A Lean Healthcare Journey: the Scottish Experience

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Abstract (100 words)
Lean has been adopted by public sector organisations to combat the growing challenges in tackling demand, capacity, service provision and issues around the reduction of errors and managing variation in processes. This chapter discusses the specific case of Trust A, a Scottish Health Board and how Lean has been implemented beyond acute service provision to include shared services.
In addition, the chapter reviews, the process of Lean implementations and the outcomes and sustainability generated through Lean. Challenges are noted but it argues that concentration on the social aspects of Lean in shared services generates real benefits across the value chain.

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Introduction
For several years now, public sector organisations (PSO’s) across the globe have looked to the manufacturing sector for improvement methodologies to combat the growing challenges in tackling demand, capacity, service provision and issues around the reduction of errors and managing variation in processes (Marshall, 2009). Nowhere is this more apparent than in the provision of healthcare, where the Lean methodology has gained popularity in its application (Petersen and Huniche, 2011; Graban, 2009; Fillingham, 2008; Ben-Tovim, et al., 2007).

The aim of this chapter is to discuss the development of Lean in public sector organisations with particular reference to healthcare. These insights are explored through the drivers for, and the process of how Lean is implemented in Trust A (a Scottish Health Board and ‘early adopter’ of Lean) and whether this does include a focus on the ‘softer’ critical areas of cultural change, leadership support and people. The outcomes generated and sustained in their Lean projects will be evaluated. The format of this chapter is as follows; initially we will discuss the application of Lean in PSO’s with a focus on healthcare; next the methodology employed is introduced. Following on, the drivers for, the process of implementation and outcomes, including what has been sustained or further developed from Lean are discussed in Trust A. The chapter will conclude by discussing the implications of how Lean has been implemented and transferrable insights which may apply for other PSO’s.

What is Lean?
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). Despite this definition originally being applied to the manufacturing sector, this definition is widely accepted as it is only varied slightly for healthcare. 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). Despite this focus on activities and processes, a key facet of Lean involves whole cultural change with a focus on people due to ‘respect for humanity’, a key pillar of the original Toyota Production System (TPS) which emerged from automotive manufacturing (Monden, 1983). The TPS was later best characterised as being Lean, as discussed by Womack, Jones and Roos’ (1990) and Womack and Jones (1996).

Reporting Lean Successes
Seminal Lean texts which brought Lean to public consciousness (Womack, Jones and Roos, 1990; Womack and Jones, 1996) focuses more on the process and operational aspects of Lean. This has been replicated in the focus on process and operational improvements of Lean in healthcare. This is due to the focus on key departments such as the Emergency Department (ED) and the outcomes these derive (Holden, 2011; Meyer, 2010; Dickson, et al., 2009; Ben-Tovim, et al., 2007). Multiple case studies are available to demonstrate the applicability of Lean in healthcare. Lean is described as being ‘mainstream’ in Danish PSO’s with healthcare providers expected to increase productivity by two per cent per annum (Pedersen and Huniche, 2011). In the UK, the most commonly referred to example is that of Bolton Royal Hospitals Trust who expected to be on a 10-20 year ‘Lean’ journey (Fillingham, 2008). In Australia, it was at Flinders Medical Centre where Lean was implemented in patient pathway work after experiencing issues in the ED (Ben-Tovim, et al., 2007). In the United States (US), patient safety was the focus at the Virginia Mason Medical Centre in Seattle (Furman and Caplan, 2007), and costs and quality were the drivers of Lean at Thedacare in Wisconsin (Toussaint,
Lean was used in increasing service capacity in mental health in Denver (LaGanga, 2011). Many published successes are commonly restricted to projects conducted within hospital sites, with limited work focusing on healthcare provision beyond these boundaries (Grove et al., 2010).

Despite these endorsements and the appearance of popularity, Lean has faced sustainability challenges. Lean implementations in healthcare are described as being still in their infancy, in comparison to other industries (Radnor, Holweg and Waring, 2012) with many Lean implementation examples being predominately provided in the US healthcare system (Graban, 2009). Even exemplary Lean US healthcare providers are thin on the ground as noted by Graban (2013) who questioned how many US healthcare providers are genuinely using Lean beyond a project basis to actually change culture.

