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QUALITY IMPROVEMENT AND QUALITY ASSURANCE IN HEALTHCARE

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Abstract

Purpose of Review: The significance of quality improvement in low- and middle-income environments will be covered in this review, along with a number of possible obstacles to these initiatives. **Recent Findings:** The field of quality improvement in low-resource settings has a lot of room to grow. There is a small but growing body of research on quality improvement (QI) in low-resource environments. **Summary:** Although it is an important component in all practice settings, patient harm resulting from the expenses of subpar quality may have a bigger impact in settings with low resources. The provision of high-quality healthcare can vary in numerous contexts, with differences in evidence-based, evidence- informed, and customary care processes, due to the acknowledged limits in human, physical, and technology resources in low- and middle- income countries. There are disparities in workforce providers' training and development, and funding for QI research is scarce. Support from the government, health ministry, and health system varies as well. Implementing cost-effective and practical quality improvement programs, education, training, and patient safety tactics that can reduce harms, enhance and establish more dependable results, and cultivate a safety culture to create more resilient and efficient workforces and systems ultimately requires attention to all of these areas.

Keywords: Quality, Low- and middle-income countries, Quality improvement, Patient safety, Culture, Sustainable

Introduction

The delivery of medical care carries a heavy burden of harm that always leads to avoidable negative outcomes that hurt patients and upset their families as well as the healthcare professionals who provided the care. In continuous quality assurance (QA) and quality improvement (QI) efforts, medical professionals worldwide are becoming more conscious of this harm, and there is a growing body of knowledge to systematically address underlying issues to create improved processes, systems, and protocols that favor superior outcomes and improve patient safety. To close the gap between what is now practiced and what is considered high-quality care according to evidence-based and evidence-informed medicine, a fundamental phase transformation at all levels of healthcare delivery is required. This intricate continuum is always changing, necessitating careful attention, gradual process adjustments, and unwavering commitment to a culture of patient safety and high-quality treatment that provides value and achieves improvement. Furthermore, skilled and qualified people are encouraged to remain in their hometowns by dependable, high-quality healthcare systems.

The seminal report To Err is Human, released by the Institute of Medicine in 1999, revealed that medical errors cause tens of thousands of deaths annually in the United States [1]. The public sector and the epicenter of US medicine were both deeply shaken by this revelation, which prompted them to start methodically analyzing current medical practices in order to create reforms that would lessen this unsettling reality. The 2001 book Crossing the Quality Chasm: A New Health System for the 21st Century acknowledged that reforming the US healthcare system at its periphery will never be sufficient to address the avoidable consequences of poor quality and

medical mistake. To genuinely address the system's widespread issues, a clear future vision informed by the six purposes of medical quality was required. Medical care should be safe, effective, efficient, patient-centered, timely, and equitable, according to the six goals that were set down at the time [2]. Work toward these goals to reduce harm can be aided by integrating a culture of patient safety and quality improvement throughout all health systems worldwide. Interventions can be used at several levels to enhance patient safety and care quality. It's crucial to keep in mind that significant changes that affect entire systems, communities, countries, and the world at large take time and can be effectively supported by careful consideration of patient safety that is currently achievable at the local level.

Importance of Quality in LMIC

While increasing access to treatment, including specialized technology and medication, is frequently the focus of interventions in low- and middle-income nations, it is crucial to take into account both the quantity and quality of care provided. Even in cases where healthcare services are widely available, demand and, consequently, healthcare coverage will remain low if those services are thought to be of poor quality [3]. Narrowing that gap through QI can have an even bigger impact in low-and-middle-income countries (LMICs), as Leatherman et al. have observed that "the gap between the actual care delivered and the best possible care is often much greater" in low-resource settings as opposed to high-resource settings [4].

Adequate resource management is a sign of high-quality care. Utilizing resources in the safest, most effective, and most equitable way possible is crucial when resources are scarce. Enhancing quality can reduce resource waste and increase equitable outcomes, such as the attainment of the Millennium Development Goals [4], which boosts public trust in the healthcare system and motivates further funding from donors and the government. Additionally, by removing underperforming outliers and increasing the bar generally, QA procedures can enhance the consistency of care across a system.

