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WARWICK BUSINESS SCHOOL
THE UNIVERSITY OF WARWICK

Leading change across a healthcare system:

How to build improvement
capability and foster a culture of
continuous improvement

Lessons from an evaluation of the NHS-VMI Partnership^{1,2}

Extended summary findings
Spring 2022





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¹ This is a summary report. A full detailed report of findings is available on request.

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Preface



The NHS-VMI partnership was a five-year collaboration between the English NHS and Virginia Mason Institute (VMI), a not-for-profit consultancy specialising in development of Lean-based improvement capability among healthcare providers. In 2015 five NHS hospital trusts were selected via competitive application to work with improvement experts from VMI in a tripartite partnership with NHS England and NHS Improvement (hereafter: NHS E & I). The goal of the partnership was twofold: first to foster a sustainable culture of continuous improvement capability within each of the five NHS trust partners, and second to derive lessons about how NHS leaders can foster continuous improvement capability across the wider healthcare system.

The NHS-VMI partnership came to a formal conclusion in March 2021 (a year later than planned due to the global pandemic COVID-19). At this time, much of the infrastructure designed to support development of a continuous improvement culture remained in place in each of the five partner NHS trusts, while mechanisms for sharing learning between partner organisations have also continued. Notably, the CEOs of the five partner NHS hospital trusts continue to meet monthly as a 'Transformation Guiding Board' ('TGB') with NHS E & I. As such, the TGB has emerged as an effective mechanism for collaboration, where healthcare service providers are working in partnership with regulatory organisations to share learning in ways that shape policy and practice, and support development of continuous improvement capability at a national level.

Evaluating the NHS-VMI partnership



The evaluation of the NHS-VMI partnership was led by Dr Nicola Burgess and colleagues at Warwick Business School between January 2018 and July 2021.

The evaluation adopted a mixed-method approach to data collection incorporating qualitative and quantitative methods of analysis. Around 300 semi-structured interviews were conducted with a range of clinical, managerial and support staff across all stakeholder organisations, alongside more than 300 hours of participant and non-participant observation. Collection of quantitative data included a survey with over 300 respondents, social network analysis within each of the five NHS partner trusts, secondary analysis of performance data using both process-level data and routinely collected data sets (including the NHS Model Hospital), and advanced statistical analysis of improvement and performance data using interrupted time series (ITS) methods.

Assessing impact

There has been much external interest in the NHS-VMI partnership and its evaluation. Many enquirers are working in healthcare organisations interested to understand what they can learn from the partnership. The primary purpose of this extended summary report is to impart learning from the NHS-VMI partnership through a distillation of lessons derived from the evaluation.

Other enquirers are interested in a quantitative assessment of impact, for example: has the partnership delivered value for money? Are patients receiving higher standards of care? Are the NHS partner trusts performing better in terms of key national indicators than they would have done had they not been involved in the partnership?

Questions that are quantitatively oriented are both valid and important, and especially within a publicly funded and resource constrained system. Answers to such questions, however, are far from straightforward, not least because ‘moving the dial’ on high-level performance metrics takes time. In response, the evaluation adopted several novel approaches to quantitatively analyse the impact of the partnership, using the NHS Model Hospital database alongside advanced statistical methods of analysis. We provide a brief overview of our methods and findings in this summary report. However, we caution that any assessment of impact should adopt a holistic and long term view, recognising that organisations which have differential starting points embody differentially receptive contexts, that subsequently shape the speed and trajectory of an organisation’s improvement journey over time.

Then came a global pandemic...

On 23 March 2020 a national lockdown was imposed across the UK in response to the global pandemic. While the world was struggling to contain the spread of the novel coronavirus, hospitals and healthcare professionals had to act fast to design new processes that would protect staff and save lives.

By March 2020, the partnership was reaching the end of the five-year contract and all five NHS partner trusts had invested significantly in infrastructure, training and nurturing leadership behaviours conducive to fostering a sustainable culture of continuous improvement.

