Lean leadership behaviours in healthcare organisations: A systematic literature review

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Abstract

This systematic literature review compares contextual similarities and differences of leader behaviours across various hierarchical levels and lean maturity levels. Since healthcare organisations are generally unique, the successful implementation of Lean Healthcare likely demands typical supportive leader behaviours at all hierarchical levels. However, the 107 reviewed articles indicate that most of the healthcare leader behaviours are similar to those of manufacturing leaders, but more relations-oriented in the early lean stages, rather than task-oriented. As most healthcare studies examined leaders at the operational and tactical levels, future multi-level research should also study strategical managers and the longitudinal effects of their behaviours.
Keywords: Lean Healthcare, Leadership, Behaviours.

Introduction
Increasingly, healthcare organisations face pressures and challenges to improve their service in terms of quality, time, costs, etcetera (Souza and Pidd, 2011). This urgency has led to the adoption of continuous improvement approaches, such as Lean Manufacturing (LM), to systematically reduce waste by establishing a continuous improvement culture (Womack and Jones, 2003; Taylor et al., 2013). LM was originally conceived in the automotive sector, but its adaptation and benefits have already been evidenced in companies from several different work settings, including offices (Hines and Taylor, 2000), services (Bowen and Youngdahl, 1998) and healthcare (Dickson et al., 2009). The recent adoption of lean in healthcare has been coined as Lean Healthcare (LH) (Womack and Jones, 2003; Young et al., 2004; Kim et al., 2006; Graban, 2012). LH aims to reduce poor service quality, lack of patient safety, long waiting times and medical errors (Dahlgaard et al., 2011). Previous studies (e.g., Dickson et al., 2009; Souza and Pidd, 2011) have also claimed that LH may help to increase efficiency and stimulate employee engagement. Despite these benefits, few healthcare organisations have fully adopted LH as part of their strategic way of operating and managing (Steed, 2012). Furthermore, the few hospitals that have successfully implemented LH, approached it in a narrow way,

thereby solely impacting a few areas or departments without systemically affecting hospital-wide processes (Aij and Veth, 2017).

Yet, especially in healthcare organisations, lack of leadership skills and behaviours is one of the main causes of failures in lean implementation (e.g., Emiliani, 2003; Emiliani and Stec, 2005; Emiliani, 2008; Mann, 2009; Souza and Pidd, 2011; Toussaint and Berry, 2013; Aij et al., 2015). Lean implementation entails an organisational change process that affects how people work, who they work with and their interests and goals (Kaplan et al., 2014). It involves more than just changes in the technical and physical aspects of the organisational environment; also socio-cultural aspects should be accounted for (Van Dun and Wilderom, 2012; Tortorella and Fogliatto, 2014). However, since LH is a relatively recent phenomenon, the quantity and quality of relevant literature about the leadership behaviours in this context are still limited, which undermines the establishment of supportive behaviours (Poksinska et al., 2013). Moreover, we do not know how behaviours may differ across organizational levels and the phases of lean implementation. Tortorella et al. (2017) suggest that the development of leadership skills is not emphasized during healthcare personnel training. These professionals usually come from technical backgrounds where the focus is on healthcare task performance rather than on leadership behaviours that reinforce process analysis from a horizontal perspective (Tortorella et al., 2017). Thus, our research question is: *"Which leadership behaviours affect LH implementation and how do those LH behaviours differ from those in manufacturing contexts as well as between hierarchical levels and across the different phases of lean implementation?"*

To answer this question we engaged in a systematic literature review. We analysed the retrieved articles on lean leadership from three different theoretical lenses: 1) leadership behaviours in different work contexts; 2) leadership hierarchical levels; and 3) a company's maturity level with regards to lean implementation.

Methodology

Our systematic literature review followed the nine steps suggested by Sampaio and Mancini (2007). Firstly, to overcome the problem of relatively few studies about lean leadership in healthcare organisations and to ensure that this review makes a significant contribution to the existing literature, we compared the findings in the literature on healthcare to studies that developed the same subject but in other, manufacturing organisational contexts.

