Designing your QI Project with Publication in Mind

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Applying Lessons Learned: Setting up your QI Project with Publication in Mind

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Learning Objectives

Understand that quality improvement work is scholarly activity

Prepare your quality improvement project for publication
Agenda

• ACGME’s definition of scholarly activity
• Advice from a journal editor
• Setting up your QI project with publication in mind
• Getting IRB approval
• Publishing pointers
• Arcane art of poster design (time permitting)
From Our Friends at the ACGME

• At least 50 percent of a program’s residents must have demonstrated engagement in more than one of the following scholarly activities:
  • Participation in grand rounds
  • Posters
  • Workshops
  • Quality improvement presentations
  • Podium presentations
  • Grant leadership
  • Non-peer-reviewed print/electronic resources
  • Articles or publications (including book chapters, textbooks, and webinars)
  • Service on professional committees, a journal reviewer, journal editorial board member, or editor

ACGME Internal Medicine Program Requirements, IV.D.3.a).(1), on page 34 of 62, for those keeping track at home
Advice from a Journal Editor

When I am reviewing a manuscript of a resident/faculty QI project, these are the things I look for:

- Needs Assessment
  - Why are we doing this?
  - What problem have we identified?
- Defined stakeholders
  - Who cares and why?
- Is it clear that there was a process map, even if it is not in the manuscript, that guided where the intervention to be studied was made?
- Is the PDSA/PDCA cycle clearly elucidated?
- What are the outcomes measures? Process measures? Balance measures?
- Is the data evaluated correctly?
- Is there a lesson learned that can be applied by someone else?
- Are there clearly indicated next steps?
More advice....

• In academic world, always think about doing two for the price of one...start with a poster presentation, get feedback, and then work that feedback into the manuscript

• If you do a lot of posters, but then don’t do manuscripts, it might look like you are not a “closer”
  • Some places may hold that against you
  • Some places won’t care

• Be careful how you use the term “value”
  • “Value” in the quality world is defined as (quality x experience) / cost.
  • “Value” in the Lean Six Sigma/process improvement world is defined as something the costumer is willing to pay for and/or it changes something about a product or process without being wasteful
Another Disclosure Slide

• The rest of this talk is organized as if you were writing a paper on your project (with aforementioned diversion into posters)

• Try to think of everything that you do as something publishable
Know where you want to end up before you do the work!
Roadmap: SQUIRE 2.0 Guidelines

- SQUIRE guidelines: framework for reporting new knowledge about healthcare improvement projects
- Developed for system level work but adaptable for smaller projects
- Structure your poster and your paper based on these guidelines!
Background Section
What and Why

• Needs Assessment (Why are we doing this? What problem have we identified?)
  • It really bothers me that...
  • I think there might be a better way to do this....

• Literature review
  • What has been tried before?
  • How does that apply to this project?
Stakeholders

• Identify stakeholders
  • Who probably cares about this issue?
    • Who needs to be on the team?
    • Then ask them if they can think of anyone else that you didn’t think about
  • Sit with the stakeholders and map out the current process

All work is a process

Background
A Few Words About Process Maps

- Current state process map establishes baseline used to determine changes that will improve outcomes
- Think about each step in the process, whom is responsible for it, and how much time each step takes
- Estimate the value to the process of each step
- Focus on main process
  - there are always exceptions, document them, but, unless they are major concerns, don’t design new processes around them
Planning the Intervention

- Review the process map and think about where the best place to intervene might be (e.g., Pareto analysis).

