



## Kaizen: A Decision Solving Approach in Healthcare Administration

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DOI : <https://doi.org/10.55248/gengpi.5.0724.1907>

### ABSTRACT

Quality in healthcare is crucial for patient satisfaction, financial stability, and safety, influenced by external factors. Identifying root causes and taking immediate action is imperative. Precision on the initial attempt is essential for enhancing quality.

Kaizen, a Japanese concept for continuous improvement, advocates for gradual changes to ensure efficient operations. It underscores collaboration and dedication to ongoing process enhancement. Introduced by Toyota, Kaizen has been globally embraced. It entails making incremental improvements daily in all facets of an organization, including healthcare.

Kaizen encourages contributions from all members of the organization for small, attainable solutions. It can significantly enhance organizational culture and staff engagement. However, altering existing culture can pose a challenge. The incorporation of studies with any biases or improperly evaluated quality of evidence in systematic reviews and meta-analyses could produce deceptive outcomes. Hence, various guidelines have been proposed for conducting systematic reviews and meta-analyses to standardize them and enhance their quality.

Overall, Kaizen drives positive transformations by fostering continuous improvement and collaboration, even within healthcare settings. Kaizen is a fundamental component of lean production, concentrating on continuous improvement and waste reduction. Targeted Kaizen events in healthcare have exhibited enduring process enhancement. It is an integral part of lean production, emphasizing continuous improvement through minor adjustments and waste reduction. Focused Kaizen events in healthcare have been proven to result in sustainable process enhancement. Kaizen has been pivotal in Japanese industry since the early 20th century. They aid in establishing a safety culture grounded in Toyota Way principles of Continuous Improvement and Respect. Kaizen is essential for persistent quality enhancement and advancement.

**Keywords:** Kaizen, Lean Methodology, Improvement

### INTRODUCTION

#### KAIZEN: PRINCIPLE AND CONCEPT

Kaizen, a term from Japanese words "kai" for "change" and "Zen" for "good," embodies continuous improvement principle. Japanese philosophy focuses on constant progress for betterment daily in all sectors. Core of Kaizen challenges traditional ways by removing barriers like silos, egos, and inefficiencies through gradual adjustments for effective operations. Kaizen drives continuous improvement in lean methodology by involving employees in idea generation, problem-solving, and maintaining positive outcomes. Practices like kaizen blitz, process improvement teams, and suggestion programs demonstrate this principle. Continuous process improvement teams and suggestion programs are long-term efforts. Healthcare often overlooks practical application of kaizen in research.

#### Nomenclature

Kaizen is a Japanese term meaning "good change", "change for the better", or "improvement."

The Japanese word kaizen means 'improvement' or 'change for better' (from 改 kai - change, revision; and 善 zen - virtue, goodness) with the inherent meaning of either 'continuous' or 'philosophy' in Japanese dictionaries and in everyday use.

#### Health Care Kaizen Tasks

Kaizen means continual improvement. Each choice represents changes to an object. Tasks are customizable, like in a game. In hospital administration limiting choices and adding a "no change" option can simplify decision-making. Healthcare costs rising, hospitals use cost containment, prioritize cost-effectiveness, streamline operations.

Kaizen improves care quality, performance, and cost efficiency. Employee engagement vital for performance and satisfaction. Continuous improvement reduces errors, costs, increases autonomy, motivation. Lean methodologies popular in healthcare. Employee involvement in decision-making common but outcomes differ. Kaizen emphasizes engaging all stakeholders in change. People-focused strategy ensures everyone is involved in gradual changes. Prioritizing human elements and efficient change management in kaizen events initiates quality enhancement. Continuous improvement involves:

Health care continuous improvement involves:

- Iteratively improving systems and processes
- Regularly assessing performance benchmarks to identify areas needing enhancement
- Increasing productivity, efficacy, and efficiency of hospital operations
- Promoting hospital preventative measures
- Educating health care employees on continuous improvement methodologies
- Setting hospital-based improvement goals and necessary actions to achieve them
- Recognizing health care staff achievements in continuous improvement efforts

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## KAIZEN: PROBLEM SOLVING AND DATA ANALYSIS

Kaizen involves all staff in making gradual changes with a scientific approach, promoting ongoing improvement and teamwork. The Japanese philosophy of "kaizen" advocates for perpetual enhancement in processes by engaging all members of the organization. Health care systems are comprised of service providers within public and private sectors, posing challenges related to regulations, finances, infrastructure, and workforce management. Healthcare systems consist of service providers linked between public and private sectors, posing challenges in policies, finances, infrastructure, and personnel.

