

Lean in healthcare: perceptions on Lean thinking impacting Lean sustainability

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Abstract

This paper highlights the perceptions of those involved in implementing and sustaining Lean within a NHS Health Board (Trust A). The findings from interviews reveals that Trust A's Lean programme is facing real challenges to its sustainability due to competing pressures of people and time in the healthcare environment.

Introduction

Womack and Jones (1996:15), describe 'Lean thinking' as being "*lean because it provides a way to do more with less and less – less human effort, less equipment, less time and less space – while coming closer and closer to providing customers with exactly what they want.*"

The original definition of Lean thinking is defined by the five principles of; "precisely specify *value*, by specific product, identify the *value stream* for each product, make value *flow* without interruptions and let customer *pull* value from the producer and pursue *perfection*" (Womack and Jones, 1996:10). In healthcare, Lean thinking can be defined as maximising the value of activities and processes for the patient whilst removing waste and improving quality and safety to ensure no harm is caused to the patient in the hospital environment (Jones et al., 2006).

Lean in the 2000's has been a popular field of study for researchers (Taylor and Taylor, 2009), however, in comparison to other industries, the implementation of Lean in healthcare is in its infancy (Radnor et al., 2011). Studies based on Lean healthcare implementations (Dickson et al., 2009, Holden, 2011), concentrate on the process and operational aspects of Lean in line with the original literature (Womack et al., 1990, Womack and Jones, 1996), rather than focusing on people and respect for humanity as highlighted in early Lean literature (Monden, 1983). Academic reviews of Lean literature has noted the limited focus on the human aspects of Lean (Brandão de Souza, 2009, Joosten et al., 2009) and where it has been mentioned, it is aligned to negativity towards the methodology (Hines et al., 2004, Pettersen, 2009).

Lean healthcare in the UK is described as being disjointed and consisting of small projects, rather than full-scale, organisational wide Lean implementations (Radnor, 2010) and is limited to the use of a few key tools. These tools have been categorised into three activity areas: assessment, improvement, and performance monitoring. Assessment involves

reviewing areas of waste, assessing process flow and process and value stream mapping. Improvement activities involve staff and are commonly conducted through the use of Kaizen or rapid improvement events (RIE's) which bring in the use of problem solving tools or use of 5's (sorting, setting in order, sweeping, standardising and sustaining). Performance monitoring measures the improvements made, usually through the use of visual standards and visual management tools (Radnor et al., 2011). Tools however only account for around 20 percent of effort in Lean implementations with 80 percent of effort required in management of the human issues of Lean (Mann, 2009).

Lean sustainability requires a focus on the human aspects of Lean and it is common to see a focus on leadership (Mann, 2009, Spear, 2004) but the multiple complexities in UK healthcare such as the focus on targets, relationships and political influence (Klein, 2010, Webster, 1998) with the influence of professional groupings (Currie et al., 2008b, Currie et al., 2010, Iedema et al., 2004, Pate et al., 2010), mean the focus has to be extended beyond leadership (Ovretveit, 2005) and for sustainability, a focus must be placed on employees at all levels of the organisation (Mann, 2009).

Hines, et al. (2008), highlights key issues for Lean and its modification in public sector organisations such as the National Health Service (NHS). This includes a 'critical' focus on the human dimensions of Lean (more so than in manufacturing), issues over the flow of communication/information, a lack of focus (and perhaps experience) of change, and issues over the identification of the customer.

This research was determined by the need for more research into the human dimensions of Lean in order to understand the issues those working in Lean faced. The recognised need for this research as previously detailed, meant that the research would cross the disciplinary boundaries of operations management, in order to effectively understand the issues faced by

those working in the NHS and to be able to add new, potentially unconsidered insights into Lean implementations in healthcare. This multi-disciplinary approach is supported within the operations discipline (Taylor and Taylor, 2009).

This study is based on a Scottish NHS Board (Trust A) who have been implementing Lean since early 2006. Lean has been implemented across multiple sites and within multiple services (both clinical and non-clinical). They have had some notable successes in the reduction of referral to treatment waiting times from 22 weeks to 8 weeks post kaizen event for substance misuse, and in physiotherapy finding approximately 2,000 extra slots per annum as a result of changes in ward routines. These successes are reported both internally and externally in the organisation but these projects are pockets of Lean activity and are disjointed. The head of the Improvement Team and the team themselves have concerns that the benefits of Lean are not being realised and there are concerns about sustainability of Lean in Trust A.

This research project is in its initial stages and this paper reports the key findings to date. The aim of this research is to determine how perceptions on Lean thinking impact Lean sustainability through the views and experiences of those involved in Lean implementations.

This aim was achieved (to date) through the following key objectives:

- Define and evaluate the use of Lean in the UK healthcare context.
- Ascertain knowledge of Lean in the organisation, as perceived by those responsible for delivery of Lean projects.
- Identify the perceptions held about Lean in order to recognise challenges and enablers for its sustainability.
- Evaluate the findings to date and their potential impact on this organisations Lean implementations.

Literature

The suitability of Lean for use in healthcare was proposed in the book 'Lean Thinking' (Womack and Jones, 1996), though reference was made to the 'conceptual development' of a Lean hospital in 1995 (Ahlstrom, 2004).

Much of the literature on the adoption of Lean outside of manufacturing, in the UK, dates from the mid 2000's onwards. There have been various articles published on the adoption of Lean in healthcare, across the globe (Balle and Regnier, 2007, Ben-Tovim et al., 2007, Fillingham, 2007, Furman and Caplan, 2007, Grove et al., 2010, Kollberg and Dahlgaard, 2007) (See Table 2 for further details) though these implementations are either partial and related to certain departments such as an emergency department (Dickson et al., 2009, Kollberg and Dahlgaard, 2007) or at an early stage in the Lean journey (Balle and Regnier, 2007, Ben-Tovim et al., 2007, Fillingham, 2007). Radnor et al. (2006:92) recognise the applicability of Lean and its suitability for the public/healthcare sector as "*The public sector can gain greater efficiency by considering and implementing aspects of Lean. However, there is still little evidence of the complete Lean philosophy being applied in the public sector.*" In 2010, this statement was still viewed as applicable (Radnor, 2010).