As such, this evaluation would not be complete without considering ‘impact’ from the perspective of managing through crisis, to examine how lessons from the NHS-VMI partnership shaped the strategic and operational response of the five NHS partner trusts to COVID-19. 39 interviews across the five partner NHS trusts were conducted during July-August 2020 (approximately eight interviews per hospital trust), alongside approximately 20 hours of observation (May-September 2020), producing vivid illustrations of the application of Lean-based principles and practices (learned via the NHS-VMI partnership) to navigate the crisis.

In sum, all five NHS partner trusts made extensive use of improvement principles, practices and tools to shape their response to the global pandemic.

We extend and conclude our assessment of impact to include a discussion of ‘How the NHS-VMI partnership shaped the strategic and operational response to the global pandemic’.

Acknowledgements



This report is the culmination of a tremendous effort by the research team at Warwick Business School, University of Warwick and could not have been completed without the generosity of time and sharing of insights from the many participants of each of the five NHS-VMI partner trusts, and also members of NHS E & I, VMI, the Health Foundation and the Evaluation Advisory Board. We feel extremely privileged to have been invited as participant observers at partnership level stakeholder meetings on a regular basis. These observations alongside interviews and a wealth of additional data have delivered extraordinary insights concerning the value of partnership working, the commitment of senior NHS leaders to developing a culture of continuous improvement across the NHS, and challenges faced by each of the five organisations throughout the partnership. A huge thanks goes to the many people who have contributed their time to this evaluation, and also the many opportunities provided to share our insights and findings.

We hope our report offers valuable insight for NHS system leaders and practitioners seeking to lead continuous improvement within their organisations and across the wider health system. We also hope our findings are of interest to others working in complex professional settings, academics studying continuous process improvement and its many derivatives, and those interested in the implementation of large-scale organisational change.

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Section 1: Introducing the NHS-VMI partnership and evaluation

In Section 1 we provide an overview of the partnership objectives, alongside a description of Lean, and an explanation of ‘*what does success look like*’ drawn from the perspective of NHS system leaders.

1.1 The NHS-VMI partnership

In July 2015 the former UK Secretary for Health Jeremy Hunt announced a partnership between the NHS and Virginia Mason Institute (VMI) in the United States. Following a competitive application process, five English hospital trusts were selected as NHS partner trusts to work in collaboration with the former Trust Development Agency (TDA)³. The goal of the partnership was to foster a sustainable culture of continuous improvement capability within each of the five partner hospital trusts, and to derive lessons for NHS system leaders about how to develop a culture of continuous improvement across the wider system.

Which NHS hospitals are part of the NHS-VMI partnership?

Five English hospital trusts were selected as NHS partners to work with VMI and develop localised versions of the Virginia Mason ‘Production System’:

- *Surrey and Sussex Healthcare NHS Trust (SASH)*
- *The Leeds Teaching Hospitals NHS Trust (LTHT)*
- *University Hospitals Coventry and Warwickshire NHS Trust (UHCW)*
- *The Shrewsbury and Telford Hospital NHS Trust (SATH)*
- *Barking, Havering and Redbridge University Hospitals NHS Trust (BHRUT)*

³ In 2016 the TDA merged with the regulator for foundation trusts and became NHS Improvement (NHSI). During 2019 another merger occurred to bring together NHSI with NHS England. This organisation is currently known as NHS England & NHS Improvement (NHS E & I).

Each NHS partner organisation is hereafter referred to by its abbreviated name: SASH, LTHT, UHCW, SATH, BHRUT.

Who is VMI?

VMI is a not-for-profit organisation specialising in healthcare transformation using Lean improvement principles and methods. VMI was established by Seattle-based US hospital Virginia Mason Medical Center (VMMC) in response to growing demand from healthcare providers to learn about the hospital's management system, the Virginia Mason Production System (VMPS). The VMPS is a translation of the Toyota Production System, incorporating principles and methods of continuous improvement more commonly known as 'Lean'.

VMMC began its transformation journey in 2000 at a time when the organisation was struggling with both finance and performance. Below, Chairman and CEO of Virginia Mason Gary Kaplan describes why they chose to establish a “*management system predicated on quality*” rather than attempting to “*bolt on*” quality improvement methods aligned to old ways of working:

Virginia Mason had gone through a period of strategic planning trying to understand what our organisation was really about; we went looking for a management system that was predicated on quality and puts patients at the centre of everything we do and no one in health care had done it. Most hospitals do quality improvement as a 'bolt-on' but we wanted something that cut across the whole organisation, to become a way of life, a common language and an opportunity to train everybody in the organisation. We found our answer at Boeing, where they had adopted Toyota's Production System to produce aircraft faster, cheaper and safer. That aligned with our vision and that's what we have been developing across the last 18 years.

