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Quality Improvement In Healthcare: A Practical Guide For Providers

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The science and methodology of quality improvement is, in this author's assessment, a frequently cited but often misunderstood series of concepts and actions. The fog of confusion surrounding the ubiquitous terms of quality improvement, process improvement, LEAN methodology, six-sigma, high value cost conscious care, and the myriad of similar ideas only adds to the anxiety of providers who are unsure how to engage with these activities at their home institutions and beyond. A clear, clinical provider-oriented, and succinct guide for starting, progressing, and assessing a quality improvement project would be a welcome addition to the collective knowledge at most institutions.

This introduction, and the remainder of articles for this quality improvement series, will attempt to provide such a guide in a fashion that favors links to clinical applications rather than esoteric discussions of theoretical utility and textbook definitions. The knowledge shared in this series of articles largely reflects my own experiential learning after more than a decade of involvement with quality improvement in healthcare, with citations to relevant literature where applicable.

To accomplish this task, this series of articles will be broken down into an installment of five articles, covering the following concepts:

(1) Picking the right problem for a quality improvement project
(2) Performing a gap analysis and constructing a process map
(3) Building an aim statement and interventions
(4) Defining measures and constructing a PDSA cycle
(5) Assessing results in a run chart

Each installment is intended to build upon the knowledge reviewed in the previous article, and so a

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retrospective review of the articles should be performed in chronological order for highest educational value.

It should also be noted that, for the sake of simplicity and consistent relevance to the frontline clinical provider, this review of quality improvement methodology will draw most heavily on the approach most often cited by the Institute for Healthcare Improvement (IHI), often referred to as the PDSA methodology.[1,2] While this methodology does have differences from other often considered strategies, such as six sigma or LEAN, the overall purpose and thought processes have sufficient overlap that mastering the concepts described in this series will have immediate relevance to all methods described in the quality improvement literature.[3]

Our discussion of how to construct a viable quality improvement project will begin with a case presentation and we will assume the perspective of a hospitalist. Mr. Smith is a 45-year-old male who presents to the hospital with a unilateral throbbing headache of several hours duration. He reports a past medical history that includes migraines and admits that his current symptoms are similar to prior episodes. His examination does not reveal any focal neurological deficits and the remainder of his exam is similarly non-contributory. As part of the work-up for this present headache, an MRI/MRA head and neck is ordered. This imaging ultimately reveals no acute findings. The patient is treated symptomatically for presumed migraine headache, recovers without additional issues, and is discharged from the hospital 24 hours later. Several weeks later, the patient files a grievance with the patient advocate department for concerns of unnecessary testing in regards to the imaging ordered for his headache. This grievance prompts administration to seek your leadership on a possible quality improvement project to prevent unnecessary testing in similar future cases.

How do we know if this potential target for a quality improvement project is worthwhile? Should we dedicate our limited resources and time into targeting this problem?

To answer these questions, our potential target must first pass a four-question screening test:

(1) **Is this a common problem?**

There will be times when the answer to this question seems obvious. It is not likely that a quality improvement team dedicated to developing an order set for the treatment of acute intermittent porphyria (a relatively uncommon disease) will be necessary at most institutions. However, this question will be particularly important for problems that seem common but a review of baseline data (a task we cover later) reveals your institution may already be performing better than expected. As an example, if you are considering a project targeting a reduction of central line associated bloodstream infections, you should re-consider your target if a review of your current data demonstrates your institution already performs at the 99th percentile in the nation for preventing this problem. With this example, we see that a good target is one that commonly occurs and not simply a problem commonly talked about.

(2) **Is this an "important" problem?**

This may seem like another fairly obvious criteria when selecting targets. However, I would challenge you to consider not just if a problem is important, but TO WHOM the problem is important. Targets favored by national guidelines, established society best practices, and the strategic goals of your institution often benefit from improved stakeholder support and available resources. Problems important to our patients should receive considerable weight, but from the perspective of a clinician this is sometimes challenged by the lack of clinical knowledge and contextual understanding putting the patient at a disadvantage in this consideration. If choosing between a reduction of surgical site infections (important to institutions and guidelines) versus the quality of food served for lunch (arguably very important to most of our patients), I would argue the surgical site infection is the more appropriate target for clinician involvement.

