



## Eliminating Waste in Healthcare Supply Chains



# Implementing LEAN to improve your supply chain

*As pressure rises in the healthcare industry to reduce costs and improve quality, multiple methods have been proposed to address performance improvement. One of the first areas that should be looked at is the supply chain, in particular because it is the second largest cost driver for healthcare firms after labor.<sup>1</sup>*

*Healthcare systems and medical suppliers are searching for ways to eliminate waste in their supply chain with the goal of cutting costs and improving patient outcomes. They need to, and want to, transform their supply chains.*

The key to delivering customer value and outstanding business performance, year after year, is to implement a LEAN culture. In a LEAN culture, every step in every process must add value for the patient. If it doesn't add value, it is eliminated.

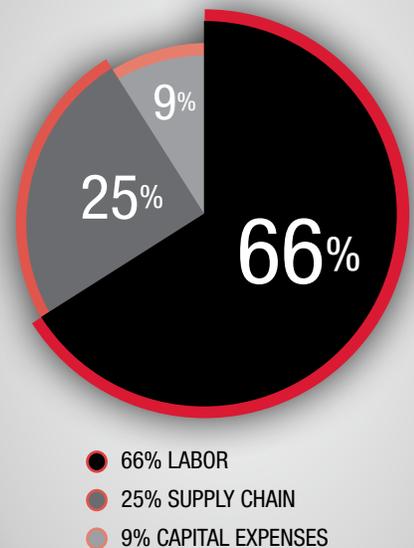
Businesses that cultivate a LEAN culture, report significant improvements in their operations. Examples in the healthcare sector include:

- H. Lee Moffitt Cancer Center and Research Institute increased procedural volume by 12% which adds nearly \$8 million annually in incremental margin.<sup>2</sup>
- St. Vincent Indianapolis Hospital made a 78% cut in the number of steps emergency department nurses take to get supplies.<sup>3</sup>

- Mercy Medical Center decreased in-hospital mortality rates from 6.7% to 3.5%, a 47.8% reduction.<sup>4</sup>
- When an electro-mechanical medical equipment manufacturer set aggressive inventory reduction goals, LEAN practices such as cellular manufacturing and Kanban controls resulted in cutting lead times from 8 weeks to 5 days and reduced inventory by \$1.7 million.<sup>5</sup>

LEAN had its start in manufacturing after World War II at the Toyota Motor Company. Today, companies across a wide range of industries use LEAN in their finance departments, customer service centers, supply chain operations, research and development organizations and many other areas. LEAN thinking also has made an impact on the public and not-for-profit sectors.

## TOP COST DRIVERS FOR HEALTHCARE



Source: [www.industryweek.com](http://www.industryweek.com)

“IF IT DOESN'T ADD VALUE, IT IS ELIMINATED.”

<sup>1</sup>[www.industryweek.com](http://www.industryweek.com), <sup>2</sup>*Tampa Bay Business Journal*, <sup>3</sup>*USA Today*, <sup>4</sup>*Medical News Today*, <sup>5</sup>[www.tpslean.com](http://www.tpslean.com)

“LEAN PRACTICES  
IMPROVE QUALITY  
AND PRODUCTIVITY  
BY TAKING COST  
AND WASTE OUT OF  
ALL FACETS OF AN  
OPERATION.”



There are seven kinds of waste that can weaken your healthcare supply chain:

- 1. Overproduction:** manufacturing items before they are required
- 2. Waiting:** leaving goods in stasis before they're ready for the next process
- 3. Transporting:** excessive movement and handling to get goods from one process to the next
- 4. Inappropriate processing:** using equipment that's more sophisticated and expensive than needed
- 5. Unnecessary inventory:** holding goods that are not flowing through any process
- 6. Unnecessary or excess motion:** allowing bending, stretching, walking, etc. that is not strictly needed to do the job and can jeopardize workers' health and safety
- 7. Defects:** allowing quality deficiencies that result in rework or scrap

To combat waste, a LEAN organization embraces the concept of Kaizen, or continuous improvement. Rather than implement ambitious programs to accomplish sweeping reforms, a

LEAN operation makes incremental improvements daily. These small changes add up to produce significant gains in both quality and operating performance.

This white paper speaks to five LEAN principles, providing insights as to how their implementations will eliminate waste in healthcare supply chains.

