



Graduate Medical Education Alliance
MICHIGAN STATE UNIVERSITY

Writing a QI Project- Step- by-Step

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CPHQ

Director Of Research



A top-down view of a dark desk with various items: a white smartphone, a pencil, a pair of black-rimmed glasses, a white keyboard, and a white coffee cup with a saucer. The text is overlaid on the left side of the image.

The best guideline for
writing a QI project is...


SQUIRE 2.0
**STANDARDS FOR QUALITY
IMPROVEMENT REPORTING
EXCELLENCE**

**[HTTPS://WWW.SQUIRE-
STATEMENT.ORG/](https://www.squire-statement.org/)**



SQUIRE 2.0 guidelines for abstract and manuscript

- https://www.squire-statement.org/index.cfm?fuseaction=Page.ViewPage&pageId=504#ee_abstract

 SQUIRE SQUIRE 2.0 Guidelines SQUIRE EDU About SQUIRE SQUIRE Translations QIKAT News and Events SQUIRE Friendly Journals		
<p>The Explanation and Elaboration document provides specific examples of well-written SQUIRE items, and an in-depth explanation of each item.</p> <ul style="list-style-type: none"> Please cite SQUIRE when it is used to write a manuscript. 		OTHER INFORMATION
<h3>Title and Abstract</h3>		SHORTCUTS
1. Title	Indicate that the manuscript concerns an initiative to improve healthcare (broadly defined to include the quality, safety, effectiveness, patient-centeredness, timeliness, cost, efficiency, and equity of healthcare)	SQUIRE 2.0 E&E
2. Abstract	a. Provide adequate information to aid in searching and indexing b. Summarize all key information from various sections of the text using the abstract format of the intended publication or a structured summary such as: background, local problem , methods, interventions, results, conclusions	SQUIRE 2.0 PDF SQUIRE 2.0 E&E PDF SQUIRE EDU PDF SQUIRE EDU E&E PDF SQUIRE 2.0 REVIEWER CHECKLIST
<h3>Introduction</h3>		GLOSSARY
<h4>Why did you start?</h4>		BMJ QUALITY & SAFETY SQUIRE 2.0 PUBLICATIONS
3. Problem Description	Nature and significance of the local problem	
4. Available Knowledge	Summary of what is currently known about the problem , including relevant previous studies	
5. Rationale	Informal or formal frameworks, models, concepts, and/or theories used to explain the problem , any reasons or assumptions that were used to develop the intervention(s) , and reasons why the intervention(s) was expected to work	
6. Specific Aims	Purpose of the project and of this report	
<h3>Methods</h3>		
<h4>What did you do?</h4>		
7. Context	Contextual elements considered important at the outset of introducing the intervention(s)	
8. Intervention(s)	a. Description of the intervention(s) in sufficient detail that others could reproduce it	



Self-Certification Form

Determining Whether Your Proposed Activity is Quality Improvement (QI)

INSTRUCTIONS: Complete the following section to help you determine if your proposed activity falls in the realm of QI.

QI Certification Statements		YES	NO
1	Your activity's primary objective is to produce an improvement in safety or care that will be sustained over time at the local institution or within a particular program at the local institution. <i>NOTE: If the intended outcome is simply to report on what happened at the local institution/program, it does not indicate research design or intent as it may not be generalizable outside of the local institution.</i>		
2	Your activity does NOT use a fixed protocol for the duration of the proposed work. <i>NOTE: If frequent adjustments are needed, your answer should be "YES."</i>		
3	Your activity does NOT involve an intervention that may pose risks greater than those presented by routine clinical care.		
4	There will be minimal delays in implementing changes <u>from results</u> .		
5	All individuals involved in key project roles have on-going commitment to the improvement of the local care situation.		
6	Your activity is NOT funded by an outside organization with commercial interest in the use of the results. <i>NOTE: The purpose of this statement is to determine if the project has received funding to be conducted as a research study.</i>		
7	Your activity is NOT part of a multi-center project that involves non-NYUL Health sites. <i>NOTE: If it is being conducted in a multi-site context with a common protocol across sites, then the results may be generalizable and thus constitute research.</i>		

Understanding Your Results

If all of your responses to the below statements are positive (i.e., checked off **YES**), then your proposed activity constitutes QI that does not require IRB review or oversight.

If you answered in any other combination, your proposed activity may be research that involves human subjects. You must submit an application to the IRB before starting your project. Visit the [IRB's website](#) or call for further instructions at 212-263-4110.

