PGME Quality Improvement and Patient Safety Elective

Developed by the PGME Quality Improvement and Patient Safety Education Committee &
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Suggested for: PGY2+

Introduction

Quality improvement (QI), patient safety, and resource stewardship have now become a formal part of Royal College's objectives for residents. The goal of the PGME Quality Improvement and Patient Safety Education Committee is to provide you with a formal curriculum and skills that you can apply to all of your practice settings, including academic and community settings. This curriculum has the following components:

- A self-led curriculum (there are no planned didactic sessions at this time).
- It will involve working closely with a supervisor and project team on an improvement initiative.
- **It is highly recommended that the trainee identify a supervisor, a project and a team as soon as possible once the elective is booked, ideally at least one month in advance prior to the elective block. Given the elective spans only 4 weeks, it is advised to join an existing project rather than starting a new one if possible.** It may be helpful to join a hospital project team that includes a Continuing Quality Improvement Specialist or Continuing Quality Improvement Coach.
- When selecting a project, consider the following factors:
  - Frequency and severity of the quality problem
  - Is the problem under your direct control?
  - Feasibility (amount of re-organization required, associated costs)
  - Possibility of unintended consequences
  - Synergy with other improvement activities at the hospital/clinic

- The trainee and supervisor should identify the elective objectives (see Objectives section) prior to the start of the elective.
- Topic reviews include resources from the Institute for Healthcare Improvement (IHI), Health Quality Ontario (HQO), the Royal College, and Sustainability in Quality Improvement (SusQI).
- There are opportunities to practice skills using practice worksheets and templates.
- Assignments are submitted to the resident's supervisor; assignments include fillable templates, literature reviews, run charts, and presentations
- Ideas for projects include working on projects already occurring in the trainee's division or department related to one of the 6 domains of quality (including patient safety), resource stewardship (see Choosing Wisely Canada recommendations), and sustainability.
- There is a strong focus on sustainability in this QI curriculum. Ideas for sustainability project involvement include collaborating with one of the Green teams at Hamilton Health Sciences (HHS) or St. Joseph's Healthcare Hamilton (SJHH), or focusing on the recent addition of climate-focused projects from Choosing Wisely Canada (link). It may be helpful to review examples of previous sustainability QI projects from SusQI: link
- If needed, residents may contact Allison Paquette (paquea1@mcmaster.ca) at PGME to be connected with potential supervisors.

Objectives[1]

There are three sets of objectives for the resident and their faculty supervisor to choose from based on the resident's level of experience.

QUALITY IMPROVEMENT

At the end of this 4-week elective, the trainee will be able to:

Fundamental
- Distinguish between quality assurance (QA) and quality improvement (QI).
- Write an aim statement for a QI process.
- Determine how to organize a QI team for a clinical process.
- Generate a flow chart for QI of a clinical process.
- Answer the following three questions of the model for improvement: What are we trying to accomplish? How will we know that a change is an improvement? What changes will we make that will result in an improvement?
- List at least one outcome measure, one process measure and one balancing measure for data collection.
- Consider how data collection can take place at baseline and after changes have been implemented in the clinical process.
- Summarize how data collection can be embedded in the workflow.
- Interpret a run chart and/or control chart by identifying common-cause versus
- special-cause variation of the data.
- Discuss whether an intervention appears to work (improvement) or not work (non improvement) on the basis of the data analysis.

Intermediate
- Form a QI team and decide on the accountability of the team members.
- Select a clinical area for a QI project and a venue for data collection.
- Produce at least one aim statement for a self-selected QI project.
- Develop a QI charter by answering the three core questions of the model for improvement for the self-selected QI project: What are we trying to accomplish? How will we know that a change is an improvement? What changes will we make that will result in an improvement?
- Establish a timeline that is realistic and feasible.
- Establish appropriate division of labour among team members.
- Identify needs for QI support and resource requirements.
- Identify indicators for data collection, including at least one outcome measure, process measure and balancing measure.
- Devise plans for data collection to ensure feasibility and sustainability.
- Analyze the data collected, with the aid of QI analysts, in the form of run charts and/or control charts.
- Discuss whether an intervention appears to work (improvement) or not work (non improvement) on the basis of the data analysis.