They are:

- 1. People Involvement:** engaging every employee to root out waste, eliminate problems and make improvements
- 2. Built-in Quality:** striving to prevent mistakes before they happen, never passing on a defect and engineering processes to make them “mistake proof”
- 3. Standardization:** documenting best practices and making sure that they are followed
- 4. Short Lead Time:** filling customer orders as promptly as possible
- 5. Continuous Improvement:** understanding that no matter how well a process works, there is room to make it even better

# 1. People Involvement: The key to success

**P**eople involvement is the most important of the five LEAN guiding principles. Nothing happens in a company without people to drive it forward. Employees must work as a single team, with everyone – from the CEO to the newest hire on the loading dock – pulling in the same direction. In a LEAN supply chain, people are the key component to eliminate waste, reduce cost and provide more value for customers.

When people are involved in a LEAN culture, it creates an atmosphere of mutual trust and respect. First, you have to cultivate an environment that's free of fear. People must know they're valuable assets whose ideas are vital to the company's success and that they're welcome to point out problems and make suggestions for eliminating waste.

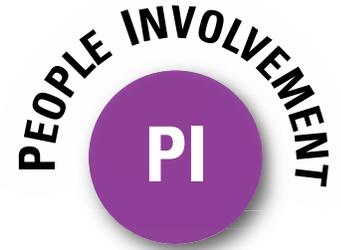
For example, if a forklift driver suggests a better route for moving supplies from point A to point B, and the new route makes the driver five percent more productive, the company should celebrate that success. If the new route makes no real difference, the supervisor should praise the effort and urge the driver to use lessons gained in the experiment to try to find a better solution.

Supervisors also encourage employees to work in teams to solve problems and find more efficient ways to perform their jobs. In addition, supervisors make sure their teams understand how their work contributes to the company's success.

At the beginning of each shift, employees meet briefly to share information and news. Warehouse workers might learn how many orders they'll be picking that day, what time various orders need to be loaded, which orders are especially critical and how well the company is doing on its key performance indicators (KPIs).

While the ultimate goal in a LEAN culture is to increase value for patients, it's only natural for an employee to ask, "What's in it for me?" Celebrating success is the way to motivate members of your LEAN team to keep doing their best. Simply thanking an employee for a great suggestion, especially in front of others, can be extremely effective. So can material rewards. You might present cash or gift cards to employees whose suggestions boost performance or save money. You might pay by the piece instead of by the hour, so a team that discovers more efficient ways to work has a chance to earn more money.

Sometimes visible tokens of success provide strong motivation. In one such program, every time an employee makes a successful suggestion, they receive a pin for their safety vest. This tactic allows them to proudly recount to others how they earned each one.



“NOTHING HAPPENS IN A COMPANY WITHOUT PEOPLE TO DRIVE IT FORWARD.”

## EXAMPLES OF REWARDING EMPLOYEES

CELEBRATE  
SUCCESS

RECOGNITION  
IN FRONT OF  
OTHERS

PAY BY THE  
PIECE, NOT BY  
THE HOUR

FINANCIAL  
REWARDS FOR  
BEST IDEAS



## 2. Built-in Quality: Get it right the first time

“THE WAY TO ENSURE QUALITY IS TO PERFORM WORK CORRECTLY THE FIRST TIME. THAT MEANS BUILDING QUALITY INTO EVERY PROCESS.”

High quality in the production and distribution of products improves your bottom line. If employees always know where to find the product they need, goods flow smoothly from point A to point B. Orders can be filled correctly, completely and on-time, satisfying customer demand and saving time because there’s no need to correct mistakes. More importantly, your efficiency often allows you to take advantage of lower-cost transportation options. The way to ensure quality is to perform work correctly the first time. That means building quality into every process.

A company should engineer its supply chain processes with its workers in mind. Any worker should be able to perform processes perfectly to meet the requirements of customers and other stakeholders, such as regulatory agencies. Once the engineering team designs a process, they conduct a Failure Mode and Effects Analysis (FMEA)—a trial run in which someone tries to “break” the process. By locating weak points, the engineers are able to bring the process even closer to perfection.

Next, the team decides which metrics it will use to determine whether the process is meeting its requirements. Then it documents the standards, describes the process in text and also creates simple how-to instructions to illustrate each step for employees.

Even the most carefully-crafted processes, and the most reliable in-process controls, won’t eliminate errors completely. When a mistake slips past the safeguards, you need to dig down to get to the root of the problem. The goal is to mistake-proof the

process by ensuring that the error never has a chance to recur.

Consider an example of a truckload of disposable gloves arriving at a warehouse unexpectedly. The warehouse doesn’t have enough room for all the extra inventory, so the excess inventory is placed in an aisle where it obstructs workers trying to fulfill orders for other, adjacent items in the aisle. The gloves are moved several times in order to reach adjacent items, causing waste and contributing to lower productivity rates.