If the results of this form indicate the project is not research involving human subjects, consistent with the NYU **SoM** IRB policy and federal regulations governing human subject research, IRB review is not required.

Interested in Publishing your
QI Project?



1- Consult IRB & fill in a self-certification form to determine if your project is a QI & does not require IRB; another name for the form could be "Determination of Human Subject Research."

2- Get IRB exempt # for publication.





CLINICAL QUALITY IMPROVEMENT CHECKLIST		
Date: _____		
Division: _____		
Project Leader: _____		
Instructions: Answer YES or NO to each of the following statements about QI projects.	YES	NO
The aim(s) of the project is to improve the process or delivery of care with established /accepted quality standards, or to implement change according to mandates of the hospital's Clinical Quality Improvement programs. There is no intention of using the data for research purposes.	<input type="checkbox"/>	<input type="checkbox"/>
The specific aim is to improve performance on a specific service or program in the hospital and is part of usual care . <u>All participants will receive standard of care.</u>	<input type="checkbox"/>	<input type="checkbox"/>
The project is NOT designed to answer a research question or test a hypothesis and is NOT intended to develop or contribute to generalizable knowledge.	<input type="checkbox"/>	<input type="checkbox"/>
The project does NOT follow a research design (e.g., hypothesis testing or group comparison (randomization, control groups, prospective comparison groups, cross-sectional, case-control)). The project does NOT follow a protocol that over-rides clinical decision-making.	<input type="checkbox"/>	<input type="checkbox"/>
The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does NOT develop paradigms or untested methods or new untested standards.	<input type="checkbox"/>	<input type="checkbox"/>
The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does NOT seek to test an intervention that is beyond current science and experience.	<input type="checkbox"/>	<input type="checkbox"/>
The project is conducted by staff where the project will take place, and involves staff who are working at, or patients who are seen at the Partners institution.	<input type="checkbox"/>	<input type="checkbox"/>
The project has NO funding from federal agencies or research-focused organizations, and is not receiving funding for implementation research (see External Funding on pg 1).	<input type="checkbox"/>	<input type="checkbox"/>
The clinical practice unit (hospital, clinic, division, or care group) agrees that this is a QI project that will be implemented to improve the process or delivery of care (i.e., <u>not</u> a personal research project that is dependent upon the voluntary participation of your colleagues, students and/or patients).	<input type="checkbox"/>	<input type="checkbox"/>
If there is an intent to, or possibility of publishing your work, you and your Department/QI Oversight group are comfortable with the following statement in your methods section: <i>"This project was undertaken as a Quality Improvement Initiative at X hospital or clinic, and as such was not formally supervised by the Institutional Review Board per their policies."</i> **	<input type="checkbox"/>	<input type="checkbox"/>
ANSWER KEY: If the answer to ALL of these questions is YES , the activity can be considered a Clinical Quality Improvement/Measurement activity that does not meet the definition of research. IRB review is not required. Keep a dated copy of this checklist in your files. If the answer to ANY of these questions is NO , the project must be submitted to the IRB for review.		

A Checklist to Evaluate Whether the Project is a QI and Does Not Need IRB Review

The checklist below can be utilized to help determine whether your proposed activity is **Clinical Quality Improvement/Measurement** that does not need IRB review, or **Quality Improvement Research** which does require IRB review. Consider consulting the IRB on challenging projects, for example those involving international sites, vulnerable populations, sensitive content, medical errors, or monetary incentives that are not hospital-wide. If necessary, review this checklist with the appropriate Department Chairperson or Administrative Supervisor where your project will be conducted.

[PHRC Guidance: Review of Quality Measurement Initiatives](#)
[OHRP Quality Improvement Activities FAQs](#)



If projects meet **ALL of the criteria on this list and an editor or publication has concerns about, or disagrees with this statement, the IRB is willing to write in support of your submission, clarifying the IRB policy/approach (contact [Elizabeth L. Hohmann](#) MD, Director and Chair, Partners Human Research Committee).



QI Project - Title

Crafting Your QI Title

- concise yet informative
- signal to readers that this is a QI initiative

Key elements to include:

- Specific focus of improvement
- clinical setting or patient population
- Clear indication it's a QI project
- Action-oriented language that conveys change

Example Title

"Improving Hand Hygiene Compliance in a Pediatric ICU: A Quality Improvement Initiative"

This title immediately tells readers the improvement focus (hand hygiene), the setting (Pediatric ICU), & that it's a QI effort.



QI Project - Background

Describe the Local Problem

Provide 1-2 sentences explaining the specific issue in your setting. Make it concrete & measurable, if possible.

