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Towards a Lean Process for Patient Journey Mapping - A Case Study in a Large Academic Setting

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Abstract. Hospital quality improvement initiatives that focus on the patient experience are increasingly gaining attention. One of the known improvement methodologies is patient journey mapping. Central to this methodology is the mapping process, resulting in a patient journey map: a visual presentation of the complete route a patient follows during all stages of a care trajectory and the patients emotional experience during this journey: the patient journey map. Currently, there is no standard approach on how to perform the steps in the mapping process and evidence is lacking on the most effective and efficient way. As a result, the adoption of the methodology by healthcare professionals is hindered, more time than necessary is spent on the mapping and a lot of significant variation exists in the quality of the resulting patient journey maps. The Lean methodology has a proven track of record to optimize and standardize processes. Hence, by performing a Lean analysis onto the patient journey mapping process, opportunities to optimize and standardize the process may be identified. This study aimed to assess the value of Lean methodology to optimize patient journey mapping in a hospital setting. Observations and interviews were performed to identify the process for patient journey mapping in a Dutch academic hospital. Lean was used to visualize the process and identify inefficiencies. An expert panel reviewed the improvement suggestions. We conclude that Lean can provide value for aligning different views on the process, for structuring the process steps and phases and for identifying optimization actions in the mapping process.

Keywords. Lean, patient journey, quality improvement, patient experience

1. Introduction

Understanding and improving how patients experience their care is increasingly recognized as one of the key components to successfully delivering high quality healthcare. *Patient journey mapping* is a relatively new and upcoming methodology used in hospital quality of care improvement initiatives to identify actions which could improve patient experience with the healthcare system [1]. In mapping a patient journey the experiences with and interaction between the patient and the healthcare providers in all stages of a care trajectory is explored. One of the foundations of this methodology is

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that patient experience is not limited to a visit to a specific healthcare provider. It includes the period before and after the visit, such as a visit to a GP, making an appointment for a hospital visit, waiting for the appointment to take place or looking up information in an (online) patient folder. How patients experience their care, is likely to change during this journey. Another central idea therefore is that patient experience is more than the rating that a patient gives to a healthcare provider, it also includes the feelings a patient experiences, like anxiety or uncertainty. The final result of the *patient journey mapping* is a visual representation of the patient journey: a map showing a timeline indicating all relevant interactions between the patient(group) and its healthcare providers (including interaction with their Electronic Systems) in combination with the different aspects of the patients' experience. The review of the patient journey by healthcare professionals subsequently leads to new insights on how healthcare services can better fulfill patient needs. This results in the identification of improvement actions [1,2].

Central to the methodology of *patient journey mapping* is the mapping process. Mapping a patient journey is a highly complex and time-intensive process that consists of multiple stages with interrelated activities to complete [2]. Currently, there is no standard approach on how to perform the steps in the mapping process and evidence is lacking on the most effective and efficient way. As a result, the adoption of the methodology by healthcare professionals is hindered, more time than necessary is spent on the mapping and a lot of significant variation exists in the quality of the resulting patient journey maps [3].

The Lean methodology has a proven track of record to optimize and standardize processes. Hence, by performing a Lean analysis onto the patient journey mapping process, opportunities to optimize and standardize the process may be identified. Because of the shortage in healthcare staff and financial limitations, it is important to work as efficiently and effectively as possible [4,5]. The objective of this study was to assess the value of lean in optimizing and standardizing the patient journey mapping process in an academic hospital setting.

2. Methods

First, the patient journey mapping process was observed and described in a Dutch academic hospital setting. This hospital was selected because of the availability of resources to participate in this research and its recent efforts to define a hospital-wide approach for mapping a patient journey. The scope of this study encompassed all activities from the moment a hospital department initiated a patient journey project till the delivery and review of a patient journey map. The observation was done by an independent Medical Informatician. A Lean tool for visualizing a process, a Swimlane diagram, was used to describe the mapping process. A Swimlane diagram documents process flows with different tasks per role and to provides insight into the order in which tasks are performed [6,7].

In the second step an expert panel consisting of a representative from the Communications department (who developed the approach and toolkit), an Operational Lead, a Medical Lead, a Lean expert (Master Black Belt) and a Medical Informatics junior researcher redesigned the mapping process based on the documented process in step one. In this step a Lean waste analysis was performed by a Lean expert. A Lean waste analysis is a tool which identifies suboptimal activities aiming at streamlining a process [8]. This step resulted in a proposal to optimize the process for mapping the

patient journey based on the applied Lean analyses. The value of applying Lean was then determined by the expert panel review on basis of accepted optimizations and insights gained the process. A Lean improvement was accepted by the expert panel if they considered it feasibility for implementation and if it fit the hospital's vision on patient journey mapping.

3. Results

The observations and interviews provided insight in the process for patient journey mapping in the academic hospital. The communications department took ownership on the mapping process and educated the departments that were supposed to apply it. In this paper this department is referred to as the Quality Improvement (QI) team. There was no top leadership pressure to create patient journey maps. The mapping process consisted of 2 workshops (a kickoff and a follow up workshop), actions to be taken by either the medical lead or operational lead and a toolkit to support the activities to follow. Tasks between the medical lead and operational lead were different depending on the way the specialty was organized. Use of the Swimlane diagram resulted in the identification of three phases with interrelated activities: the initiation, the data collection and the mapping phase.

Overall the Lean waste analysis provided sight on 11 improvements. The expert panel review accepted eight improvements and rejected three. Figure 1 shows the resulting Swimlane diagram. The rectangular boxes in Figure 1 represent activities. Each activity has detailed work instructions.