The second step comprised the establishment of the keywords for the initial database search of the titles, abstracts or keywords of the publications, namely, all combinations of the terms 'lean', 'leadership', 'leader', 'manager' and 'management'. The following databases were selected (step 3): Web of Knowledge (ISI), Science Direct, Engineering Village and Scopus. Our search was conducted in June 2017 and it scanned all the available articles published in peer-reviewed journals or English written conference papers, without limiting the time period. In step 4, all 4,258 resulting articles were uploaded into EndNote software, to facilitate the organisation and filtering process. Subsequently, duplicates were verified and removed (step 5) resulting in a total of 3,315 articles.

The articles were then revisited and verified to what extent they aligned with the research subject based on their titles, keywords and abstracts. The key determinant for including the article in the portfolio was the mention of leaders' role in lean transformation, including the necessary behaviours, values, competencies, skills, attributes or characteristics for effective implementation. We chose these broad selection criteria in order to include papers that did not mention 'behaviours' but used different

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terms for items that are, in essence, behaviours. From this analysis, a total of 171 articles were identified. The remaining articles were read in full (step 7). In line with our research question, we only kept the articles that mainly focused on lean leadership behaviours. We thereby followed our definition of leader behaviours, namely: specific observable verbal and nonverbal leaders' actions "in interaction with their followers in an organisational setting" (Szabo et al., 2001, p. 225; Van Dun et al., 2017). In other words, articles that approached leaders' values, competencies, styles, skills or characteristics during the lean implementation were disregarded.

The final portfolio, consisting of 107 articles, was categorized according to context so as to consolidate the main ideas and findings (step 8). While 42 of those 107 articles focused on lean leadership in healthcare organisations, 65 articles dealt with lean leadership in other, predominantly manufacturing sector contexts. In the final, ninth step, the articles were content-analysed, classified and conclusions were drawn to arrive at a list of behaviours a lean leader may need so as to implement lean successfully.

Results and discussion
Lean Leadership Behaviours
Fifteen behaviours were identified in the final portfolio, as shown in Table 1. Their citation frequency was compared to verify which leader behaviours are more commonly observed in each context. Four behaviours were mentioned in more than 40% of the articles in both healthcare and manufacturing contexts: 'demonstrating commitment and support'; 'developing and training employees'; 'creating a learning environment'; and 'formulating and communicating goals and objectives'. This indicates that these behaviours are associated with effective lean leadership, regardless of the context. Notwithstanding, other behaviours seemed to be more prevalent in certain contexts.

For instance, there was a large difference in the frequency of the citation of 'empowering employees' between healthcare (21 citations; 50%) and manufacturing (15 citations; 23%) contexts. According to the identified studies, leaders have to create a favourable environment for successful lean implementation, one in which employees are empowered and problems are recognized as opportunities for improvement (Poksinska et al., 2013; Dannapfel, 2014; Aij et al., 2015). Specifically, in healthcare environments, this behaviour is essential due to the occurrence of rapid changes in patients' clinical states, requiring versatility, speed and precision in the decisions (Abuhejleh, et al., 2016; Aij and Veth, 2017). Also, employee participation and empowerment are enablers of quality of care and patient safety (Kim et al., 2006; Dickson, 2009; Anand et al., 2012; Steed, 2012). Indeed, hospital management has to be driven by these principles in order to create an innovative culture (White et al., 2013; van Rossum et al., 2016). According to Aij et al. (2017), leaders can build a nurturing environment through employee empowerment, whereby employees can learn, improve and effectively achieve goals. Hence, this behaviour has been emphasized in the healthcare portfolio.

Also 'committing to self-development' was mentioned more often in the healthcare articles (17 citations; 41%) than in the manufacturing articles (15 citations; 23%). This is an interesting difference, as lean leaders in any context are suggested to be adaptive learners (Ballé, 2017). Perhaps, similar to the previous point, healthcare leaders are more focused on self-development than manufacturing leaders due to the diverse, sometimes ad hoc situations in which they must learn to function well.