The focus on the implementation of Lean in healthcare had not been attempted as a whole before 2005, and by 2005, only three hospitals, two of which were in the USA (Virginia Mason, Seattle and Thedacare in Wisconsin), and one in Australia (Flinders in Adelaide) were embarking on the Lean journey (Ben-Tovim et al., 2007, Fillingham, 2007). Shortly afterwards they were joined by the Bolton Hospitals NHS Trust in the UK who expect to be on a 10-20 year Lean journey (Fillingham, 2008) so there is very little published literature on full Lean deployment across health care organisations and it is questionable as to whether healthcare organisations who claim to be Lean, are indeed truly Lean (Radnor et al., 2009). Much of the current 'Lean' literature deals with the improvement of healthcare processes in

reference to the ‘silo’ structure of healthcare where Lean is applied to ‘key departments’ such as the emergency department (Brandão de Souza, 2009, Decker and Stead, 2008, Dickson et al., 2009, Holden, 2011) which results in a lack of integration across the hospital and wider hospital trust (Brandão de Souza, 2009, Radnor, 2010) and neglects human aspects within Lean implementations (Joosten et al., 2009).

These ‘human aspects’ in Lean are crucial as 80 per cent of work during the Lean implementation is based on people (Mann, 2009) and although this focus on people is shown in the work of Monden (1983) and the impact Lean has on work, roles, knowledge sharing, process improvement and communication in the workplace (see Table 1). This focus on people appears at odds with the comments of Pettersen (2009) in the discussion of Lean as Theory X or those recognised by Hines, et al. (2004) about the Lean working environment. The focus of articles, (see Table 2) is on process improvements with the areas which require further investigation being those related to people.

Task	Description
Job Rotation	Rotation of jobs creates multi-functional workers who can work across a range of tasks. Job rotation scheduling considers the condition of the worker (illness, experience, training level).
Standardisation of tasks and processes	Allows workers to learn roles and tasks, knowing there is one way to do things, so tasks can be set to workers taking into account the condition of the worker (eg. skilled work, heavy work).
Knowledge Sharing	Senior workers and supervisors use their own knowledge and skills to teach other workers and those subordinate to them, thus sharing knowledge.
Workers influence on process improvement	Workers at all level are encouraged to think creatively and propose improvements in their working environment. This results in empowerment and this respect for human’s principle encourages worker contribution for improving worker morale.

Communication	There is a need to have open communication. This is to inform all in the organisation what is happening – e.g. process improvements so that trust and credibility is maintained. This is especially important at lower levels so workers feel they have a contribution to make in the workplace.
Education	As well as knowledge sharing between workers, including those considered to be senior, education is also promoted through the use of Quality Control (QC) circles. Education is also provided for employees (separate to knowledge sharing) in areas such as problem solving, trainer courses for department heads and advisor courses for supervisors.

Table 1: The Human Dimensions of Lean (adapted from Monden, 1983)

Table 2 below details some key articles highlighting the use of Lean in healthcare with key issues and issues identified. One thing to note about this table is that many of the case studies are from hospitals in the USA, showing there is a need for literature which deals with Lean implementations in the UK. This table also highlights the focus on process and operational improvements in healthcare, and how there are areas of conflict in Lean in relation to people involvement and a lack of detail on how Lean affects those involved.

Article	Description of study	Key Findings/Issues
Papadopoulous, Radnor and Merali (2011) ‘The role of actor associations in understanding the implementation of Lean thinking in healthcare’	Study of a Pathology unit of an NHS Trust, where Lean was being implemented through the use of Actor Network Theory (ANT) (UK)	<ul style="list-style-type: none"> - Those involved in the implementation (the actors) took on roles which would affect the dynamics of the Lean implementation. - No single actor had influence. - The actors determined the trajectory and outcome of lean - Process of “negotiations, articulations and conflicts” (p.184)
Holden (2011) ‘Lean Thinking in	Review of 18 Lean implementations in	<ul style="list-style-type: none"> - Lean appears to offer significant improvements in ED’s such as; process flow, standardised procedures/forms,

Emergency Departments: A Critical Review'	15 ED's in Australia, Canada and the United States	<p>improved communication</p> <ul style="list-style-type: none"> - Process change is a key component of Lean in the ED - Need for longitudinal research - Lack of detail on effects (directly and indirectly) of Lean on employees
Waring and Bishop (2010) 'Lean healthcare: Rhetoric, Ritual and Resistance'	Study of a Lean implementation in an NHS operating dept (UK).	<ul style="list-style-type: none"> - Lean acts as a challenge to power within healthcare - Lean can contribute to evidence based work, new forms of clinical leadership and the re-determination of occupational boundaries - Rhetoric – showed use of language in selling Lean to health care workers - Ritual – “accepted patterns of routines, customs and order emerged” (p.1336) - Efficiency gains and improved work flow emerged. - Resistance: issues not limited to one single group, cynicism over methods and aims.
Meyer (2010) 'Life in the 'Lean' Lane: Performance Improvement at Denver Health'	Lean – performance improvement (US)	<ul style="list-style-type: none"> - Cost savings and revenue gains worth \$54 million from Lean. - Improvements in ED waiting times for patients. - Issues in Lean – employee relations, Lean is process and operationally based but other non-lean aspects are required for addressing attitudes of clinicians who block changes.
Grove, et al. (2010) 'UK health visiting: challenges faced during lean implementation'	Health visiting in a UK primary care trust	<ul style="list-style-type: none"> - Many of the current studies are within hospitals. - Poor understanding of Lean by the project team. - Issues over communication and leadership as working in the 'community' causes issues here and limited achievement and sustainability of Lean goals. - No strategic planning for Lean. - Challenges over customer focus on Lean – who is the customer in healthcare as so many stakeholders (33 identified)?
Dickson, et al. (2009) 'Use of Lean in the Emergency Department: A	Effects of lean on 4 emergency departments in the US	<ul style="list-style-type: none"> - Length of stay reduced - Greater results where employees actively engaged with Lean - Lean outcomes affected by leadership commitment to Lean - Closer Lean is to the original Toyota ideal, the better Lean works initially