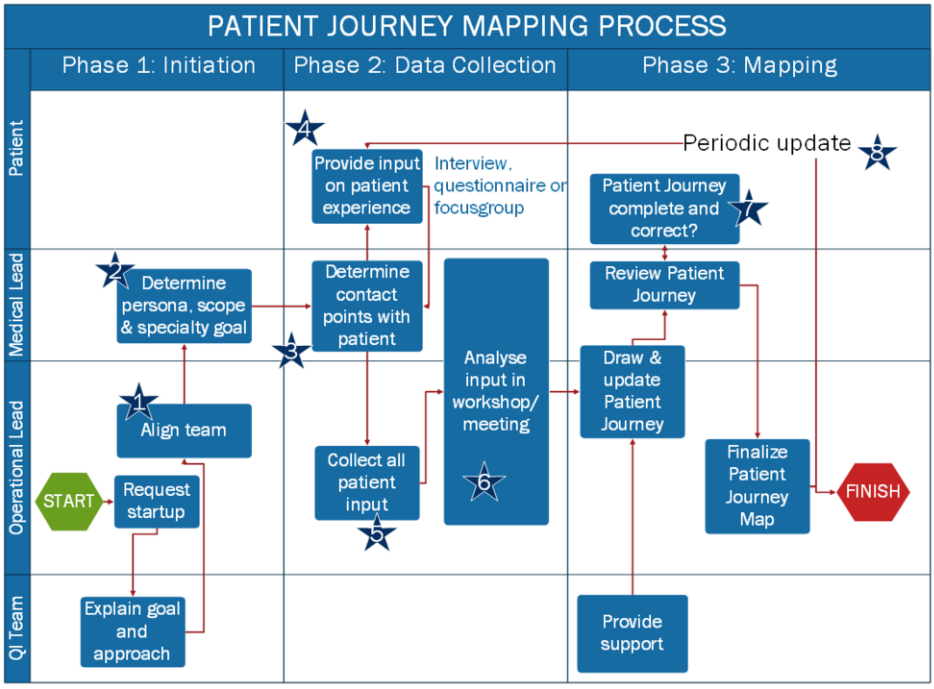

Figure 1. Swimlane diagram showing Lean improvements for patient journey mapping. Stars indicate improvement suggestions, QI Team = Quality Improvement Team

The numbered stars highlight the accepted Lean optimizations. Below each optimization is described in detail.

- *Star 1- Align team upfront*
  Prevent wasting time and effort on discussion and confusion about who is supposed to be involved in which actions by agreeing up front on the roles and responsibilities between QI Team, Medical Lead and Operational Lead.
- *Star 2 – Faster determination of persona, scope and goals*
  Reduce time and effort spent by healthcare professionals on determination of persona, scope and goals by providing guidance on how to do this.
- *Star 3 – Use available resources to determine contact points with patient*
  Prevent having to change the patient journey later on by using available system data to determine contact points with patients.
- *Star 4 – Collect high quality input on patient experience*
  Increase quality of data on patient experience by providing guidance on the selection of patients and by standardizing questionnaires for collecting data about patient experience.
- *Star 5 - Only start a workshop when all input is available*
  Make sure all required data which is needed in a workshop is available, so that the workshop can deliver expected outputs without wasting time and energy of attendees.
- *Star 6 - Reduce amount of workshops*
  Do not organize workshops if the goal can be realized by using other means of communication so that timelines are reduced.
- *Star 7 - Review patient journey map with patient*
  Increase quality of the patient journey map by reviewing the map by a patient (or representative) before finalizing it. This prevents rework later on and prevents healthcare professionals from spending time on analysing incorrect or incomplete patient journeys.
- *Star 8 - Periodic update*
  In a changing world a patient journey map needs regular updates to stay up to date. Otherwise time is waste on analyzing incomplete or incorrect patient journeys and opportunities to improve patient experiences are missed out.

Rejected improvements included: the creation of online instruction materials to reduce time needed to attend a workshop, the creation of online instruction materials, to replace focus groups and questionnaires for collecting patient input by phone calls and drawing the patient journey map once instead of twice (during workshop on paper/ board and after workshop in electronic format).

4. Discussion

In this study we assessed the value of Lean for improving the patient journey mapping process in an academic hospital setting. First, the Swimlane diagram helped with aligning different views on the current mapping process and with structuring the process activities. Secondly, an expert panel reviewed eight out of 11 Lean suggestions based upon Lean waste analysis as valuable and fitting their hospital vision on patient journey mapping.

Other studies also confirmed the value of Lean for optimizing and standardizing processes in healthcare settings, resulting in quality improvement. The systematic review performed by Glasgow in 2010 showed ample examples of successful quality improvement initiatives based on Lean, varying from improving laboratory tests to radiology processes [9]. A strength of our study is to base the Lean analysis upon observation of an actual patient mapping process from initiation till finalization by an independent researcher. Other strength include the execution of the Lean analysis by a Lean expert and the involvement of an expert panel in reviewing the Lean improvements.

A limitation of the setting of this study is that all healthcare professionals involved were mostly unexperienced with patient journey mapping which is reflected in the process. For example there is a higher need for clear instructions and examples, teams had to get aligned at the startup of a new patient journey process execution, etc. The improvement findings might therefore differ from a setting where an experienced team is executing the process.

On the basis of this work, we conclude that Lean can provide value for aligning different views on the process, for structuring the process activities and phases and for identifying optimization actions in a patient journey mapping process. The mapping process described by us is a first step in optimizing the process for patient journey mapping. Further validation and adjustments are needed to come to an optimal process. We look forward to further develop the process for patient journey mapping and intend to validate the proposed model in the near future.

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