

Program to improve the quality of care in health services: reflection study*Programa para mejorar la calidad de atención en los servicios de salud: estudio de reflexión**Programa de melhoria da qualidade nos cuidados em serviços de saúde: estudo de reflexão***Laís Facioli Rosa Moreno da Costa¹**

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Submission: 02-06-2022**Approval:** 02-21-2022**Abstract**

The aim was to reflect on the potential of applying the continuous quality improvement model, disseminated by the Institute for Healthcare Improvement (IHI) in health services. This is a reflective study on the application of the continuous quality improvement model in national and international research. The purpose of the model is to improve healthcare outcomes and the patient experience through changes in the behavior of healthcare professionals and institutions and by systematically applying changes to complex processes and systems. Furthermore, the model consists of three fundamental questions that are combined with the PDSA cycle (Plan-Do-Study-Act). The impacts of these cycles on care processes and patient safety were also presented. Studies that used this methodology showed a reduction in adverse events and improvement in care processes in health services. Thus, the continuous quality improvement model should be widely used in clinical practice and research to improve care provided to all patients and at all levels of health care with limited resources and without great costs.

Descriptors: Medication Errors; Total Quality Management; Risk Management; Quality of Health Care; Patient Safety.**Resumen**

El objetivo fue reflexionar sobre el potencial de aplicar el modelo de mejora continua de la calidad, difundido por el Instituto para la Mejora de la Salud (IHI) en los servicios de salud. Se trata de un estudio reflexivo sobre la aplicación del modelo de mejora continua de la calidad en la investigación nacional e internacional. El propósito del modelo es mejorar los resultados de atención médica y la experiencia del paciente a través de cambios en el comportamiento de los profesionales e instituciones de atención médica y mediante la aplicación sistemática de cambios a procesos y sistemas complejos. Además, el modelo consta de tres preguntas fundamentales que se combinan con el ciclo PDSA (Plan-Do-Study-Act). También se presentaron los impactos de estos ciclos en los procesos de atención y seguridad del paciente. Los estudios que utilizaron esta metodología demostraron una reducción de los eventos adversos y una mejora en los procesos de atención en los servicios de salud. Por tanto, el modelo de mejora continua de la calidad debe ser ampliamente utilizado en la práctica clínica y la investigación para mejorar la atención prestada a todos los pacientes y en todos los niveles de atención sanitaria con recursos limitados y sin grandes costes.

Descriptores: Errores de Medicación; Gestión de la Calidad Total; Gestión de Riesgos; Calidad de la Atención de Salud; Seguridad del Paciente.**Resumo**

Objetivou-se refletir sobre a potencialidade da aplicação do modelo de melhoria contínua da qualidade, difundido pelo *Institute for Healthcare Improvement* (IHI) em serviços de saúde. Trata-se de um estudo reflexivo sobre a aplicação do modelo de melhoria contínua da qualidade nas pesquisas nacionais e internacionais. A finalidade do modelo é melhorar os resultados em saúde e a experiência do paciente, por meio de mudanças no comportamento dos profissionais e instituições de saúde e pela aplicação sistemática de mudanças em processos e sistemas complexos. Ademais o modelo é constituído por três perguntas fundamentais que são combinadas com o ciclo PDSA (*Plan-Do-Study-Act*). Também foram apresentados os impactos desses ciclos nos processos assistenciais e na segurança do paciente. Os estudos que utilizaram tal metodologia demonstraram redução de eventos adversos e melhoria nos processos assistenciais em serviços de saúde. Com isso, o modelo de melhoria contínua da qualidade deve ser utilizado amplamente na prática clínica e nas pesquisas para melhorar a assistência prestada a todos os pacientes e em todos os níveis de atenção à saúde com recursos limitados e sem grandes custos.

Descritores: Erros de Medicação; Gestão da Qualidade Total; Gestão de Riscos; Qualidade da Assistência à Saúde; Segurança do Paciente.

Introduction

Patient safety is a strategic priority for modern health care and is critical to countries' efforts to achieve universal coverage. According to data from the World Health Organization (WHO) in a 2018 report, about 421 million people are hospitalized each year around the world and, on average, one in ten hospitalizations results in harm to the patient. Furthermore, 134 million adverse events occur every year in hospitals in low- and middle-income countries and such events result in 2.6 million deaths annually^{1,2}.

Such numbers reveal that, despite decades of investments in research and technologies, health services continue to operate with a low degree of reliability. It is noteworthy that the simple implementation of protocols may not solve the problem, since adverse events have multicausal factors, which include lack of knowledge, fatigue, communication failures, stressful work environment and lack of equipment. In this context, a deep understanding of the processes involved in care, the involvement of all stakeholders and the ability to measure desirable outcomes are important strategies for managing risks related to health care³⁻⁵.