Using the “5 Why” LEAN tool, the workers investigate what happened:

**Why #1:** Why did the disposable gloves move so many times? It was placed in the middle of the aisle.

**Why #2:** Why was it placed in the middle of the aisle? The shelving location where it belonged was full and there was no additional space to put it.

**Why #3:** Why was the shelving location full? Because there was an oversupply of disposable gloves beyond what the bin space allocated.

**Why #4:** Why was there an oversupply? A full truckload of gloves arrived unexpected yesterday.

**Why #5:** Why did a full truckload of gloves arrive unexpectedly? A person in sourcing got a highly discounted price and decided to order excess, not knowing we didn’t have space for it in the warehouse.

A meeting with the sourcing person later established a process for notifying the warehouse in advance of a special promotion, and getting their approval that there would be enough space available on the warehouse shelves for excess, prior to ordering.

# 3. Standardization: The best way is the only way

In a LEAN facility, everyone is trained and expected to follow the documented best practices. The company documents these tasks and trains the employees who perform them to follow best practices. No matter who executes a process, the steps they follow should be the same.

Standardization offers several advantages. It allows you to easily calculate how much time and how many resources you need to complete your work. When work is standardized, every employee is your best and fastest employee. Estimating what it takes to meet any requirement becomes a matter of simple computation.

Also, standardization provides the foundation for continuous improvement. Consider an employee named John who suggests a better way identify items in a hospital store room. The new technique speeds the picking process by eight minutes. If every other employee uses their own techniques to get the supplies, John's suggestion will improve only John's work. But if everyone follows a standard procedure, the hospital will save eight minutes every time a new patient is admitted. Standardization multiplies improvements and also makes them easier to sustain.

Standardization involves five elements:

- **Visual management:** Signs, symbols, color codes and other visual tools make a facility "talk" to the people who work there. They keep people informed about how to do their work, how work is progressing, where tools are located and other conditions important to the task at hand.

- **Layered audits:** A layered audit ensures that employees perform their work according to the established standard. The key to a layered audit is to perform it while the work is in progress, not after the work is complete, to allow for immediate corrections. Layered audits occur on a regular schedule, using standard work documents.
- **Management by customer demand:** A LEAN operation doesn't grow more productive by pushing people to work harder. Instead, it tailors its resources and sets a steady pace to produce exactly what is needed each day.
- **Standard work:** This is a written description of the only acceptable way to perform a particular task. Although the company expects to make continual improvements on this method, the procedure in the document is the safest, best and most efficient way currently known to do the task. The description includes the time it should take to perform the task.
- **Workplace organization:** Just as there is one acceptable method for performing a task, there should be one standard method for organizing the materials and tools in a work space. The goal is not simply to achieve neatness, although that is a desirable side benefit. The real goal is to create flow—to ensure that work proceeds as efficiently as possible.

The principle of standardization maintains that in a LEAN operation, all work follows established, well-tested procedures. Management provides clear instructions for performing every task and creates schedules and physical facilities that help work flow smoothly.



“STANDARDIZATION PROVIDES THE FOUNDATION FOR CONTINUOUS IMPROVEMENT.”



## 4. Short Lead Time: Keep it moving

“A LEAN ORGANIZATION DESIGNS ITS OPERATIONS TO KEEP WORK FLOWING WITHOUT IMPEDIMENT OR WASTE.”

Lead time is the period that elapses from the moment a customer places an order until that customer receives the goods – the shorter the period, the LEANer the supply chain. When lead time is short, companies don’t tie up cash in safety stock or build extra days into production or distribution cycles. Instead, they rely on a steady flow of inventory to arrive exactly when it’s needed and they can plan their business processes accordingly.

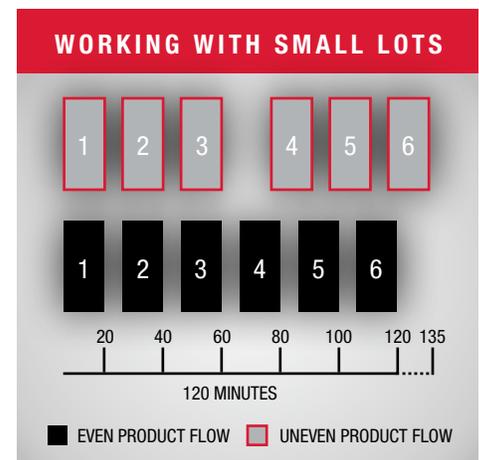
A LEAN organization reduces lead time by streamlining its work as much as possible and eliminates steps that don’t add value because they know that minutes shaved off here and there eventually add up to significant savings. A LEAN organization designs its facilities to keep work flowing without impediment or waste.

