CONCORDANCE™
HEALTHCARE SOLUTIONS

Using **Lean** and
Six Sigma to Reduce
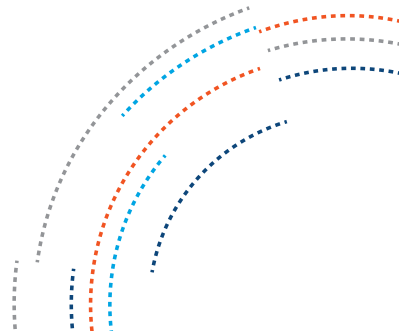Waste in Your Community
Health Center

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Introduction:
Benefits of Lean and Six Sigma

The adoption of lean manufacturing processes in the automotive industry revolutionized vehicle production leading to lower costs, improved quality and an ability to respond quickly to changes in demand.

Although initial focus was on improving manufacturing systems, it became apparent these techniques were equally effective in reducing costs and improving efficiencies in virtually every industry.

As Community Health Centers seek to find ways of reducing costs, these concepts offer the promise of greater efficiencies, fewer errors and lower expenses.

The success of lean and Six Sigma in the service industry and specifically within healthcare has been illustrated in several case studies:

Service Industry

Wipro, a global IT company, launched a lean initiative in 2004 and, of 10 projects chosen, eight achieved efficiency improvements that exceeded 10 percent. By the end of 2006, the company had racked up over 600 successful lean projects. Similarly, in 2006, a British council in the West Midlands, over a period of 18 months, saved nearly $3 million expenditure after adopting lean strategies.

Healthcare

In 2001, Heritage Valley Health System, a community-based healthcare facility caring for 300,000 local residents, used lean principles to identify inefficient usage of operating facilities as well as incorrect patient classifications, and they increased revenue by more than $1 million. Other examples include the Bay Medical Center in Florida that saved $2.04 million with Six Sigma projects and the Health Insurance Plan of New York that achieved $19 million in savings over a 20-month period.

Definitions of Lean and Six Sigma

Although the term "lean management" may be applied to all forms of lean activity including 5S, Kaizen and Six Sigma, there is a natural hierarchy that places techniques like 5S and Kaizen below more advanced practices such as Six Sigma.

These terms can be defined as follows:

Lean Management

The primary concepts behind lean are the reduction of waste, optimizing productivity and a process of continuous improvement. Lean includes the use of 5S methods, which can be summarized as:

- Sort (seiri)
- Set in Order (seiton)
- Shine (seiso)
- Standardize (seiketsu)
- Sustain (shitsuke)

It also covers what is known as Kaizen, which is best translated as continuous improvement processes involving groups of employees working together. Kaizen activities generally follow a process of

- Planning
- Doing
- Checking
- Acting

Six Sigma

Six Sigma was originally developed by Motorola and uses statistical analysis to standardize a process to achieve extremely low error rates. The goal of Six Sigma is to achieve fewer than 3.4 errors in a million operations. Implementation of Six Sigma requires a level of professional training to understand the methodology and utilizes champions known as Black Belts. A common approach used in Six Sigma is DMAIC, which means to

- Define
- Measure
- Analyze
- Improve
- Control

Seven Wastes

Waste is any activity that directly or indirectly results in loss. In the healthcare profession, the seven wastes embrace:

- **Transport:** This relates to unnecessary and unproductive movement of patients, medical equipment and supplies. All movement takes time and effort, reducing the availability of staff to perform more productive work.
- **Inventory:** While certain levels of inventory are necessary to allow healthcare workers to perform their duties, excess inventory wastes financial resources, increases storage space and increases the risk of having to dispose of expired medical stock.
- **Motion:** Needless motion wastes time and energy. Examples include having to walk from a workstation to collect documentation, materials or equipment, as well as poor ergonomics that entail excessive physical effort. Excess motion means tasks take longer.
- **Waiting:** Waiting time represents lost opportunities, not only to health center staff, but also to patients. This includes time lost waiting for delivery of supplies, reports, treatments and medications from a dispensary.
- **Over-processing:** The concept of over-processing is that of doing more than is needed. From a health center perspective, this could include ordering unnecessary tests or expensive procedures that are not clinically indicated, especially when cheaper solutions are as effective.
- **Over-production:** While similar to over-processing, over-production differs in that it refers to ordering or producing more supplies than are necessary or prescribing a higher dosage of medications than required.
- **Defects:** From a medical perspective, defects include any adverse reaction arising from a course of treatment or procedure. These may include infections, allergic reactions as well as errors occurring during surgical and medical procedures that have to be rectified. The term applies equally to errors that occur in administrative work, such as entering incorrect patient information, ordering the wrong supplies or other administrative errors.