Kaizen philosophy involves incremental process enhancements with team involvement. Kaizen starts by acknowledging challenges for improvement with team involvement. Kaizen methodology is essential for long-lasting quality improvement practices. Decision-making in healthcare involves several approaches, each tailored to the complexity of the medical situation, the availability of evidence, and patient preferences. Here are some common decision-making approaches:

### 1. Evidence-Based Decision Making:

- Relies on the integration of the best available research evidence with clinical expertise and patient values.
- Involves the use of clinical guidelines, systematic reviews, and randomized controlled trials to inform decisions.

### 2. Shared Decision Making:

- Focuses on collaboration between healthcare providers and patients.
- Patients are informed about their options and are actively involved in making decisions about their care, considering their preferences and values.

### 3. Clinical Judgment and Expertise:

- Utilizes the experience and intuition of healthcare providers to make decisions, especially in complex or uncertain situations.
- Often necessary in emergency or rapidly evolving scenarios where evidence may be limited or not immediately applicable.

### 4. Patient-Centered Care:

- Emphasizes the patient's unique needs, preferences, and values.
- Involves tailoring decisions to fit the individual patient's context, lifestyle, and desired health outcomes.

### 5. Cost-Effectiveness Analysis:

- Considers the economic impact of different treatment options.
- Aims to provide the best possible care within the constraints of available resources.

### 6. Consensus Building:

- Involves multidisciplinary teams discussing and agreeing on the best course of action.
- Useful in complex cases requiring input from various specialists.

### 7. Predictive Analytics and Decision Support Systems:

- Utilizes data and algorithms to predict outcomes and support clinical decisions.
- Can enhance decision-making by providing insights based on large datasets and trends.

#### 8. Ethical and Legal Considerations:

- Ensures that decisions comply with ethical standards and legal requirements.
- Important in cases involving end-of-life care, informed consent, and patient autonomy.

Choosing the right approach depends on the specific clinical context, the availability of evidence, the complexity of the decision, and the preferences of the patient and healthcare providers.

#### FOCUS-PDSA framework model

The FOCUS-PDSA framework by HCA improves healthcare processes through problem identification, team formation, intervention selection, and evaluation. It helps pinpoint areas for improvement and facilitate iterative improvement cycles. Kaizen boosts efficiency in healthcare, but sustaining long-term outcomes is challenging. This study examines lasting performance gains from Kaizen initiatives.

The FOCUS-PDSA methodology contributes to enhancing quality in healthcare by optimizing time, financial resources, and labor. It elevates patient safety, cost efficiency, and overall quality aspects.

Table 1

**F-Find the Process for Improvement**  
**O- Organize leaders or teams that knows the process**  
**C-Clarify and Classify the Knowledge process**  
**U- Understand the process**  
**S- Select Improvement Plans**

**Plan the Improvement**  
**Do the Improvement**  
**Study the effectiveness of the Improvement**  
**Act to hold the gain**

#### FOCUS-PDSA USED FOR QUALITY IMPROVEMENT:

The first step in the FOCUS-PDSA methodology is to identify and characterize a specific process that needs to be improved or problem that needs to be solved. This process entails systematic, iterative testing of individual changes. FOCUS-PDSA is used for establishing high-quality standards and pursuing continual improvement and quality assurance. [12] This model for process improvement is essential for continuous improvement and typically gives strategies for quality improvement in healthcare. FOCUS-PDSA, also known as the trial-and-error cycle, encourages tiny modifications as well as quick adaptations and improvements. [13]

- **Planning Phase:** Clinic board designates hospital clinical director as chairman of committee, nursing department director as vice-chairman. Committee members include department heads, secretary, leadership team, supervisors, ward nurses. Quality control areas include specialized care, ward care, materials management, head nurse supervision, document control. Plan formulated to organize nursing competitions and training sessions to enhance staff competencies.
- **Execution Phase:** Comprehensive research on quality standards is carried out. Head nurses present department-specific inquiries, provide recommendations, interact with staff. Implementation phase begins upon plan approval. Quality assurance guides created, educational articles written, circular management techniques implemented. Responsibilities distributed among five key areas. Routine ward inspections conducted for necessary adjustments, head nurses deliver reports to quality control team. Hospital-wide meetings adhere to strict standards, departmental gatherings refine criteria, address issues, devise strategies. Internal quality control teams established to encourage staff participation, clinical nurses expected to exhibit excellence.
- **Evaluation Phase:** Inspection system initiated involving self-assessments, ward inspections, quality control checks. Healthcare professionals evaluate tasks based on quality benchmarks, head nurses maintain weekly records. Designated inspectors review departments every three months, monthly adjustments made in key areas to drive improvement.
- **Summary and Treatment Phase:** Clinical nurses submit self-assessment reports during shift changes. Outcomes analyzed by nurse manager at professional seminar. Performance incentives linked to results of quality assessments. Supervisors present evaluation