Additionally, it is critical that QI be valued by the local community and not only be a checkbox requirement for financing or based on the ideals of an NGO donor [5]. In order to improve care and guarantee patient safety as much as possible, there is a compelling need for a common vision of QI.

Furthermore, the procedure is aided by trustworthy techniques for collecting information on population demographics and quality metrics. If a quality cannot be identified, it cannot be improved [5]. There is "an obligation to assure that quality improvement science is relevant not just in high-income countries, but wherever improvement might reduce suffering and mortality" [6], despite the fact that resource limitations may make it difficult to gather and share QI efforts and data.

QI Defined

To start designing possible improvement initiatives to achieve the desired quality of care, it is necessary to comprehend the existing condition of the quality of care delivery. First and foremost, QI initiatives depend heavily on a sound and practical definition of healthcare quality. "Healthcare quality improvement is the systematic reduction of the variation in output of a system, sometimes accompanied by adjusting the central tendency of the system, as measured against specification limits from the third-party payer, patient, or other important recipient of the system output -

whichever is most difficult to satisfy," explain Kashmer et al. in their useful definition [7]. A standard approach to QI that aims for consistent, acceptable results is emphasized by this definition. There are already trustworthy QI tools available that are beneficial to the manufacturing and service sectors. They can be used in any QI function, regardless of the product or industry, and their use in healthcare is well-established. It is also crucial to realize that each system output generates a distribution, which may or may not be a distribution that is mathematically normal. Having similar and acceptable results for every care process output is important when considering quality in this approach. It is crucial to understand that a shift in central tendency by itself does not always mean that quality has improved; merely examining an average may not be sufficient to address the issue because the average does not reflect consistency or acceptability in the results produced. Reliability and consistency of acceptable results—rather than just the system average—are crucial. The patient is the most crucial and challenging recipient and stakeholder in healthcare delivery, and this is the focus of the majority of local-level quality initiatives. It is also necessary to take into account other stakeholders, such as the communities served, government and nongovernmental organizations, local, regional, and national systems, and the caregivers.

General Approach to QI

Organizations and departments can find achievable changes that accomplish desired results and bridge the gap between the current state of wide variability in system output and the desired outcome of dependable and consistent acceptable results by implementing a systematic approach to QI using established QI methodology and tools.

For a very basic theoretical example, it is preferable to have a decrease in the patient's temperature as the result of treating a fever. Let's say that several different treatments are being used, with differing outcomes. For example, some doctors may recommend acetaminophen, while others may recommend a tepid water bath or wrapping in blankets. The subject of whether this may be improved for better fever control for the patients was raised after it was observed that there was a broad range of outcomes in the existing state. Through an examination of the charts, the interested team assessed the three treatments and their results over the previous three months. They discovered that 95% of patients who received acetaminophen, 50% of patients who had a tepid water bath, and 0% of patients who were wrapped in blankets saw a sufficient reduction in fever, which is the current state of practice. In three months, the team decided that the desired outcome was to reduce fever to less than 38 °C (less than 100.5 °F), which would be achieved in >90% of febrile patients. Their QI project was planned using Deming's Cycle, a well-known QI technique. A QI project was developed using Deming's Cycle, often known as the PDSA Cycle (Plan, Do, Study, Act), with the objective of effectively lowering fever in > 90% of febrile patients within three months. Using the retrospective Current State data, the team meticulously began the Plan phase of a QI study. As part of the intervention, ordering physicians were trained to stop bundling in blankets, which was unsuccessful, and to administer appropriately dosed acetaminophen as a first-line fever control strategy in the right patients. After this instruction was spread, they would monitor the same results for three months. After completing the Do portion and disseminating the education, the team started to prospectively track the results. The team saw more consistent outcomes during the data collection process, with 80% of patients experiencing a sufficient drop in fever by the end of the third month. Although they were worried that they had fallen short of their target of >90%, they proceeded to the cycle's Study phase, where the team discovered that

tepid water baths were the only treatment recommended for the 20% of patients who had insufficient fever reduction. Based on these findings, the team modified the project to suggest that acetaminophen be used as the first-line monotherapy in all suitable patients with fever. Additionally, a tepid water bath could no longer be used as a single intervention unless acetaminophen was contraindicated. This time, the team chose to monitor the results for six weeks, and by the end of that time, they discovered that 94% of the patients they had treated had achieved sufficient fever control. The team distributed this extremely encouraging feedback to everyone who helped the project succeed and worked to modify their practices. This was a long-lasting adjustment since the providers supported the initiative and successfully changed their practices over time, improving patient fever control results. The key takeaway from this example is that any clinical improvement project can use and modify this PDSA tool.