Case Series of 4 hospitals'		
Graban (2009) 'Lean Healthcare'	Lean healthcare 'success' examples from US healthcare	<ul style="list-style-type: none"> - Turnaround time for a laboratory improved by 60% with same level of resources. - Reduced deaths by 95% in relation to central line infections. - Orthopaedic surgery waiting time reduced from 14 weeks to 31 hours. - Savings of \$7.5 million from Lean rapid improvement events in 2004 and savings reinvested into patient care.
Ben-Tovim, et al. (2007) 'Lean thinking across a hospital: redesigning care at Flinders Medical Centre'	Lean implementation (AUS)	<ul style="list-style-type: none"> - Reduction in 'did not wait' patients, from 7% to 3%. - Reduction in waiting times in ED. - Improvement in bed management processes. - Challenge in moving away from 'command and control' management to facilitating problem solving in Lean.
Ballé and Régnier (2007) 'Lean as a learning system in a hospital ward'	Lean and learning in healthcare (FR)	<ul style="list-style-type: none"> - Lean outside of the automotive industry is a challenge and a system which must be constructed by ward managers, matrons and nurses. - Need for basic stability in the working environment – which has shown to be problematic. Took around a year to embed standardising practices. - Issues over maintaining basic 'Lean' environment before moving on to specific tasks involving patients. - Results though were good once stability achieved – reduction of probability of a patient having an accident by 45%
Fillingham (2007) 'Can lean save lives'	Lean implementation in NHS Trust (UK)	<ul style="list-style-type: none"> - Experience that Lean 'can save lives'. - Better multi-disciplinary team working. - Total length of stay reduced by 33% - Mortality reduced by 36% - 42% reduction in paperwork.

Table 2: Lean healthcare literature – key findings and issues

As table two shows, recent literature is beginning to focus on the human dimensions of Lean but this focus is from other disciplines such as reviewing Lean through the use of Actor Network Theory (ANT) (Papadopoulos et al., 2011) and Organisational Behaviour (OB)

studies (Waring and Bishop, 2010), rather focusing on the other areas whilst still grounding the research in the operations management domain.

From the literature it is clear that Lean can provide process and operational benefits to healthcare organisations but the practice of implementing Lean is far more complex than introducing tools and techniques due to the human dimensions of Lean and these limitations although acknowledged are not yet fully understood. Until the human dimensions are fully understood, they are unable to be addressed sufficiently and this can impact subsequent implementations and the future sustainability of Lean thinking in the healthcare environment.

Research Methodology

Although the growth of Lean research has been highlighted in literature (Taylor and Taylor, 2009), the use of Lean in healthcare is a relatively new topic in the UK. In order to gain understanding of its use in the healthcare environment and to ascertain perceptions towards Lean, a case study approach has been adopted as the choice of research strategy. The use of case study research is supported within operations management due to operations management focus on both hard (physical) and soft (human) elements and indeed is acknowledged as contributing to the breakthrough of concepts such as Lean (Voss et al., 2002). As this research is focusing on perceptions and experiences of Lean, the case study methods allows the researcher to ask questions of what, why and how (Voss, 2009). The use of case study can also be used in exploratory studies where the researcher is intending to gain an understanding of all the variables and context influencing the field under study (Voss, 2009).

This study is a single organisation case study but this organisation consists of multiple sites and multiple respondents have been drawn from these sites in order for different perceptions

and viewpoints to be ascertained as viewpoints can be subject to variable interpretations. To mitigate the known limitations associated with single case studies such as generalisability and bias over certain events, the multi-site focus of this single case will add depth to the study (Voss, 2009).

In order for the study to have been conducted, research approval was required from the Executive Management. This approval was granted but this has determined the sampling method which has been used. Snowball sampling has been used as the researcher was granted access to the Improvement Team and it is through this contact that access has been gained to other groups (Bryman and Bell, 2011). This approach was the only approach feasible in this study as the research is being conducted as an academic piece of work and the researcher has no affiliation to the organisation so it would be impossible without assistance to know which section of the organisations population that samples could be drawn from (Bryman and Bell, 2011). Snowball sampling further enhances this research due to its qualitative nature and the focus on key relationships in the hospital environment (Bryman and Bell, 2011). It is important to note that sampling of any kind can only be generalized to the population it was taken from but the intention of this research is to inform understanding of the issues in healthcare, as shown in Trust A, which can influence the knowledge and practice of operations managers implementing Lean.

This study was a purely qualitative study, focusing on those who work in healthcare and who are affected by Lean implementations so observations with an Improvement Team Lead were undertaken in order to understand the work involved in Lean projects and the context under which it was undertaken (the healthcare environment) through shadowing and attendance at internal and external meetings. The researcher was a non-participant observer and used unstructured observation as the focus was gathering detail for the research diary (Bryman and Bell, 2011). Observation data was then taken forward to support subsequent interviews as this

meant learning's from observations could then be used, even if they were not discussed in interviews (Radnor, 2002). This data from observations was compiled in a research diary directly after the observations took place so that events and conversations remained clear to the researcher and to mitigate against information which may have been forgotten had there been a delay in the recording of events (Radnor, 2002). These observations and diaries were used to help understand the complexities of the subject under study - Trust A.