(Interview with Virginia Mason CEO Gary Kaplan, December 2018)

VMMC has achieved an exemplary record of high quality safe patient care. The hospital has consistently received an 'A' rating for patient safety since The Leapfrog Group began collecting data in 2012,⁴ an achievement it attributes to the sustained development of its management system aligned to Lean principles and methods.

⁴ Source: <https://www.leapfroggroup.org>

1.2 Implementing Lean as a management system⁵

Adopting Lean as a management system involves the whole organisation working together to enhance ‘value’ from the perspective of the patient, improve quality and safety of service delivery, and embed a sustainable culture of continuous improvement. Adopting Lean as a management system involves everyone (from senior leaders, doctors, nurses and allied health professionals to front-line employees and those working in vital support roles and functions) in the adoption of new routines, new practices and new behaviours.

We note the adoption of Lean-based improvement methods is not new in the context of health care: reports of quality improvement projects that employ Lean principles and practices are commonplace across England, the UK and countries around the world. Yet, the systematic adoption of Lean principles and methods across a whole organisation to become a management system remains rare, limited to a very small number of hospitals worldwide (Burgess and Radnor, 2013; D’Andrea Matteo et al, 2015; Shortell et al, 2018).

1.3 The NHS-VMI partnership objective

The objective of the NHS-VMI partnership was for the five NHS partner trusts to develop localised versions of Virginia Mason’s system-wide approach to Lean implementation, through which they would each develop a sustainable culture of continuous improvement. As such, emphasis was placed upon developing continuous improvement (CI) capability so that at the end of the partnership the five organisations will be able to continue their CI journey without external coaching and support.

By the end of the five-year partnership we expect each trust to have sufficient capacity in their organisation to build on this journey themselves without necessarily getting support externally. They have a sustainable culture of continuous improvement. The journey – they can carry on themselves.

(Senior Manager, NHS E & I)

The partnership required each NHS partner trust to undertake changes to their internal management and reporting infrastructure, adopt new management routines and practices, and roll out a comprehensive training programme known as ‘Lean for Leaders’ (L4L) across the organisation. We explain the structural elements of the NHS-VMI partnership in greater detail in Section 2.

⁵ A full discussion of Lean methods is beyond the scope of this report. There are many publications that offer an excellent description of Lean and its application to healthcare organisations and systems. See for example: *This is Lean, Resolving the efficiency paradox* by Niklas Modig & Par Åhlström (2012), Rheologica Publishing.

1.4 What does success look like?

A really important starting point for the partnership and the evaluation was to understand ‘*what does success look like?*’ However, there were no formal quantifiable goals set against the NHS-VMI partnership. This was an unusual but considered decision by key stakeholders, reflecting the overarching partnership objective: at the end of the contracted period (2015-2020) it was expected that the five NHS partner trusts would be able to ‘*carry on the journey for themselves*’.

Normally at national level you create a programme, you then performance manage the outcomes of that and then you kind of report on it, but that wasn’t the intent with this and we were really careful at the start.

We did flirt with the idea at the start of creating some metrics...[but] we couldn’t create and somehow give extra prominence to a separate set of measures from the performance framework that they were already part of [so] a kind of first point we thought “okay, this is something different”...I think that was not that easy for us to do because our traditional instincts are “Right, what are the 60 things you’re going to measure?”

(Senior Manager, NHS E & I)

We provide further examination and discussion of the impact of not setting metrics at the level of the partnership in Section 6: Aligning priorities, objectives, and metrics for strategic impact: The ‘golden thread’. To summarise, the NHS-VMI partnership was a capability-building intervention. The prescribed vehicle for transformation was the development of localised versions of the Virginia Mason Production System, and the goal was to develop a **sustainable culture of continuous improvement capability**.

