Lean Healthcare

The Official Guide

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Introduction

Attempting to tell you all about Continuous Improvement for your Hospital in this short white paper would be a daunting task. It is possible, however, provide you with a very complete overview of the reasons, tool, techniques, and path to follow to deliver better care to patients every day.

Let me start with a big disclaimer as the author. I would never tell a clinician how to deliver care, let alone better care, to a patient. But if I can help a clinician or nurse get some minutes back because of a quicker and better room turnover, that nurse can spend those minutes taking care of patients. That is where I can help, by helping you get your time back! Faster room turnover can be extended to finding medications for your next med pass, or getting that broken bed out of the hallway, or finding that patient lift or wheelchair (don't get me started on the wheelchairs!). It is all about your limited time that is a precious commodity that needs to be spent wisely on patient care.

How to save time? First, by not doing wasteful tasks and then by making valuable tasks more efficient. Generally speaking, the greatest gains are in waste elimination, not on efficiency improvements. Here are some tools, techniques, and procedures to optimize workflow so you can spend more time doing what you were trained for, caring for patients.

Why to Improve – The Forms of Waste

This topic was organized into nine categories, based on the famous seven wastes of the Toyota Production System adapted for a hospital environment. You need to be familiar with these sources of waste, in order to be able to see them clearly. Following is a short description of each of the nine categories.

Overproduction

This form of waste takes place when you produce more than what is needed right now by the customer. Examples of this waste in a hospital are: Reassembling instrument sets in large batches while the autoclave sits idle. The symptom is "We do not have enough instrument sets." Spiking IV bags in Pre-Surgery for the whole day, while patients wait. The symptom is "Our on-time starts are very low." Here's the Lean rule: any production in excess of your short-term needs can be considered waste. Even if you have a very good reason why you overproduce, this does not change the fact that excessive production is waste. The process needs to be improved to allow the efficient production of smaller quantities, in line with actual needs.

Transportation

You see this form of waste when the patient or another form of value (instrument set) is moved without adding value. Examples of this form of waste are: Blood specimens collected at the oncology unit go on a hospital tour before reaching the lab. IV and DVT pumps go from the patient room to sterile processing and back via utility rooms, to accomplish a few seconds of cleaning. As was the case with over-production, you can't just say "stop doing that" to eliminate this waste. It requires you to ask why in a more forceful way, and to come up with practical alternatives. Remember that the waste exists for a reason, typically related to bad processes.

Motion

This form of waste refers to staff members moving without adding value. This becomes evident in the amount of walking staff members do during their day, looking or "hunting" for something. Why is it that you cannot provide clinicians with the tools and supplies they need to take care of patients? Some examples of motion waste are: Searching for a patient lift, a positioning device, an IV pump or any piece of equipment. The level of frustration staff members feel when they cannot find what they need is enormous. Delay of care can also be dangerous for the patient. Searching for paperwork. If your hospital still requires hand-written paperwork for surgical patients, you may find yourself scrambling for that document while the patient is on the table. This is one of the easiest forms of waste to solve. The application of 7S methods and the abolishment of the par level system for supplies management will get you most of the way there.

Waiting

This is idle time created when supplies, information, people, and equipment are not ready. If you find yourself waiting on any kind of resource, you need to start asking why, and be ready to take action once you get the answer. Just one rule: blaming somebody else is not allowed. Here are some practical examples you can verify for yourself: Take a stroll through the waiting rooms. How many patients do you see waiting? Go to Pre-Surgery. How many patients are ready, but their OR is not? Go to PACU. How many patients are recovered, but there is no room for them to be moved to?

Over-Processing

This is the waste of overdoing. It is so easy to believe you are doing the right thing by overdoing. Think about the times you do this at home: "If three screws will do, five must be better." Here are some more examples from the Hospital: In one perioperative services department, staff was checking case carts four times, due to the unspoken distrust of the prior processes. The par level method, where supplies are counted or eye-balled daily. Modern inventory management techniques and tools provide excellent alternatives to this bankrupt method.

Excess Inventory

When you see more supplies, equipment or paperwork than the customer needs right now, you have excess inventory. The OR is the champion of excess inventory in the hospital. The OR wants to have enough inventory in case the worst happens, and then double that in case the Martians attack. Excess inventory gives staff a false sense of security. When you need something, you then have to wade through piles of stuff to get to what you need. Are you seeing the waste yet? To that, add the increased risk of expired items due to the piles you have to go through. Pick a couple of well-stocked shelves and see if you find any expired supplies. The main culprit is the incredible anachronistic par level system that many hospitals use for supplies management, as we mentioned in the previous waste. It is mind boggling that hospitals still use such an inefficient method to deliver supplies to clinicians. Start by abolishing par. The result of implementing Lean supplies management will be a substantial reduction in inventory dollars coupled with the elimination of shortages. Here's what if often seen in the OR: Topping off of supplies instead of observing the par levels previously established. Eye-balling supplies instead of counting, since counting everything every day is virtually impossible. Overstocking for weekends due to a disconnect between the supplies delivery schedule and OR needs.