- Is your intervention perceived as “outside your lane?”
  - Heart failure resident QI
Planning the Intervention

• Once you have identified the problem, develop an Aim Statement which fulfills SMART criteria:
  • Specific
  • Measurable
  • Achievable
  • Relevant
  • Time-Bound
Planning the Intervention

• Helpful to structure the planning around a tool, especially if you have not done this before → know the expectations for something to be judged as successful

• I recommend MAQIP (Multi-Domain Assessment of Quality Improvement Projects)
  • Uses simple language to help understand each step, as well as highlighting the aspects that your project may be evaluated upon
### MAQIP

#### Methods

- **Change**
  - Systems change or other robust intervention, utilizes an accepted methodology (e.g., PSA, Six Sigma, Lean)
    - Does not fulfill: 1
    - Partially fulfills: 2
    - Fulfills: 3

- **Measures**
  - Identifies outcome and/or process measures, as well as at least one balancing measure
    - Does not fulfill: 1
    - Partially fulfills: 2
    - Fulfills: 3

- **Data analysis**
  - Data are formatted in a run chart with multiple time points, and include some comment, assessment, or other interpretation of outcome
    - Does not fulfill: 1
    - Partially fulfills: 2
    - Fulfills: 3

- **Project evaluation**
  - Reflection of initial data with suggestions of next steps
    - Does not fulfill: 1
    - Partially fulfills: 2
    - Fulfills: 3

- **Sustained improvement**
  - Demonstrates improvement sustained through multiple cycles and/or time points
    - Does not fulfill: 1
    - Partially fulfills: 2
    - Fulfills: 3

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#### Results

#### Discussion and Conclusion

Methods Section
Know Your Measures and How You Will Track Them

• Set your objective (remember your really SMART Aim Statement?) → outcomes measure → improve compliance rate with guideline x 30% over the next 3 months, reduce LOS by 0.58 bed-days, etc.

• Process measures → specific steps in a process that lead (either negatively or positively) to a particular metric.
  • Represent an effort to incorporate and systematize evidence-based practice

• Balance measures → what’s the “cost” of getting this done? The metrics you track to ensure improvement in one area does not negatively impact another
Know Your Measures and How You are Tracking Them

• Determine how these will be measured (e.g., via run chart, days without an event, etc.), spell that out and then spell out how these will be analyzed
• Include diagram with inclusions and exclusions
• Include your fishbone
• TIMELINE OF INTERVENTIONS IS VERY USEFUL!
Examples from Methods Sections

Evidence-based guidelines in the treatment of...

Fig. 2. Fishbone diagram for non-adherence with guidelines.
Timelines – Use graphics for posters and tables for papers

**Table 1. Timeline of interventions in the research culture development at Reading Health System**

<table>
<thead>
<tr>
<th>Year</th>
<th>Initiative</th>
<th>Description</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003-04</td>
<td>Named residency research director</td>
<td>Chosen director from faculty without additional protected salary or time; served as mentor and evaluator for projects and elective experience. Focused on study design and critical appraisal, rather than on study outcomes.</td>
<td>Coordinate and centralize research.</td>
</tr>
<tr>
<td>2004-05</td>
<td>Redesigned journal club</td>
<td>Developed 'point system' for scholarly activity for all residents and determined minimum point requirement for graduation.</td>
<td>Introduce/reinforce skills.</td>
</tr>
<tr>
<td>2004-05</td>
<td>Mandatory resident scholarly activity</td>
<td>Developed 'point system' for scholarly activity for all residents and determined minimum point requirement for graduation.</td>
<td>Increase expectations.</td>
</tr>
<tr>
<td>2005-06</td>
<td>Implemented faculty incentive plan</td>
<td>Scholarly activity bonus initiated for full-time faculty worth approximately 5% of base salary.</td>
<td>Counterbalance clinical productivity incentives.</td>
</tr>
<tr>
<td>2005-06</td>
<td>Clinical research noon conference series</td>
<td>Three 1-hour sessions annually covering basics of evidence-based medicine and literature research skills.</td>
<td>Reinforce research skills.</td>
</tr>
<tr>
<td>2006-07</td>
<td>Hired statistician</td>
<td>Full-time biostatistician hired by institution and shared across departments.</td>
<td>Add expertise.</td>
</tr>
<tr>
<td>2007-08</td>
<td>Formal research curriculum with</td>
<td>Curricular plan written by residency research director for resident research elective time.</td>
<td>Provide protected time and fellowship.</td>
</tr>
<tr>
<td>2007-08</td>
<td>Associated research elective</td>
<td>Curriculum plan written by residency research director for resident research elective time.</td>
<td>Provide protected time and fellowship.</td>
</tr>
<tr>
<td>2007-08</td>
<td>Created mentoring guidelines that had to be</td>
<td>Created mentoring guidelines that included formal review of resident efforts using structured portfolio.</td>
<td>Provide protected time and fellowship.</td>
</tr>
<tr>
<td>2008-11</td>
<td>'How to write a clinical vignette' seminar</td>
<td>One-hour seminar with focus on choosing topic and writing with clarity: residents in teams write abstract on same vignette with top rated abstract awarded rights to submit case.</td>
<td>Expand research repertoire.</td>
</tr>
<tr>
<td>2012-13</td>
<td>Implemented resident incentive plan</td>
<td>Pay-for-performance bonus using residency discretion funds; $100 bonus per regional or national abstract and $300 bonus per publication (maximum: $600).</td>
<td>Re-balance resident priorities.</td>
</tr>
<tr>
<td>2013-14</td>
<td>Increase in resident incentive plan</td>
<td>Increased maximum resident bonus to $1,000.</td>
<td>Reward productive.</td>
</tr>
</tbody>
</table>
Let’s try that really quickly....