Challenges for Lean

Despite this body of knowledge available for quality and service improvement through Lean; Lean healthcare in the UK is limited in approach and discusses the use of a few key tools. This is also echoed in literature which reviews the implementation of Lean in the US and globally (Holden, 2011; Dickson, et al., 2009). These tools have been categorised into three activity areas by Radnor, Holweg and Waring (2012) as assessment, improvement, and performance monitoring; but also noted in a similar format in the aforementioned studies 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, Holweg and Waring, 2012). Tools however, only account for around 20 per cent of effort in Lean implementations with 80 per cent of effort required in the management of the social issues of Lean (Mann, 2009). It has been noted that there is limited literature on the people aspects of Lean (Stone, 2012; Brandão de Souza, 2009; Joosten et al., 2009) and literature that focuses on this area highlights areas of conflicts, resistance and attitudes of clinicians (Meyer, 2010; Waring and Bishop, 2010). Recent reviews of Lean in healthcare in the UK has shown that Lean implementations are often small projects and are disjointed, rather than organisational wide (Radnor and Osborne, 2013; Radnor, 2010).

Sustainability of Lean requires a focus on these social aspects of Lean at all levels in the organisation (Mann, 2009), as this links to ‘respect for people’ being a key pillar in the TPS (Monden, 1983). It is not just about a focus on leadership in healthcare improvement, but key stakeholders who include the professional groups (Øvretveit, 2005). Lean success is associated with adopting ‘Lean thinking’ (Womack and Jones, 1996) and is described as a philosophy involving whole cultural changes (Bhasin and Burcher, 2006). However, cultural change in healthcare is described as complex due to the role of professional groups (Scott, et al., 2003). Change, including quality initiatives and improvement, are commonly viewed as the domain of operational managers and clinical staff (Davies, Powell and Rushmer, 2007; McBride and Mustchin, 2013).

Hines, Martins and Beale (2008), Radnor, Holweg and Waring (2012) and Radnor and Osborne (2013), all highlight key issues for Lean and its modification in PSO’s. Radnor and Osborne (2013) argues for the need for linking Lean to strategic intent, using ‘freed-up’ resources and changing patterns of work to meet the needs of service users. Radnor, Holweg and Waring (2012) assesses PSO’s as being capacity led rather being demand led and how there is a need for effectiveness and equity. Hines, Martins and Beale (2008) identifies the need for a ‘critical’
focus on the human dimensions of Lean (more so 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.

Organisational Readiness
Case studies regarded as ‘best practice’ highlight organisational readiness for Lean. The limitations of these cases are they report projects in their infancy and the long term success of PSO’s implementing Lean is yet to be viewed. Indeed, Radnor and Osborne (2013) claim Lean in the public sector has been ‘defective’ to date. Although it is noted that Bolton (Fillingham, 2008), Flinders (Ben-Tovim, et al., 2007) and Thedacare (Toussaint, 2009) were described as being at a crisis point, it is not clear whether Virginia Mason (Furman and Caplan, 2007) were at the same point. Virginia Mason was experiencing problems with patient safety. All best practice organisations, however, share commonalities of having a focus on patient safety and quality improvement, through adopting a systemic approach to improvement. These organisations also integrated the need to change organisational culture (Radnor and Osborne, 2013; Monden, 1983). Having executive support (Mann, 2009) is also apparent in these cases but also the recognition that there is a need for cross functional teams who include professionals (Øvretveit, 2005). Measuring organisational readiness for Lean is therefore in comparison to these aforementioned best practice cases (Bolton, Flinders, Thedacare and Virginia Mason), but limitations resulting from the infancy of the reporting of these cases is noted.

Methodology
The data reported in this chapter is based on content analysis of project documents, observations and interview data with 21 managers and front line staff who have been involved in Lean projects in Trust A. In the analysis, the work of Charmaz (2012) was used as both the content analysis of project documents and interview data was coded in the grounded theory method. All methods employed within the case study (see Eisenhardt (1989) for protocol), focus on four main areas; drivers for the implementation of Lean; the process of implementation; outcomes generated and sustained from Lean. All project data is taken from the projects conducted in the period of 2006-2012.

The NHS in Scotland
The Lean methodology has been endorsed for use by the Scottish Government and has been supported for use in National Health Service (NHS) Scotland. This support for Lean can be viewed in other programmes in use in the NHS in Scotland, such as the Productive Series, Releasing Time to Care (which originated in the NHS Institute for Innovation and Improvement and has been deployed globally), and the Scottish Patient Safety Programme (SPSP) which was considered to the first patient safety programme in the world (Scottish Government, 2010). Lean in healthcare is defined by the Scottish Government as supporting service redesign across the patient journey for the improvement of whole processes and improved flow through the reduction of waste and delays (Scottish Government, 2008).