Defects

Defects represent work that contains errors, requires rework, has mistakes or lacks something necessary. Nothing proclaims a broken process quite like defective work. The temptation is to start with the old search for accountability and looking for someone to blame. Instead, try looking at the broken process and asking why, or use simple assessment tools like a fishbone diagram. Engage other staff members in

finding solutions. The results will amaze you. A typical hospital example is that of an incomplete instrument set. Your choices are: “Accountability!” or, after you solve the immediate need ask: “Why was the set incomplete?” Could it be that it was sent to SPD from the OR incomplete? Could it be that you need to develop work instructions for each instrument set? Could it be that the instrument was sent to sharpening?

Ineffective Use of Computers

This form of waste refers to time spent at the computer, but not using the available software efficiently. No one questions the fact that the use of computers is a must in a modern hospital. However, when their use detracts from patient care, you must stop and ask why. Take another stroll and go to the Emergency department. Stand in the department and count the number of clinicians in patient rooms versus the number in front of a computer screen. What is the ratio? What should that ratio be? Let’s make it clear that nobody is calling for the Pitchfork-and-Torch Brigade to go after your EMR system. EMR is here to stay and it should. Whether it is in its current form or much improved, it is up to you and hospital leadership recognizing this form of waste.

Human Potential

The waste of human potential is not taking advantage of people’s natural desire to be a part of something good. This is considered the biggest of the wastes, and by engaging staff you will identify and reduce or eliminate all the other forms of waste. This is not about the touchy-feely stuff like “Our staff is our most valuable asset” or “we practice respect for our people.” Show respect for staff by engaging them in working on solutions to the problems that afflict their processes. Check the results. You will be amazed.

Once these nine categories of waste have been understood and discussed by staff, start focusing on each of the wastes, one by one. Start with a critical waste, the waste of defects. As you know, defects in a hospital environment can be life-threatening, and if you have processes that you know are not error-proofed that is a good place to start. With your entire team in attendance, simple go process by process with your quality goggles on, and flag the processes that need attention from a quality perspective. You don’t need to come up with solutions yet, just flag the process.

Another low-hanging fruit opportunity is the waste of waiting. With your team look at the queue time between processes, and flag the instances where there is a clear need for improvement. Again, you don’t need to have answers and solutions yet. Team members with intimate knowledge of the details of the processes can be very helpful in pointing out waste that is not easily seen with the naked eye. For example, we have made it no secret that we consider the par level method highly dysfunctional, but staff members may be able to point out other specific practices that need improvement. If supplies shortages are excessive, i.e. greater than zero, then that will be a target for improvement.

How to Improve – The Tried-and-True Continuous Improvement Tools

First, the Hard Part – The Culture of Continuous Improvement

There is a suite of tools used for the improvement of workflow in the Lean toolbox. The majority of them guide you to focus the improvements on the elimination of waste first and the streamlining of work steps after. Before we talk at all about the tools, there is one aspect of Lean that must be considered, the Culture of Continuous Improvement. I am very lucky to work with the most successful enterprise in the history of business, Toyota. In that role, I get to see what matters most and what is secondary when it comes to the goal of process perfection. The tools, important as they are, take a back seat to Culture. A culture of Continuous Improvement is one where there is a lot of value placed on spending time improving the process. A leadership team that supports, encourages, and rewards process improvement is a must for any hospital that wants to succeed in a Lean endeavor. Improvements do not sustain themselves and without committed leadership and an engaged staff, there is no Lean. When your hospital leadership figures out the culture, that's when life will change.

The Work Itself

5,6,7's – Designing the Perfect Workplace

When we teach this topic at a hospital, we ask a team of staff members to make a list of five items that irritate or bother them during a typical workday. There are always at least two items on the lists that pertain to difficulty in finding something in a room, drawer, or whole department. We once followed a nurse as she looked for a wheelchair to discharge a patient. It took her twenty-two minutes to find it. How much patient care can be delivered in twenty-two minutes? It's amazing how these seemingly small annoyances actually turn into a big deal, because they take time away from patients.

5S is a tool for designing a perfect workspace using the steps of sorting, shining, setting in order, standardizing and sustaining. Add safety and security to the mix and you're using the 7S process. You've probably heard that 5S was about cleaning, and although cleanliness does have a place in 5S, it's not the kind of cleaning you probably have in mind.

