individuals when confronted with ambiguous situations.</td>
<td>Aware of the unique contributions (knowledge, skills, and attitudes) of other health care professionals, and seeks their input for appropriate issues, and as a result, is an excellent team player.</td>
<td>Same as Level 3, but an individual at this stage understands the broader connectivity of the professions and their complementary nature; recognizes that quality patient care only occurs in the context of the interprofessional team; serves as a role model for others in interdisciplinary work and is an excellent team leader.</td>
<td>Current literature does not distinguish between behaviors of proficient and expert practitioners. Expertise is not an expectation of GME training, as it requires deliberate practice over time.</td>
</tr>
</tbody>
</table>

Comments:
Validated Evaluation Tools for Teamwork

Self Assessed Team Skills
- Rochester Communication Rating Scale
- Team Skills Scale
- Leadership and Group Development Assessment
- ALERT questionnaire
- Team Development Wheel
- Team Dimensions Rating form

Self Assessed Attitudinal Changes
- Human Factors Attitude Survey
- Attitudes Towards Healthcare Rating Scale
- Readiness in Interprofessional Learning

Teamwork impact on quality
- None

How can we better evaluate the competencies related to QI?
Please Evaluate Us!

• Paper evaluations

• https://www.appd.org/amsurvey/

• Thank you for participating!
Questions?
Course Goals and Objectives

1. Reflect on personal experiences to identify areas of focus for systems improvement
2. Identify stakeholders, propose a SMART aim statement and measures (outcome, process, and balancing) for a hypothetical QI project
3. Apply the Model for Improvement and Plan-Do-Study-Act methodology to participate as an active team member in a SCHC QI project
Course Goals and Objectives

• Present team project on QI Day demonstrating application of the Model for Improvement/PDSA
  – Develop SMART aim
  – Define meaningful outcome, process, balancing measures
  – Work in inter-professional teams
  – Seek input from others
  – Understand existing process (via process map)
  – Construct Key Driver Diagram
  – Collect and analyze data over time
  – Perform rapid-cycle improvement (Plan-Do-Study-Act)
Problem-Based Learning and Improvement-2

<table>
<thead>
<tr>
<th>Not yet Assessable</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unable to gain insight from encounters due to a lack of reflection on individual patient encounters, but potential improvements are limited by a lack of systematic improvement strategies and teamwork approach; is dependent upon external prompts to define opportunities within one’s practice</td>
<td>Able to gain insight from reflection on individual patient encounters, but potential improvements are limited by a lack of systematic improvement strategies and teamwork approach; is dependent upon external prompts to define improvement opportunities at the population level</td>
<td>Able to gain insight for improvement opportunities from reflection on both individual patients and populations; grasps improvement methodologies enough to apply to populations; is still reliant on external prompts to inform and prioritize improvement opportunities at the population level</td>
<td>Able to use both individual encounter and population data to drive improvement using improvement methodology; analyzes one’s own data on a continuous basis, without reliance on external forces, to prioritize improvement efforts, and uses that analysis in an iterative process for improvement; is able to lead a team in improvement</td>
<td>In addition to demonstrating continuous improvement activities and appropriately utilizing quality improvement methodologies, thinks and acts systematically to try to use one’s own successes to benefit other practices, systems, or populations; is open to analysis that at times requires course correction to optimize improvement</td>
</tr>
</tbody>
</table>

Comments:

**MERIT**

**Pediatric QIKAT**

**Participate in QI project**

**Lead QI project**
## System-Based Practice-2

### SBP2. Advocate for quality patient care and optimal patient care systems

<table>
<thead>
<tr>
<th>Not yet Assessable</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Attends to medical needs of individual patient(s); wants to take good care of patients and takes action for individual patients’ health care needs</td>
<td>Demonstrates recognition that an individual patient’s issues are shared by other patients; that there are systems at play, and that there is a need for quality improvement of those systems; acts on the observed need to assess and improve quality of care.</td>
<td>Acts within the defined medical role to address an issue or problem that is confronting a cohort of patients; may enlist colleagues to help with this problem.</td>
<td>Actively participates in hospital-initiated quality improvement and safety actions; demonstrates a desire to have an impact beyond the hospital walls.</td>
<td>Identifies and acts to begin the process of improvement projects both inside the hospital and within one’s practice community.</td>
</tr>
</tbody>
</table>