Establish the Significance

Highlight the impact of the problem (e.g., patient safety, costs, or bad outcomes) that motivated the team to act

Provide Baseline Context

Include baseline data or benchmarks to establish the quality gap & demonstrate the magnitude of the problem.

Include current implications & overarching goal

E.g., better clinical outcomes, better process, less waste, cutting costs, better patient satisfaction.

Example:

"Central line infections were above national benchmarks in our ICU, leading to increased morbidity and extended length of stay for our patients."



QI Project- Aim & Objectives

Be specific

Specify the exact measurable outcome

Make it measurable

Add baseline and target numbers to show intended improvement

Set a timeframe

Set a realistic, time-bound target for achieving your goal



Example

“Our aim is to increase outpatient diabetes foot exam rates from 50% to 90% within 12 months.”



QI Project- Aim Statement: Things to Consider

Prior knowledge needed:

- ✓ Benchmark or future **numerical** target
- ✓ Baseline data or current state
- ✓ Who is affected or who would benefit?
- ✓ Type of measure: process or outcome
- ✓ Timeframe & setting



IMPORTANT!

Aim statement should be result-oriented, BUT it should **NOT** include

- Blame
- Implication of cause
- Suggestion of intervention

Example: To **reduce** the **average LOS** for **CABG patients** from **7 days to 5 days** (comparable to hospitals in the area or to national) within **6 months**.

(Result-oriented, No blame, no implication of cause, no suggestion of intervention)

Measurable & Specific



QI Project- Objectives

Breaking Down Your Aim

Objectives break the aim into specific, actionable steps

1

Identify 2-4 clear objectives that align closely with the aim, particularly if multiple metrics are being tracked

2

Ensure each objective is clear, realistic, and directly aligned with the aim- avoid anything vague or overly ambitious

3

Combine aim & objectives when you have a clear goal; separate them to track only if multiple metrics

4

Objectives can be clearly evaluated later in the results section



QI Project- **Methods**



- **QI Approach/Framework:** PDSA, Clinical Practice Improvement, Root Cause Analysis, Model for Improvement, Lean, Six Sigma...etc.?
- Provide a roadmap to your work; others can replicate it
- Discuss QI tools or techniques
- Discuss the PDSA in detail
- Root Cause Analysis (RCA)? Mention it here & under “results”

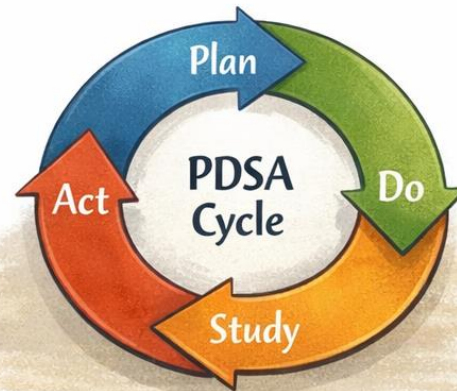


METHODS

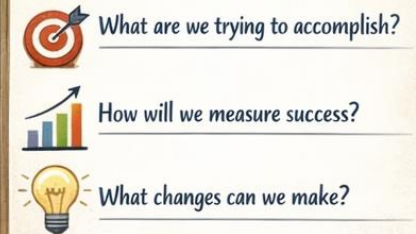
- Context
- Intervention
- Measures
- Data Collection
- Analysis

QI Project Methods

PDSA Cycle



Model for Improvement

- 
- A spiral-bound notebook with a 'Model for Improvement' section. It contains three questions, each with an icon: a target icon for 'What are we trying to accomplish?', a bar chart icon for 'How will we measure success?', and a lightbulb icon for 'What changes can we make?'. Below the questions is a flowchart with three boxes: 'Aim' (blue), 'Measures' (green), and 'Changes' (orange), connected by arrows.
- What are we trying to accomplish?
 - How will we measure success?
 - What changes can we make?



METHODS

Context

Describe **what you did** and **how you did it**.



Describe setting (hospital, clinic, unit, inpatient floors, community, academic)?



Who participated (e.g., nurses, physicians, QI team, patients)?

Provide enough context so readers can tell whether your project or intervention would work in their own setting.



Example:

The project was carried out in a 30-bed neonatal ICU within a large academic medical center. The unit had a strong safety culture and an active QI multidisciplinary team that included nurses, physicians, and respiratory therapists. However, the team observed a concerning rise in central line infection rates, prompting the need for a focused improvement effort.