findings to governance committee. Immediate feedback enhances measures and recommendations. Management protocols refined based on previous experiences.

### ***Implementation of Kaizen***

The implementation of the Kaizen methodology is paramount for establishing enduring quality enhancement practices and fostering a culture of continuous progress to embed quality improvement within operations. The effectiveness of Kaizen will shape the framework of future ED improvement endeavors. SMART Goals, as outlined by Conzemius et al., are distinguished by their Specific, Measurable, Achievable, Relevant, and Time-bound nature. Specificity clarifies progress clearly, measurability tracks advancement, achievability considers effort, relevance aligns with other objectives, while a deadline instills urgency and direction. Numerous studies in scientific literature concentrate on the application of lean methodology in hospitals, emphasizing outcomes over the utilized approach. Ambiguity regarding context and strategy can result in a trial-and-error implementation process, which is both time-consuming and resource-intensive.

SMART Goals outlined by Conzemius et al. are Specific, Measurable, Achievable, Relevant, and Time-bound. PDCA cycle involves Plan, Design, Check, and Action stages, used in management for quality care. PDCA improves patient care and nursing quality. PDSA testing improves care bundles. FOCUS-PDSA aids healthcare quality improvement by saving time, money, and effort. PDCA cycles with an improvement ramp along a single KE were chosen for structured process improvement.

This research underscores the significance of contextual factors and introduction strategy in facilitating the implementation of lean methodology in hospitals. Detailed methodologies for data preparation, annotation, training, and model evaluation utilizing the "KAIZEN checklist" have been published. Files must be in MS Word only and should be formatted for direct printing, using the CRC MS Word provided. Figures and tables should be embedded and not supplied separately.

### ***General guidelines for Kaizen***

The KAIZEN initiative, which entailed strategizing and executing enhancement strategies guided by process indicators, successfully managed the MDRA epidemic by streamlining infection control and antimicrobial utilization through the implementation of regulations.(15)

The Kaizen model provides detailed guidance for perioperative nurses to achieve process enhancement through a five-step framework encompassing teamwork, personal accountability, boosted morale, quality circles, and recommendations for enhancement.(45) Identifying, training, and mentoring units lacking this foundation can improve their chances of success. Challenges like heavy workloads and inadequate follow-up should be recognized and managed proactively with allocated time and resources for development work.(46)

The Lean and Six Sigma quality improvement methodologies present an opportunity to reduce errors and costs while elevating the quality of radiology services. However, there is an immediate need for rigorous research to fully unleash the potential of these quality improvement strategies in the healthcare and radiology realms. Recommendations for enhancing the quality of research literature are also proposed.

The Lean and Six Sigma quality improvement methodologies offer the opportunity to diminish errors and expenses while enhancing the quality of services. Nevertheless, there is an urgent requirement for conducting rigorous studies to fully unlock the potential of these quality improvement methodologies in the field of healthcare and radiology. Suggestions on enhancing the quality of research literature are put forth. (18)

Setting aside time for frontline healthcare providers to participate in improvement is crucial. Through open dialogues, staff play a key role in advancing projects. Their involvement helps pinpoint reasons for ineffective procedures and optimize performance. Involving frontline staff results in a more effective healthcare system focused on high-quality care.

Implementing Kaizen in healthcare requires collaboration to simplify procedures. Overcoming obstacles involves engaging multiple disciplines and institutions. Dedication to these methodologies can shift culture towards enhanced efficacy.

Effective kaizen implementation in hospitals needs managerial support, tool use, and team cohesion. Managers should encourage opinion exchange, allocate resources, and show benefits to nurses.

Kaizen practices in healthcare involve employees suggesting improvements using templates. Hospital employees proposed solutions to enhance efficiency but lacked dedication to testing them fully. Kaizen engages employees in problem-solving to reduce workplace tensions.