The NHS in Scotland differs from that of the other home nations. Scotland by 2004 had dissolved 23 hospital Trusts, and healthcare was subsequently provided by 15 (now 14) regional health boards and this structure exists today. This reorganisation of the NHS to remove duplication and competition in Scotland was expected to minimise the “gap between national policy and local practice” (Scottish Executive, 2000:23). The flatter structure of the NHS in Scotland allowed for decentralisation; with frontline staff acquiring greater influence, Chief Executives remaining accountable for strategic leadership and governance, and Divisional Chief Executives maintaining control of budgets and performance. This was viewed as
‘rebuilding our NHS’ as standards of care were prior to re-organisation, variable, with the people of Scotland facing a ‘postcode lottery of care’ as the focus had moved away from quality and service improvement (Scottish Executive, 2000). The links with many institutions working with the NHS in England such as NICE (National Institute for Clinical Excellence that advise and approve drugs and technologies for use in the NHS) were still maintained.

A Scottish health board, known as Trust A, began implementing Lean in 2006. Trust A was chosen as the focus of this chapter, due to being recognised as an ‘early adopter’ of Lean in Scotland and who were supported by NHS Education for Scotland (NES). This support was provided as it was expected learning’s could be transferred to other NHS health boards in Scotland. The projects which are reviewed also differ from what has been a common focus in literature (Toussaint, 2009; Fillingham, 2008; Ben-Tovim, et al., 2007; Furman and Caplan, 2007) as the review contains projects which have extended beyond the acute setting boundaries and link into multi-agency work conducted across the region of Trust A.

Drivers for Trust A’s Lean Journey
Following the formation of the new health boards, the Chief Executive (CE) of the newly formed Trust A recognised that there had to be something to ‘bind together the constituent parts’ of what were formerly four separate organisations prior to formation of the health board structure. In late 2005, Trust A engaged in conversation with management consultancy organisations so they could begin in 2006, their Lean journey. The use of consultants was to bring in expertise from an organisation who ‘lived and breathed Lean’, in order to begin building capacity in Trust A to embed improvement through Lean. Trust A adapted a ‘model’ for implementing Lean in their organisation and this model is described by the Chief Executive as being “based on not just the Kaizen principle but the engineering metrics of how you could actually eliminate waste and steps out of process.”

Trust A and their Executives are very proud of their Lean successes and are recognised as being early adopters of the Lean methodology as “it was a gusty thing to do and not in a self-congratulatory way but to have the courage to do it.” Lean is linked to the organisations’ strategy for the development of the organisation and through the development of Trust A staff by promoting quality and patient care. Lean in Trust A is described as a programme, though a systemic approach in line with case studies previously discussed (Fillingham, 2008; Furman and Caplan, 2007) as Lean is described as ‘the way we do things around here’ by the CE. The CE had been a vocal and visual supporter of the Lean programme. From the start it has been linked to both the organisations own strategic objectives and also to those at NHS Scotland and Scottish Government level for the improvement and enhancement of quality in healthcare provision. Strategically, the organisation was also aiming to join ‘best in class’ global healthcare providers and were benchmarking with other global healthcare providers through the use of the McKinsey Global Health Tracker. Lean in Trust A was viewed by the Executive as not just focusing on processes but full cultural change as it was recognised that Lean would be “an overall cultural organisational intervention.” The CE emphasises the need for a focus on people and empowerment in healthcare improvement as “if you work in…an organisation like the NHS, yes, we’ve got lots of buildings, yes we’ve got lots of equipment and that sort of stuff but ultimately what makes the difference is our people and so what we are trying to do and what we or Lean absolutely successfully did was to empower people to take decisions, to make things better for patients.” Alongside this cultural benefit there was recognition that process improvement would support staff in facing longer term future challenges. By already ‘working smarter’ the organisation would be prepared for what they were forecasting - future efficiency savings being required under a challenging financial climate.
Developing organisational readiness for Lean