METHODS

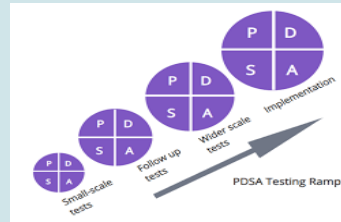
Intervention

Identify the change

Clearly state what you changed, such as new protocols, training programs, workflow redesigns, education materials, technology implementations, or care bundles

Outline PDSA Cycles

Briefly describe each test cycle or phase to show what you learned & improved over time



Provide Intervention Details

- Components & tools & implementation
- Sequence & timing of change
- Staff training or education

Example:

We introduced a standardized checklist and delivered hands-on nurse training to improve central line insertion practices, coupled with weekly feedback sessions on compliance rates and monthly recognition of high-performing teams.



METHODS

Measures

1

State Your Measure

Define what you tracked
(process, outcome, balancing)

e.g., infection rates, wait times,
compliance %, patient
satisfaction scores, or other
clinical or operational metrics

Outcome measures: ultimate
results you want to improve
(patient outcomes, safety events)

2

Provide Operational Definition

Describe how each measure is
calculated

e.g., #infections per 1000
central line-days;
% patients receiving antibiotics,
or bundle care.

Mention source & survey validity

Process measures: key steps taken
to achieve outcomes (adherence to
protocols)

3

Describe Frequency

State frequency of measurements
(daily observations, weekly audits,
monthly reports)

Collection tools: e.g., EHR queries,
audit forms, databases, surveys,
direct observation)

Balancing measures: metrics that
reflect unintended consequences
or trade-offs to monitor



Example- Family of Measures

Aim: Reducing waiting time at the residents' clinic

Outcome Measures

- Average waiting time

1-2

Process Measures

- Time from check-in to check-out
- Waiting time for labs, vitals, imaging
- # of patient to staff ratio

3-4

Balancing Measures

- % of patients leaving without seeing Dr
- Staff satisfaction
- # of patients scheduled (volume)

1-2



METHODS

Data Collection



Describe the Process

How data were collected, who collected them, and what tools were used.
State data frequency (daily observations, weekly audits, monthly reports)

Define Time Periods

State duration of baseline data collection and post-intervention measurement periods (e.g., 3 months baseline, 6 months post-implementation)

Identify Data Sources

Medical records, direct observation, patient surveys, EMR, dashboards, quality reports, or administrative databases

Example:

“Daily hand hygiene compliance was assessed by infection control staff using a standardized checklist & recorded in a database.”

Note Sampling Strategy

Briefly state your sampling method (random audits, consecutive patients, stratified, or full census)

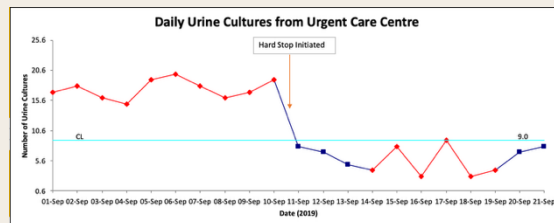


METHODS

Analysis- Three-Part Analysis Approach

1. Tracking Change Over Time

- Plot data using run charts / control charts
- Assess trends & non-random variation
- Compare performance to baseline period



This Photo by Unknown Author is licensed under CC BY SA NC

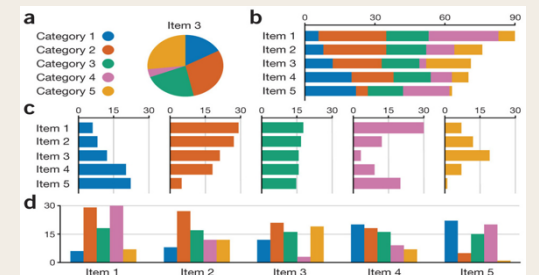
2. Statistical Analysis

- Calculate percent change & averages
- Applied statistical tests when appropriate (e.g., paired t-test, chi-square)
- Evaluate pre-post intervention differences



3. Qualitative Feedback

- Collected staff/patient feedback
- Review for recurring themes
- Assess perceived impact and feasibility



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METHODS

Analysis- Incorporating QI Tools Into Your Analysis & Improvement Work

Use QI Tools

To show that the team carried a Root Cause Analysis (RCA) to understand the problem, visualize variation, and identify root causes

Common QI Tools

Fishbone Diagram: RCA. List major categories & mention themes that directly shaped your intervention