- Example: You wish to reduce LOS for CAP admissions by stimulating greater utilization of an already existing IV antibiotic at home program via the addition of an order set
  - Outcomes measure?
  - Process measures?
  - Balance measures?
• Example: You wish to reduce LOS for CAP admissions by stimulating greater utilization of an already existing IV antibiotic at home program via an order set
  • Outcome measure:
    • “The goal of this initiative was to reduce the LOS for CAP admissions by 0.58 bed-days over a 6 month period by creating an order set to facilitate the utilization of our home health agency to provide an IV antibiotic at home program.”
  • Process measures:
    • How many times was the order set used (vs not used)?
    • How many times was the service utilized pre and post the order set going in (tracked weekly)?
  • Balance measures:
    • What was the change in patient satisfaction for those that went home earlier vs those that did not?
    • What was the readmission rate for those that had the use of the order set vs. those that did not?
    • What was the cost of the admission vs the cost of getting the IV antibiotics at home? Remember, the home health agency may have had to increase staff, which effects the cost of the intervention, too!
Results Section
Be Specific– Most People Don’t Understand QI

- May look different than what most readers expect
  - Was the analysis done via a run chart? Show the run chart
Be Specific—Most People Don’t Understand QI

• May look different than what most readers expect:
  • Specifically call out the measures

Armonk, NY) with significance of results determined by \( p < 0.05 \).

Results

Patient characteristics

From 24 October 2013 to 15 July 2014, a total of 273 patients were identified using the Epic electronic health record by reviewing acute patient visits for diagnoses of URI, sinusitis, or pharyngitis. Of these encounters, 240 patients met the inclusion criteria of acute visits that were identified in the EPIC (EPIC Systems Corporation, Verona, WI) medical health records system using visit diagnosis of URI, pharyngitis, and sinusitis. The remainder met the exclusion criteria of active malignancy, immunocompromised state, including HIV infection, more than one visit for the same presentation during the study period, and concurrent use of antibiotics for another etiology, for example, urinary tract infection (Fig. 1).

Outcomes measures

Since 2012, adherence to antibiotic guidelines continued to improve with the implementation of the iterative interventions described (10, 11). A total of 240 patients...

Process measures

Process measures included rate of usage of the CDS tool. The CDS tool was made available for use in December 2013. In the 179 encounters that occurred after the CDS tool rollout, the tool was used in 71 encounters (39.7%).

Balancing measure

Balancing measures were callback rates within 72 h of office visit. There were 11 callbacks within 72 h for the same clinical issue during the entirety of the study period, for a rate of 0.05%, which was unchanged from prior interventions.