Key questions had emerged from the literature review but the observations were required to understand some of the key contextual issues that might be faced during the research and this subsequently resulted in further development of interview questions. 12 semi-structured interviews were conducted with Improvement Leads and those tasked with improvement in their departments. Interviews were conducted with single interviewee's rather than group interviews to avoid any individual dominating the conversation, at the exclusion of others, on the subject under discussion (Voss, 2009). Semi-structured interviews allowed the researcher to ask the questions of what, why and how but also gave the flexibility to probe deeper into key areas which were emerging and asking the respondent to 'tell me about...' in order to discover new themes previously unconsidered at the outset of the research. This would have been restricted by structured interviews or key questions may not have been answered by unstructured interviews (Bryman and Bell, 2011, Radnor, 2002). The nature of the interviews meant that key questions could be supplemented by questions relating to emergent themes or opportunities which may present themselves in the interview situation (Eisenhardt, 1989). This is feasible in case research as the use of the case study in this instance is to understand the subject and provide as much depth as possible (Eisenhardt, 1989).

The interview findings have been triangulated to those in the literature review. As all interviews were transcribed, the transcriptions have been compared to identify consistency in

themes as discussed by the individuals. The identification of consistent themes shows the alignment of findings as this demonstrates the suitability of research for this area of study.

Observations and Interview Analysis

As this research is in its initial stages, the first part of the research and the work this paper reports on is based on observations and interviews conducted with those involved in Lean at Trust A. 12 members of staff have been interviewed and it is their views and experiences that have been documented here. These 12 members of staff are composed of those who work across multiple sites in the organisation and have conducted projects on these sites.

The demographics of the staff are as follows:

- 8 members of staff are actively involved in Lean Improvement and have the responsibility for delivering training and Lean projects – where they have a clinical or operations background then this distinction is made;
- 1 Operational Manager: fully trained in the Lean Methodology and delivers projects at site level;
- Two administrative staff, located at different sites and have been involved in Lean events;
- 1 Consultant who has been trained in the Lean Methodology and was involved in Lean project work.

Full details of staff and selected responses are shown in Table 3.

Observation – background information

The researcher shadowed an Improvement Lead to see how projects were scoped out and this enabled the researcher to understand how the Improvement Leads would work on their respective projects which would provide greater insight to the interviews which were conducted. The initial work conducted by the Improvement Leads is shown in Figure 1 and this was verified by another Improvement Lead at the interview stage. At times, these projects are fed top down as some projects are “*a strategic goal the Improvement Team have to work with*”. Each proposal, if successful will be given to an Improvement Team member to work on and from then the Improvement Lead will contact the service and speak to the Process Owner and further define the project. Recently the team have adopted a Project Charter for use in their projects due to issues in getting process owners to commit to and take forward Lean implementations after the Improvement Team have handed over the project. This Project Charter cannot be enforced to the point of repercussions, but it is hoped that by signing, the Process Owner is demonstrating their commitment to Lean by specifying the projects, intended goals, reporting to their Executive Sponsor and detailing how they will sustain the project in the longer term.

Key tools used by the Improvement Team

Once this has been agreed, the Improvement Lead can begin pre-work for the project (See Table 1), by visiting the service, meeting staff and identifying key stakeholders who will be involved in the Lean improvement, mapping processes, flow and value and non-value adding activities and inviting those who are needed to the Lean event. This event will be a larger scale kaizen event (3-5 days) or a one day ‘work-out’ or rapid improvement event (RIE) which is aligned to the findings of literature on tools used in healthcare and the public sector (Radnor et al., 2011). Events are opened by an Executive Sponsor who supports the project,

staff are introduced to the Lean methodology and then it is with this knowledge that staff can recognise the need for Lean in their service so they can start to identify the issues which has led to this project. Staff will map processes, identify issues and then (in a one day event) review potential solutions and leave with an action plan to work through.

The researcher observed meetings at the start of a Lean project. This project was on drug prescribing in the prison service as Trust A had recently taken over all healthcare services in this domain. The improvement Lead had tried to organise a one day event but this was later reduced to 3 hours due to time constraints on the service. The Improvement Lead demonstrated the use of process and value stream mapping as well as conducting interviews to identify key stakeholders.

At the event, the process owner did not attend although assurances had been given that there was service commitment to the project. 12 staff members attended, were taught about Lean and key tools and techniques and why they would be relevant in this service. As the event was a 'taster' of Lean, staff were asked about their views. Very little was said but one staff member reacted aggressively and said that she *"had picked up the pieces of Lean before"* and that *"it is a waste of time and there is no point in doing it as it doesn't work"*. When the Improvement Lead asked her how she had experienced Lean, she referenced what the Improvement Lead said was a very successful project that was still being sustained. Other members of staff stayed silent but there was a noticeable change in the mood of the staff after this.

When staff asked if time would be provided for working on Lean, the Improvement Lead said that only the manager could authorise that and it would be up to the service, as there is no automatic time given for Lean projects.