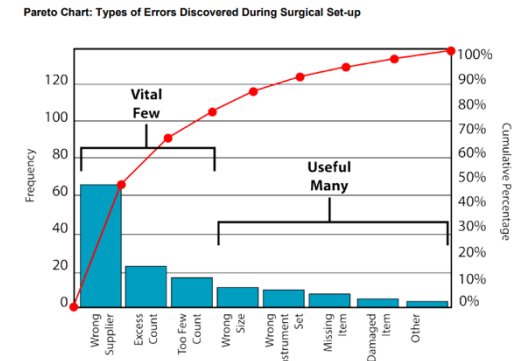
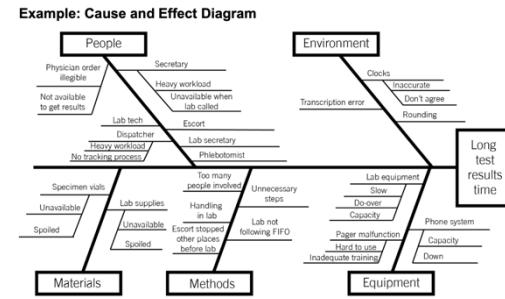
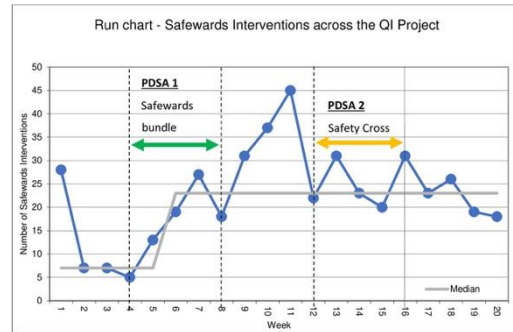
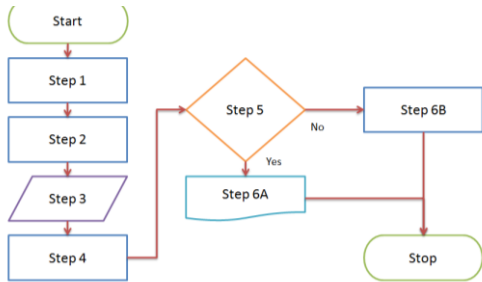
Process Map: visualize workflow to identify bottlenecks or waste. Discuss how mapping uncovered steps prone to errors or bottlenecks & informed improvement (ideal workflow)

Pareto Chart: identify & prioritize high-impact “vital few” contributors to the problem & connect these to selected interventions

Driver Diagram: mapping primary/secondary drivers and interventions linked to the aim; identify which change ideas/intervention were tested in each PDSA Cycle

Run/Control Chart: visualize performance over time, detect trends, non-random variation, and evaluate whether the intervention led to real, sustained improvement