Another interesting difference concerns 'getting and giving information'. Only 29% of the healthcare articles mentioned this behaviour, whereas it was listed in 42% of the manufacturing articles. As noted by Van Dun and Wilderom (2016), information sharing is a key behaviour in lean work settings. It is also a more task-oriented behaviour which

Table 1 – *Lean Leadership behaviours in Healthcare and Manufacturing settings and frequency of citation*

Behaviours	Healthcare (n=42)		Manufacturing (n=65)		Behaviour orientation[a]		Early Maturity Stage		Advanced Maturity Stage	
	Quantity	Frequency	Quantity	Frequency	Task	Relation	HC[b]	MF[b]	HC	MF
1. Demonstrating commitment and support	31	**74%**	34	**52%**		X				X
2. Developing and training employees	22	**52%**	30	**46%**		X				X
3. Creating a learning environment	21	**50%**	24	**40%**		X				X
4. Empowering employees	21	**50%**	15	23%		X				X
5. Formulating and communicating goals and objectives	18	**43%**	27	**42%**	X		X			X
6. Committing to self-development	17	**41%**	15	23%	X	X	X	X	X	X
7. Visiting the work floor (*gemba* walk)	15	36%	14	22%	X	X	X	X	X	X
8. Getting and giving information	12	29%	27	**42%**	X			X	X	
9. Acting as a role model	11	26%	12	18%		X				X
10. Showing modesty and openness	3	7%	6	9%		X				X
11. Celebrating and recognizing success	3	7%	4	6%		X				X
12. Intellectual stimulation	2	5%	6	9%		X				X
13. Monitoring and evaluating	2	5%	4	6%	X			X	X	
14. Experimenting	2	5%	3	5%	X			X	X	
15. Visibly apply lean	1	2%	3	5%	X			X	X	X

Note. All behavioural frequencies above 40% are in bold. Quantities and frequencies refer to the absolute and relative numbers of reviewed articles that have mentioned a certain behaviour.
[a] Source: Yukl et al. (2002) and Van Dun et al. (2017)
[b] HC = Healthcare; MF = Manufacturing

may fit the manufacturing context better. As noted by Jones (2017, p. 264), HC leaders must learn "how to manage by asking questions rather than telling subordinates what to do." In healthcare organizations, it may not always be feasible to share a lot of information, either because of patient privacy issues or because of the high workload many doctors and nurses experience. In this respect, it is likely that leaders within healthcare settings adopt more relations-oriented behaviour in order to support their subordinates better who have to deal with life-threatening situations on a daily basis (Salas et al., in press).

Finally, 'visibly applying lean' is noted only in a few papers. This is contrary to our expectations based on the social learning theory (Bandura, 1977), which implies that when successful leaders adopt certain behaviours their subordinates will follow their lead. In this sense, if leaders adopt lean practices first, their followers are likely to embrace lean more actively in their own work. A recent study by Camuffo and Gerli (2018) did find 'standards development' as a key lean managerial behaviour, which indicates that leader's visible adoption of lean practices may be more important than previously thought. Future research should focus on whether and why leader's visible adoption of lean practices may not be effective.

Leader hierarchical level and lean leadership behaviours
Very few studies specified leaders' behaviours at different hierarchical levels within organisations. Regarding healthcare, only 6 of the 42 articles superficially touch on the hierarchical levels of leaders and their behaviours in relation to successful lean implementation. This demonstrates that there is a clear need for a better understanding of how hierarchical levels in healthcare organisations may influence leader's behaviours throughout the lean implementation—especially because different hierarchical levels (operational, tactical and strategic) are required to interact and collaborate to bring about a successful lean change (Aij et al, 2015).

Of the papers that did specify leader hierarchical levels, it became clear that healthcare papers more frequently with operational- and tactical-level leaders and the manufacturing papers with strategical-level leaders (see Table 2). Furthermore, leaders' roles at each level differed according to the context in which the study was carried out. At the operational level, healthcare studies usually looked at nurse's behaviours, whereas manufacturing work setting analyses were often related to frontline leaders. At the tactical level, healthcare papers dealt with physicians and manufacturing papers with middle managers. In turn, all the studies that approached the behaviours of lean leaders at a strategic level referred to 'senior managers' regardless of the context. Articles may thus give similar hierarchical levels different labels; thus, in order to allow for generalizability of the findings, we advise authors to describe their sample's organizational level clearly. Moreover, whereas LH scholars may want to start examining more senior managers, lean scholars who focus on manufacturing settings are urged to also study the lower organizational levels. This will enable the specification of lean leader behaviours across hierarchical levels.