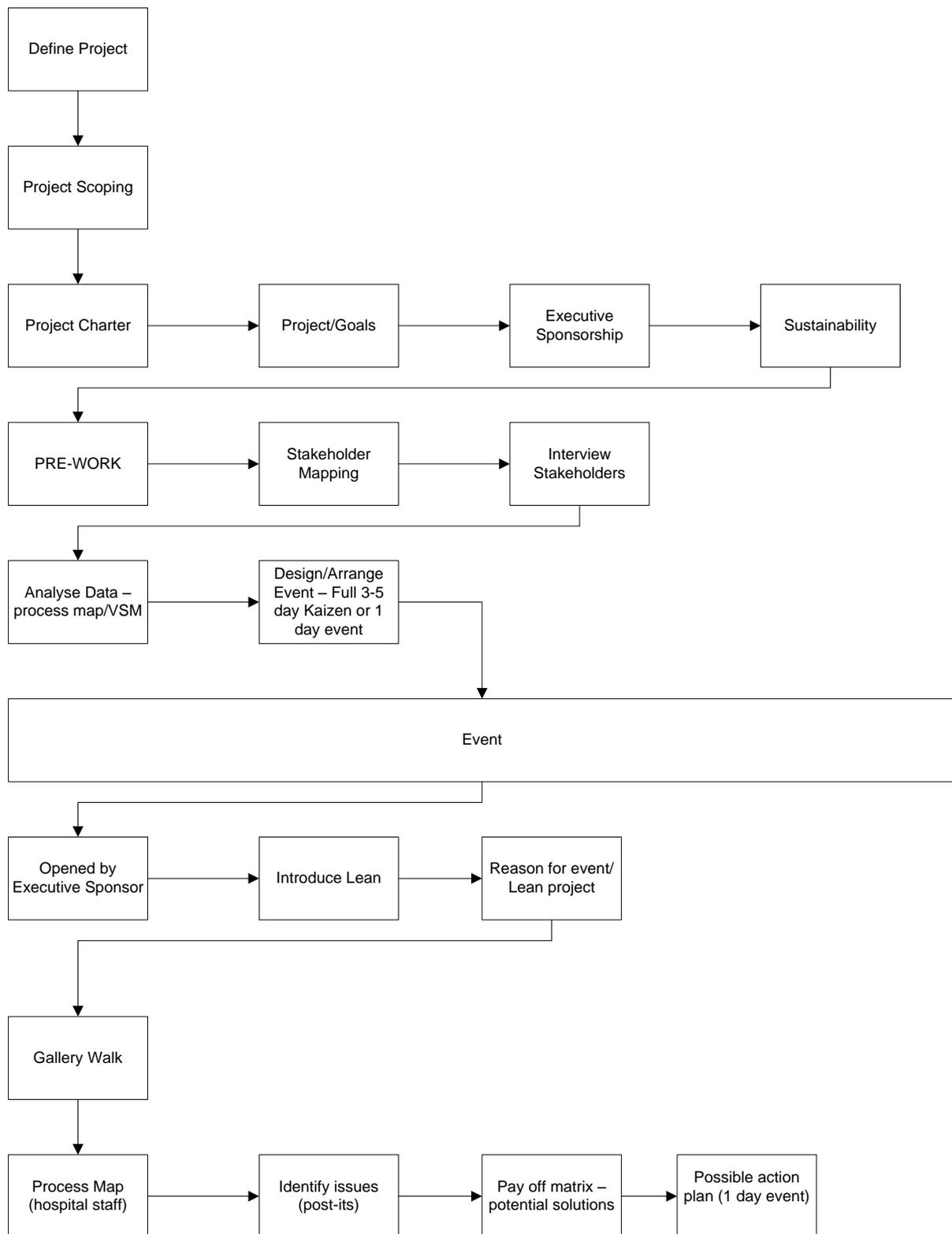


Figure 1: The start of a Lean project in Trust A

These observations were used to understand the work of the Improvement Team and to identify any issues that might be faced by them so this type of information could be ascertained by the interviews by additional questions. As questions were adapted depending

on the subjects covered in the interviews, key themes were identified and then tabulated in Table 3 by interviewee.

As Table 3 demonstrates, four out of the eight interviewees have a clinical background meaning that they have been employed in healthcare in a clinical capacity before moving into Improvement work. Three others have an Operational background and one team member has remained within an Improvement role. Four other employees of the organisation were found through the snowball sampling employed as other employees identified by the Improvement Team directed the researcher to these individuals and are from three separate sites.

Knowledge of Lean

Trust A is a substantial NHS Board and is one of the largest in the United Kingdom (UK). Despite its size, and a clear focus on Lean as an improvement methodology, comments are contradictory as to the knowledge of Lean in the organisation. Some interviewees discuss the knowledge of Lean as *“I don’t think there is a service that hasn’t been touched (by Lean)”*, though other members of the Improvement Team make references to the lack of knowledge about Lean in the organisation as *“where we haven’t run projects, it’s probably that staff are a bit indifferent about it, because they don’t know about it.”* When a Consultant was asked about staff and Lean, she said *“a lot of people don’t have any knowledge of it at all, especially medical staff as I think I was the first consultant ever to go on Lean training...but overall, a lot of people aren’t familiar with Lean or anything”*. Though this can be attributed to the challenge of embedding Lean as; *“we are trying to embed the Lean methodology in an organisation which is so big with only three Improvement Leads.”* This limitation is echoed as *“not only are we providing the projects, but we are also providing the training. So we are a...we are a very well used resource but a very scarce resource as well.”*

All employees were asked about their Lean experience. All had either run Lean events or attended Lean events so they were familiar with the methodology and the benefits Lean could derive. All examples that were given of projects that interview subjects had been involved in were of process improvement and patient flow and tools which were used but factors of time and people came up in these areas, showing that people account for a far greater focus than the tools and techniques associated with Lean (Mann, 2009).

Key Challenges for Lean in Trust A

The key challenges were identified by each respondent and these challenges highlighted link back to key themes discovered in literature when exploring the complexities of the NHS such as the influence of targets and the complexities of managing professional groups and the role they play in the healthcare environment (Currie et al., 2008a, Currie et al., 2010, Klein, 2010). The key challenges are identified in Figure 2, with details of responses by interviewee in Table 3. Throughout the interviews, two topics came up consistently. Time impacted the planning of events at the start up stage of a project (as shown in Figure 1) as longer events such as 3-5 days were discussed with the interviewee stating; *“we can’t get staff out for more than a day and then you have people cancelling. We’ve got an issue just now in the organisation with time.”* This is having an impact on Lean in the organisation for Operational Managers; *“It (Lean) is not a priority for them. I’m not saying it should be but I think it could benefit them more if they took the time to think about it but they just don’t feel they’ve got that time.”* Those respondents who had worked in Lean since its introduction in Trust A had discussed how early events were commonly 3-5 day events which were well attended by both staff and senior management but now, time pressures were impacting everyone at all levels of the organisation.