From the start, Lean was linked to organisational culture and received strong executive support as the CE is viewed as “bringing Lean to Trust A” as Lean was designed to support staff in providing patient care. Trust A from the start, formed their own branded ‘Lean in Trust A’ programme which was supported by five Improvement Leads from within the organisation who were to conduct projects and training with cross function teams. Trust A selected five Improvement Leads from the areas of Organisational Development and Modernisation to be fully trained by the consultancy who were aiding the Lean implementation. All had previous experience of leading and facilitating change programmes. The Trust A Improvement Leads would work with the consultants, each being allocated a mentor; firstly completing training courses and working in three phases. The first phase was to shadow the leads on projects. In the second phase, they would actively work on a project with their mentor, and thirdly, lead their own project with support provided by their mentor where required. Training for all staff, regards to Lean, was initially delivered from consultancy, but training and development of the Trust A Improvement Leads was to enhance the organisations ability to grow Lean. Trust A Improvement Leads took over the provision of training and development for all staff taking on Lean projects. By the end of 2011, 355 staff had received full Lean training, with 18% of these working out-with the main acute sites, in Community Health and the local authority. The Improvement Leads attempt to maintain contact with all trainees. Not all staff members have followed up this training with leading Lean projects (the reasons for which are unknown), but there have been projects conducted by staff following training which the Improvement Leads report on. These projects link into wider pathway work and has contributed to the sustainability of Lean in these services.

The process of implementing Lean

Figure 1 illustrates how Lean projects are implemented in Trust A by Improvement Leads. This process was observed by one of the researchers and then verified through interview data to ensure this was the approach undertaken by all Improvement Leads working in Lean in Trust A. This initial data was also compared to subsequent report data made available to the researchers. These projects are fed top down by the Executive or requested by the services themselves as a project proposal as the projects are “a strategic goal the Improvement Team have to work with.” Each proposal, if successful will be given to an Improvement Team Lead to work on and from then the Improvement Lead with 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 (sustainability) after the Improvement Leads have handed over the project. This Project Charter cannot be enforced to the point of repercussions. However, 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. Once this has been confirmed with Executive and Process Owner support, the Improvement Leads commence pre-work on the Lean implementation.

Pre-work or assessment in Lean projects

Lean, as has been previously noted in Radnor, Holweg and Waring (2012), takes the form of assessment, improvement and performance measurement and this is demonstrated in Trust A as noted in Figure 1. Pre-work by Improvement Leads involves the assessment period (6-8 weeks of ‘pre-work’). The Improvement Lead can begin pre-work for the project (See Figure
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. Pre-work includes meeting process owners and staff, determining the voice of the customer, observing the area/process under study, conducting interviews and gathering data to assess and map process flow and value streams.

Insert Figure 1 about here

Leadership in Lean
Although the CEO has been described as a ‘vocal and visual’ supporter of Lean, other members of the Executive support the Trusts branded Lean programme. Each project is provided with an Executive Sponsor who is ultimately in charge of the results generated and maintained from the Lean project. The Executive Sponsor will also attend Lean events and the reporting stage as this sends a clear message to staff that there is support for Lean at the very top of the organisation. Improvement Leads and staff involved in Lean projects were also consistent in noting that the CE often attended Lean events and for many staff it was their first interaction with him.
At service level, each project is also allocated a Process Sponsor who is going to take sole responsibility for the action plan for generating improvement and the sustainability. The Process Sponsor directs Improvement Leads to service staff so pre-work can be conducted and data can be gathered in the service under review.

Respect for People
From the outset, the pre-work stages have included a focus on people through building relationships with staff in services. The multi-disciplinary nature of healthcare and the need for cross functional teams (improvement leads, medical staff, nurses, managers, administrators and partnership (union) representatives to name just a few) show the process of building relationships and communication is key. There is cynicism noted by staff due to the nature of change in the NHS and reorganisations. Consequently, this means that engaging staff in Lean projects from the earliest stages has been crucial in order to secure future successes. As shown in Figure 1, in pre-work stages stakeholder interviews are conducted with staff at all levels within services. These aid the Improvement Lead in recognising the differing perceptions about, and the implications of the Lean project on services. The importance of this is discussed as; “the stakeholder interviews tell you two things: one, they give you detail about the process, and they also tell you about people which is really, really important. Because Lean, although it looks very theoretical and very textbook, I would say in figures, my view is 70% people, if not more. And with the best process in the world if people aren’t willing to follow or buy into then you have a problem. So it tells you two things. One is the objective parts but also the other parts, where the tensions are, where there’s maybe subjective influences going on which may be having an influence on how their process is performing now, what we might need to address in order for them to get better in the future.”