The continuous quality improvement model, developed by Associates in Process Improvement and disseminated by the Institute for Healthcare Improvement (IHI) has become a reference since 1984 for professionals who want to improve results through a systematic approach. This model is widely used in health services in the United

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States, the United Kingdom and Australia. In these countries, the model was used to identify flaws in the drug administration process and reduce the use of polypharmacy⁶⁻⁹.

Although research has shown the feasibility of the continuous quality improvement model in the prevention and mitigation of adverse events related to health care and in improving patient safety, in Brazil, its application is still restricted. Given the above, the objective of this article is to reflect on the potential of applying the continuous quality improvement model, disseminated by the (IHI) in health services.

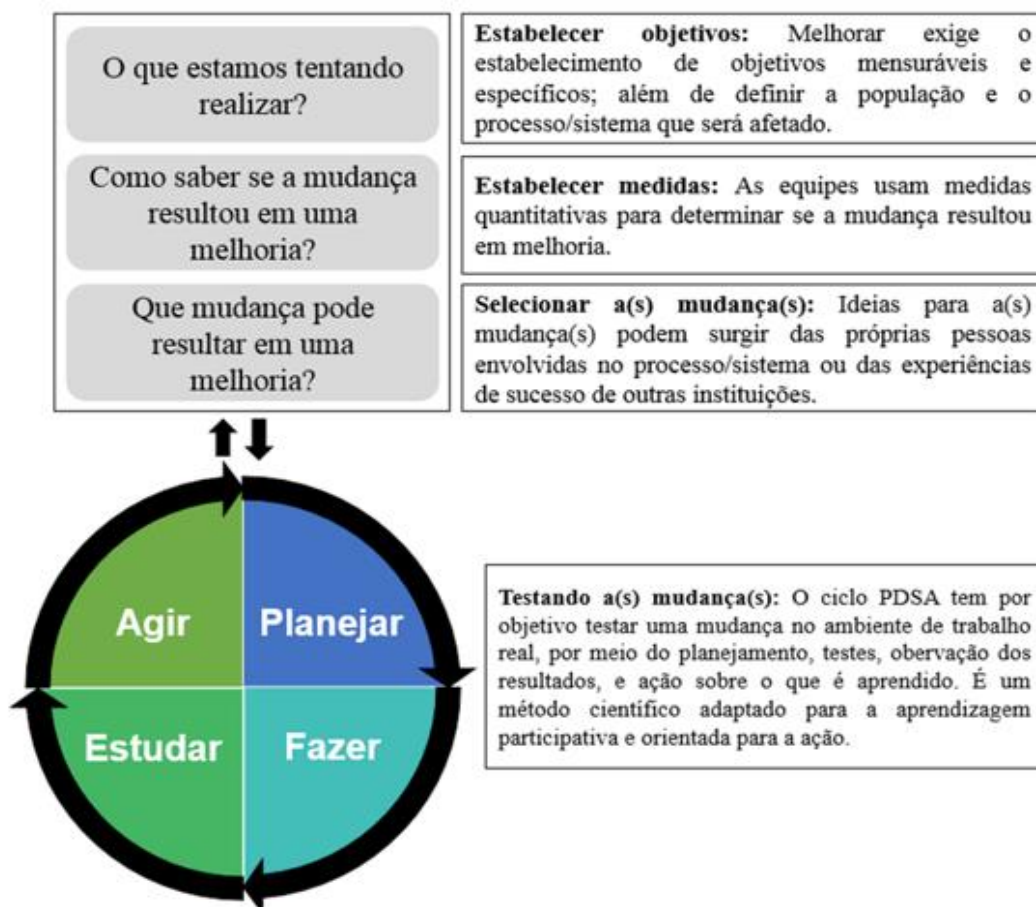
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Quality improvement is defined as a:

"[...] systematic approach that uses specific techniques to improve health outcomes and the patient experience, through changes in the behavior of health professionals and institutions and the use of systematic methods aimed at change"¹⁰.

According to the National Health Surveillance Agency (ANVISA), the quality improvement model, disseminated by the IHI, consists of a scientific method used for action-oriented learning that provides a detailed study of the changes implemented in a health service. The model is formed by three fundamental questions that are combined with the PDSA (Plan-Do-Study-Act) cycle, reported in Figure 1^{11,12}.

Figure 1. Quality Improvement Model disseminated by the IHI. São Paulo, SP, Brazil, 2021



The PDSA cycle, also known as the Deming cycle, stands for Plan = Plan; Do = Do; Study = Study; and Act = Act. The cycle is intended to test changes in real work environments and determine whether these changes have resulted in an improvement and a better patient experience¹².

Research carried out in 17 hospitals, in partnership with the Connecticut Peer Review Organization (Qualidigm), USA, aimed to increase the early identification of patients at high risk for pressure injuries (PPL) and improve the use of preventive measures. Four PDSA cycles were used over a nine-month period and multifaceted changes were tested. According to the researchers, there was improvement in four outcome measures and a reduction in LPP rates¹³.