Indicators and Implementation of Quality in LMIC

Because of differences in disease patterns and resource availability, low- and middle-income countries may have different quality indicators and/or target objectives than higher-income nations. In comparison to upper-middle-income countries, low- and lower-middle-income countries continue to have a significantly higher rate of maternal and pediatric (under 5) mortality, as well as a higher percentage of deaths from communicable diseases or nutritional conditions, than do higher-income countries with a higher prevalence of noncommunicable diseases [8]. The optimization of prenatal and neonatal care, as well as the optimization of dietary circumstances for all patients prior to surgery for the best outcomes, are critical factors in both medical and surgical outcome improvement.

Better health outcomes have been linked to quality improvement, but it is important to recognize that programs and systems that are effective in one context might not be easily generalizable or transferable to another. With a vision for ongoing quality improvement initiatives and a commitment to patient safety, evidence-informed treatment based on current science that supports the delivery setting and local resources may be the ultimate aim. Effective strategies are frequently multimodal, targeting patients, providers, and the systems in which they interact all at once [4]. In order to evaluate local contextual, strategic, and structural elements that might influence QI implementation in low- and middle-income nations, Ruelas et al. put up a set of questions as part of a framework. These include the ability of the health system to meet the needs of the population, the availability of sufficient information systems for measurement and reporting, the availability of funding, understanding of fundamental QI concepts and operational definitions, the ability of the population, government and healthcare leaders, and donors to align their values, needs, and expectations, and the sustainability of the proposed change [8].

Challenges for QI Initiatives in LMIC

Technical quality of care measurement is unquestionably vital, but while planning and executing QI, other elements must also be taken into account. Examining the treatment process at various stages of the care pathway, comparing patients' assessments of quality to the actual clinical quality, societal norms, accessibility, trust, and acceptability of the provided care in relation to other possibilities are some of these factors. The idea and measurement of care quality in low- and

middle-income settings present six challenges, according to the World Health Organization. Patients' views have a big impact on how they use easily accessible treatment, even though they are not a direct or accurate indicator of quality. Quality must be continually pursued in all care episodes since the individual's experience is cumulative and pertinent to all care encounters. Thirdly, the system's and the providers' responsiveness to the patient's needs is important. The quality of care and its perception are significantly impacted by management at the facility, state, regional, and federal levels. As appropriate for each project's objective, several facets of the community combine to create the social construct of quality in healthcare services, and these should be taken into account in QI initiatives. Lastly, as experience grows, methods for measuring quality in low- and middle-resource areas may need to be modified for practicality in the context and then improved to more easily support larger QI initiatives [3].

Hospital beds, PPE, technology, and human capital are examples of physical assets that are particularly scarce in limited economic contexts. Nevertheless, there are possibilities to take advantage of despite the significant differences between nations and areas within the same income bracket. Innovative solutions that are adapted to local conditions are needed to improve quality within such limitations.

Before beginning a high-quality project, many require assessment by an Institutional assessment Board or Ethics Committee. Approval may occasionally be delayed due to the protection of health information, even if specific protected patient information is not typically the focus of quality improvement projects. Since most quality improvement is assessed on a systems or local departmental basis rather than on an individual basis, efforts to reduce thorough reviews and the use of a "not human subjects" inquiry category can be beneficial. This can be carried out without running the risk of injury from traditional study methodology or compromise of protected personal health information.

There are "few reliable routes of site-to-site or nation-to-nation shared learning," and many quality improvement programs are not reported [4]. Additionally, quality-related publications in LMICs are typically descriptive rather than hypothesis-driven, which may restrict their generalizability in other contexts and their ability to advance QI science [6]. Collaboration is essential because QI expertise, experience, and interest are not uniformly distributed. It may be possible to accelerate the development and application of QI techniques worldwide by increasing the corpus of research in this area and promoting information sharing.

