

Healthcare Lean Readiness Assessment in a Territorial Outpatient System

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Abstract: Healthcare organisations are increasingly compelled to adopt innovative managerial approaches to meet the high standards of care quality demanded by demographic changes, particularly the ageing population and the rising diffusion of chronic diseases. In this context, strengthening territorial care is essential to guarantee universal healthcare coverage. Providing care in outpatient and primary care settings enables more effective responses to population health needs, supports the prevention of chronic disease progression, and helps to reduce costly hospital admissions and clinical risks. However, implementing managerial innovation in territorial settings presents significant challenges due to the involvement of multiple care providers who must effectively coordinate and communicate to ensure continuity and integration of care. In this context, Healthcare Lean Management (HLM) emerges as a managerial approach that can reduce wastes while enhancing process performance and care quality. Nonetheless, many HLM initiatives fail due to insufficient organisational readiness to implement such a complex approach. To overcome this challenge, HLM readiness assessments are essential for identifying all those managerial, organisational, and cultural factors that must be strengthened before launching an HLM initiative. To this purpose, the current study aims to conduct an HLM readiness assessment within an outpatient territorial healthcare system in Italy, to identify critical areas for improvement and support the organisation in preparing for future HLM implementation. The evaluation was conducted using a previously developed model. A questionnaire was administered to employees and managers within the targeted setting, enabling the mapping of the readiness level and the identification of the weakest factors to be improved. Preliminary findings indicate key weaknesses in the diffusion of a culture that promote change acceptance and continuous improvement. In fact, despite strong support from top and middle management, there is a limited presence of HLM experts and leaders responsible for guiding and facilitating HLM and quality improvement projects. Results will be shared with participants to identify root causes and discuss possible countermeasures. This study represents an initial example of HLM readiness assessment in a non-hospital setting, providing valuable insights for initiating sustainable and effective improvement processes in this underexplored context. It advances knowledge in this field by proposing a model applicable in a territorial healthcare setting, without requiring prior expertise in HLM, and by integrating data analysis results with health staff insights. The contribution, both academic and managerial, also supports social sustainability and promotes patient well-being.

Keywords: Healthcare lean management, Territorial healthcare, Outpatient, Readiness, Sustainability

1. Introduction and Theoretical Background

The European territorial healthcare context is currently undergoing significant changes and reforms aimed at improving healthcare services and strengthening universal healthcare coverage. These efforts are designed to address the pressing challenges faced by health systems, such as resource shortages and demographic shifts (World Health Organization, 2022). Effective territorial care services play a crucial role in managing elderly and chronic patients at the local level, preventing disease exacerbations and thereby reducing avoidable hospital admissions (Young et al., 2021).

To achieve these goals, given the managerial complexity and the need to effectively integrate multiple care services, it is essential to innovate and implement structured approaches for quality improvement from a managerial and organizational perspective (World Health Organization and United Nations Children's Fund, 2018). Among these, Healthcare Lean Management (HLM) is the most widely used approach within this sector, although its adoption within territorial healthcare settings remains limited (Tiso et al., 2022). HLM leverages a set of principles, practices, tools, and techniques to enhance all aspects of value for patients, reduce wastes, and improve patient safety and satisfaction and process performance (Talero-Sarmiento et al., 2024).

Despite the numerous benefits associated with HLM (Antony et al., 2019), its successful implementation is often challenging. Many HLM projects either remain incomplete or fail to sustain improvement over time because the target healthcare setting is not sufficiently "ready" for the introduction of such methodologies (Narayanamurthy et al., 2018). Several managerial, cultural, and organizational factors must be considered before initiating an HLM implementation, as their presence or absence can significantly influence the likelihood of success. These

factors, referred to in the literature as Critical Readiness Factors (CRF), are assessed in HLM readiness evaluations based on their presence within the target context and their relative importance in supporting the successful implementation of HLM. This evaluation enables organizations to determine the overall level of HLM readiness within the target setting and to identify key areas requiring improvement to support future HLM initiatives (Narayanamurthy et al., 2018).

In light of the existing literature, this study aims to advance knowledge regarding HLM readiness assessment in territorial healthcare contexts. Specifically, this study seeks to conduct an HLM readiness assessment within an outpatient territorial healthcare system in Italy, with the objective of identifying critical areas for improvement and supporting the organization in preparing future successful HLM implementation.

