Resident QI Curriculum – Development and Improvement

SUO/AADO/OPDO Combined Program
November 9, 2018
Question # 1

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Question # 3

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Panelists

• **Moderator – Eric Dobratz, MD**
  o Program Director, Eastern Virginia Medical School

• **Sarah N. Bowe, MD, EdM**
  o San Antonio Uniformed Services Health Education Consortium

• **Kelley Dodson, MD**
  o Program Director, Virginia Commonwealth University

• **Brett Comer, MD**
  o Program Director, University of Kentucky

• **Noel Jabbour, MD, MS**
  o Program Director, Pediatric Otolaryngology Fellowship
  Assistant Program Director, University of Pittsburgh
• How can we create an environment that is conducive to developing and instituting an effective PS/QI curriculum
Disclosures

• The views expressed herein are those of the speaker and do not reflect the official policy or position of the US Air Force Medical Service, the US Air Force Office of the Surgeon General, the Department of the Air Force, the Department of Defense, or the US Government.
Alignment
“Just Culture”

Safety

Accountability
Accountability System > Individual
Behavioral Choices

- Human error - System
- At-risk behavior
- Reckless behavior

Human error

EXECUTION FAILURES

- SLIPS
  - Attention: Double-capture slips, Perceptual confusions, Interference errors, Reversal, Misordering, Mistiming

PLANNING FAILURES

- LAPSES
  - Memory: Omissions, Repetitions, Reduced Intentionality

RULE BASED MISTAKES

- Two causes: Misapplication of a good rule, Application of a bad rule

KNOWLEDGE BASED MISTAKES

- Many causes: Confirmation bias, Selectivity, Out of sight, out of mind, Encystment, Vagabonding
• It seems that much of the discussion we have heard in the past about PS/QI curricula revolves around resident education, should we be getting the faculty involved and how can we do this?
Faculty Development

• “Expert” educators - faculty who will create, implement, and evaluate QIPS education

• “Proficient” frontline faculty - faculty who model safety and quality practices on a daily basis
“Expert” Educators

Teaching for Quality (Te4Q)

On-site Workshop (1.5 days)
Participants attend a 1.5 day-long workshop delivered at their institution by AAMC expert faculty. The interactive workshop covers the following topics:

- Overview of Adult Learning Principles
- Creating Effective Learner-Centered Education in QI/PS
- Knowing What to Teach
- Assessing the Impact of an Educational Intervention
- Making the Case for Educational Innovation and Leading Change
Program

This two-and-a-half-day meeting aims to fill the current gaps for faculty by offering basic concepts and educational tools in the field of quality improvement and patient safety in an interactive way, providing guidance on career and curriculum development and establishing a national network of quality and safety educators.
“Expert” Educators or “Proficient” Frontline Faculty
“Proficient” Frontline Faculty

GME Faculty Training Courses

The GME faculty course series includes:

- GME 201: Why Engage Trainees in Quality and Safety?
- GME 203: The Faculty Role: Understanding & Modeling Fundamentals of Quality & Safety
- GME 204: The Role of Didactic Learning in Quality Improvement
- GME 205: A Roadmap for Facilitating Experiential Learning in Quality Improvement
- GME 206: Aligning Graduate Medical Education with Organizational Quality & Safety Goals
- GME 207: Faculty Advisor Guide to the IHI Open School Quality Improvement Practicum
Can you describe an overview of how to effectively implement a QI curriculum?
Curricular Resources

• Didactic
  o Institute for Healthcare Improvement
  o World Health Organization Patient Safety Curriculum
  o Lean Six Sigma

• Experiential
  o Morbidity & Mortality conferences – Quality Assurance/QIPS conferences
  o Root cause analysis
  o QIPS committees – department, GME, hospital
  o QI projects
QI Project Strategies

- Trainee
- Department
- Institution
• At VCU, your institution began utilizing the IHI PDSA model. How has this resulted in improvement of your QI curriculum?
The IHI PDSA Model for Improvement

There are several methodologies used in healthcare to improve safety and quality. All are based on the same basic concepts but differ in rigor, such as specificity of the analysis, tools used, details of execution, and scope.

The Institute for Healthcare Improvement (IHI) Plan-Do-Study-Act (PDSA) Model is a basic approach used to guide improvement work that includes setting aims, establishing measures, selecting and testing changes, spreading changes, and sustaining improvements.