(3) **Is this problem within my reach?**

This criteria (and criteria #4) are the most often overlooked points when choosing targets for a project. There are times when this challenge is obvious—a hospitalist or primary care provider may not be the most appropriate team member for a project focused on operating room throughput or time of first incision. There are other times, however, when this challenge is less obvious and can truly derail a project after preparations have begun. As an example, many projects that have targeted timeliness of discharge from the hospital have been challenged by factors largely outside of the team's control, such as timeliness of transportation availability or pending insurance approvals. When assessing if a target is appropriate for a quality improvement project, you must honestly assess if this something you can meaningfully impact.

(4) **Can I measure this problem?**

Our fourth question in this screening test is a common cause of project failure if overlooked. In our day-to-day activities, it is not uncommon that we see multiple workflows we believe could be improved, streamlined, or otherwise made more efficient. It is necessary to consider how you would measure each of those workflows at baseline and how you would measure and define improvement at the beginning of project discussions. As an example, many quality improvement projects have attempted to focus on improving communication between providers. Certainly, communication breakdowns are common, important, and well within the reach for many of us to impact. However, this metric is notoriously challenging to measure both at baseline and during an improvement effort. Do you plan to survey all relevant providers about how they feel communication took place? Are you limiting to just communication between nurses and physicians?... or just multi-disciplinary rounds? Are you including face-to-face, phone, and electronic messaging? How do you plan to capture this data and demonstrate changes relevant to your interventions? These are all careful considerations you must undertake at the very start of the conversation about a potential quality improvement project.

If we now return to Mr. Smith and assess if this target is reasonable for a quality improvement project (from the perspective of a hospitalist), we learn the following:

(1) Is this problem common? Often this starts with an anecdotal assumption that needs to be verified by a review of baseline data. For our purposes, we will assume that key stakeholders agree this seems to be a common occurrence.

(2) Is this problem important? Yes, this problem has been targeted by your institution's administration and multiple society guidelines provide input about the utility of imaging for otherwise uncomplicated headaches.4

(3) Is this problem within my reach? Yes, as a hospitalist and the primary ordering provider for neuroimaging in similar patients admitted to the

hospital, this target would be within your common workflows.

(4) Is this problem measurable? Yes, if your initial thoughts are to track the volume of certain images ordered for patients with a presumed diagnosis of migraine, this should be a target you can readily measure.

Now that this target has passed our 4-question screening test, we can be confident that further exploration is worthwhile as we consider developing a quality improvement project and team. As we endeavor to construct a team to explore this project further, note that significant variability exists in the precise composition of quality improvement teams. While the precise number of individuals on the team should not be dramatically too few or too many, with teams ranging from 6 to 9 individuals being common, obtaining the necessary stakeholders and expertise is far more important. At a minimum, the following expertise is necessary when constructing a team:

(1) Content experts- who understands the nature of the disease or condition at the center of your targeted workflow?

For the purposes of migraine headaches, their work up, and their treatment, incorporating a neurologist or pain management expert may be necessary. Further consideration should also be made to have representation from radiology, with a particular focus on neuroimaging expertise.

(2) Process experts- who understands how patients within your targeted workflow experience the healthcare system?

For the purposes of patients with migraines admitted to the hospital, hospitalists with admitting privileges will be a necessary component for your team. Further consideration should also be made to incorporate bedside nursing from relevant floors and other appropriate team members.

(3) IT/ Data experts- who understands how to collect, organize, and update data gathered from our computer systems while also providing expertise regarding interventions acting upon these same systems.

It is quite common that a myriad of other members will be necessary on your team, depending on the details of the target problem you identify. Layers of additional experts may be required even on a temporary of ad hoc basis. The bare minimum for your core group that should persist for the life of the project, however, must include the three experts noted above. As we will review in the next installment of this series, we will move forward from this point with a review of best practices ("benchmarking") as well

as a review of our institution's baseline data. We will use this gathered knowledge to perform a gap analysis—that is, if a "gap" exists between the ideal state (our "benchmark") and our actual performance (our baseline data), a gap analysis aims to determine why that discrepancy exists. In essence, why aren't we already performing at a high level for this target? With this gap analysis performed, our quality improvement team can begin to analyze the problem effectively and develop potential interventions to improve performance.

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