For example, let's take a look at a messy garage. How would you go about cleaning it? Would you even know where to start? 7S provides you with everything you need for workplace organization, so let's apply it to the garage example.

Step 1
Here you apply the first S, Sorting. Take everything to the driveway and start making piles. You can expect to have four different piles start to accumulate:

- Pile 1 - The keep pile.
- Pile 2 - The toss pile.
- Pile 3 - The donate pile.
- Pile 4 - The “I’m not sure” or Maybe pile.

Step 2
The second S stands for Shining or Sweep. This is the time to cash in any favors you have coming from family, friends and neighbors, by asking them to help clean the dirt that’s been accumulating for too many years. Now that the garage is temporarily empty, cleaning is now a real possibility.

Step 3
Now it’s time to address the piles so you can complete the third S, Set in Order. Put the Donate pile into bags to be dropped off at your local donation facility, and the Toss pile into bags to be taken to your local trash disposal location. By following some basic ergonomic rules, the Keep pile can be put back into the garage according to use. Yes, this means taking those dumbbells off the top shelf. Lastly, organize the Maybe pile back into the garage in a special dedicated location, for later disposition. Anything that isn’t used in the Maybe pile within a certain amount of time will be donated or thrown away. How are you going to make sure that everything will be put in its proper place? Labeling the shelves is a good idea. Dedicated hooks and baskets with labels are also good ideas. The slogan of the Set in Order step is “A Place for Everything, and Everything in its Place”.

Step 4
The fourth S stands for Safety. You need to make sure that you put items in places that are not going to endanger the safety of anyone who enters the garage. Did you move the dumbbells to a lower shelf? Can anyone hit their head on the bicycle hanging from the ceiling? Is the shelving sturdy? Is anything too close to a light fixture?

Step 5
The fifth S is Security. You need to do another assessment to ensure that the new arrangements are not hindering security of the house. Are there any items stored so that you can’t completely open or shut a window or door? Is there anything that could accidentally fall onto the garage door opener and subsequently open the garage door?

Step 6
The sixth S stands for Standardizing. This consists of making the locations and storage methods a standard procedure. It’s time to figure out how to make everything stay exactly like it is, forever.

Step 7

The seventh S is for Sustaining. Although standardization is helpful in keeping everything in its place, more tools are needed. Sustaining is the most difficult ”s” and requires lots of coaching, encouragement, and reminding until the improved practices become a habit. We need to emphasize that reminding is going to be a large part of successfully sustaining.

Now, let’s take the garage example to that “Clean” Utility room in your floor. Can you treat it just like the dirty garage? Sure you can, and you should. How about the Nurse’s Station? How about the Med Room? Make up a rule with your team as the acid test for 5S success. Here is one I use: Enter a Supply Room and find the 4x4s, or the supply of your choice, blindfolded.

Quick Changeover

This is a method used to improve procedure room utilization and patient room turnover speed and quality. The goal is to improve a changeover’s quality and consistency, which enables higher output.

In every survey we’ve conducted, procedure room turnover is one of the top three issues affecting hospitals. Turnovers are described by staff as too slow, too chaotic, unpredictable, or something else, rarely positive. Hardly ever do we hear, “We turn in fifteen minutes, and the process is as smooth as silk”. The terms Changeover and Turnover are used interchangeably. We’ve had great results when this tool was applied to procedure rooms such as Cath Labs, IR Labs, CT Scan, as well as patient rooms and nursing units.

Quick Changeover Preparation

You know what a changeover is because you live it and suffer through it many times a day. At this stage, setting project boundaries is especially important. For example, since you’ll be assembling a Kaizen team to improve the OR Suite changeovers, and not solving global warming, it’s critical that you stay on task by defining the project with a narrow focus. We recommend starting with the “Wheels Out” work step and finishing with the “Room Ready” work step. Although you can be more extensive in scope, if you’re not experienced in Quick Changeover, then we recommend this more narrow focus.

With the start and end points defined, it’s time to document all the steps that take place between these two points. Use the Standard Work Definition (SWD) form for documenting the work steps at the process level.

As you document all the changeover steps, be sure to review them with staff. They may see something you’ve missed or see something they never knew before. Awareness is the first step on the road to change. One tool that can add value to the preparation stage is video, and this is a great way to see and confirm the steps you’ve documented on the Standard Work Definition form. This allows you to easily make any appropriate corrections.

What Happens in a Quick Changeover Kaizen?

The Quick Changeover method can easily be described in three phases: Separating, Converting and Streamlining. We could never hope to cover everything about Quick Changeover in this white paper. For more information we refer you to Quick Changeover in the OR by the author.