Think of it like driving a car. When on a rocky road, you can only drive so fast trying to get through obstacles without compromising safety. When on a smooth road, the speed is faster and safer. Work in a LEAN operation is similar to driving on a smooth road.

To achieve that smooth road and build a simple process, a business must start with facility design. The design of a warehouse should allow material to move from point A to point B with as little handling as possible. For example, a fast moving product is stored on the floor, so pickers don’t spend time retrieving it from slots on higher levels. That high-demand product

is also positioned close to the loading docks, so workers only need to travel short distances to get it out the door.

Also, breaking big jobs into smaller units helps employees to work more efficiently. Consider an employee who is assigned a picking job that is expected to take two hours. The picking might move quickly for the first hour and then slows down as the employee’s mind wanders. No one keeps track of the pace or quality of the work. The job ends up taking two hours and 15 minutes.



Now consider what happens when you break that two hour job into smaller lots. The team leader asks the employee to bring a specific amount of product to the loading dock every 20 minutes and indicates on a white board each time a task is complete. Now, the employee is responsible for meeting a goal three times in 60 minutes. The employee meets that goal six times and the job takes exactly 120 minutes – eliminating 15 minutes worth of waste.

## 5. Continuous Improvement: Step-by-step

Every day in a LEAN operation, each employee looks for ways to remove waste and improve quality. That ongoing stream of small gains is called continuous improvement.

Continuous improvement is based on the idea that it is more effective to make many small gains over time than to try to accomplish massive gains all at once. Not everyone can climb Mount Everest, but nearly anyone can take a single step up a mountain trail. In the same way, anyone can learn to shave one minute from the time it takes to unload a trailer, or to walk from aisle 3 to aisle 12 in a warehouse. Continue to make those small improvements, and eventually you will scale the mountain.

Problem solving for continuous improvement is a structured practice for identifying a problem, analyzing its root causes and implementing solutions to resolve the problem in order to keep it from occurring again.

LEAN philosophy offers many tools for eliminating problems. One is the problem solving jacket – a booklet that outlines a series of steps required to identify and eliminate a problem and sustain the solution. Another is the “fishbone,” a diagram that examines causes and effects. Yet another is the A3 process, a discipline that keeps the discussion of a problem clear and simple enough to diagram it on a single sheet of paper.

A company can apply any of these tools toward the same goal— defining the root causes of a problem. The crucial part of this exercise is to state the cause simply; focusing precisely on the process that is creating waste.



The continuous improvement process is woven deeply into the culture of a LEAN operation. Every employee is trained to identify and root out waste, and devoted to sustaining previous improvements. Employees are ambitious in their efforts to improve performance in order to support customers’ needs and help maintain their own job security. They are always suggesting innovative ideas, and even if an idea doesn’t work, they are encouraged to keep exploring new ways.



“IT IS MORE EFFECTIVE TO MAKE MANY SMALL GAINS OVER TIME THAN TO TRY TO ACCOMPLISH MASSIVE GAINS ALL AT ONCE.”



### Conclusion

In the healthcare supply chain, a LEAN culture offers tremendous rewards, but pursuing a LEAN strategy also requires a significant commitment. Luckily, the right partner can offer deep expertise on how to deploy a LEAN strategy to transform your healthcare supply chain operation with continuous, incremental gains in quality and efficiency, while helping increase positive patient outcomes.

Ryder, which has managed supply chains for Toyota for more than 30 years, as well as numerous other companies, has implemented these five LEAN guiding principles to govern every activity in its own and customers' warehouses. As a result, Ryder has become a leader in LEAN supply chain solutions.

Once again, they are:

1. **People Involvement:** Engaging every employee to root out waste, eliminate problems and make improvements
2. **Built-in Quality:** Striving to prevent mistakes before they happen, and engineering processes to make them “mistake proof”
3. **Standardization:** Documenting best practices and making sure that they are followed
4. **Short Lead Time:** Filling customer orders as promptly as possible
5. **Continuous Improvement:** Understanding that no matter how well a process works today, there is room to make it even better

To learn more about how LEAN can transform your operation, visit [ryder.com/lean](http://ryder.com/lean) or call us at 1-888-887-9337



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