Implementation of Lean Initiatives

Implementation of a lean initiative entails careful preparation and requires the full commitment of top management. Lean processes change the way organizations function, and requires strong administrative support towards achieving lean objectives.

As with most new initiatives employees need to be brought on board: their active participation is vital to the success of lean. It's best to start small and use initial successes to promote the program. Once the lean journey starts, it should never end but follow the progression of continuous improvement (Kaizen) as espoused by the Toyota Production System.

Four important elements of every **successful** lean initiative include:

Champions

It's imperative to appoint a lean champion to lead and guide the lean initiative.

Ideally, the champion should have experience in leading lean initiatives but it's also possible to use external lean consultants whose primary task is to train an internal champion. The appointment of a champion helps internalize and sustain lean processes. Over time, and depending upon the size of the organization, other lean champions may be appointed to expand lean initiatives.

Structure

An ideal approach is to set up small internal work teams who meet on a regular basis to discuss lean ideas and drive changes.

It helps to have a specific place to meet that is in, or close to, their work area as possible. Teams should use visual boards to track ideas and monitor progress. Each team should be given as much latitude as possible to implement their ideas. Kaizen events help to focus energies and are a very effective way of introducing improvements quickly.

Training

It's important that participants receive some level of formal and informal training, especially when attempting to use techniques like 5S for organizing workplaces and Kaizen.

A great deal can be achieved through small teams using these techniques. The introduction of Six Sigma should be preceded by formal training that equips team members in Six Sigma techniques.

Data

Data is the key to success in using lean to reduce waste.

Its essential metrics are available to provide teams with information that allows them to measure where they are and evaluate progress towards their targets. For example, if the goal is to reduce the cost of looking after patients, then it must be possible to measure the patient cost per day at the level the team is operating. A crucial aspect of effective lean initiatives is access to meaningful data and also the ability to set up systems to measure the progress of individual teams and activities.

Concordance Healthcare Solutions Tools

As indicated above, the first and most important step in setting up a lean initiative is measurement. Without effective measurements, it's impossible to correlate the success or otherwise of changes designed to reduce waste.

Among other criteria, systems of measurement in community health centers need to be able to establish labor costs, numbers of patients treated, the cost of medical supplies and total revenue at a departmental and sectional level. Also, it should be possible to obtain ad hoc reports and preferably to be able to update progress on a daily basis. In this way, teams can readily monitor the effectiveness of their efforts to reduce waste.

Concordance Healthcare Solutions provides web-based reporting software packages that offer an ideal solution for community health centers. These include uCommand®, a supply chain management solution, and BeCompliant™, an inventory control reporting solution.

uCommand®

uCommand® is an affordable, easily implemented web-based order processing and tracking solution. Orders can be placed from anywhere using local workstations or mobile devices, and there's a built-in management approval system. The system can be used with multiple suppliers and uCommand interfaces with third-party billing systems. uCommand's inventory management function monitors overall inventory as well as local supply closet inventories. Its order history retention features allow users to track costs and compare trends. Supply costs can be tracked down to patient level, and it's possible to calculate patient per day costs.

BeCompliant™

BeCompliant™ takes reporting to the next level. Using BeCompliant, health centers can set budgets and monitor expenditure at a departmental and facility level. Customized reporting allows users to configure special reports and track expenditure. By using its flexible reporting facilities, costs can be tracked at item level and patient per day costs tracked over user-selectable periods.

Key Takeaways and Conclusion

As healthcare costs continue to escalate, community health centers are faced with an urgent need to reduce costs and increase efficiencies. At the same time, it's imperative that healthcare standards are maintained.

The solution lies in identifying and eliminating waste by implementing lean initiatives that are managed and controlled by the healthcare staff themselves. As an example, the recovery of the U.S. automotive industry was largely due to implementing lean manufacturing initiatives that lowered costs and increased productivity. Similarly, medical centers that have embraced lean management have demonstrated substantial cost savings.

As top management commits themselves wholeheartedly to a process of continuous improvement that identifies and eliminates waste, community health centers can achieve the triple aim of:

- **reducing costs**

- **improving patient care**

- **enhancing the patient experience**

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