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Process Improvement in Health Care: Kaizen Approach to Lean in Outpatient Services at KCH

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Abstract

Increasing competition among health care systems and pressure from payers, particularly Medicare and Medicaid, to improve the quality of care has led many health providers to begin adopting quality management systems. This case details such efforts in the outpatient services at Kishwaukee Community Hospital (KCH), which recently undertook efforts to implement lean operations by using a kaizen event. We first review kaizen and its relationship to lean operations. We then examine the process of the kaizen event and its outcomes, which included reducing the average patient service time by 5.2 minutes and improving the accuracy of patient identification. We found that a number of factors were critical to achieving these results, including supportive administration and appropriate kaizen team member selection. We also identify and analyze the limitations of using the kaizen event approach to lean operations and challenges remaining at KCH due to these limitations. These challenges specifically include handling process issues related to other departments, the physical design of the building, and software problems.

This case was prepared using interviews with Vice President of Patient Care Services & Chief Nursing Officer Pamela Duffy and phlebotomy supervisor Angela Guarino. Additionally, the case uses presentation materials and documents supplied by Kishwaukee Community Hospital. I would like to sincerely thank Pamela, Angela and KCH for their involvement with this paper. I would also like to thank Director of Marketing & Public Relations Sharon Emanuelson for her assistance in getting approval for the public release of the information in this case. Finally, I would like to thank NIU students Paula Bartel, Brian Lamb, Travis Mighell, and Ivan Polidario for their assistance in preparing this case.

Introduction

Kishwaukee Community Hospital (KCH) is a private, not-for-profit, 119 bed community hospital that provides medical services to a population of more than 130,000 people living in DeKalb County, Illinois and other nearby areas (“About Kish”; 2010 U.S. Census). KCH is the largest member of the KishHealth System, whose mission is to “be the cornerstone of health care for the communities we serve - the first choice for service, comfort and safety. As a community-owned health system, the Kish family unselfishly commits to excellence, education and innovation” (“About Kish”). The distinction of being a first choice provider is an important one, as KCH is located in close proximity to a number of large Chicago-based health care systems. This requires KCH to provide high-quality care without over-extending itself in terms of providing highly-specialized/advanced care that is better suited to the academic medical centers in Chicago. This issue, among others, has resulted in KishHealth and KCH offering a large number of outpatient services, which account for 68% percent of the health system’s FY09 revenue (“Patient Care and Beyond”).

The number of outpatient visits to KCH is indicative of the way the hospital is utilized by its patients and creates a rationale for KCH’s choices to provide a broad array of outpatient services and to focus on efficiency and quality of those services. KCH outpatient services include laboratory, ultrasound, bone density, physical therapy, massage, nutrition counseling, and cosmetic procedures (“About Kish”). Outpatients may have been referred from both inside the hospital and from outside clinics and the services required by a particular patient often cross between different departments in outpatient services. In light of the sizable daily demand and complexity of scheduling and providing care for the patients, KCH has adopted lean and kaizen techniques to improve resource efficiency and patient satisfaction in outpatient services.

Organizational reviews that occurred within the process of lean implementation at the hospital uncovered opportunities for quality improvements in outpatient services. Specifically, organizational leadership felt that the time that patients spent in outpatient services could be reduced and that fewer mistakes could be made in patient identification. As a result, hospital leadership decided to hold a kaizen event for outpatient services.

History and Evolution of Kaizen

The kaizen concept originated around the time of World War II as the Japanese (most specifically Toyota) sought to develop a management system that would continuously improve all aspects of quality from the supplier to the customer (Heizer and Render 199-200; “Creating Everyday Excellence”). This means that kaizen aims to create an “ongoing process of continuous improvement-the setting and achieving of ever-higher goals” (Heizer and Render 199). The original kaizen process included an adaptation of what is known as the Shewhart Cycle, or later, the Deming Cycle (Evans and Lindsay 657). This process includes four general steps: Plan (define the problem and propose solutions), Do (test the effectiveness of the solution), Study (examine the results of the testing), and Act (use the best solution) (Evans and Lindsay 659). Through the continuous and daily implementation of this process, incremental improvement occurs.

Despite its origins as a continuous process improvement system, today’s application of kaizen focuses less on daily implementation and more so on kaizen sessions or events. As Alukal and Manos explain:

“The common use of the term [kaizen] in the United States means breakthrough improvement, implemented as a project or event. Unlike incremental improvements, breakthrough improvements

usually have a beginning and an end. A few years ago, the term kaizen blitz (meaning substantial improvements in a flash, and service marked by the Association for Manufacturing Excellence) was popular. In Japanese, the term *kaikaku* is more commonly used for what we understand as a kaizen blitz or event. Nowadays people refer to such lean breakthrough improvements more and more as kaizen events or just as kaizens. Kaizens pave our lean journey”. (10-11)

An important implication of this description is that kaizen as an ongoing process is now commonly referred to and implemented within a related framework known as lean. Alukal and Manos cite the Manufacturing Extension Partnership of the National Institute of Standards and Technology in defining lean as “a systematic approach in identifying and eliminating waste (non-value-added activities) through continuous improvement at the pull of the customer in the pursuit of perfection”(Alukal and Manos 2-3). This means that lean organizations focus on continually improving processes to more efficiently deliver exactly what the customer wants at the desired level of quality. The kaizen legacy lies in the fact that it provided the philosophical underpinnings and some of the basic tools for the lean framework. Kaizen tools and principles are still implemented on both an ongoing and project/event basis, although both implementations generally occur during the process of moving toward becoming a lean organization. Finally, kaizen principles help establish the culture required for the use of lean tools and concepts (Murthy).