Table 2 – Frequency of citation of leadership behaviours according to hierarchical level

Hierarchical level	Healthcare (*n*=42)		Manufacturing (*n*=65)	
	Role	Frequency	Role	Frequency
Operational	Nurses	12%	Frontline Leaders	3%
Tactical	Physicians	12%	Middle Managers	5%
Strategic	Senior Managers	9%	Senior Managers	12%

Organisational maturity level and lean leadership behaviours
Previous studies illustrated that it can take up to at least four to five years from the beginning of lean implementation to enjoying the full benefits of the management system (Ben-Tovim et al., 2007; Netland and Ferdows, 2016). Leaders should thus be committed to a long-term lean journey (Fine et al., 2009). While it is expected that leader behaviours vary according to different stages of the lean implementation (Dickson et al., 2009), just a few of the reviewed articles provided arguments of how exactly leader behaviours differ throughout the phases of lean implementation. Tortorella et al. (2017) noted the existence of a developing leadership style orientation during lean implementation. Such a behavioural shift is described in terms of task- and relation-orientation, and may vary according to the organisation's maturity level with respect to lean implementation. Others suggest that there is not a single best leadership behaviour that supports all phases of lean implementation (Mann, 2009; Testani and Ramakrishnan, 2010).

Table 1 classifies the identified behaviours in terms of task- and relation-orientation and, consequently, the stages of the lean implementation processes they should be emphasized in. This classification of task- and relations-orientation is widely shared among leadership scholars (Yukl et al., 2002; Behrendt et al., 2017). Following Yukl et al. (2002), we defined task-oriented behaviours as those that tend to focus on "high efficiency in the use of the resources and personnel, and high reliability of operations, products and services". In the relations-oriented classification, the behaviours are described as "strong commitment to the unit and its mission, and a high level of mutual trust and cooperation among members" (Yukl et al., 2002). According to the literature review, leader behaviours in manufacturing organisations appear to be more task- than relation-oriented at the early phases of lean implementation. Furthermore, as the implementation advances, leaders might shift their focus from task to relation, emphasizing the importance of interpersonal skills (Found and Harvey, 2007; Found et al., 2009; Martínez-Jurado et al., 2013). Hersey and Blanchard (1993) state that when followers are not capable of executing their tasks yet or are unwilling or afraid to try, then the leader has to take a highly directive role by telling them, in detail, what to do. However, as soon as the followers can perform the job properly but show insufficient commitment, leaders need to find out why they are refusing to cooperate and then persuade them to work properly. This is the point of the lean implementation where leaders should spend time listening, praising and making followers feel good when they show the necessary commitment to sustain the improvements achieved so far (Mann, 2009; Rother, 2009).

Lean healthcare implementation usually begins with leaders who attempt to adopt isolated parts or practices without understanding the entire system (D'Andreamatteo et al., 2015; Aij et al., 2017). However, the successful adoption of the lean philosophy requires the adoption of the entire system in a holistic manner, rather than applying techniques in an isolated way (Womack and Jones, 2003). Thus, after reviewing the literature, it is recommended that in the beginning of the lean implementation in healthcare organisations, leaders should focus their behaviours' orientation on relationships, instead of tasks (Aij et al., 2017). Indeed, relation-oriented, transformational leadership has been shown to motivate people to put more effort into their performance than they intended at the beginning (Bass and Avolio, 1994). Such transformational leaders adopt inspiration and motivation, intellectual stimulation, idealized influence and personal consideration (Avolio et al., 2009).

The relation-oriented approach to leadership has also been shown to be especially important for outcomes in the healthcare sector, such as staff job satisfaction, roles and pay, staff relationships with work and their health and well-being, work environment

factors, productivity and effectiveness. A review by Cummings et al. (2010) showed that registered nurses who reported enhanced teamwork with physicians and collaboration within the work group were those who reported relation-oriented leadership. Abdallah (2014) and Poksinska et al. (2013) highlight that employees may be sceptical and reluctant in the initial phases of lean implementation. In manufacturing, for instance, such unwillingness to change is particularly observed among shop floor employees, where the first improvement initiatives are commonly undertaken (Liker, 2004). Hence, also in manufacturing work settings, the emphasis on behaviours that are relation-oriented may support followers' initial reaction to lean change better. As healthcare organisations become more mature with lean implementation, the leaders therein must increase their task orientation (Poksinska et al., 2013).