Tensions in Lean projects
By the very nature of working with people, tensions are noted by Improvement Leads. As Lean seeks to improve processes in service, by the very nature of the Lean process, people from different backgrounds are involved. Table 1 discusses pathway projects and by the very nature
of these pathway projects, they include multi-disciplinary and cross functional teams. They also include social work and local council employees (delayed discharges) as well as community health and third sector (substance misuse). Full patient pathway projects are noted for their complexity resulting from having multi-agency stakeholders where some pre-existing relationship tensions may exist. Some of these tensions are those noted previously in PSO’s such as those due to issues over communication and information (Hines, Martins and Beale, 2008). Theses tensions have to be overcome to facilitate success in Lean. Full pathway projects are complex and contained projects are perceived to be easier to get buy in from staff as; “you can actually get in there, work with the staff, get to know them, it’s about hearts and minds.”

The Improvement Lead will be involved in the full pathway project, but often staff from each respective part of the service will be involved at the required stages, starting with the initial assessment and improvement work. Breaking down of the processes is viewed to be beneficial as a medical consultant involved in one full pathway project said, “I think the good thing about Lean is it breaks it down into small manageable chunks and you’ve got someone overseeing the whole thing.” Some examples of full pathway work are noted in Table 1 and discussed below.

**Medicine for the Elderly (MOE)**

The pathway activities which are encompassed under Medicine of the Elderly were a strategic goal the organisation had in formulating clear pathways and access points to ensure patients across the Trust A region received equitable and safe quality of treatment. This strategic focus was linked to Scottish Government set HEAT ministerial targets (Health Improvement, Efficiency and governance improvements, Access to services, Treatment appropriate to Individuals).

As Table 1 shows, Trust A has generated good results in their projects, with support from general practitioners (GP’s) in the Medicine for the Elderly project. Moving beyond the healthcare setting can be a challenge until all actors begin to recognise each part in the process. Even working with different professional groups can be challenging. Staff can fear evaluation of their processes and withhold knowledge, viewing evaluation as criticism. Although sustainability is discussed, there were challenges in engaging staff when rolling out projects across sites. Trust A focus their initial efforts on communication through the pre-work or assessment stage to engage staff, and then common Lean tools to aid evaluation and the improvement process are applied.

In work related to the MOE pathway project, an Improvement Lead discussed problems uncovered and the challenges faced when patients were audited to see how much therapy they were receiving, to determine if this was a factor in delayed discharges; “you could see there was a mismatch between the therapists’ day and the availability of the patient for the therapist which meant there was quite a lot of time where they did not have access to patients, or they were there but it was early morning and it wasn’t a reasonable time necessarily to see patients.” Uncovering misalignment such as this has resulted in 72 occupational therapists slots per month being made available through work linking into the MOE pathway project through simple changes to ward routines.

From the sustainability and development of projects discussed in Table 1, it is shown that subsequent projects linked in to Medicine of the Elderly and delayed discharges. Five members
of the Improvement Team have worked across these projects and the original project lead discussed opening ‘Pandora’s Box’ as she was first to discover the misalignment of Allied Health Professional (AHP’s) therapists time and patient availability. The others followed in areas across the region but despite initial challenges of therapists fearing criticism of their work, they were described as being “movers and shakers” who have continued to support the team in subsequent projects.

**Substance Misuse Projects**

The substance misuse project (South) although challenging at first due to the multi-disciplinary, multi-agency input, overcame initial challenges as; “they ended up working in a very multi-disciplinary way, so with hind sight that was a really successful project” as “we dropped DNA rates – they actually became leading (in the region) and I think in Scotland to hit targets.” Government set targets also influenced this project and provided the main drivers of the project as the services were not meeting current targets and were not expected to meet subsequent targets unless improved processes were embedded in the services. Challenges noted in multi-agency projects like substance misuse were the amount of agencies and sectors involved, all with different systems and protocols. Notable outcomes for managing clients (patients) were around standardisation of process and protocols to improve patients’ access, safety of treatment and experience. The success in this project was to see the same lead recruited to help another substance misuse group (West) which led to greater success and better multi-disciplinary and multi-agency working. Within a three day Kaizen event voluntary, social work and health came together and with support of the Executive Sponsor, they managed to agree to co-locate to a hub, found premises and were up and running within three months. These projects, although challenging has demonstrated the social attributes of Lean such as communication, knowledge sharing and empowerment to lead to Lean improvements.

The sustainability and reported success of both South and West has seen the same lead progress to working in South East with the same approach being taken with multi-agency involvement across the regional area. Despite initial suspicions over health and social workers working together and the fear of ‘health’ telling social work ‘what to do’, social workers were regarded as ‘fantastic’ to work with due to their drive in taking the project forward.