- Setting Aims
- Establishing Measures
- Setting Changes

What are we trying to accomplish?

How will we know that a change is an improvement?

What changes can we make that will result in improvement?

**ACT**: Refine the change, based on what is learned from the test.

**PLAN**: Plan the test or observation, including a plan for collecting data.

**STUDY**: Analyze the data and study the results.

**DO**: Try out the test on a small scale.

For more information about quality and safety improvement at VCU Medical Center, or to request assistance with a project, email IHIquestions@vcuhealth.org.
VCU Health Organizational Priorities – High Reliability

IHI Modules

High Reliability in Health Care

IHI Modules

Safety Culture

- Just Culture

- Engaged Leadership (engaged in walk rounds to understand risks and improve feedback)

- Robust Team Training (team behavior, communication, checklists, transitions, situational awareness)

New Technologies to Enhance Practice

- Electronic Medical Record

- Computer Physician Order Entry

- Medication Record, Bar Coding, Smart Pumps

Evidence Based Practice

- Understand and measure current performance

- Standardization and Simplification of Care Processes

- Default Standard Processes with MD Exception

Standard Methods for Process Optimization and Standardization

- PDSSA

- LEAN

- Six Sigma

Adapted from: Frankel AS. HSR; 41: 4. 2006 and Ikkersheim DE. BMJ Qual Safe. 2011
• How do you use the IHI modules in your department?
VCU FACULTY IHI MODULE REQUIREMENTS AND JOB AID

VCU is requiring faculty to complete the following IHI Open School Modules by 6/30/2017. Residents will complete the same modules as part of their training:

1. QI 101: Introduction to Health Care Improvement
2. QI 102: How to Improve with the Model for Improvement
3. QI 103: Testing and Measuring Changes with PDSA Cycles
4. PS 101: Introduction to Patient Safety
5. PS 102: From Error to Harm
VCU Resident IHI Module Requirements and Job Aid

VCU is requiring housestaff to complete the following IHI Open School Modules during their training:

1. PS 101: Introduction to Patient Safety  PGY1
2. PS 102: From Error to Harm          PGY1
3. PS 104: Teamwork and Communication PGY1
4. QI 101: Introduction to Healthcare Improvement PGY2
5. QI 102: How to Improve with the model for improvement PGY2
6. QI 103: Testing and Measuring Changes with PDSA Cycles PGY2
7. L 101: Introduction to Healthcare Leadership PGY3
8. PS 201: Root Cause Analysis and Systems Analysis PGY3

You are welcome to complete additional modules, as our subscription covers your complete access to all modules. Please see important benefits below:
• Do you have an example of how your residents have utilized the PDSA module for QI?
### Current System

- Handwritten rounding list
- Variable quality
- Human error transcription

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<td>RYAN MD, RYAN S</td>
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<td>LEE MD, THOMAS S</td>
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<td>ANAND MD, RAJOL J</td>
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RAMS / iPASS Tool

- Automatically generated
- Default template
- Not customized to any particular service
Diagnosis, OR Date, and Surgery Performed automatically populate from the Immediate Brief Op Note

Note Type: Operative Note – Immediate Post-Op
Title: Immediate Brief Op Note (VCU Health)
Study

- Next Steps --
- Quantify:
  - Labs, drains, medications
  - Time
    - # minutes
    - # clicks
- Trial Testing:
  - Survey residents
Brief Summary

- Time handwritten: 11 mins 25 secs
- Time for RAMS: 35 secs
- # Clicks handwritten: 90.9
- # Clicks RAMS: 8.2
- So... on an 'easy' day (we did the test on a list with only 4-5 patients),
- it saves you ~10 mins and nearly 80 clicks.
- Plus, is more accurate and readable data.
- From the survey responses, most people preferred RAMS, but there were a few who felt handwritten was better because it forces you to look at the values and process them as you write it.
At Kentucky, you changed from monthly M&M conferences to a QIPS conference. Can you describe why you made this change and how you did it?
**QIPS Monthly Timeline**

- **Chief resident:** Submit 1 month of OR cases/pertinent ED/floor events.
- **PD:** 3 events chosen
- **Involved resident:**
  - 5min case summary
  - 5-10 min didactic lecture & board review
  - 5-10min discussion
  - Dynamic presentations encouraged