Separating

The first step is all about Preparation, where you Separate the Internal Steps from the External Steps. An Internal Step is work that has to be done while the room is empty and not in use. An External Step can be done while the room is in use. Look closely at your SWD to identify all the External Steps that can be done before it's time to start the Internal Steps. The External Preparatory Changeover Steps can take place while the prior procedure is still going on.

Examples of Separating:

- Developing a kit of items for resetting the OR table. One of our clients created a kit, wrapped it up in a blanket, and named it "the burrito".
- Staging the next case cart. Bring the next case cart to the OR Suite prior to starting the Changeover, to save retrieval time.
- Staging the bed right outside the OR suite. A great time saver!

As soon as you've completed the Separating Steps, it's time to move to the second step of the Quick Changeover methodology, Converting.

Converting

The second step is looking at your SWD [staff working document???] for Internal Steps that can be converted into External Steps. The term "convert" is used because it normally requires that procedure changes be made. Converting is the most challenging phase of the Quick Changeover process because it requires modifications to current processes. Some ideas may not be implemented immediately, because you lack resources, and that's okay. Go ahead and document the improvements and make any changes you can before formally starting the Kaizen Event.

A Few Examples of Converting:

- Garbage Bin Exchange System. Cleaning up and re-lining garbage bins is a typical Internal Step in the OR. What if an extra set of bins was staged outside the door while the prior case was taking place, and during the Changeover you exchanged them? We have done this and it saved time!
- OR Table Strap Exchange. The same as above with the added benefit of a more thorough cleaning of the straps done in a utility room.
- Setting up a kit with all items for a Wilson Frame. Applies to any OR suite equipment made up of several pieces. In one case, the team found an unused Bovie cart and used it to assemble a kit with all items required to attach a Wilson Frame. Again, a substantial amount of time was saved.

Streamlining

And last but not least, streamlining. Think of a race car pit crew that can get the car back on the track within the recommended fifteen-second time frame and still manage to shave a few hundredths/thousandths of a second off the next try. How is this possible? Practice! Before practicing, a clear definition of what to practice must be defined. In an OR suite turnover, certain tasks or steps are internal by nature, like cleaning the OR Suite. You must relentlessly look for an opportunity to covert internal steps into external steps.

Look at the SWD and identify steps or groups of steps that can be made more efficient or Streamlined. Pay attention to the details as minimization, elimination, rearrangement or other minor changes will save time in the OR suite changeover, and it doesn't matter how small, saved time is saved time. You will be looking through the steps, or series of steps, that you've set aside during the first two phases (separate and convert) of the Quick Changeover project with a fine-tooth comb.

Examples of Streamlining:

- The OR Suite Cleaning Sequence. Start with the definition of what supplies belong in the cleaning cart. Continue with the initial positioning. Finish with the actual cleaning sequence.
- OR Suite Equipment Location. Define the most efficient location for the microscope, the bovies, and the stealth, to minimize the number of steps to store and position them.

Many More Tools

There are many other tools that you should know and learn to use. There are many sources to get access to the tools and you should do your homework to develop a good understanding of the available tools and techniques that could support your endeavor of providing the best possible care for your patients. Here is a simple list for you to consider:

Kaizen

This is Toyota's secret sauce. A word of warning though: it is all about culture, as the tool itself it is very simple.

A3

This is a procedure to organize your continuous improvement projects using these mini-project plans that excel in being succinct. There are several forms and methods, from the A3 Team Charter to the X-Chart, all of them will help you get organized and get your point across much better.

Standardized Work

With its roots in Frederick W. Taylor's "The One Best Way" Standardized Work is a method to make predictable the repeatable work. Just use this mantra "Make the repeatable predictable". This is a phrase we developed for clinicians as they have a hard time seeing how Standard Work could help them. Don't think of all work being standard, just think of the repeatable work being so. The patient and its clinical characteristics will provide you with enough surprises during your day, the location and availability of supplies, the retrieval method, and documenting whether is chargeable should not be a surprise.

Value Stream Mapping

This is a flow-charting technique that focuses on the flow/movement of something of value. Think of an instrument set for the OR and the steps it has to follow from the moment it leaves the OR until it returns to the OR. How much of that time was the instrument set being worked on and how much time was it sitting waiting to be worked on? The goal is to minimize the wait time and maximize the work time so you get it back faster. The same applies to Labs, Medical Supplies and even Medical Refuse.

Check-Do-Check

This is a simple, yet powerful quality improvement technique that reminds us that we are human and bound to make mistakes. The key is to prevent mistakes from becoming defects and affecting others, especially the patient.

We will leave the list there and encourage you to do your own research, which should include asking your trusted sources like suppliers. There is one aspect that we need to spend a bit more time discussing due to its paramount importance to clinicians, the Medical Supplies.

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