Kaizen/Lean Implementation at KCH

The outpatient services kaizen event brought together a supervisor and director from each department within outpatient services for five work days. One outside consultant and several directors previously trained by consultants from General Electric ran the event.

After learning the components of lean and kaizen, the team established the current state of the outpatient services process by performing walkthroughs and value stream mapping. In examining the current state of the process, the team was able to identify places where non-value-added steps occurred. This process elucidated the issues leading to delays in the outpatient service process listed in Table 1.

Table 1: Causes of Waste in the Outpatient Service Process

- Duplicative Documentation
- No Pull (The next department in the process did not immediately expect the patient, resulting in waiting)
- Looking for paperwork
- Using paper as crutch- then becomes waste
- Lack of standardized work
- Missing information
- Handoffs absent or not effective
- Members of the team “in silos”
- Tracking board not utilized as designed

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Using the identified problems, the team defined the future state of the process and developed ideas for improving the process. The team selected the best solutions and then began a process called “try-storming” in which possible solutions were tested for effectiveness based on specific metrics. This strategy allowed the team to address the kaizen 5S framework.

Table 2: Addressing Causes of Waste in the Outpatient Service Process via the 5S Framework

- **Sort:** Eliminated unnecessary paperwork
- **Set in order:** Converted paperwork to electronic format in order to make it immediately accessible at the worker’s station (Previously, registration staff had to walk to a central location to pick-up files pertaining to patients)
- **Standardize:**
 1. Created a defined patient identification process to eliminate mistakes
 2. Utilized a patient tracking board to allow notification of the patient’s location in the process, thereby allowing the next department to expect the patient’s arrival (pull system). For example, once a phlebotomy patient has completed registration, the phlebotomy department is automatically notified. The phlebotomist no longer has to guess as to when the patient will be ready and may begin care as soon as possible.
- **Sustain:** Developed metrics for determining the effectiveness of changes and plans for monitoring adherence to the program

OP Flow Kaizen Report. PowerPoint presentation. Kishwaukee Community Hospital. DeKalb, IL. 3 Sept 2010. and Guarino, Angela. Personal interview. 24 Mar. 2011.

Having identified effective solutions, the remainder of the event focused on implementing the solutions and validating the results.

Outcomes

Application of kaizen and lean principles yielded significant results:

Table 3: Outcomes of Kaizen Event		
Problem	Actions Taken	Results
Communication regarding where patient is in flow (Push system)	Tracking Board to create pull system	Increased tracking board utilization by 24 percentage points (52% to 76%)
Patient ID process had substantial opportunity for error	Create standard work	Standardized processes reduced the opportunity for error. Accurate process went from 52% to 83%.
Paper work is duplicative to electronically available information	Reduce/remove paperwork that is duplicative	Demonstrated that 7 out of 8 patients didn’t require the paperwork generated.
Paper work is missing, spending time looking for information that is available electronically	Use electronic means to obtain /verify information	Calculated that removed steps represented a savings of 6 hours of work per day

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The sum of these improvements was a reduction in average process time by 5.2 minutes, which equates an added capacity of 20 patients per day. Members of the kaizen team ensure that

these results continue by conducting regular process audits in which the team follows ten patients through the process. This not only monitors the extent to which the new processes are followed, but also helps the team identify additional ways to improve the process. Team members also meet on a weekly or bi-weekly basis to review the outcomes of the audits and discuss further improvements. These meetings and audits collectively represent the continuous improvement component of process improvement in outpatient services.

Defining Kaizen from an Implementation Perspective

As was seen in the kaizen review section of this paper, drawing a distinction between lean and kaizen is difficult. Some of the literature describes lean as a philosophy and a set of tools, while other sources describe kaizen as the philosophy that guides organizations as they implement the principles of lean. In the face of this ambiguity, the outpatient services case suggests a possible delineation between the two.

It is clear that kaizen is used as an event by numerous consultancies, including those like GE Healthcare, which worked with Kishwaukee Community Hospital on the outpatient services event. Using kaizen in this way means that some manner of schedule is associated with a kaizen event. This schedule defines the procedure by which members of the kaizen team use a set of measurements, tools, and activities to generate meaningful change in organizational processes and to establish plans for further improvement. During the outpatient kaizen event, these items were largely aimed at reducing waste in the outpatient services process, which is a main focus of lean. Furthermore, the tools used to eliminate waste were predominantly those that are increasingly being assigned to the lean philosophy.