In another study carried out in a quaternary public hospital in the city of São Paulo, the authors aimed to reduce in-hospital mortality from sepsis. Six PDSA cycles were used over a period of eighteen months and, according to the researchers, there was a reduction in mortality after the implementation of a sepsis protocol, through the quality improvement model disseminated by the IHI¹⁴.

In a study carried out in a public hospital in the city of Itapeverica da Serra, São Paulo, the objective was to reduce the rate of cesarean delivery within 31 months. The researchers developed an action plan and trained the teams through PDSA cycles, resulting in a reduction in the rate from 29.5% to 25.84%¹⁵.

Collaborative work among all stakeholders is also an important aspect to improve processes, carry out risk and quality management, as well as ensure the quality of health care. For this reason, it should be encouraged by managers and organizational leaders. In the improvement model disseminated by the IHI, the multidisciplinary team defines

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the problem, determines the causes, establishes the goals and objectives of the project, as well as the results to be achieved¹².

Then the team plans the improvement actions. Such planning should include: system/process to be improved, target audience, deadline and objective. In a previous study carried out in a private hospital in the interior of the state of São Paulo, the researcher, together with the multidisciplinary team, established the following goal for the quality improvement project: Reduce by 50% non-conformities in the preparation and administration of solid medications via nasoenteral tube, in adult patients seen at the medical clinic, within a period of three months. It is possible to verify in this sentence the process that must be improved (preparation and administration of solid drugs via nasoenteral tube), the target audience (adult patients seen at the medical clinic), the deadline (three months) and the objective (reduce by 50% non-conformities)¹⁶.

In a research conducted in an American hospital, with the objective of improving the medication administration process (process) and reducing medication errors by 20% (target), several PDSA cycles were used in a period of eight months (term). Meetings with the teams, repair of equipment and qualification of health professionals were the changes tested over time⁷.

These examples illustrate the need to measure the results achieved in order to determine whether the changes have, in fact, resulted in quality improvement. Therefore, measurements are used to compare the results obtained before (baseline) and after the change tests. Three levels of measures are considered (Chart 1), which will guide participatory and action-oriented learning¹².

Chart 1. Types of measures and definitions. São Paulo, SP, Brazil, 2021

Types of Measures	Definition
Result	It is directly related to the purpose of the study and provides evidence that changes are resulting in improvement.
Process	Determines whether an action is being performed as planned.
Balance	When carrying out the change, the improvement team must make sure that damages are not being caused to the processes, that is, that all measures have remained unchanged or that they have improved.

After determining the measures that will be monitored over time, it is necessary to define the changes that will be tested. Changes (or improvements) are defined as any general idea with proven merit and sound scientific basis or logic that can stimulate specific ideas for changes that lead to improvement. In addition, the team must consider the cost of change in economic and human resource terms. Figure 2 exemplifies the types of measures and changes tested, through PDSA cycles, in the research carried out in a private hospital in the interior of the State of São Paulo^{12,16,17}.

In another study conducted in a large Brazilian hospital, four PDSA cycles were conducted over a period of six months with the aim of describing the implementation of

a rapid response team. After the change tests, which involved guidance on improvement actions, incorporation of corporate cell phones to facilitate team communication, implementation of a bed management system and continuing education, there was a reduction in mortality and waiting time for a bed in the ICU. , increased recognition of patients in palliative care and better use of existing resources in the institution and of beds destined for critical care¹⁸.