People were recognised as a key challenge in Lean with respondents specifically identifying those in ‘professional’ roles for example medical staff and senior clinicians as impacting on their Lean projects (Meyer, 2010) and as a group, providing a particular challenge which has been noted in organisational behaviour literature (Currie et al., 2008a). Relationships between different groups were discussed by respondents, including a few respondents who made references to the added complexity of personal and team relationships impacting their work and what they were trying to achieve as *“they might be a group of people who all do the same thing but they might not see themselves as a team so they might not be happy for doctor’s A&B to represent them and then come back and say ‘right, we’ve done this event and this is what was decided’ and it doesn’t matter if this was a good or bad idea, it’s just they won’t be told by doctor’s A&B.”* One project lead discussed a current project over the introduction of technology into a service saying that the consultants were *“dead against Lean and against the technology”* because they perceived the need was for more Consultants (Senior Physician’s), not technology. When asked how to manage this, the response was *“I’ve tried but they don’t respond to emails and when they do respond their negative comments are not just directed at me but also everyone else.”* Another respondent also mentioned issues with medical staff saying *“some of them are quite difficult characters and I mean all doctors feel as if they are THE person, they are all very important...they don’t see past their own ideas and if it is something they do not want to do then they are like ‘no, no, no’.”* This negativity can have an impact on the Lean events and future Lean projects with one Improvement Lead discussing a negative Consultant who interrupted a recent one day event after turning up late as *“she sucked the life out of the group in the afternoon and the whole dynamic changed.”*

Table 3 shows the response themes perceived to be the Challenges to Lean. All subjects were asked what challenges they perceived Lean to face in Trust A. The NHS focus on targets is

cited in literature (Klein, 2010) and six respondents voiced it as a challenge (see Figure 2 and Table 3). Comments about targets impacting operational management and how the NHS had to more pragmatic about targets as *“there are so many targets now...it seems like the operational managers are fire-fighting and it is difficult for them to see the wood for the trees....it’s all waiting times and its all consuming and the NHS is not about waiting times, there are people to see to.”* An Operations Manager with responsibilities across two sites was interviewed and discussed financial pressures but also the focus on targets saying *“I think as an organisation we get bogged down in the quantitative aspects of it and we don’t look at the qualitative aspects of targets...what harm has been done to the person? I don’t think we’ve got a link there.”*

Another Improvement Lead point out that as a team they are pointed towards ‘strategic target’ areas for projects and it is perceived they would not be supported if they suggested projects in other areas. The focus on Lean thinking is about focus on customers or in the case of healthcare, the patient (Jones et al., 2006, Womack and Jones, 1996). The changing demographics and care needs of the local population are affecting projects as strategic targets determined by management receive a high focus but any improvements according to the Consultant interviewed will *“not happen overnight...you can’t suddenly decide that’s going to happen and some people want it done yesterday and that’s not the best thing for the patient.”* This loss of focus on patients was echoed by two improvement leads with one deeming the topic her ‘soapbox’ as *“I think that sometimes we lose sight of the fact that Lean is supposed to be about the customer which is often the patient and I think we are very good at talking about it but I feel strongly we could do more to involve patients in the work we do.”* The link to Lean and strategy is supported (Grove et al., 2010). However, this strategic focus and its influence on projects is perceived by more than half of the Improvement Team that at times they are working on projects which are not Lean and the description and scope of Lean

projects described in these interviews fits with Radnor’s assessment of the disjointed, project based use of Lean in the NHS in the UK (Radnor, 2010).

For Lean improvement to be measured, data should be used to demonstrate the before state and then after state to determine if the Lean implementation has been successful (Womack et al., 1990) but historically this has been an issue for the NHS (Klein, 2010) and it is still an issue in Trust A. Five out of eight improvement team members had an issue with data as “we struggle to get data” as “in healthcare we have loads of data but not always the right data to be able to pin it back to” with two other Improvement Leads admitting they were unable to determine capacity in two separate services as there was no data. Another Improvement Lead discussing a past project, admitted to getting data which clinical staff had been requesting but had been unable to access it before the Lean project commenced.



Figure 2: Challenges for Lean in Trust A: summarised from interview data

Enabling/Influencing Lean in Trust A

Once key challenges had been identified, interviewees were asked what enabled and/or influenced Lean in Trust A. It was the vision of the Chief Executive who led to the

implementation in Trust A, at a time when the Scottish Government were commissioning research on the suitability of Lean in public services (Radnor et al., 2006). As Figure 3 demonstrates, the Chief Executive is seen as a strong figurehead in the drive of Lean throughout the organisation and this was recognised by interviewees as well as the role of management in promoting Lean in Trust A. Management are recognised by many interviewees as enabling Lean as the Consultant interviewed got involved in Lean as she was told to go on the Lean course through her work with management in her service. Some hospital based staff have praised their management for their support of Lean, although management can also have a negative influence on Lean. The failure of Executive Sponsors and Service Operational Managers to attend Lean events have a negative impact as one Administrator comments *“there was an issue one day that the person who came along...didn't have the authority to do things and I think you are just loading the gun for people who don't want this to happen as there was nobody to sign it (changes) off.”* Some of the ‘Lean Team’ and one of the administrators recognise the presence of a Lean Team as an enabling factor as they bring people together for events as well as running projects and providing all the Lean training in the organisation, despite three full time staff members and the rest of the team being made up of ‘secondees’. These Improvement Team members are sharing knowledge and education through their role in improvement and have been recognised by those involved in the events as facilitating teamwork and communication – all key attributes recognised as enabling the Toyota Production System before it was described as Lean (Monden, 1983). Staff are regarded as influencing and enabling Lean. Negative perceptions towards Lean can influence staff, especially if a senior member of staff is involved as *“a lot of people do kind of feel intimidated and they are not comfortable about speaking up...and it's hard if you are in a lower grade”* or *“I had heard bad things before I was involved. I heard about the couple of areas who'd had kaizen's saying it was just a waste*

of time, they were there all day and you knew what doctors were like, they say yes and no and then go back and do what they want.”