**Example:**
- *Level 1:
  - A physician notes on rounds, “We have sent home four-to-five firearm-injury patients and one has come back with repeated injury. We need to do something about that.”*  
- *Level 2:
  - The physician works with colleagues to develop an approach, protocol, or procedure for improving care for penetrating trauma injury in children and measures the outcomes of system changes.*  
- *Level 4:
  - The physician attends a hospital symposium on gun-related trauma and what can be done about it and then arranges to speak on gun safety at the local meeting of the parent-teachers association.*  
- *Level 5:
  - Upon completion of quality improvement project, the physician works on new proposed legislation and testifies in City Council.*

**Patient Tracer Activity (Advocacy block)**

**QI/Advocacy project**
## System-Based Practice-4

**SBP4. Work in inter-professional teams to enhance patient safety and improve patient care quality**

<table>
<thead>
<tr>
<th>Not yet Assessable</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seeks answers and responds to authority from only intra-professional colleagues; does not recognize other members of the interdisciplinary team as being important or making significant contributions to the team; tends to dismiss input from other professionals aside from other physicians</td>
<td>Is beginning to have an understanding of the other professionals on the team, especially their unique knowledge base, and is open to their input, however, still acquiesces to physician authorities to resolve conflict and provide answers in the face of ambiguity; is not dismissive of other health care professionals, but is unlikely to seek out those individuals when confronted with ambiguous situations</td>
<td>Aware of the unique contributions (knowledge, skills, and attitudes) of other health care professionals, and seeks their input for appropriate issues, and as a result, is an excellent team player</td>
<td>Same as Level 3, but an individual at this stage understands the broader connectivity of the professions and their complementary nature; recognizes that quality patient care only occurs in the context of the inter-professional team; serves as a role model for others in interdisciplinary work and is an excellent team leader</td>
<td>Current literature does not distinguish between behaviors of proficient and expert practitioners. Expertise is not an expectation of GME training, as it requires deliberate practice over time</td>
</tr>
</tbody>
</table>

**Inter-professional collaboration in QI project**

**Team leader**
## QIPAT-7

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>SD</th>
<th>ICC</th>
<th>95% CI</th>
<th>Cronbach’s α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition of the problem</td>
<td>3.4</td>
<td>0.995</td>
<td>0.79</td>
<td>0.61, 0.84</td>
<td>0.87</td>
</tr>
<tr>
<td>Identification of stakeholders</td>
<td>2.6</td>
<td>1.116</td>
<td>0.91</td>
<td>0.84, 0.94</td>
<td></td>
</tr>
<tr>
<td>Root Cause analysis</td>
<td>2.3</td>
<td>1.05</td>
<td>0.93</td>
<td>0.87, 0.95</td>
<td></td>
</tr>
<tr>
<td>Choice of QI Project</td>
<td>3.4</td>
<td>1.08</td>
<td>0.82</td>
<td>0.62, 0.84</td>
<td></td>
</tr>
<tr>
<td>Potential Interventions</td>
<td>2.1</td>
<td>0.968</td>
<td>0.87</td>
<td>0.78, 0.91</td>
<td></td>
</tr>
<tr>
<td>Proposed Interventions</td>
<td>2.9</td>
<td>1.1</td>
<td>0.85</td>
<td>0.65, 0.86</td>
<td></td>
</tr>
<tr>
<td>Implementation and Evaluation</td>
<td>1.9</td>
<td>1.12</td>
<td>0.9</td>
<td>0.82, 0.93</td>
<td></td>
</tr>
</tbody>
</table>