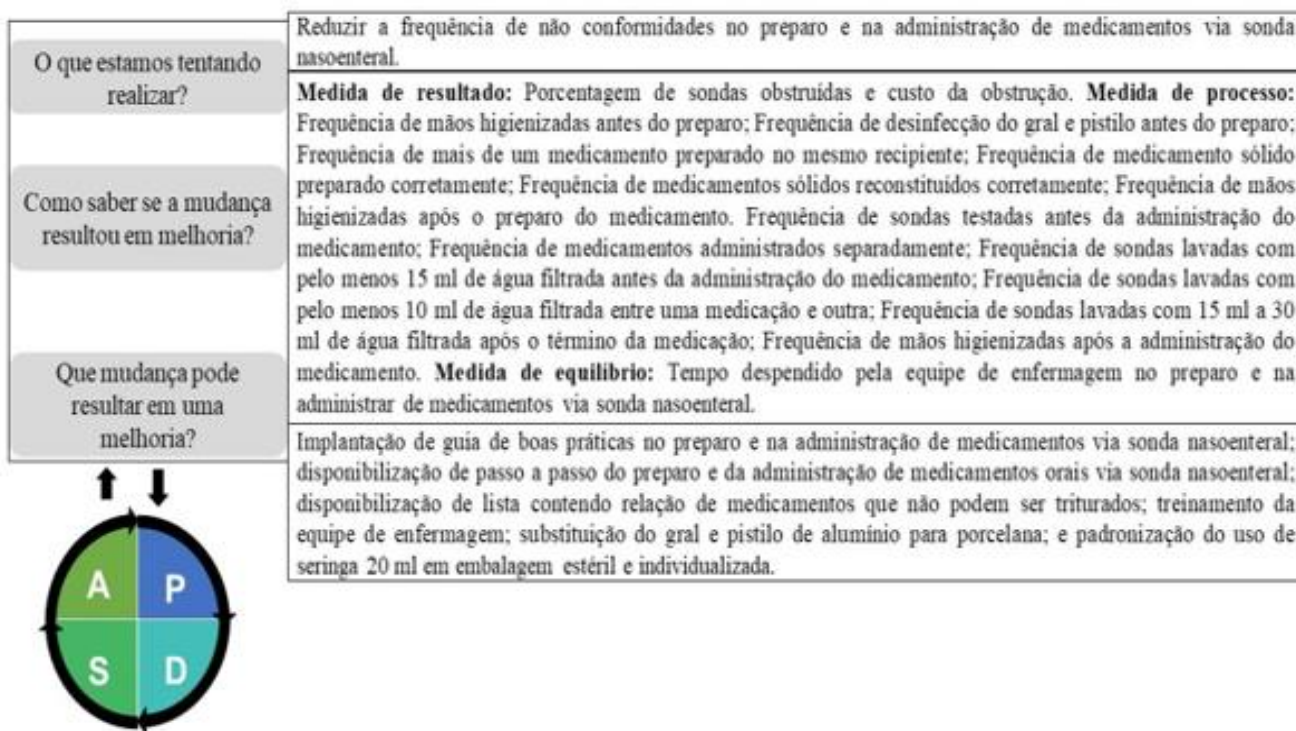
According to the IHI,⁶ change must also be planned and tested on a small scale to minimize risk, avoid distractions, allow for process changes, and see how the system reacts to change over the long term. Brazilian researchers tested the implementation of a guide of good



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 ones were not ground to a fine and homogeneous powder and the main cause was the lack of appropriate equipment (grass and pestle) to perform the procedure. The knowledge acquired in this cycle allowed the planning of the next one. The hospital acquired porcelain mortar and pestle and made them available in the hospital wards^{6,19}.

practices in the preparation and administration of oral medications via nasogastric tube. After training the nursing staff working in the medical clinic of a medium-sized public hospital in the interior of São Paulo, three PDSA cycles were performed from April to November 2015 and from June to July 2017. According to the researchers, the tablets the hard

Figure 2. Example of measures and changes tested through PDSA cycles. São Paulo, SP, Brazil, 2021



In another Brazilian study, the researcher used four PDSA cycles to reduce errors related to vaccine administration in a Basic Health Unit in the city of Araraquara. It was found that the main cause of errors was related to the lack of guidance to users or guardians about potential adverse reactions to vaccines. After using the methodology, there was an improvement in the percentage of guidelines from 48.3% to 100%²⁰.

Showing in a single test that the change resulted in improvement is not enough, as the change needs to be sustainable and disseminated to other units or departments, which requires additional planning and learning. The change may turn out to be good in the way it was proposed, or it may have to be modified or discarded. Regardless of the outcome, there has been learning and the next change will be designed based on the knowledge gained and the experiences gained. Furthermore, if the established changes are not adhered to, the improvement team must understand the reasons and overcome the barriers encountered. When 80% adherence is achieved, the change can be considered a success. Another important factor in the improvement is the inclusion of the patient and family in the process, which can be a barrier in the prevention of adverse drug events^{12,21,22}.

It is noteworthy that the changes tested by the researchers were later reproduced in a medium-sized private hospital in the interior of the state of São Paulo. The

results showed a reduction in the number of obstructions related to non-compliance in the preparation and administration of drugs via nasogastric tube and in the costs related to both processes^{16,19}.

Final Considerations

The quality improvement methodology disseminated by the IHI is being used in research and clinical practice around the world and, more recently, in Brazil, with the objective of reducing risks related to health care. Such a methodology optimizes quality improvement and should be widely used to ensure safe care for all patients and at all levels of health care. Furthermore, this methodology can be useful to improve care processes and patient outcomes in places with limited resources.

One of the challenges, however, is to keep improving processes and systems over time. Future research is recommended with the aim of translating the evidence into measurable improvements, with a focus on reducing preventable adverse events.

The present study has as a limitation publications that used the quality improvement program with the application of PDSA cycles in adults and in hospitals, and can also be explored in other research involving neonates and children and in other health units such as Basic Health Units, among others.



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