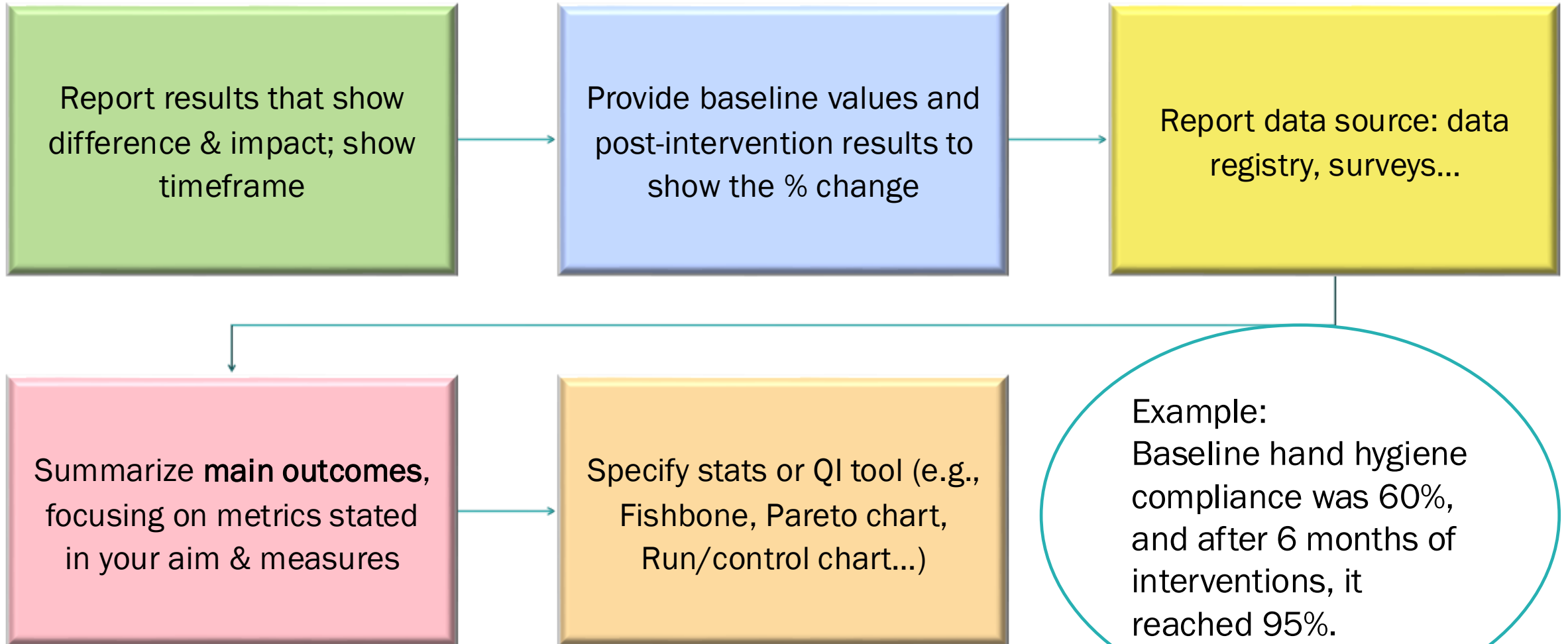
METHODS

Analysis- Incorporating QI Tools in Write-up

- **Example 1:** We used monthly run charts to track the infection rate and conducted a chi-square test to compare infection proportions before and after intervention.
- **Example 2:** Fishbone analysis revealed medication issues, gaps in follow-up, & social determinants as major contributors to 30-day readmissions, guiding our intervention.
- **Example 3:** Pareto analysis revealed that two drivers- medication discrepancies and lack of timely follow-up- were responsible for most 30-day readmissions, guiding our improvement priorities.



QI Project- Results



QI Project- Results

Trends Over Time:

- If data collected over a period (e.g., weekly or monthly rates), describe the trend.
- Describe whether the measure improved gradually or only after a key intervention and note any turning points that show its impact.

Example: “A sharp drop in infection rates were noticed after implementing the checklist in March.”

- Stick to facts- leave deeper interpretation for the ‘Discussion’ part.

Unintended Consequences:

- Note whether improvements were sustained over time and whether any unintended consequences emerged (positive or negative).

Example: “We did not observe an increase in nurses’ workload; however, we noted an unexpected rise in patient satisfaction.”

- If certain measures did not improve or targets were not met, state that clearly; include significance when relevant (e.g., results exceeded the goal or reached statistical significance).



QI Project- Discussion

Interpretation of Results:

- Use 1-2 sentences to summarize the results.
- Connect the findings back to your aim and the original problem- did the intervention meaningfully reduce 30-day readmissions, and how substantial was that change?
- Emphasize key insights, inconclusive or unexpected findings, policy & practice considerations and why they matter.
- Mention limitations and relate to findings from the literature.

Example: “Our results indicate that implementing post-discharge follow-up calls significantly reduced 30-day readmissions, directly addressing the care-continuity gaps identified at baseline.”



Copyright



QI Project- Discussion/Conclusion

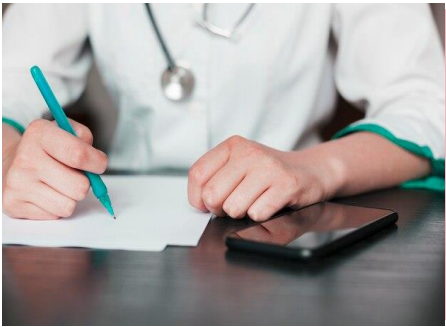
- Are implications clearly described? Aligned to results?
- Discuss lessons learned
- Relate conclusion to aim statement & take-home message-THM
- Mention next steps (e.g., another PDSA Cycle)



Last Tips on Writing a QI Project Abstract



Read abstracts from other QI projects from the literature or conferences to familiarize yourself with the write-up



Write a full raw, unfiltered draft, then edit



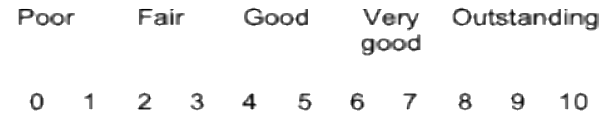
Let others read your draft (preferably someone outside the project) and get their feedback.



Tips for Writing QI Abstract- Check Research Day QI Judging Rubric

Welcome to the Judging Rubric for the Quality Improvement Project!

