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Lean – Ohno's eight wastes



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What is it?

In a healthcare context, value is a combination of what is valued by patients within a care pathway and the achievement of appropriate health outcomes (linked to providing evidence-based care). Any activity that does not contribute to this value can be classified as waste.

The concepts of value and waste are central to the Lean methodology that has been adapted from its manufacturing origins and applied successfully to the context of healthcare improvement in a number of organisations.

The eight wastes approach can help to achieve improvement in healthcare services by enabling staff to examine their own workplace and eliminate activities that do not add value, ie wasteful activities. This approach can improve the patient experience and release time that frontline staff can reinvest in service provision.

Considering the eight wastes can be a useful exercise within any service improvement effort and will play a significant part if a wider Lean methodology is being implemented.

When to use it

Waste is a symptom rather than the root cause of a problem. Waste indicates where problems are within the system or organisation. You can use the eight wastes approach if you are embarking on a project to ensure that resources are being used to optimal efficiency.

How to use it

These are the eight wastes, which can be remembered with the mnemonic **TIM WOODS**.

1. Transport – waste transport refers to the excess movement of the product, patient/service user or medical records, supplies and equipment through the process. Some amount of transportation will be necessary depending on hospital or clinic layouts – but ask yourself, “Have we optimised or minimised transportation?” This is where [spaghetti diagrams](#) can be particularly useful. Your service redesign could take patient/service user walking distances into account.

2. Inventory – wasteful inventory is usually excessive inventory – defined as having more of a particular item than is needed to perform the process. Excess inventories tie up resources – hospital cash is used to pay for these materials that sit in store cupboards. Often we spend additional money to store these items – shelving, etc. As inventories grow so the space required to store them increases – and this may mean that material has to be stored remotely from the point of use – this in turn can lead to additional transportation waste.

Large inventories also have the effect of hiding out-of-date and obsolescent material. In one south west NHS trust, a review of the haematology inventories revealed 17 boxes of thermal printing paper, even though the department no longer used a thermal printer! This excess inventory was purchased to take advantage of lower bulk prices - which proved more expensive as actual usage was not considered.

The primary consideration here is customer and patient/service user needs – but we aim to meet those needs with the lowest possible inventory levels. Remember that although too much inventory wastes space and financial resources, running out of an item can lead to additional motion, transportation, costs and also the additional expedition required. In a lean and efficient process, we aim for the right level of supplies and inventory close to the point of use – ensuring that patient/service user care can be delivered.

3. Motion – while transportation considers the movement of the product or patient/service user, the waste of motion refers to employees. Service re-design should aim to reduce or eliminate the extra motion that poor system design often creates. A system with optimal motion reduces employee fatigue and frees up valuable time to focus on the value add activities within our processes.

Often in a healthcare environment the wasted motion is walking. It may well be considered 'part of the job' – but it is very rarely a value add activity. Does the amount of walking you have to do add value from the patient/service user perspective? Walking waste can often be addressed by improving the layout of work areas and the location of supplies and equipment.

Other forms of waste motion could be stretching or reaching.

4. Waiting – waiting refers to those points in the process where nothing is happening – no value is being added. Patient/service user waiting rooms is one obvious example – often due to poor flow (see [flow – reduce unnecessary waits](#)) or scheduling.

Racks of histology specimens waiting for diagnosis, or surgical instruments waiting to be sterilised are other examples – often due to batching of work and no consideration of FIFO (first in first out) planning.

5. Over production – this is waste where an excess of a product or service is being created without there being any need for them. Examples may include patient/service user meals, IT reporting or pharmacy medications for patients/service users who have already been discharged.

6. Over processing – doing unnecessary work or work to a higher quality than the customer requires.

7. Defects – any work activities not done 'right first time'.

8. Skills – not using people to the best of their abilities. One example could be bed managers acting as porters, but can also be created through not engaging employees or listening to their ideas.

What next?

Once you have succeeded in eliminating waste, your next step should be waste prevention. Ensure you design new services without inherently wasteful steps.

Eliminating waste is not the only way to become a Lean organisation, but it is a valuable learning experience, which brings all the team together to understand problems that they are then encouraged to solve.

Additional resources

Bicheno, J (2000) *The Lean Toolbox: The Essential Guide to Lean Transformation*, PICSIE Books: 4th edition

Rich, N, Bateman, N, Esain, A, Massey, L and Samuel, D (2006) *Lean Evolutions*, Cambridge University Press: Cambridge

Womack, J and Jones, D (2007) *Lean Solutions*, Simon and Schuster: New York

Womack, J and Jones, D (2007) *Lean Thinking*, Simon and Schuster: New York

Background

Taiichi Ohno, who is credited with being the architect of the Toyota production system, originally classified the eight wastes. He was said to expect new managers to go to the workplace, draw a chalk circle and spend several hours identifying waste. Deming also emphasised waste reduction in the 1950s in Japan.

Waste is translated as 'muda' in Japanese. Womack and Jones talk of 'muda glasses', which asserts that this process is about seeing your own organisation differently.