### Table 2: The Mayo Evaluation of Reflection on Improvement Tool (MERIT): factors, mean scores and reliability

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>SD</th>
<th>ICC</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Factor 1 (eigenvalue 8.46; Cronbach’s α = 0.91)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reflection on Personal Characteristics of Quality Improvement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relevant new behaviours were proposed</td>
<td>2.34</td>
<td>1.02</td>
<td>0.85</td>
<td>0.70–0.87</td>
</tr>
<tr>
<td>Resident questioned his or her personal practice</td>
<td>2.50</td>
<td>1.09</td>
<td>0.89</td>
<td>0.76–0.90</td>
</tr>
<tr>
<td>Quality of reflection on personal practice</td>
<td>1.94</td>
<td>0.91</td>
<td>0.87</td>
<td>0.78–0.91</td>
</tr>
<tr>
<td>Next steps towards personal change were identified</td>
<td>1.78</td>
<td>0.97</td>
<td>0.79</td>
<td>0.63–0.84</td>
</tr>
<tr>
<td>Contributing personal factors were identified</td>
<td>2.38</td>
<td>1.04</td>
<td>0.82</td>
<td>0.59–0.83</td>
</tr>
<tr>
<td>Multiple options for personal change were considered</td>
<td>1.46</td>
<td>0.84</td>
<td>0.81</td>
<td>0.68–0.87</td>
</tr>
<tr>
<td>Sufficient details to delineate contributing factors</td>
<td>2.25</td>
<td>1.09</td>
<td>0.85</td>
<td>0.68–0.87</td>
</tr>
<tr>
<td><strong>Factor 2 (eigenvalue 1.86; Cronbach’s α = 0.91)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reflection on System Characteristics of Quality Improvement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of reflection on the institution or wider health care system</td>
<td>1.89</td>
<td>0.94</td>
<td>0.89</td>
<td>0.81–0.92</td>
</tr>
<tr>
<td>Relevant changes to the system were proposed</td>
<td>2.22</td>
<td>1.06</td>
<td>0.86</td>
<td>0.72–0.88</td>
</tr>
<tr>
<td>Next steps towards system change were identified</td>
<td>1.72</td>
<td>0.97</td>
<td>0.79</td>
<td>0.60–0.84</td>
</tr>
<tr>
<td>Current institutional practice or system was questioned</td>
<td>2.47</td>
<td>1.03</td>
<td>0.86</td>
<td>0.69–0.87</td>
</tr>
<tr>
<td>Multiple options for system change were considered</td>
<td>1.50</td>
<td>0.88</td>
<td>0.86</td>
<td>0.74–0.89</td>
</tr>
<tr>
<td>Contributing system factors were identified</td>
<td>2.13</td>
<td>0.97</td>
<td>0.76</td>
<td>0.57–0.82</td>
</tr>
<tr>
<td><strong>Factor 3 (eigenvalue 1.54; Cronbach’s α = 0.83)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Problem of Merit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Event was patient-centred</td>
<td>3.80</td>
<td>0.59</td>
<td>0.73</td>
<td>0.54–0.81</td>
</tr>
<tr>
<td>Potential for event to effect other patients</td>
<td>3.74</td>
<td>0.67</td>
<td>0.78</td>
<td>0.66–0.86</td>
</tr>
<tr>
<td>Event could cause negative clinical impact</td>
<td>3.49</td>
<td>0.82</td>
<td>0.74</td>
<td>0.56–0.82</td>
</tr>
<tr>
<td>Overall Problem of merit</td>
<td>3.09</td>
<td>0.97</td>
<td>0.73</td>
<td>0.55–0.81</td>
</tr>
<tr>
<td>Event was evidence-based in its description</td>
<td>3.15</td>
<td>1.09</td>
<td>0.74</td>
<td>0.38–0.74</td>
</tr>
<tr>
<td>Overall improvement opportunity*</td>
<td>2.49</td>
<td>1.00</td>
<td>0.82</td>
<td>0.71–0.88</td>
</tr>
</tbody>
</table>

Overall (18 items) Cronbach’s α = 0.93
• Study of 1 month PBLI curriculum for internal medicine residents
  – Administered QIKAT pre and post curriculum

<table>
<thead>
<tr>
<th></th>
<th>Pretest Mean (SD)</th>
<th>Post test Mean (SD)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants</td>
<td>9.2 (2.6)</td>
<td>11.4 (2.4)</td>
<td>&lt;0.5</td>
</tr>
<tr>
<td>Non Participants</td>
<td>8.2 (2.2)</td>
<td>8.7 (2.5)</td>
<td>NS</td>
</tr>
<tr>
<td>P Value</td>
<td>NS</td>
<td>&lt; 0.1</td>
<td></td>
</tr>
</tbody>
</table>