2. Methodology

To address the objective of this study, the HLM readiness assessment model developed by Pozzan et al. (2024) was adopted. The application of this model entails, first, the identification of the relevant setting in accordance with the research objectives, and subsequently, the determination of the HLM readiness level through the assessment of 39 CRFs.

Specifically, a structured questionnaire was developed to assess, for each CRF, the perceived level of presence within the healthcare setting (Table 1). The evaluation involved six healthcare professionals, including individuals in top and middle management roles, physicians, and nurse coordinators, all belonging to the same territorial healthcare setting. The questionnaire was distributed via an email link, and assistance was provided throughout its completion. A facilitator, one of the authors, was available to address any questions or doubts raised by the respondents. Respondents were selected for their commitment to the study and their willingness to contribute not only by completing the questionnaire but also by engaging in subsequent phases, including result sharing and follow-up activities. All respondents successfully completed the questionnaire. Additionally, the perceived importance of each CRF in supporting sustainable HLM implementation was evaluated through a separate questionnaire, which was administered to HLM experts during interviews. Six HLM experts from academia, as well as private and public health organizations, were involved. The data collected through the questionnaires were analyzed by associating fuzzy numbers with linguistic variables and employing descriptive statistics to achieve two distinct objectives: 1) To provide a descriptive analysis of the target setting's level of readiness 2) To identify the weakest CRFs requiring improvement.

To address the first data analysis objective, the readiness level of the target setting was calculated by weighting the perceived level of presence by the perceived level of importance assigned by HLM experts for each CRF, and then averaging these values for the entire target setting and for each stakeholder category. To achieve the second objective, the fuzzy Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) was applied to rank the CRFs. The aim was to prioritize those factors considered highly important by HLM experts but perceived as less present in the target setting by health staff. The results obtained were shared with the health personnel involved in the assessment. This step aimed to suggest possible directions for improvement by discussing the identified weakest CRFs with the staff, thereby fostering a collaborative approach to continuous improvement.

Table 1: Example of a questionnaire for assessing the perceived level of importance and presence, with the corresponding supporting literature: case of the CRF related to cross-functional project teams.
Table by authors

CRF	Likert scale		Reference
Project team members are selected from different departments to create a cross-functional healthcare team to improve patient satisfaction and system-wide performance rather than focusing on individual results	<i>Perceived level of presence</i>	<i>Perceived level of importance</i>	(Alnajem et al., 2019; Costa et al., 2024; de Souza & Pidd, 2011; Delgado et al., 2010; Desai et al., 2012; Narayanamurthy et al., 2018)
	1 = totally disagree	1 = important	
	2	2 = very important	
	3	3 = essential	
	4		
	5 = totally agree		

3. Preliminary Results

In line with the research objectives, the selected target setting for conducting the HLM readiness assessment was an outpatient healthcare system in Italy, which provides both primary and specialist ambulatory care services to a population of over 200,000 residents.

The data analysis findings are presented according to three distinct phases.

3.1 Determining the HLM Readiness Level

The HLM readiness level was calculated as described in the methodology section, both for the target setting as a whole and disaggregated by stakeholder categories. As shown in Figure 1, while the overall HLM readiness level is challenging to interpret in absolute terms, it may serve as a useful metric for longitudinal comparisons within the same setting or for benchmarking across different settings. Furthermore, the readiness levels of different stakeholder categories can be compared both among themselves and against the overall HLM readiness level. The results indicate that CRFs related to top and middle management, as well as to the healthcare organization, exhibit higher readiness compared to the overall average.