**Dermatology**

Increased demand and unaligned capacity saw Dermatology facing huge challenges. Target pressures were apparent and the service was struggling to meet demand without provision of additional out of hour’s clinics, further placing strain on service budgets. Changes to general practitioner (GP) contracts had resulted in increased demand for minor treatments, previously conducted at primary care level, which were now being referred to acute services for management. Processes were unaligned, with equity and access to service determined by varying triage procedures across sites, so standardisation was required.

Dermatology was viewed as a successful Lean project for Trust A and has since been the focus of additional pathway projects, linking into Plastic Surgery and Pathology. Demand and capacity were better aligned in the service resulting in changes to consultant job plans to meet service users’ requirements. This outcome has been limited in Lean reporting to date (Radnor and Osborne, 2013). Improved management of referrals was implemented at acute service level but also in work with GP’s with an advice service being offered in an attempt to minimise inappropriate referrals. Like the previous MOE and substance misuse projects, Dermatology outcomes also contributed to the meeting and management of targets. Ongoing initiatives to facilitate demand management are evident in this service.
Sustainability
Although these multi-site projects are recognised as being sustained and have generated further improvement from successive Lean projects, this has not been the case in every project generated from Trust A. One Improvement Lead discussed a ‘contained’ project in a ‘laboratory type’ environment which was initially successful, winning the ‘Lean in Trust A’ award for best project. Staff supported the project but ‘it was picked apart’ by a manager and the original state returned. The Improvement Team were dismayed that a change of manager could result in this ‘damage’ but this only serves to highlight why those viewed as leaders are important in sustaining improvement (Mann, 2009). Other projects have suffered from lack of professional (medical) staff engagement which affected project timescales and outcomes. One Lean project linked to the wider MOE project, suffered from a lack of ‘professional’ involvement which frustrated a medical consultant as this restricted the ability to make quality improvements through Lean. This medical consultant identifies some colleagues as regarding “professionalism as ‘being able to do what you want,’” rather than engaging in improvement work, despite the recognition that engagement and involvement of medical professionals is essential in quality improvement initiatives (Øvretveit, 2005).

The Focus on People in Lean
Although this chapter has reported outcomes from Lean projects as conducted by Trust A, it should be noted from Table 1 that relationships do feature in discussion over Lean. Outcomes in Medicine for the Elderly, Substance Misuse and Dermatology have been improved relationships and especially within Medicine of the Elderly and Substance Misuse, this has included improved multi-agency relationships. There are still existing tensions in engaging staff and there have been issues with the engagement of medical staff, which has impacted projects. Although we have mapped out the implementation process for Lean in Trust A, we have noted the processes which are dedicated to focusing on people and the role of multiple stakeholders in the Lean projects and the importance of this. This approach reiterates that although it is already noted there has been a large focus on tools and techniques in Lean (Radnor, et al., 2012) in PSO’s, the focus does have to be on people and the management of Lean as a change process (Stone, 2012; Mann, 2009; Hines, Martins and Beale, 2008).

Conclusion
We have examined how Trust A, a Scottish Health Board, has implemented Lean in the period 2006 to early 2012. It was of particular interest to review the drivers for and the process of implementing Lean. Outcomes and the sustainability of Lean as viewed through the lens of projects conducted have also been examined. As this paper has discussed, this is an organisation that have, by 2014, now been implementing Lean for eight years. Trust A share commonalities with other best in class case studies in their focus on changing organisational culture and their readiness to adopt Lean for long term improvement (Toussaint, 2009; Fillingham, 2008; Furman and Caplan, 2007;).

Trust A is viewed as having successfully implemented Lean. The restructuring of health provision in Scotland resulted in the desire for a ‘cultural intervention’ by senior management. This restructuring devolved more power to health boards and openness to improvement was financially supported by NES to share learnings across NHS Scotland. Combined with this was also the recognition of forthcoming financially straightened times with pressures on budgets.
This at least highlights the organisation understood Lean as involving whole cultural change (Bhasin and Burcher, 2006). Far from being a public sector organisation who had no contingency and lacked linking Lean with strategic focus (Radnor and Walley, 2006), the opposite has been shown in Trust A which has focused in aligning Lean with strategic intent from the start (Radnor and Osborne, 2013).