Section 2: Implementing a continuous improvement infrastructure

Developing a culture of continuous improvement (CI) capability requires an infrastructure that supports the execution and co-ordination of improvement activity, at the same time building improvement capability through a comprehensive training programme. In this section we outline the infrastructure, routines and mechanisms implemented by each of the five NHS partner trusts as part of the NHS-VMI partnership. Further, we highlight the changes in leadership style required to lead continuous improvement across a whole organisation.

Key findings

- *All five NHS-VMI partner trusts implemented all elements of the CI infrastructure as advocated by VMI and sustained all elements across the duration of the NHS-VMI partnership.*
- *The CI infrastructure embodied a set of routines and practices as a vehicle for implementing an organisation-wide approach to CI.*
- *Participants' attendance at strategic-level meetings was both routine and mandatory, enabling the organisations to oversee, manage and ensure the momentum of improvement activity over time.*
- *All five CEOs of the NHS partner trusts described changes to leadership style as an essential component of leading change in their organisations.*
- *A 'coaching style' of leadership was described by CEOs as 'always better', but maintaining this can be hard in the context of 'traditional' regulatory oversight that has prevailed in the NHS.*

2.1 A continuous improvement infrastructure

Conceptualised as a 'dynamic capability' (Anand et al, 2009; Furnival et al, 2019), a culture of continuous improvement reflects "...stable pattern[s] of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness" (Zollo & Winter, 2002, p.340).

Uniquely, the NHS-VMI partnership embodied an infrastructure that spanned inter- and intra-organisational levels (see Figure 2.1). At an inter-organisational level, a monthly meeting (known as the Transformation Guiding Board/TGB) took place between the CEOs of each of the five NHS partner trusts, senior members of NHS E & I, and senior members of VMI.⁶ This meeting was instrumental to facilitating new 'partnership' ways of working: we discuss this meeting, and the mechanisms that brought about new and enduring ways of working, in Section 3.

Other elements identified in Figure 2.1 were features of the CI infrastructure present within each of the five NHS trusts. In other words, partnership level meetings were attended by selected individuals from each partner organisation, while all other elements (in the figure, from the TGT (Transformation Guidance Team) downwards) were features of the CI infrastructure present within each of the five NHS partner trusts. Table 2.1 offers further detail concerning each infrastructural element, specifically: the pattern of activity associated with each element of CI infrastructure, the participants involved, and the intended outcomes.

⁶ A further (quarterly) inter-organisational meeting took place between the senior leads of the central improvement team (known as the KPO). Like the TGB, the meeting was administrated by NHS E & I and designed to foster 'partnership working', shared organisational learning, informal accountability, governance, and peer support.