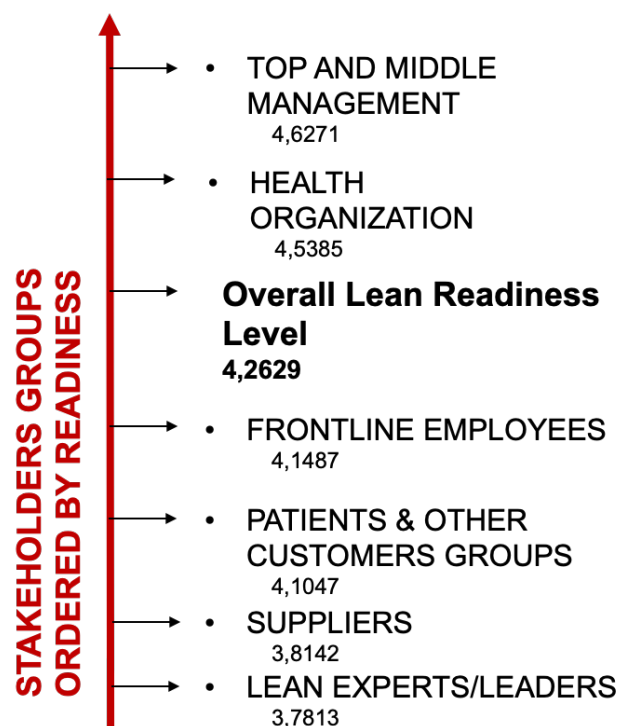


Figure 1: HLM Readiness Levels. Figure by authors

3.2 Identifying the Weakest CRFs to be Improved

As outlined in the methodology section, to address the second research objective, the ten weakest CRFs were identified:

1. Frontline employees' acceptance of change
2. HLM experts fostering a culture of continuous improvement
3. HLM experts acting as improvement project facilitators
4. Presence of roles dedicated to facilitating improvement process within the organization
5. Stakeholders' expectations alignment
6. Adoption of a project implementation plan
7. Cross-functional project team creation
8. Training for frontline employees and project team
9. Participation of frontline employees in decision-making processes
10. Employees commitment in their daily work activities

The results were subsequently shared with the health staff involved in the project, with the aim of identifying critical areas and exploring potential solutions tailored to the specific context.

3.3 Sharing Results with the Health Personnel Involved

A focus group with healthcare staff was conducted to discuss and validate the results of the data analysis. This collaborative step was crucial for confirming the critical issues identified and for co-developing realistic, context-specific improvement strategies. Within the selected setting, two primary challenges emerged: a) resistance to change and b) difficulties in multidisciplinary collaboration across hospital and territorial care services.

Regarding change acceptance, staff often experience top-down decisions with insufficient time to adapt and little communication about the rationale, goals, or expected outcomes. Engagement opportunities are limited, partly due to concerns that open dialogue might reveal challenges the organization feels unprepared to address, often rooted in a limited understanding of frontline work. Consequently, management may propose changes that lack practical feasibility. A key finding is the need for greater managerial awareness of day-to-day staff activities to design realistic, sustainable interventions. External facilitators could support this process by mediating between management and staff, facilitating communication, analysing, and mapping processes, and supporting the training and development of healthcare professionals.

As for the challenges of implementing multidisciplinary improvement projects, particularly those integrating hospital and territorial services, obstacles are linked to the siloed structure of the healthcare system and poor interprofessional understanding. This issue reflects broader health policy limitations: reforms have not unified hospital and territorial services, which continue to function independently. Fragmentation is worsened by the presence of providers outside the national healthcare system, hindering shared goals. Improved communication, supported by digital tools, is essential but must be accompanied by cultural change. Transitioning from a hospital-centric to a patient-centred system requires long-term commitment and cannot be achieved through short-term measures alone.

4. Conclusions

This study contributes to both the academic and managerial advancement of knowledge on the sustainability of HLM initiatives in territorial healthcare. Specifically, the application of this HLM readiness assessment model represents one of the first attempts to evaluate HLM readiness within a complex territorial healthcare setting. A key innovative aspect of this work lies in conducting the assessment in a context where HLM has been minimally, or not yet, implemented. Furthermore, the model offers not only a descriptive tool but also a prescriptive one, demonstrating how data analysis can be integrated with the active involvement of healthcare staff to identify context-specific improvement strategies.

These features, in addition to distinguishing this work from previous studies, provide valuable support to healthcare management and clinical leadership in promoting HLM initiatives that can succeed and whose outcomes can be sustained over time. Furthermore, the study contributes to support social sustainability by fostering the delivery of high-quality care and enhancing the well-being of both citizens and healthcare staff. The implementation of the HLM readiness assessment model and the results obtained in this study may prove highly valuable within the European context of strengthening territorial healthcare. Sustainable HLM initiatives can support proximity care, tailored to the specific needs of citizens, while also contributing to the pursuit of universal healthcare coverage.

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AI declaration: During the preparation of this work, the authors used ChatGPT to improve the readability of the manuscripts. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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