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[1] Source: Wong et al. Teaching Quality Improvement in Residency Education – Royal College 2015 – pages 42-43

Advanced

After having achieved all of the learning objectives for the fundamental and intermediate QI curricula, the trainee working at the advanced level will be able to:

- Lead a QI team.
- Align QI with health promotion and disease prevention strategies.
- Explain the ethical implications of collecting data for QI.
- Seek ethical approval when indicated.
- Write a QI abstract that meets standard criteria.
- Produce and deliver, with team members, an oral presentation of the findings of a QI project in a podium session.
- Write a QI scholarly article that meets standard criteria.

PATIENT SAFETY

- Explain key patient safety concepts such as adverse events, near misses, no-harm events, errors, and root cause analysis.
- Describe how QI can be used to contribute to a culture that promotes patient safety, including:
  - o Improving disclosure after a safety incident
  - o How to evaluate practices in place for patient safety (human factors, transfer of care, verbal and written communication)

Weekly Schedule of Resources and Assignments

SUGGESTED CURRICULUM AND RESOURCES

Pre-work

Topic	Read and Review	Hand in
General QI Resources / Guides	Read: Royal College: Fundamentals of QI (7 pages): found under Quality Improvement tab, direct link Optional but recommended: (17 pages): HQO QI Guide: link, focusing on the 6 Domains of Quality and Quintuple Aim	N/A
IHI Open School Modules - Quality Improvement The Institute for Healthcare Improvement (IHI) are leaders in the QI/PS movement and provide great educational resources. They have an Open School with online modules that are a great starting point: Start by registering for IHI Open School	Complete: QI 102: How to improve with the Model for Improvement QI 103: Testing and Measuring Changes with PDSA Cycles QI 104: Interpreting Data: Run Charts, Control Charts, and Other Measurement Tools	Completed certifications for QI 102, QI 103, QI 104
Sustainability in QI (SusQI) Resources	Read SusQI Framework Intro: link Read SusQI Framework paper: link (focus on understanding the "Triple Bottom Line" Familiarize yourself with the SusQI Step by Step Guide and Resources: link and: link	N/A
CMPA Patient Safety Resources	Read: CMPA articles on patient safety incident reviews (link) and (link) and disclosure of patient safety incidents (link)	

IHI Open School Modules - Patient Safety Start by registering for [IHI Open School](link)	Complete: PS 101: Introduction to Patient Safety PS 102: From Error to Harm PS: 103: Human Factors and Safety	Completed certifications for PS 101, PS 102, PS 103

Week 1: **Defining the Problem**

Topic	Read and Review	Practice	Hand in
Defining the Problem	Watch: HQO video on Problem Statements (link) Review: HQO Problem Statement Tool (link) (from HQO QI Essentials resources - link)	SusQI Problem Statement Template (link)	HQO Project Charter Tool - page 3 and 5 only (link)
Brief Literature Review	Review relevant literature related to your topic, including: - similar problems identified in similar or different settings - relevant benchmarks/ targets - known contributors to the problem - change ideas trialed in other settings - lessons and limitations from other similar studies		Brief literature review (12 pt font, maximum 3 pages single spaced, maximum 20 references)
Study the System (Baseline data acquisition and interpretation)	Review HQO Run Charts Tool (link) Further (Optional) Reading: HQO Measurement Guide (link)	Practice creating Run charts in Microsoft Excel (Use "Line Chart with markers" graph type; example at link)	1) Collect retrospective baseline data for your project (ideally 10 or more data points) 2) Depict baseline data on a run chart with time on the x-axis, and the outcome measure on the y-axis. For the x-axis, choose a time interval that is reasonable for your project (e.g. hourly, daily, weekly, etc) 3) Identify whether there is common cause or special

			cause variation. If special cause variation is identified: - label the type of special cause variation (shift, trend, or astronomical point) - Identify potential factors that may be contributing to the special cause variation (shift changes, staffing levels, etc.)