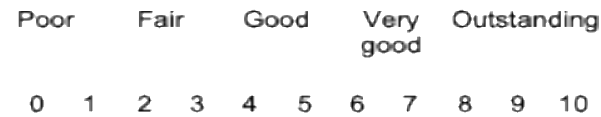
Q5. Introduction/Problem Statement



The problem and its significance is clearly stated & linked to best practices



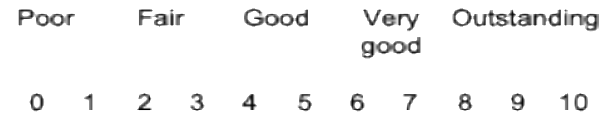
Q6. Objectives/Aim Statement



Project objective using SMART aim statement well-stated & includes outcome measure & anticipated improvement



Q7. Methods



PDSA cycle used as framework & project plan well-stated



Metrics, baseline data, primary outcome and/or process measures well-defined



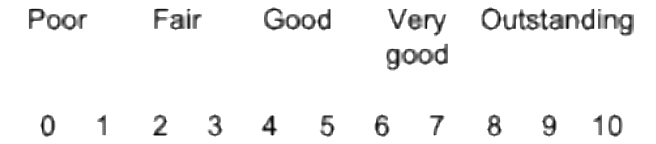
Use of QI methods & tools such as root cause analysis (e.g., fishbone), process map, flowchart, pre-post analysis, run/control charts, Pareto chart, etc.



QI intervention, including rationale & improvement plan, well-described



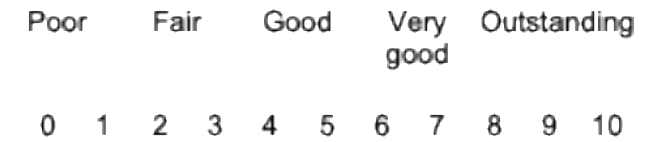
Q8. Results



Results of intervention & improvement measures clearly described



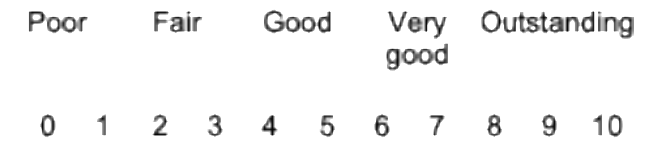
Q9. Discussion/Conclusions



Overall improvement, lessons learned, implications for patient care well-stated



Q10. Presentation Visual Appearance & Delivery



Overall presentation visually appealing, organized, easy to follow, engaging graphics



Presenter knowledgeable, effectively communicated key concepts, engaging delivery



Important QI Resources- QI Curriculum



GME Alliance Member Portal

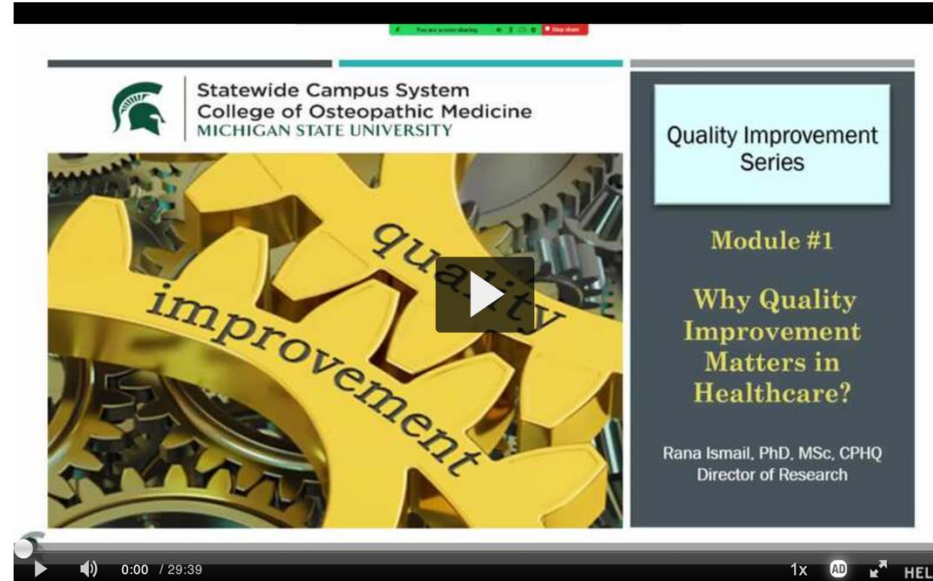
Quality Improvement Curriculum Series

Dive into 10 engaging modules, each offering practical tools to enhance patient care and drive measurable improvements. Complete each module to earn a certificate.