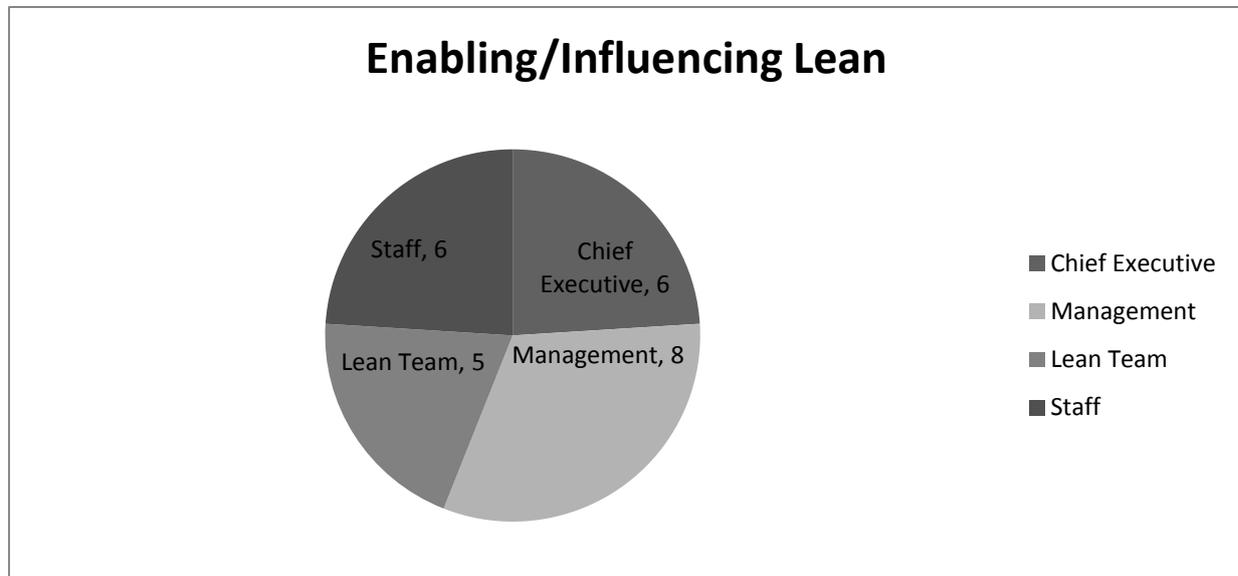


Figure 3: Perceived Enablers and Influences on Lean in Trust A

Future of Lean in Trust A

Although key challenges and enablers and influences on Lean in Trust A were identified, it was important to ascertain interviewee’s perceptions about the future of Lean A. References had already been made in interviews to targets and time pressures in the organisation and how this had affected Lean events and training in comparison to the earlier Lean projects conducted in Trust A.

As shown in Figure 4, more than half of interviewees perceived Lean to be successful in Trust A as it was delivering real service and operational improvements and was supported by the Executive and Senior Managers. The work of the Lean team is again mentioned as “*we try to self sustain so we teach Lean, we are transferring knowledge and skills...we are very transparent...there are always summaries on the monthly report*”. However, one third of respondents, and tellingly, interviewees 4, 5 and 6 who are not original Improvement Team

members have expressed concern over sustainability and how Trust A is not Lean due to the change and focus of their projects as *“projects are not very Lean anymore, they are more project management”*. Improvement Team members made references to projects which had *“slipped back”* or projects which after a successful Lean project are now facing the need for intervention after reverting back to its pre-Lean state with its associated problems as *“over the last couple of years, it has been systematically picked apart by one or two individuals as they didn’t appreciate it”*.

One respondent discusses a ‘weariness’ that has set in and see’s the influence of senior management in this as *“it has got to the lip-service stage...there is just not enough engagement in it to convince...they just don’t have time to give it anymore thought and they just expect it to happen now.”* This weariness can also be viewed in the responses of Improvement Leads as *“I feel we are stagnating a bit...I’d like to see the whole thing freshened up which is again about our processes and the projects we accept.”*

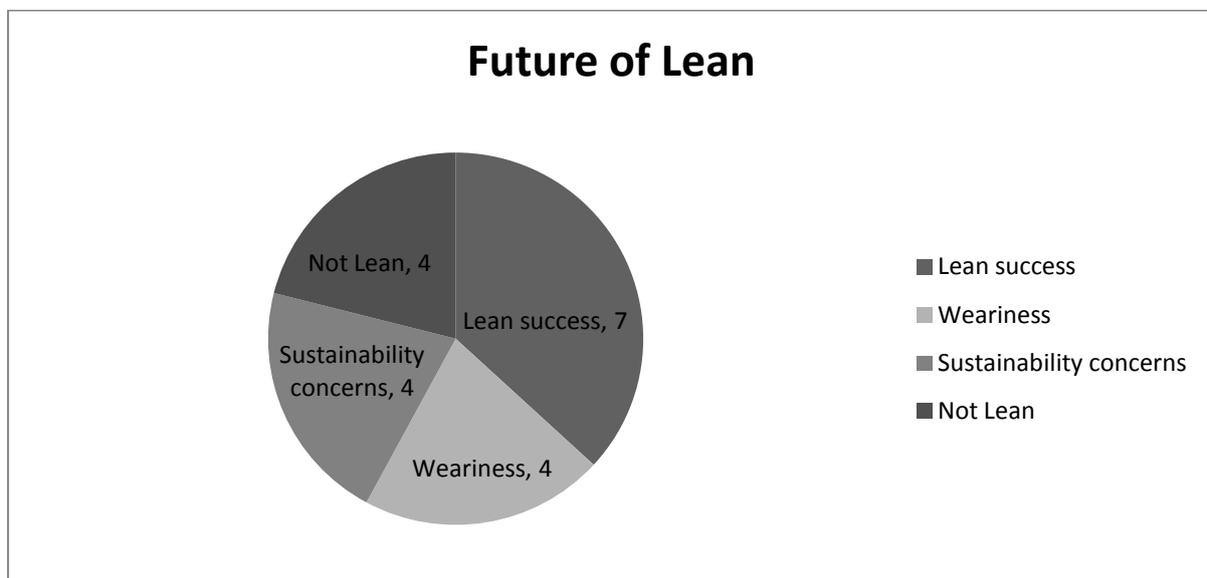


Figure 4: Perceptions of the Future of Lean from interviewees in Trust A

Other Improvement Leads echo this as they would like Lean projects that will develop them as individuals or to take their experience and move into Operational Management to spread

Lean through the organisation, with new Improvement Leads to take their place so that Lean starts to embed in the organisation.