Figure 2.1: Outline of NHS-VMI infrastructure

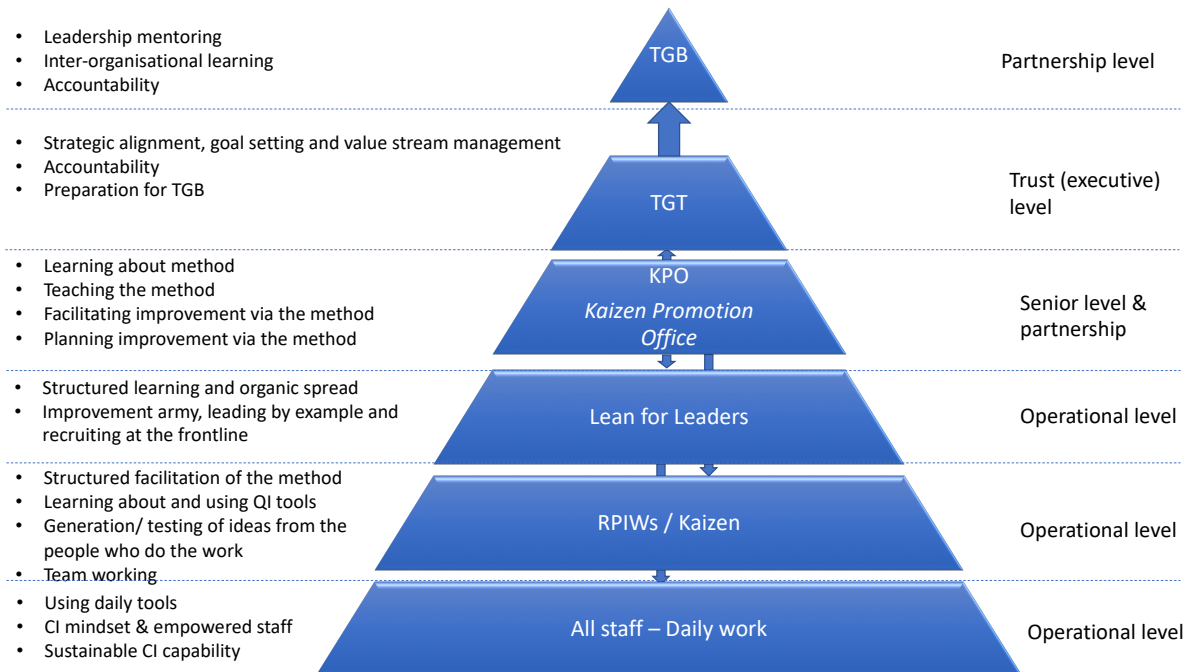


Table 2.1: A CI Infrastructure: activity and outcomes

Infrastructural element	Level of implementation	Description and pattern of activity	Outcome
Transformation Guiding Board (TGB)	Inter-organisational	Routine: Monthly meeting routine for strategic oversight, peer support and inter-organisational learning. Participants: CEOs from all five partner NHS trusts, senior representatives of NHS E & I, senior representatives of VMI.	-New 'partnership' ways of working -A safe psychological space to share progress and challenges -Collaboration for inter-organisational learning -Commitment to shared purpose supported and sustained by all participants: 'developing a sustainable culture of CI capability in the NHS' -A platform for shaping policy and practice
Transformation Guidance Team (TGT)	Organisational - strategic level	Routine: Monthly meeting routine (approx. 2.5 hours) for co-ordination and monitoring of improvement work. Participants: CEO, selected senior and middle level leaders.	-Strategic alignment between organisational priorities and improvement activity -Regular monitoring and reporting of improvement work and progress (accountability) -Regular reflections and learning among senior and middle level leaders
Central improvement team: 'Kaizen Promotion Office' (KPO)	Operational (Central resource)	A central resource (facilitates training routines, strategic alignment and Rapid Process Improvement Workshops (RPIWs)): Delivery and facilitation of CI training programme and assessment; improvement facilitation (RPIWs) and performance measurement and monitoring; supporting others to lead improvement; reporting upwards to TGT. Participants: KPO 'lead' and team of facilitators. Members of the KPO have themselves been trained to a high standard by VMI and certified by VMI assessors.	-KPO are colloquially known as 'keepers of the method'; supporting the continued use of Lean-based improvement principles and methods -Developing widespread improvement capability -Connecting others for collaborative improvement via 'Lean for Leaders' training and RPIWs -Delivery and reporting of process improvement via RPIWs -Monitoring improvements in relation to value stream metrics
Daily work	Operational	Routines and practices performed at a 'local' level (e.g. team or department) to support daily management and promote continuous improvement. An example was the use of team 'huddles', typically a daily routine that fosters collective problem solving, performance monitoring and continuous improvement, usually with the support of a 'production board' that aids visual management. Participants: Team lead (e.g. a ward manager) and team members.	-Aids rapid and effective communication -An opportunity to talk and reflect with team members (share tacit knowledge) -Performance monitoring -Identification of improvement opportunities

2.2 Changing leadership behaviours

The NHS-VMI partnership invested significantly in leadership training. Alongside the Lean for Leaders training programme (described in Section 5), senior leaders with responsibility for leading the organisation's local adaption of the VMPS have received regular coaching from VMI.

From problem solver to problem framer

Observations and interviews identified multiple instances of leaders identifying changes to leadership style as important; specifically moving from 'problem solver' to 'problem framer'.

Many of us have got to where we are by being problem solvers, but now I recognise that it's the people who do the work that know how to improve the work. We need big ears, big eyes, little mouth.