Conclusion
Overall, the current general leadership literature has placed too much emphasis on the leadership behaviours and styles, and too little on the need to understand the complex contexts in which such leadership takes place (Aij and Teunissen, 2017). This study is grounded on the idea that different sets of lean leader behaviours should be emphasized and developed according to the type of work setting, the leader's hierarchical level and the phase of their organisation's lean implementation. By focusing on the healthcare sector that is challenged by the need to cut costs and increase productivity without sacrificing patient safety, this study acknowledges the complexity of lean leadership.

In summary, the literature review offers the following key contributions: First, it identifies a repertoire of leader behaviours that are suggested to lead to successful lean implementation in healthcare organizations. This repertoire is supported by the few articles on lean leadership that appeared after our literature search in June 2017. For instance, Camuffo and Gerli (2018) found that effective lean leaders in non-healthcare settings should act supportively and must help build the capabilities of their subordinates. Yet, leader's visible adoption of lean practices, such as standards development (Camuffo and Gerli, 2018), was less frequently observed in the reviewed articles.

Second, the increasing scholarly attention for lean leadership in healthcare and manufacturing confirms that top managers should reconsider adopting lean practices if they do not want to change their own and their lower-level leaders' behaviours. Overemphasizing lean practices may lead leaders to think that those practices will result in performance improvements, independently of the way in which they lead and the social and psychological impact of their decisions and actions. However, no solid evidence exists yet in terms of causality: It could be that the leaders develop new behaviours on adopting lean practices. Nevertheless, organizations that adopt lean may need to stimulate the leader behaviours, as found in our review, by setting up leadership development programmes at various organizational levels. It is advisable that organizations start with those development programmes early, because it will take time to change leader behaviours. The fact that organizations can now build their medical leadership models upon the tailored, healthcare- specific leader behavioural repertoire uncovered by our review, may reduce healthcare leaders' likely resistance to change. This may help healthcare professionals to become "more comfortable with 'industrial' process improvement techniques" such as lean (D'Andreamatteo et al., 2015, p. 1206).

Moreover, this review supports what has been suggested before, namely that relation-oriented leadership in healthcare organizations leads to better organizational outcomes and employee health than task-oriented leadership (Cummings et al., 2010), especially at the early stages of LH implementation. As noted before, only a few studies took the exact lean phase of the organizations, the studied leaders and their (sub) departments into

account. We hope that new studies will report more accurately such sample demographics, enabling future meta-analyses that may provide better insights into the extent to which a lean leader must demonstrate task- or relations-oriented behaviours, and how this may differ per lean implementation stage.

Our literature review also indicated that most healthcare lean articles focused on middle managers and frontline leaders including the physicians, nurses and other medical staffs in a healthcare organisation. They play a significant role in implementing LH practices. Even though strategic-level senior leaders are the ones who often make the decision to initiate lean implementation, tactical and operational level leaders must then implement LH practices in their day-to-day operations. The meaningful involvement of physicians, nurses and other medical staff, including senior doctors, is of vital importance for the sustained success of a LH programme. To embrace ownership of the processes, to identify and recommend improvements in their daily work (Narayanamurthy et al., 2018), they must feel supported by their higher-ups. Multi-level follow-up studies are recommended that show the behavioural links between the strategical, tactical and operational level leaders and how these behaviours may relate to successful lean adoption.

The main limitation of this study is that the resulting framework of leader behaviours is to a certain extent based on papers outside the healthcare literature; its applicability as such is not assured. Thus, empirically testing the resulting behaviours in healthcare organisations is advised, as well as testing to what extent leaders are effective when they adopt the proposed behaviours. Such future research ought to be based on longitudinal data in order to analyse the true impact of the listed lean leader behaviours in the long term, i.e., in terms of job satisfaction, work engagement and engagement in organizational development involving, for instance, patient safety and quality of care (Strömgren et al., 2016). Ideally, we call for the tracking of lean's impact on objectively measurable indicators. This will enable leaders to see LH not only as a means to achieve short-term benefits, but as an operational management philosophy that must be integrated in an organisation's strategy to aid long-term cultural and behavioural change (Van Dun and Wilderom, 2012; Bortolotti et al., 2018). Since we know that "leadership serves several critical functions in the context of healthcare and shaping patient safety outcomes" (Salas et al., in press, p. 6), this review hopes to spark many more studies of effective leadership in the context of LH so that, ultimately, more patients can be served better.

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A complete list of all the 107 reviewed articles is available from the authors upon request.

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