This paper reports the process undertaken by Improvement Leads who are implementing Lean, and this does go some way in addressing the lack of focus to date on organisations who are reporting on Lean implementations beyond the initial 1-2 year stage. Many public sector organisations have reported using Lean, but often this work is a focus on initial projects and quick gains (Radnor and Osborne, 2013). From the start, Lean in Trust A has been linked to future ambitions and strategy and this is reflected in the process of initiating and implementing Lean projects which have been undertaken as part of the Lean programme. The systemic approach with projects which build upon previous work, linked to strategic objectives, are also supported through building capacity of Lean in the organisation and beyond, by their own branded training programme. This builds into the multi-agency work where Lean is being spread and supported by training of external partners. This support for Lean was supported at Executive level with vocal and visible support of leaders which undoubtedly has been a factor in successful projects (Mann, 2009). This can be compared to where projects have failed as senior or influential staff (managers, medical staff) have not supported projects despite recognition that this support is essential for success (Øvretveit, 2005).

The projects noted in this paper do highlight measureable outcomes such as saving in bed days, extra capacity identified and the improved meeting of targets. These projects have also used Lean for effectiveness but also for equity for service users in access to the service under review (Radnor, et al., 2012). Trust A has approached Lean in a ‘typical manner’, with three phases identified, as with previous reporting (Radnor, Holweg and Waring, 2012). However, these projects do move beyond the traditional reporting of projects conducted in acute (hospital) provisions (Holden, 2011; Fillingham, 2008; Ben Tovim, et al., 2007). These projects have moved across the organisation and include cross-regional and multi-agency healthcare provision which has received limited focus to date (Radnor and Osborne, 2013). The projects in the case of Dermatology and MOE has also seen demand and capacity aligned for improved service provision by changing of medical consultant job plans which too has not been an outcome noted in project reporting (Radnor and Osborne, 2013). Even with these traditional outcomes being reported, the focus on people is reiterated with improved relationships between staff within and across services being recognised as a measureable benefit from Lean projects. This further contributes to the call for greater focus in this area (Stone, 2012; Brandão de Souza, 2009; Joosten et al., 2009). Despite the target driven nature of Lean projects, the successes here demonstrate the applicability of ‘manufacturing approaches’ such as Lean being used in PSO’s such as healthcare (Marshall, 2009).

Key Contribution
In this chapter we have contributed to the growing body of Lean literature in PSO’s by discussing the importance of multi-agency and cross functional team involvement for improving service provision and relationships in shared services. The multi-agency work undertaken in the projects on substance misuse and MOE pathways addressed some of the resource issues faced by PSO’s which were a driver for the projects in Table 1. By focusing on people and aligning Lean to strategy, this has further sustained Lean through building relationships and improving communication for further role out of projects. This however,
leaves scope for further research to be undertaken in this area and as such the following propositions are provided:

Proposition 1: A clear alignment between organisational strategic objectives and Lean is required for long-term sustainability.
Proposition 2: A clear process, which including a concentrated focus on people prior to initiation of the Lean project, builds consensus for improvement through Lean.
Proposition 3: Cross-disciplinary teams which include the professional groups, are an enabler for Lean success and sustainability.
Proposition 4: Lean implementations focusing on shared services in PSO’s can have a far greater impact across the value chain.

References


A Lean Healthcare Journey: the Scottish Experience

(Table 1 and Figure 1)