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<th>EW</th>
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**Weekly Agenda**
- **Summary:** A brief summary of the week’s events.
- **Evaluation:** An evaluation of the week’s learning objectives.
- **Discussion:** A discussion of the week’s topics.
- **Presentation:** Dynamic presentations encouraged.
• What would one of these presentations look like?
“O.S.” Case

- HPI: “O.S.” 57yoF left tongue T1N0M0 SCCA in 2013, s/p primary resection with adjuvant chemoXRT.
- 2014- L MRND
- 2015- 2x partial gloss
- 2016- TORS L BOT
- 2018:
  - May-HBO secondary to dentition.
  - July-new, ulcerative lesion on right tongue + for SCCa.

- 7/30/18: Right hemiglossectomy, MRND, RFFF, Trach
- 7/31/18: Takeback for venous thrombosis
- 8/3/18: Moved from ICU to floor, heparin gtt stopped, PLOV started
- 8/6/18: ViOptix removed in AM, flap appeared healthy. Flap appeared necrotic on PM rounds.
- 8/7/18: Takeback for flap debridement, supraclavicular flap performed
Salvage surgery

- Rabbit epigastric flaps: All flaps survived after 8 h of ischaemia, 80% of flaps survived after 24 h and 90% of flaps survived after 48 h of ischaemia.
- Majority of vascular compromise is arterial: 90% of arterial compromise occurs within 1 h of ischaemia.
- 80% of flaps can be salvaged if operated within 12 h of ischaemia: 23/47 (49%) flaps salvaged in this time period.
- Flaps need 8+ days for pedicle survival: 20% of flaps failed within the first 8 days of pedicle survival.
- Second free flap after failed first flap: The 90-96% success rate of primary free flaps is consistent.


Fig. 3. The salvage rate for microvascularly compromised flaps (venous or arterial) based on the presence or loss of the arterial Doppler signal with particular clinical indicators are described for each respective time period.
Anticoagulation

- **Limited evidence for postoperative anticoagulation:**
  - Aspirin: no benefit, increased rate of revision surgery
  - LMWH: increased hematoma rate, medical complication rate, and infection rate
  - PGE1: no benefit, possible increased hematoma rate
  - Dextran: do not use, increased pulmonary complications, no benefit
  - 96% of flap surgeons report some anticoagulation regimen

**Table 2**

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<th>Study</th>
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<th># Patients per Anticoagulant</th>
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<td>Dina et al, 2003</td>
<td>Randomized prospective</td>
<td>35 Dextran 40, 48 h</td>
<td>No difference in overall flap survival between two groups</td>
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<td>Sun et al, 2003</td>
<td>Retrospective</td>
<td>25 Dextran 40</td>
<td>No difference in overall flap survival between two groups</td>
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<td>Ajhian et al, 2007</td>
<td>Prospective</td>
<td>260 Aspirin</td>
<td>No difference in flap survival or complications rates between two groups</td>
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<td>Retrospective</td>
<td>252 PGE1</td>
<td>No overall difference in flap survival or complications difference between three groups</td>
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<td>Gyaprasud et al, 2013</td>
<td>Retrospective</td>
<td>40 Dextran 40</td>
<td>No difference in flap survival, increase in atelectasis in Dextran 40 group</td>
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<td>Groerseec et al, 2013</td>
<td>Retrospective</td>
<td>305 Unfractionated heparin</td>
<td>No difference in flap survival rates between the two anticoagulants</td>
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<td>Lihthai et al, 2013</td>
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<td>142 Aspirin</td>
<td>Increase in revisions in aspirin vs no therapy</td>
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<tr>
<td>Swartz et al, 2015</td>
<td>Meta-analysis</td>
<td>91 Aspirin</td>
<td>Increase in hematoma, infection and medical complication rates with combination therapy vs no anticoagulant</td>
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• What has been the result of this change?
**QIPS Conference Modification Outcomes**

**Benefits**
- Jump in ITE scores
- Improved confidence in difficult-to-discuss topics
  - Presentation
  - Knowledge
- “Clustering” of topics
- Repository of board review material
- Multi-use presentations