Week 2: **Study the System**

Topic	Read and Review	Practice	Hand in
Study the System (Process and value mapping)	Watch: HQO video on diagnostics (link), section on Process mapping (8:04-10:20) Read SusQI "Study the System" overview (link) Read SusQI Value Mapping overview (link) Review *Examples of value process maps in various clinical settings (hyperlinks):* - outpatients example - sexual health services example - unilateral tinnitus example	SusQI Templates (hyperlinks): Scanning for Waste Recognising Resource Use Scanning for Social Impact Scanning for Social Determinants	**Please draft a Process/value map** of the system in its current state for your chosen project, similar to the three examples under the "Read/Review" Column. Please also label each step with a duration, if applicable (e.g. how long the step typically takes, in the current state)
Study the System (Diagnostic Tools)	Watch: HQO video on diagnostics (link) (entire video)		Please hand in **two** completed templates, that you believe are most relevant to your project: HQO Fishbone tool (source) HQO 5 Whys tool (source) HQO Pareto Chart tool (source)

Week 3: Design Improvement

Topic	Read and Review	Practice	Hand in
Designing Change Ideas to address the root causes found in your diagnostics	Watch: HQO Video on Change ideas and PDSAs (link) until 10:47 (Focus on Change Ideas only) Read: HQO Change Concepts and Ideas guide (source), (direct link)		
Structuring your Design Process	Review SusQI page on Improvement Design, focusing particularly on how to construct a Driver Diagram: link	Review: *Examples of Driver Diagrams in various clinical settings:* • anasthetics • renal services • diabetes services • ICU	SusQI Driver diagram template: link (page 1 only)
Prioritization of change ideas		SusQI: Use this table to support you in considering the potential Health, Environmental and Social Impacts of your change ideas, as well as their feasibility	
Stakeholder Engagement and Communication		HQO Communication Tool: link	
PDSA cycles	Watch: HQO Video on Change Ideas and PDSAs (Link from 10:47 onwards for PDSAs)		HQO PDSA Tool Source and direct link - only fill out the "Plan" section for this week - clearly outline which root cause(s) (from your diagnostic tools) the

			chosen change idea is addressing
Measurement	Read: HQO Measurement Guide ([source](#)), (download [link](#))	HQO Measurement Plan tool ([source](#)), download [link](#)	Updated HQO QI Charter tool ([source](#)) (direct download [link](#)) - all pages

Week 4: Measure Impact

Topic	Read and Review	Practice	Hand in
If possible, carry out PDSA #1 and/or PDSA #2			HQO PDSA Tool for PDSA 1 (all sections), and "Plan" section for PDSA 2. [Source](#) and [direct link](#).
Measure Impact	SusQI Measure Impact Page: [link](#), focusing on the Sustainable Value Equation	Carbon footprinting exercise ([link](#))	
Project Report Template			SusQI Project Report Template ([Downloadable template link](#)) (Tip: Use instructions ([link)](#) to guide you)
Final presentation to supervisor +- team (max 15 minutes) - Optional, at the discretion of the supervisor			You may use the SusQI Project Report template; ensure you outline: - Problem Statement (with relevant supporting literature of extent of problem), - SMART Aim statement - Triple Bottom Line - Stakeholders - Process/Value Map - Root causes found on relevant, diagnostic tools - Chosen/prioritized change ideas - Lessons from PDSA (if applicable) - Run chart and analysis (may be only baseline runchart if no PDSA was able to be carried out during elective) - Plan for Sustaining change (Refer to HQO Guide ([link](#)))

Assessment

A number of tools are available for assessment, including the Self-Assessment Program (SAP) and the Quality Improvement Knowledge Application Tool (QIKAT) which now includes an updated version, the Quality Improvement Knowledge Application Tool Revised (QIKAT-R). The SAP and the QIKAT/QIKAT-R can be administered at the start of the first session to establish a baseline of the trainee's knowledge of QI. After the elective is completed, the assessment should be repeated, using the SAP and a different version of QIKAT/QIKAT-R. Using a second version of QIKAT/QIKAT-R will minimize any learning effect related to the test.