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Figure 1: Process of Implementing Lean in Trust A
<table>
<thead>
<tr>
<th>Project</th>
<th>Issues identified</th>
<th>Outcomes</th>
<th>Measurable benefit</th>
<th>Sustainability/Development of Lean</th>
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<tr>
<td>Delayed Discharges (Medicine for the Elderly - MOE)</td>
<td>Lack of visibility across the Board of beds available. Delayed discharges is impacted beyond the hospital and involves multi-agencies Issues over post-acute care, care packages, patient’s progression to nursing home/residential care for transfer or discharge.</td>
<td>3pm notification to MOE central site of beds to be available the following day. Increased utilization of ‘downstream’ beds such as GP beds and local hospitals Use of traffic light system to aid discharge planning and bed management across the health board. Centralised bed management system: patients pulled into the right bed and treatment pathway instead of pushed.</td>
<td>72 Occupational Therapy Assistant slots released per month due to simple changes in ward routines. Estimated 2,500 acute bed days per annum released as patients released/transferred to downstream care. Improved relationships and communication of processes between healthcare sites and agencies means more effective and accurate information available to patients and carers.</td>
<td>Further role out of projects across Trust A in the period of 2006-2012. Use of e-booking for patient transport (booked at ward level) generating savings estimated at £60,000 per annum. Projects moving beyond the acute MOE pathway to link into Social Work for managing of further care packages which were identified as impacting on delayed discharges. Standardising acute care and social work paperwork and communications procedures to resolve complexity. Working with local Council in partnership to utilise relevant resources, eg. Day centres, crisis care and community resources. Alignment of consultants’ job plans to meet service user requirements.</td>
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<td>Substance Misuse (South)</td>
<td>Waiting times for new patient appointments</td>
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<td>Drugs: Up to 4 months</td>
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<td>Alcohol: Up to 6 weeks</td>
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<td>to see a community psychiatric nurse</td>
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<td>Drugs service Did Not Attend (DNA) rate was 40% with some patients receiving multiple appointments.</td>
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<td>Multi-agency offerings: community healthcare services, social work additions team and voluntary sector.</td>
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<td>Patient focused booking</td>
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<td>Improved standardised appointment schedule and DNA handling.</td>
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<td>Dedicated appointments booking line.</td>
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<td>Ability to text message patients with same appointment day reminders</td>
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<td>New hub to be opened.</td>
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<td>Waiting times:</td>
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<td>Drugs – 4 months to two months at longest part</td>
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<td>Alcohol – 6 weeks to 4 days at longest wait.</td>
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<td>Drugs – 28% increase in patients attending.</td>
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<td>Did Not Attend (DNA):</td>
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<td>Alcohol – reduction from 65% to 7%</td>
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<td>Drugs: 25% reduction in the first two weeks and then reduced by a further 21%</td>
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<td>Standardised appointment scheduling and patient focused booking system implemented.</td>
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<td>534 hours saved in alcohol clinic.</td>
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<td>28% increase in drugs patients attending at new appointments.</td>
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<td>Drugs DNA maintained.</td>
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<td>Learning from South subsequently applied in West.</td>
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<td>Substance Misuse (West)</td>
<td>Drug and Alcohol waiting times for appointments</td>
<td>Inter-agency group formed with monthly sessions to improve working</td>
<td>Reduction for drug and alcohol appointments from a maximum of 24 weeks to 3 weeks.</td>
<td>Successes maintained in South and West show potential for expansion across the region. Later implemented in South East, and East.</td>
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<td>Clients/referrers not all aware of services offered in the area (multi-agency offerings: community healthcare services, social work addictions team and voluntary sector). Lack of standardised assessment.</td>
<td>Website designed with all service information accessible from all providers on one site. Standardised working implemented – single shared assessment protocols were designed and agreed upon across all agencies.</td>
<td>Post kaizen waiting list for treatment went from 122 to 40 with longest wait down to 8 weeks. Centralised methadone clinic planned and operational with methadone titration down from 12 weeks to 3 weeks.</td>
<td>HEAT target met and exceeded. Clear pathway established and maintained across referral, care and discharge processes. Safe and effective drug titration maintained and meeting targets.</td>
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Dermatology Outpatients

Need to achieve 12 week target for routine referrals and 62 day target for patients who result in a cancer diagnosis.

Future challenges also apparent over 18 weeks referral to treatment time guarantee’s (Scottish Government target) and 31 days from diagnosis to treatments (cancer patients) target

Services impacted by General Practitioner (GP) contract changes so work previously conducted at GP level, now referred to Dermatology speciality.

Improved use of referral form and process meant patient wait for treatment has been cut by 37 days

Implemented patient focused booking to include sub specialities which has reduced DNA’s.

Kaizen work to improve capacity due to additional load from GP’s saw changes in consultant job plans.

Recognition of increasing demand for specialist services resulted in a review of staff training.

Email advice service for GP’s now provided by a consultant.

Work conducted with plastic surgery on cancer treatment has led to the development of parallel clinics reducing the need for secondary appointments and saving days in the patient journey.

Changes to job plans for consultants added an extra 228 general appointment slots, 126 phototherapy slots and 462 tumour slots.

Traffic light system introduced for triage of referrals – tumour referral within 2-3 weeks and lesions within 4 weeks.

Extra training of one nurse for high demand treatment and nurses currently working to establish extra capacity for nurse led treatments.

E-triage service being introduced, through subsequent Lean projects being conducted.

Improved relations within and across the service post-Kaizen event(s).

Plastics work maintained and feeds into tumour service where urgent melanoma patients are seen within two weeks.

Dermatology have subsequently been include in pathology Lean projects and new systems implemented to meet the 62 day targets set.

Nurses have continued to work on initiatives to build on further developing capacity for nurse led treatments.

GP advice service has been maintained and this has improved management of ‘unnecessary’ referrals for ‘cosmetic’ procedures.

Further roll out of E-triage was introduced.

Patient focused booking is fully centralised, in place and has been extended to cover specialities.

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Table 1: Created by the author based on interview and research data