This suggests that, despite its origin as both the tools and philosophy for continuous improvement, **kaizen could be defined as an implementation plan for the tools and principles of lean.**

A kaizen event provides a structured way to accomplish the following:

1. Bring together a team of employees to improve a process
2. Educate the team members in the philosophies and tools of process improvement
3. Study the process and identify places for improvement, including places to standardize the work
4. Create and test solutions to identified problems
5. Develop plans for implementing effective solutions, validating results of the solutions, and making subsequent improvements on an ongoing basis

The steps of the general outline of a kaizen plan listed above use tools, frameworks, and strategies from lean and other related process improvement systems, such as just-in-time production. The selection and purpose of the tools used are based in the original principles of kaizen. For example, using a process map to eliminate movement waste (lean) would fall under the original kaizen principles of sorting and standardizing. Finally, a kaizen event plan includes a component for ongoing evaluation of the process, which holds to the original definition of kaizen as a continuous improvement philosophy. In this way, the original kaizen principles guide organizations in creating a continuous process improvement plan.

Organizational Change and the Role of Administration in Kaizen and Lean

The outpatient services kaizen event demonstrated the importance of “ownership” of process improvement at all levels of the organization. At Kishwaukee Community Hospital, quality improvement began with senior leadership training in the methods and philosophies of lean and kaizen. This not only allowed the hospital administration to understand the value of process improvement in improving health care quality, but it also allowed these individuals to take a direct role in implementing lean and kaizen throughout the organization. This saved costs

by reducing the need for consultants to provide additional training and it provided a way for other employees to work directly with their supervisors to improve the processes. This provided a number of benefits, including:

- Team members responsible for running the kaizen event had deeper organizational knowledge than outside consultants, which allowed for enhanced interaction with other members based on previous work experience and provided greater familiarity with the processes themselves
- The involvement of organizational leaders legitimized their commitment to the process. Lean and kaizen were not simply delegated to other employees; rather, it was something that was valuable enough for organizational members at every level to be involved in
- Perspectives from all levels of the organization were integrated into the changes made in outpatient services and understanding of the changes were communicated from the kaizen members all the way to executive level leadership

These benefits were considered so significant by phlebotomy supervisor Angela Guarino that she listed administrative involvement as one the critical success factors in kaizen events. Along with this, Angela felt that the people involved in the kaizen need to be open-minded, flexible, and open to criticism.

Limitations on Implementing Kaizen and Lean

As highlighted earlier, the outpatient services kaizen event produced some significant improvements in the service process. Angela felt that the kaizen event and the tools it used provided an excellent way to identify problems and create solutions. She also explained that the interdepartmental make-up of the kaizen team helped employees to understand how their departments interact with other departments. Finally, she felt that kaizen's employee

involvement aspect improved acceptance of the changes because it helped employees understand that lean was about improving efficiency rather than staff reductions, as is commonly assumed.

However, Angela also explained that solutions to process problems faced limitations of both departmental scope and physical constraints. For example, if a process delay was caused by another part of the organization, such as the emergency department, the team was limited in what it could do to address the problem. Furthermore, if an idea for improving the process involved expensive changes to the physical layout of the hospital or if it involved substantial changes to software systems or equipment, it was difficult to do much more than make a recommendation that the option be further considered. For example, it would require substantial resources and planning to alter the physical space/layout for outpatient services and a kaizen event is not suitable for implementing a change of this type.

Angela also described certain problems with the software that the hospital uses for patient records that would require extensive revision in order to fix. One example of such a problem is that recurring patients are issued numbers that change monthly, but patient information from prior visits is not always transferred to the new number. Again, such a problem can be identified by a kaizen event, but designing and implementing a solution to the problem must generally be a separate project.

One final limitation of lean and kaizen in the context of health care is that any process improvement idea must fit with the requirements and procedures of both health care regulatory bodies and paying organizations, such as private insurers and Medicare. For example, a kaizen team may determine that a nurse could safely and effectively perform a procedure that is normally performed by a physician. However, having the nurse perform the procedure may be illegal because it lies outside of the nurse's defined professional scope. Additionally, a paying

organization may not agree that the nurse can or should perform the procedure and therefore might withhold payment for the service unless it is performed by a physician. Ultimately, this adds another limitation on what changes may be implemented during a kaizen event.

Conclusion: Learning from the Outpatient Services Example

This case demonstrates how kaizen has evolved into a quality planning approach that utilizes the tools of lean to significantly improve service organizations. This is remarkable given its origins as a manufacturing management philosophy. It also provides further evidence for the importance of employee empowerment and provides an excellent example of how an organization can create a culture of continuous improvement and quality from the executive level to the front-line level. Finally, we believe that this case provides additional evidence that demonstrates the appropriateness of process improvement in the health care industry.

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