Kaizen uses visual aids to engage employees in problem-solving. Collaboration and interaction with tools like kaizen boards are crucial. Continuous resources are essential for progress. Integrating Kaizen with Agile ensures ongoing improvement.

Innovative reengineering can enhance healthcare. The US govt should promote modernization with Lean, Agile, and human-centered design. Cultural change and leader support are crucial. Combining Kaizen with Agile ensures continuous improvement. Expanding virtual participation in Kaizen events is advisable.

Lean and Six Sigma are suitable for environments with sequential processes. Lean Six Sigma program success is influenced by organizational culture. This insight is valuable for successful implementation.

Lean and its variants can be applied to various aspects of healthcare. Moderation and mediation are crucial in the relationship between Lean methodologies and performance outcomes. Focus on reducing complexity to optimize Lean's impact.

Seven initial hypotheses on Lean's impact on leadership:

1. Aligns goals and objectives
2. Allocates resources
3. Provides tools
4. Changes attitudes and beliefs
5. Requires expertise and dedication
6. Uses data
7. Promotes a 'learning organization' culture

Lean, Six Sigma, and Lean Sigma help address healthcare issues in acute care settings. Effectiveness is hard to determine without thorough evaluation. Further research is needed for lasting improvements.

Quality improvement methodologies assist healthcare facilities in addressing various issues in acute care settings. Effectiveness is hard to determine due to lack of evaluation. Further research is crucial for lasting improvements.

Lean management in healthcare is popular globally. Assessing maturity and monitoring changes is challenging. LHISI tool from CLEAR at UC Berkeley helps by focusing on leadership, commitment, standard work, communication, and daily management system.

Kaizen approach emphasizes continuous improvement and cultural norms. Changes focus on processes and individuals. Gradual alterations, monitoring outcomes, and necessary adjustments ensure enduring enhancements. Cultural considerations lead to efficient execution and sustained success.

Kaizen process improvement strategy reduces waste, standardizes, and empowers staff. A weeklong Kaizen event decreased turnaround time significantly through standardized work procedures, frontline staff involvement, visual management techniques, metric alignment, enhanced satisfaction, and elimination of non-value-added tasks.

## Illustrations

The INEAS-led initiative in Tunisia aimed to foster organizational creativity in healthcare, potentially becoming a blueprint for the 5S-Kaizen-TQM methodology nationwide. The CDC's ACG project aimed to enhance processes involving multiple organizations and disciplines using a modified Kaizen approach. This article delves into the modified Kaizen methodology using the ACG initiative as a case study. CDC initiated the ACG project with a Kaizen event in February 2018, followed by multi-year implementation. The ACG initiative focused on guideline creation, informatics, translation, communication, and evaluation. This article explores modified Kaizen methodology using ACG initiative as a case study. ACG workgroups produced deliverables detailed in a separate publication. ACG aimed to improve a complex process with an adapted Kaizen approach. CDC initiated ACG with a Kaizen event in February 2018. This article focuses on how Kaizen can be applied using ACG initiative as an example. Mexico's healthcare system faces challenges post-2018 government change. Lean Thinking, Six Sigma, and Kaizen are crucial for improving public hospital services



Fig. 1 - (a) first before Kaizen ; (b) second picture after Kaizen

## Discussion:

The Kaizen model provides detailed guidance for perioperative nurses to achieve process enhancement through a five-step framework encompassing teamwork, personal accountability, boosted morale, quality circles, and recommendations for enhancement.(45)

This research explores the sustainability of performance enhancements in Kaizen studies, emphasizing the importance of a supportive work environment and motivation for success. Units should establish a supportive groundwork before launching a Kaizen event to increase the likelihood of

thriving. Identifying, training, and mentoring units lacking this foundation can improve their chances of success. Challenges like heavy workloads and inadequate follow-up should be recognized and managed proactively with allocated time and resources for development work.(46)

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Implementing Kaizen in healthcare requires collaboration to simplify procedures. Overcoming obstacles involves engaging multiple disciplines and institutions. The CDC's ACG program demonstrates success. Dedication to these methodologies can shift culture towards enhanced efficacy.

Lean Kaizen model reduced oncology patients overdue for CT scans without impacting clinic visit duration. Cross-departmental cooperation and surveillance drove enhancements. Positive outcomes will extend this workflow to more clinics.

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