Discussion

This quality improvement initiative shows an improvement in overall antibiotic guideline adherence for all process and outcome measures demonstrating that simple, low-cost, iterative interventions can change the prescribing habits of providers. Interventions were chosen on the basis of a needs assessment following the findings of previous PDSA cycles. Previous work indicated that limited-scale passive interventions could generate moderate change but had not yielded the desired levels of antibiotic guideline adherence. By basing our most recent...
Discussion and Conclusion Sections
Discussion Section

• Convince me why I should be intrigued by your work (hook them with the abstract and reel them in with the discussion)!

The present study analyzed a large database and revealed an increased rate of VT in patients with sarcoidosis (2.29%) compared to patients without sarcoidosis (1.22%); p < 0.001. HF, hypertension, chronic kidney disease and diabetes mellitus were more common in the sarcoidosis group. Even after adjustment for possible biological confounders, the odds for having VT was still higher (1.82; 95% CI 1.72–1.95; p < 0.001) in sarcoidosis patients, which suggest that CS may be an independent risk factor for VT.

What does your work add to the literature?

Lessons learned that might be applicable to my setting

Clinical symptoms and signs to suggest thrombocytopenia can be commonly encountered in primary care offices. Signs of thrombocytopenia such as petechia and purpura are a common presentation to primary care. Thrombocytopenia should be reflexive in a differential and if established, it is imperative to rule out other systemic illnesses and medications.
Discussion Section

• Limitations of the work to date

This study had several limitations. The knowledge and acceptance of treatment guidelines by practitioners at the time of treatment could not be measured in this retrospective study. One of the providers included in the study

• Next steps

Considerations to improve guideline adherence in the future could include following adherence as a quality measure, patient handouts educating them on the impact of inappropriate antibiotics (11), and further education
Conclusion

• Short statement of the key findings
• Generally followed with “further study needed...”

unclear. Given the complications of unnecessary antibiotic therapy are significant, further study is needed to determine the best modality to assist physicians in adhering to nationally recognized guidelines.
Getting IRB Approval
So, you wrote a great paper...

• You didn’t forget to get IRB approval, did you?

• Rochester Regional Health requires all work that is to be presented outside the system to have approval from the IRB
  • Expedited review process exists with shorter paperwork to be filled out

• Internal presentations would be exempted (e.g., RGH Research Day).

• For QI work, expedited/exempt status is often asked for AFTER the project is done and people realize they have something to share with the outside world, after all. That’s OK (retroactive approval).
Publication Pointers
So, you wrote a great paper and the IRB approved the project (before you wrote the paper)...

- Now, where to publish?
  - Things to consider:
    - When I did my literature review, where did I find my references?
    - What journals publish resident/faculty QI projects (typically small)?
    - Is the journal open access (i.e., will I have to pay for the publication)?
    - Is the journal PubMed Indexed?
    - Is the journal “SQUIRE-friendly?”
    - Do I have the time and mentorship to write this up, and rewrite, and rewrite it, and rewrite it...
So, you wrote a great paper and the IRB approved the project (before you wrote the paper)...

Journals that co-published SQUIRE

• Am. J. Critical Care
• Permanente Journal
• J. Surgical Research
• J. Continuing Education in Nursing
• Am. J. Medical Quality
• Canadian J. Diabetes
• J. Nursing Care Quality
• Joint Commission Journal
• J. American College of Surgeons
• BMJ Quality and Safety

Journals that publish QI reports

• Annals of Internal Medicine
• Health Affairs
• Health care: J. of Delivery Science
• Implementation Science
• International J. for Quality in Health Care
• J. for Healthcare Quality
• J. of Clinical Outcomes Mgmt
• J. of Healthcare Risk Mgmt
• J. Pediatrics
• PLoS One
• Quality Mgmt in Health Care
• J. Nursing Care Mgmt
• NEJM
• JAMA
So, you wrote a great paper and the IRB approved the project (before you wrote the paper)...

• Will this publication make me rich and famous?

   No.

   However, it can lead to more work in the area, giving you expertise, and setting you up for success/leadership/a niche in your current and future positions
Any questions?