Title:
Lean-In Stroke Care: Reducing Waste to Increase Efficiency

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Abstract Summary:
The Lean methodology focuses on the customer: the patient. The Lean method looks at every step in every process to assess if this step adds value for the customer or not. Reducing mistakes and removing non value adding steps are examples of eliminating wastes.

Learning Activity:

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<th>LEARNING OBJECTIVES</th>
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<td>The learner will be able to acknowledge that more healthcare organizations are looking into the Lean methodology to reduce cost and work more efficient.</td>
<td>The presenters will provide information about the value adding and non value adding process steps in stroke patient admission and discharge in an integrated care stroke service</td>
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<td>The learner will be able to learn about process steps of the lean methodology and the wastes that can occur in an integrated care service</td>
<td>The presenters will provide information about the types of waste that were discovered during the study</td>
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Abstract Text:

Background

In the Netherlands, 47,000 people suffer a stroke every year. The percentage of people who died of a stroke has declined over the last decade. While in 2000, 50% of the stroke patients died within 12 months, by 2005, this has been reduced to 22%. However, the number of stroke patients is expected to increase and strokes are responsible for 2.5% of the total health costs.
Many health care organizations are looking for methods to reduce their costs and increase the productivity of their nurses and other professionals. Although the resources, such as budget and number of professionals are declining every year, the demand for health care is still increasing in the Netherlands. In 2015, the annual costs of healthcare in the Netherlands were 95 billion euro’s: 5.628 euro per inhabitant.

More healthcare organizations are looking into the Lean methodology to reduce cost and work more efficient. The Lean methodology focuses on the customer: the patient. The Lean method looks at every step in every process to assess if this step adds value for the customer or not. If not, the step should be removed. Reducing mistakes and removing non value adding steps are examples of eliminating wastes. In literature, there are many examples of Lean implementations in healthcare. Research shows that in the United States of America, a reduction of human mistakes by 50% can save the American healthcare annually 1 billion dollars.

In the Netherlands, stroke care is delivered in integrated care stroke services, which means that patients receive care in multiple steps in several healthcare facilities, according to their phase after stroke. This study shows what health care facilities can learn from a methodology that was originally designed for the production industry. Therefore, the aim of this study was to explore the value adding and non value adding process steps in stroke patient admission in an integrated care stroke service in the Netherlands.

**Methods**

In this research, we focus primarily on stroke patients, whom are discharged from hospital acute treatment, and are ready to start their medical rehabilitation. Our research is executed in the Rotterdam Stroke Service (RSS) in three out of 19 organisations of the RSS.

In this study, we chose a qualitative and quantitative approach. We used the qualitative approach to generate theory using interpretative knowledge from nurses and other professionals (normative approach, explorative research, naturalistic inquiry). Nurses and other professionals were interviewed to explore which problems they experience in their daily work. This results in more insight of potential wastes. In order to collect all the important data, we used interviewing, value stream mapping and a large part of the data consists of the research journals that captured all the information gathered during the naturalistic inquiry process. The last thing we added to our data were the documents we received from the experts (current protocols, application forms, available beds).

For the interviews we used coding according to the grounded theory approach. Furthermore, we used a configuration analysis to distinguish aggregates and configurations in order to diagnose the different problems.

**Results**

To sketch the current situation, 11 interviews were held with nurses and other professionals. In a customer journey, each step was researched from the moment the patient arrived in the hospital till the moment the patient was discharged to a rehabilitation center or nursing home. After the interviews, several expert meetings were planned. In these expert-meetings, nurses and other professionals discussed the findings and tried to create an improvement plan, based on the Lean method. The results of the configuration analysis (most common problems and possible solutions) were discussed with all the involved experts.

The up to date protocol in the RSS states that the patient should preferably be transferred to either rehabilitation of a nursing home within 5 days, if the condition of the patient allows for transfer. The majority of the patients were discharged within 5 days. An influence analysis showed that nurses influenced the patient processes the most.
More than 100 wastes were discovered during this research. The most reported issues concerned 1) slow internal logistics in the hospital, 2) lack of medical readiness of the patient, 3) missing or delayed medical patient information transfer, 4) multiple discharge interviews, 5) lack of safely transfer of delicate information, 6) waiting lists and queuing up in rehabilitation centre.

Discussion

After this study, the organisations within the RSS started with reducing the wastes which were discovered during this study. This is in ongoing process in 2017, and the assumption is that there will be a significant improvement. Also, implementation of Lean caused a remarkable improvement in the University of Pittsburgh Medical Centre. Nevertheless, a critical note is that no research was found about failed attempts to implement Lean. Several studies show that only 10% of the Lean implementations can be considered as a success in the long term. Therefore we should be careful with marking Lean as the definite success for the entire healthcare industry.