These tools can be downloaded from the Self-Assessment tab on this website and here.

Self-assessment Program (SAP) for QI Competencies

Thank you for taking the time to answer the following questions, which were adapted, with permission, from a tool developed by Dr. Greg Ogrinc (Geisel School of Medicine, Dartmouth College, Hanover, NH) and used by his research team (Ogrinc G, LA Headrick, LJ Morrison, T Foster. Teaching and assessing resident competence in practice-based learning and improvement. *Journal of General Internal Medicine* 2004;19(5 Pt 2):496–500).

Instructions:

How comfortable are you in your current skill with the following aspects of quality improvement? Please circle the most appropriate option (whole numbers only) for each item.

[1] not at all   [2] slightly   [3] moderately   [4] extremely

1. Defining a clear problem statement (goal, aim)	1	2	3	4
2. Applying best professional knowledge	1	2	3	4
3. Developing appropriate measures	1	2	3	4
4. Studying the process of care	1	2	3	4
5. Developing a data collection plan consistent with time and resource limitations	1	2	3	4
6. Analyzing data	1	2	3	4
7. Applying statistical process control	1	2	3	4
8. Describing the roles of different professionals in health care improvement	1	2	3	4
9. Implementing a structured plan to test a change	1	2	3	4
10. Sustaining a change over time	1	2	3	4
This is the end of the questionnaire. Thank you for your input.				

Balanced Score Card
This tool is to be used after completion of the QI project.

Title of project:

Team members:

Rating system:

0 = no

1 = some attempt was made but does not meet the requirements

2 = met some requirements but substantial improvement is required

3 = good (can use some improvement)

4 = very good (only minimal improvement is required)

5 = excellent (no improvement needed)

Please circle appropriate number for each question

1.	Have the residents worked effectively as a team?	0	1	2	3	4	5
2.	Do the project findings indicate a patient focus?	0	1	2	3	4	5
3.	Do the project findings indicate knowledge of process?	0	1	2	3	4	5
4.	Do the project findings incorporate PDSA/small tests of change?	0	1	2	3	4	5
5.	How would you rate the aim statement (including use of appropriate methodology to identify causes of the problem)?	0	1	2	3	4	5
6.	How would you rate the measurement/collection/use of data? (0 = no actual data)	0	1	2	3	4	5
7.	Has the team engaged stakeholders in planning, executing and evaluating the change?	0	1	2	3	4	5
8.	How would you rate the change suggested/achieved? (0 = no change suggested)	0	1	2	3	4	5
9.	Do the three elements (aim, measure, change) bear some relationship to each other?	0	1	2	3	4	5

Comments:

Total Score	/45

Revised QIKAT Scoring Rubric (QIKAT-R)

Each item receives one point if the response adequately addresses the item and zero points if it does not. The total possible score is 9 points for each scenario.

3 points for the AIM. The AIM …	
A1	is focused on the system-level of the problem presented.
A2	includes direction of change (increase or decrease).
A3	includes at least <u>one</u> specific characteristic such as magnitude (% change) or time frame.
3 points for the MEASURE. The MEASURE…	
M1	is relevant to the aim.
M2	is readily available so data can be analyzed over time.
M3	captures a key process or outcome.
3 points for the CHANGE. The CHANGE…	
C1	is linked directly with the aim.
C2	proposes to use existing resources.
C3	provides sufficient details to initiate a test of change.