**Challenges**
- Time commitment on involved residents
- Time commitment on faculty supervisor
- “Stale” topics if lack of M&Ms
- >3 topics worthy of discussion
You are one of 9 centers to participate in a study using unit level SWARM for root-cause analysis. What is SWARM?
• What are the phases of the project?
New Learner Root-Cause Analysis Project

Phase 1

- Mock SWARM training
  - Goal: 100% new learners, PDs
  - Mandatory in 2018-2019

Phase 2

- Faculty Champion identified
- Focus on minimal harm events to avoid duplication of system-level SWARM process
- Analysis Model
  - What happened (timeline)
  - What should have happened (Initiate Fishbone to make problems visible)
  - Why did it happen ("5 whys")
  - How can we do better (1-3 action items)
- Event analysis must be:
  - Real-time (< 30 days after the event), 1hr
  - Include many different members of the health care team (e.g., physicians, nurses, pharmacists, administrators, etc.)
  - Include resident interviews of different members of the team
  - Show next steps directed toward improvement activities
  - In collaboration with patient safety office and/or faculty coach or mentor.
• How is unit level SWARM performed?
Problem description and background:
Why the Problem Occurred (Fishbone Diagram):

**Equipment Factors**
- Viapix signal stopped reading
- Only Dr. Keizer + technologist made aware
- Physicians in OR at the time
- Viapix sensor obstructs view of flap
- "Alarm fatigue"
- Dopplers not working

**Protocol**
- No flap check order set with thorough instruction
- Separate EMR systems
  - Surgeons lack access to proper manager
  - Systems do not communicate
  - No mechanism for identifying hypercoagulability
  - Inadequate notification of viapix signal change

**Patient Factors**
- Variability between monitoring needs
- Patient difficult to visualize
- Sick population

**People**
- Different people monitoring throughout day
- Whole team not on same page
- Unclear how pharmacist can give orders

**Free Flap Failure**
- No set protocol for all flaps
• What has been the result of this change?
Unit Level SWARM Outcomes

Benefits

- Very positive feedback from learners and faculty
- Takes the “mystery” out of root-cause analysis for young learners
- Trackable outcomes with “real world” changes (e.g. not attempting system-level changes)
- Collaborative input by all levels of audience

Challenges

- Logistics/Time commitment on faculty champion
- Logistics of multiple department involvement
- Meeting organization
- Is it sustainable to do this, and how often?
• At Pittsburgh, you instituted a change in the QI project requirement. Can you tell us why you made this change?
• How have you used the “flipped classroom” to improve your residents QI project experience?
• Tell us more about your team based QI projects, what are the benefits?
Team-Based QI

- Experiential, project-based learning
- Supports interprofessional QI solutions
- Follows principles of adult learning
- Engrains pattern for future QI problems
Team-Based QI

10 min lecture/review
20 minute update / progress report
70 minute work in teams
20 minute wrap-up / next steps
Team-Based QI – getting started

- Who?
  - Resident team:
  - Who is team-lead for this project:
  - Faculty mentor(s):
  - Expert mentor/consultant, if needed:
  - Interprofessional team members (nurses, APPs, other specialties, etc):

- What?
  - Define patient safety goal:
  - Define current problem:
  - Describe Hypothesis for potential solution:
  - What is known/published on this topic/problem/solution:

- Where?
  - What sites/hospital:
  - Are there specific subsites (ED, clinic, OR, etc):

- When?
  - Create a brief timeline for QI cycle (when will you study current state, make change, study outcomes, etc):
  - What is realistic start and stop dates for study steps:
    - Planning complete (IRB if needed):
    - Study current state (prospective vs retrospective):
    - Implement change:
    - Study outcomes:
Team-Based QI – getting started

- Who?
- What?
- Where?
- When?
- Why?
- How?

- Why:
  - Describe why this is important?
  - How does this align with patient safety goals of department/hospital/institution?
- How:
  - How are you going to get this done? This is a cycle...so go back to 'Who' question and state deliverables and timeline for each resident team member:

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Example projects

- **PGY-1**: Solution to reduce respiratory complications in post-operative tracheostomy patients.

- **PGY-2**: Decreasing radiation exposure in ED for PTA and deep neck space infection imaging

- **PGY-3**: Predictive analytics for show-rates in clinic to optimize scheduling

- **PGY-4**: Improved methods for pre-operative counseling for head and neck surgery patients

- **PGY-5**: MENTORING LOWER CLASSES