The interviews of this phase of this study on have provided some initial results. As this study is based on individual's views and perceptions, ascertaining knowledge of Lean shows that all those interviewed had knowledge of Lean, through their role in delivering process improvement, or attendance at Lean events in their service. The use of a dedicated 'Lean' team is supporting the people aspects in Lean through education, communication and knowledge sharing (Monden, 1983). The themes, by interviewee responses, are shown in Table 3.

Interview ee	Improvement Team								Other Staff					Total
	Operations background			Clinical background				Other	Operational Manager	Administrative		Consultant		
	8	2	3	1	7	5	6	4	9	10	11	12		
Challenges for Lean														
People	x	x		x	x	x	x	x		x	x	x	10	
Managing Expectations				x					x				2	
Time	x	x		x	x		x	x	x	x	x	x	10	
Targets	x	x			x	x		x	x				6	
Momentum		x											1	
Resources	x	x	x					x	x				5	
Type of Projects (not Lean projects)			x		x	x	x	x					5	
Access to Data		x		x		x	x	x					5	
Enabling/influencing Lean														
Chief Executive		x	x	x			x	x	x				6	
Management	x	x			x	x	x	x			x	x	8	
Dedicated 'Lean' team			x	x	x			x			x		5	
Staff	x	x			x	x				x	x		6	
Future of Lean														
Lean is still successful	x	x		x	x				x	x	x		7	
Weariness setting in					x	x	x	x					4	
Concern/current sustainability issues	x					x	x	x					4	
Not properly Lean			x		x	x	x						4	
Victim of own success			x										1	

Table 3: Roles of Interviewees and their responses in key thematic areas

The challenges for Lean are varied, but people are viewed as a key challenge, as is time which is impacting on Lean project delivery. When it comes to enabling or influencing Lean, it is people dominated factors which are highlighted such as key figures (Chief Executive, Managers), the dedicated Lean team and the role of Trust A staff. The focus on management does show leadership has a strong role to play in Lean (Mann, 2009) but it is not the sole driver of success due to the issues highlighted by the role of the professional groups (Currie et al., 2008a). The future of Lean as perceived by this interview group is still strongly positive but others are starting to question Lean and raise issues around projects, weariness and lack of support for concerns over sustainability.

Conclusion and Recommendations

All of those who were interviewed had experience of Lean projects and were involved in actively delivering projects in their own and other services so were well placed to comment on Lean in Trust A. The three full time improvement leads referred to throughout have been working in Lean since its introduction in Trust A and a wider range of perceptions and views which can impact Lean have been introduced through interviewing newer members of the team and also those in the wider hospital environment.

The main theme that emerges from the data and the findings is that Lean in Trust A is being dually challenged by people and time. Pressures on services to meet targets show staff perceive that Operations Managers have no time to think and spend their time 'fire-fighting' rather than thinking about Lean and service improvement. This focus on fire-fighting and targets is affecting the focus on the patient within Lean as this focus on the patient should be maintained (Jones et al., 2006).

People are a key area in Lean as identified by literature (Mann, 2009, Monden, 1983) and this is shown by this interview groups as impacting on Lean in Trust A. More than half of interviewees when questioned on the people who impacted their Lean events, made strong references to professional groups such as clinicians and consultants who impacted their Lean projects which is being recognised elsewhere (Meyer, 2010) and a need for a focus on this group has been recognised as important in improvement literature (Ovretveit, 2005). People's attitudes, including those who perceive Lean negatively were discussed and have shed light on key areas where more focus is required.

Although Lean is recognised as a strong 'brand' for Trust A with a dedicated 'Lean Team', the organisation itself is not a truly Lean organisation and is conducting disjointed, Lean projects (Radnor et al., 2011). Staff are currently questioning whether Trust A is moving away from Lean as projects are requiring a project management focus as opposed to giving Improvement Leads the opportunity to use the Lean methodology and this is supported by perceptions of senior management now paying lip-service through their lack of active engagement in Lean.

As this paper is reporting some initial conclusions, some tentative recommendations can be made. The Chief Executive and Senior Management have been recognised as enabling and influencing Lean which is important for Lean sustainability (Fillingham, 2007, Mann, 2009, Ovretveit, 2005) but given this Trust has been implementing Lean since early 2006, it may well be that that weariness is setting in and renewed commitment to Lean must be demonstrated at all levels so that this is seen by staff as it is perceived to be missing at this time.

For Trust A to demonstrate its commitment to Lean which appears to be linked to strategy given the Improvement Team's perspective, and to develop into being a truly Lean

organisation, then resources and greater spreading of the Lean message will be required as this will not be achieved with just three full time improvement leads who deliver projects and training in an organisation of over 20,000 staff. Moving existing staff into Operational roles would help embed the Lean methodology in Trust A and as it has been already discovered, several of the staff came to the Improvement Team from Operations roles.

Time is seen as a major challenge for Lean for getting people involved and using the methodology throughout Trust A to take on and sustain Lean projects. The focus on Lean as a strategic objective could only be further supported if 'bought out' time is given to staff for the attendance at Lean events, training and working through 'action plans' in Lean projects which should encourage attendance, facilitate the progression of projects and remove the excuse that time is an issue.

A key area to be considered is that is the role of the professional groups in healthcare. There are clear issues that have been identified in literature and respondents have already made reference to existing poor relationships that subsequently impact on the Lean implementation when actions have to be carried forward. Although improvement leads conduct pre-work for their projects, the challenge would be for operational management, prior to request for assistance for a Lean project, try to work through some of the personal issues in their services so that these issues are not rising to the fore at the start of a project or during an event which affect lower grade members of staff's perceptions of Lean and what the methodology can achieve.

Multiple influences on the progression of Lean in Trust A have been identified through the perceptions of those working with Lean. This project is only in its initial stages and the use of snowball sampling has resulted in further respondents who will be interviewed to further correlate or add new insights into this research.

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