Module 1	00:29:39	↑
Why Quality Improvement Matters in Healthcare	00:29:39	🔗 ✓ ☆
Module 1 Quiz		✓ ☆
Module 1 Certificate		✓ ☆

Module 2	00:29:19	↑
Intro to Quality Improvement Models	00:29:19	🔗 ✓ ☆
Module 2 Quiz		☆
Module 2 Certificate		🔒 ☆

- Asynchronous
- Different speeds
- Quiz
- PDF of slides/Attachments
- Feedback survey
- Certificate of Completion



Files attached

Module 1 Slides.pdf

NOTES

TABLE OF CONTENTS

NEXT: MODULE 1 QUIZ



Important QI Resources- IHI Resources

A good primer video showing how to pinpoint QI project ideas: (4 min)

<https://www.youtube.com/watch?v=c1IQ81J7Ork>

How to choose a QI project based on dimensions of health care? (6min)

<https://www.youtube.com/watch?v=I8Y962VTiBY>

PDSA or PDCA cycle: how to plan your QI project (5 min)

https://www.youtube.com/watch?v=JdvJb_EIQHE

Pareto chart is good to identify the main factors contributing to the problem-Pareto Chart (7 minutes):

<https://www.youtube.com/watch?v=zbDRH2ASyqQ>

Fishbone in 2 minutes

<https://www.youtube.com/watch?v=I0c6Gd26Fwx>

**VIDEO
Resources**

Fishbone or Cause & Effect Diagram (5 minutes):

<https://www.youtube.com/watch?v=387chd8p54c>

Run Charts: QI Tool from IHI open school: (7 minutes)

<https://www.youtube.com/watch?v=YQd1QoMHYwU>

Control charts on QIMacros (7 minutes)

<https://www.youtube.com/watch?v=uPTdz8mkxi8>

QI Essentials Toolkit

Go to IHI website
and download this
QI Toolkit:

<https://www.ihi.org/library/tools/quality-improvement-essentials-toolkit>

- [Cause and Effect Diagram](#)
- [Driver Diagram](#)
- [Failure Modes and Effects Analysis \(FMEA\)](#)
- [Flowchart](#)
- [Histogram](#)
- [Pareto Chart](#)
- [PDSA Worksheet](#)
- [Project Planning Form](#)
- [Run Charts](#)
- [Scatter Diagram](#)

For Good Read & Publishing- Recommended QI Journals

- BMJ Quality & Safety <https://qualitysafety.bmj.com/>
- BMJ Open Quality <https://bmjopenquality.bmj.com/>
- American Journal of Medical Quality
- Journal of Graduate Medical Education (JGME)
- Joint Commission Journal on Quality and Patient Safety
- Journal of Healthcare Quality (JHQ)





References

References

- Eva KW. Titles, Abstracts and Authors. In: Hall GM, editor. How to Write a Paper. Wiley-Blackwell. 2012: p.43.
- <https://scientificwritingtips.wordpress.com/the-cartoons/>
- Wong, Brian M., and Gail M. Sullivan. "How to Write Up Your Quality Improvement Initiatives for Publication." *Journal of Graduate Medical Education*, vol. 8, no. 2, 2016, pp. 128-133. doi:10.4300/JGME-D-16-00086.1
- Ogrinc G, Mooney SE, Estrada C, *et al*
- The SQUIRE (Standards for QUality Improvement Reporting Excellence) guidelines for quality improvement reporting: explanation and elaboration
- *BMJ Quality & Safety* 2008;**17**:i13-i32.
https://qualitysafety.bmj.com/content/17/Suppl_1/i13
- Copilot- graphics
- IHI.org
- YouTube selected video resources

Consider submitting your QI project to:

MSUCOM RESEARCH DAY



SMRJ

SPARTAN MEDICAL RESEARCH JOURNAL

Open Access
PubMed Indexed
Peer-reviewed

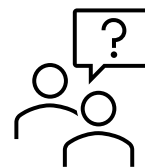
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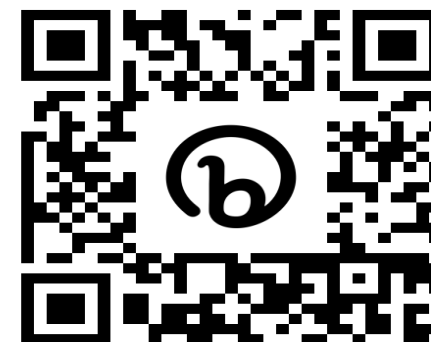
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