What does "lean" have to do with patient safety?

January 2007

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Ever since the landmark document *"To err is human"* [1] was released, patient safety has been the paramount objective in US hospitals. *"Patient safety"* became the catch phrase and focus for all activities; a trend that was rapidly taken up by the rest of the world's hospitals. Suddenly a new catch phrase – *"lean"* – is dominating the hospital press. What is *"lean"* and does it have anything to do with improving patient safety?

What is "lean"?

Simply put, *"lean"* means to *"eliminate waste"*. The concept and principles of *"lean"* have come from industry. *"Waste"* in manufacturing includes wasted materials, wasted time, too much stock or inventory, etc.

The principles of *"lean"* are to systematically examine procedures and processes, and try to eliminate the waste. *"Lean"* can therefore also be called *"process optimization"* or *"process improvement through workflow analysis"*.

An error made during manufacturing creates waste – not just wasted time, but also wasted effort – so leaning the processes is also intended to reduce the possibilities of making errors.

"Lean" has been growing in popularity in the business world ever since World War 2, because it improves productivity and helps make the business more competitive.

Does "lean" apply to a hospital?

Waste in production costs money; thus lean manufacturing is a means of producing to a quality level, at least cost. Does that sound familiar for a hospital? Yes, it does.

Hospitals want to provide the fastest best-outcome treatment of patients, at the least cost. While a hospital's focus on *"least cost"* means maximizing the best use of limited resources (staff, time, space, materials, money), it also means least pain and inconvenience to the patient, and least lost income and productivity (of the patient) to society.

How does *"lean"* achieve this? By applying the principles of *"lean"* to processes in a hospital – processes that are related to patient care – the aim is to reduce waste, reduce errors, and provide better patient care.

Starting a lean project in a hospital does not mean to go out and try to lean the whole hospital at once. Instead, start with one or two key processes, doing the obvious and easy ones first. Leaning a process is also more likely to succeed if you make small improvements repeatedly, rather than try to change a lot at once.

A key to success is for the leaning activity to be performed by those people who own the process, i.e. the ones who will use the process afterwards.

The goals of applying "lean" principles, to a patient care process, are...

- to reduce the time a process takes, improving flow of patients and staff
- to make the process easier to perform
- to reduce the risk of error

To lean a process, the owners of the process should...

- analyze the steps used to perform a task
- eliminate steps that are not valuable to patients or staff
- move and optimize the physical layout of where work is done and where the resources for that work are kept

After the process has been leaned...

- revisit the leaning of this process again; continuous small improvements are the best method of improving efficiency
- examine immediately any errors that occur, take countermeasures to avoid repetition

In order to reduce error, hospitals are "leaning"

So, why has *"lean"* become popular in hospitals? Not for its own sake, (we don't like to think of hospitals as production lines, although some proponents of *"lean"* suggest we should). *"Lean"* is popular in hospitals as part of the process of eliminating errors – bringing safety and speed to patient care.

It is easy to see that errors are *"waste"*, they are wasted time, and – in manufacturing terms – there is no correct output for the work done. One of the ways of eliminating errors in processes is to examine the processes themselves to find ways to eliminate unnecessary steps and to minimize the number of steps where error could occur.

Is it an error or a problem?

Since *"To err is human"*, there has been a lot of focus on errors in healthcare, but trying to eliminate errors by examining the steps in processes is not the only way in which patient care can be improved. Examining the process resources is equally important.

Tucker and Edmondson, in *"Why hospitals don't learn from failures…"*[2], say that there are two types of failure in front-line hospital care delivery – errors and problems – and that the majority of failures (86 %) are problems.

They classify an error as a task that has been incorrectly carried out or was unnecessary. The solution to preventing errors lies in redesigning work systems so as to make errors less likely to occur.

A problem, on the other hand, is where a task cannot be carried out because something that should be there is missing (such as information, supplies or medicine), or something is present that interferes with the task (such as simultaneous demands on a caregiver's time). In other words, problems are usually centered on proper resource allocation for the task required.

This is precisely where lean activities can be used. When examining the cause of a problem – digging down into the process to understand why the error happened, what caused the preceding event and its preceding event, etc. – the process of seeking solutions is not only aimed at reducing the possibility of the error happening again, but also to redesign the process and optimize the

resources around the process, to improve the quality of the job done and hence reduce *"waste"*.

Where can you start to lean? Find the cause of the error

Wrong tests performed on patient samples, wrong patients identified, wrong treatment given to patients – these are all errors related to tasks that can be analyzed to identify the causes of the errors and examine the resources used in the process.

Improving processes requires changes to existing ways of doing things. Healthcare is hyper-cautious about change and typically makes change reluctantly and incrementally. However, this fits will with the *"lean"* philosophy, i.e. to make small changes and continuous improvement. That the world of healthcare is embracing *"lean"* as a means of improving patient care is a good sign that hospitals can reduce error and can improve patient care.

> ***"Lean"*** in hospitals = improving processes around patient care, to reduce errors and improve safety and speed in patient care.
>
> Using *"lean"* principles in healthcare allows hospitals to provide the fastest and best-outcome treatment of patients, at the least cost to all.

Does "lean" improve patient safety?

If we return to the definition of "lean", it is to eliminate waste. By eliminating waste – reducing steps, simplifying processes and maximizing the use of resources – you can reduce the number of process steps in which there is a risk for error, and ensure that processes are planned to use resources most effectively. Reducing errors will help improve patient safety, patient care and treatment outcome.

By streamlining processes around patient care – testing, diagnosis and treatment – you can also reduce the time spent on all the things done that have nothing directly to do with actual patient care. Having more time to provide patient care, now that's got to be a good thing!

References

1. Kohn LT, Corrigan JM, Donaldson MS. To err is human: building a safer health system. National Academy Press, Washington DC, USA, 2000.

2. Tucker A, Edmondson A. Why hospitals don't learn from failures: Organizational and psychological dynamics that inhibit system change. California Management Review 2003; 45(2): 1-18.