The quality measurements that are collected in this manner may be limited in lower-income countries since there may not be strong evidence-based national standards that might be utilized as a benchmark to assess clinical practices [3]. The implementation of any QI project may be delayed because data collecting and reporting procedures may be restricted in LMICs and necessitate considerable adjustments to guarantee accuracy and completeness [5, 9].

Initiatives may also be hampered by rivalry with other global health efforts and inadequate conceptualization of the technical parts of the QI process [4]. In contrast to cultivation as a crucial pillar of the healthcare delivery system, there might need to be a careful balance struck between

showcasing QI as a particularly significant process that need careful attention and preventing it from being just another program among many.

One of the most commonly mentioned obstacles to QI projects is a lack of financing [4, 9]. Furthermore, it could appear difficult to acquire the personnel needed to advocate for quality improvement. However, when considered as a way to assess the efficacy of care processes, even minor adjustments can lead to significant improvements that reduce costs in the use of resources, which in turn improves care, streamlines the duties of physicians, reduces iatrogenic injury, enhances diagnostic precision, supports evidence-based treatment that is appropriate for the situation, reduces surgical site infections, and reduces complications that necessitate hospitalization or rehospitalization, among many other areas. This increases the importance of prioritizing quality improvement in any context.

Like any health project, a QI plan requires strong governance and leadership to be successful. Healthcare quality may suffer as a result of regional or even institutional leadership changes or political unrest at the federal level [9]. QI activities can be strengthened by management approaches that include strategies to reward quality and correct or sanction subpar performance [10].

Perceptions are crucial, to sum up. Patients' perceptions of quality, which might not match the actual quality of care received, will serve as the foundation for their actions while seeking medical attention. Preconceived ideas about the superiority or inferiority of care provided in a specific location (such as rural vs. urban, public vs. private), prior experiences, or perceived or actual prejudice may all be connected to this [3]. Since the patient's benefit is the ultimate goal of QA and QI, a foundation of trust is essential to aligning perceptions with reality.

Looking to the Future

Real-time challenges for health systems, doctors, and staff include the need to provide each patient with safe, appropriate care while ethically balancing the use of available resources to ensure that others in need can receive comparable care while maintaining the integrity of the caregivers' well-being.

This lesson has recently come to light in significant ways because to the SARS, MERS, and Ebola outbreaks, as well as the ongoing COVID-19 pandemic. The use of available resources necessitates good stewardship, which bases each patient's care on their medical needs, considers accurate scientific evidence when making decisions, and selects actions that use the fewest resources while having the highest chance of producing the safest results for the majority of patients [4••]. The fact that the highest-resource countries are having trouble distributing and using resources fairly is undoubtedly an eye-opening finding of COVID-19. Those who have mastered these lessons can make significant contributions. Bidirectional cooperation that promotes unity in the goals of healthcare quality in all resource contexts has a lot to offer. There are no limitless resources. In environments with limited resources, quality improvement initiatives don't have to be complicated, involve a large financial investment, or involve a complete system redesign. A minor modification can occasionally result in a major shift in fostering a culture of safety. A straightforward surgical checklist, for instance, is an inexpensive and successful strategy that has been found to reduce clinical errors and mortality. The development of open-source electronic medical record programs and patient outreach through web-based phone applications or SMS

messaging present opportunities to leverage technology to support data collection, communication, and patient engagement as Internet and mobile phone connectivity continue to expand globally [11].

Enhancing mentorship programs for trainees, developing avenues for sharing QI efforts outside of peer-reviewed journals, and cultivating a network of researchers to facilitate experience sharing and solution-development cooperation are further ways to support QI research efforts in settings with limited resources. [6]. There are several free and open-access platforms accessible to improve teamwork.

Conclusion

Physicians want to provide timely, egalitarian, patient-centered, safe, effective, and efficient care, which reflects the motivations of the majority who enter the field. Since they are the specialists, doctors must take responsibility for patient safety and quality, establish the framework for integrating quality assurance and improvement into current systems, and instill this knowledge and goal in the education of aspiring professionals. A viewpoint that embraces QI as a valued capability of medical practice can unite everyone in the achievement of a focused culture of patient safety and continuous improvement, as physicians are the leaders responsible for cultivating the values and ethos of the workplace. Even minor adjustments can have a significant impact in environments with limited resources, and the quality and safety domain offers more and more chances for vital research and development.

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