(CEO, UHCW)

When a leader 'frames' a problem they give permission for employees to lead improvement from the front line. Analysis of qualitative data supports the notion that our five CEOs have adapted their leadership behaviours in important ways. As one respondent comments: *"the table banging, 'Things must change, this isn't good enough' model has got better"* (see Box 2.1).

Box 2.1: Excerpt from interview illustrating a new style of leadership

The leadership here is more challenging than before but also more respectful. We have very different conversations as chief officers in terms of challenging each other. Our language has changed certainly. We will challenge and call each other out as executives very openly, very constructively, very respectfully and very comfortably. Three years ago, we'd have said, "Something has gone wrong in such a department. Well, who was there? Who made that decision? Where are they? I want to know why they did that." Now we say, "Well, hang on a minute." If that question comes out, somebody else around the table will say, "No, let's not go down that pathway. Let's look at what went wrong in a more systemised process way. What do we need to change? How do we need to develop it?" So, we'll challenge each other if that sort of approach starts to creep in but, perhaps more importantly, it doesn't really creep in that much, nowhere near as much as it might have done. You know, the conversation will be about, "Well, what do we need to learn from that and what have we learned from that and what do we need to do differently?"

Senior leaders should demonstrate the same commitment to continuous improvement they expect of others

All five partnership CEOs received positive endorsements from a wide range of interview respondents for their continued passion and commitment to the partnership, including regular participation in routines and practices designed to facilitate, co-ordinate and celebrate improvement. However, interviews conducted in 2018 identified criticism from respondents about the lack of engagement from senior executives (including the CEOs) with the formal Lean training programme (Lean for Leaders/L4L). Interview respondents identified CEO participation as a clear signal of the importance of the training, the commitment to the method, and the relevance of the training to everybody. No one should consider themselves too elite, too powerful or too busy; participation of senior executives makes this message very clear.

In 2019, all five CEOs embarked on the formal Lean training programme (L4L) alongside several members of their senior executive teams.⁷

Leadership must be shared

A system-wide approach to CI cannot be reliant on the efforts of any one individual no matter how committed and managerially powerful they may be. Failure to engage leaders more broadly can leave a substantial gap if that individual subsequently leaves the organisation.

Everybody followed [CEO]’s vision. Then when he exited the building so did the love for this.

(Senior Manager, BHRUT)

There was feedback that the [NHS-VMJ partnership] was the CEO’s baby [SIC]. So actually, that gave an excuse to some of the other executive team members not to be as fully involved with the work. So is the organisation still committed to this methodology? Does it continue? Are we [improvement specialists] really valued?

(Improvement Facilitator, SATH)

⁷ We note that the five CEOs had each enrolled on the L4L programme. However, given the time commitment required to complete all modules of L4L, the CEOs would often have to rotate through multiple training cohorts. Far from being a disadvantage, this rotation further improved leader visibility and accessibility among employees across the organisation.

2.3 Calling for a new style of leadership at a system level

The need to develop a new style of leadership was a frequent reflection from the five CEOs. Moving from problem solver to problem framer can be hard when careers have been won on the basis of firefighting and problem-solving prowess. Despite this, leaders tell us their more facilitative ‘problem-framing’ approach *is “always more effective”*.

However, external pressure to improve performance in line with national targets for example, creates a challenging context for leaders to maintain allegiance to a ‘problem-framing’ approach. Below we illustrate a collective call from the five NHS-VMI CEOs asking NHS system leaders to help them maintain their ‘coaching style’ of leadership by adopting similar behaviours at a system level:

As chief executives we’ve learnt that doing this [systematic approach to improvement] properly requires a different style of leadership. It means adopting a coaching style that empowers staff to find solutions, that creates the time and space for them to do improvement and where our role focuses on removing barriers. More broadly it’s about demonstrating those core behaviours of ‘go see, ask why, show respect’...creating that leadership culture locally can be made more challenging at times given the traditional ‘system oversight’ culture in the NHS....[we believe] similar changes in leadership style and behaviours between the centre and providers [are required] as we, and others like us, are adopting with our staff.

Implications for practice

Developing a management system for continuous improvement requires significant investments in infrastructure (routines and practices that support CI methods), resource, and time. Changes to leadership style from ‘problem solving to problem framing’ are essential for developing an improvement culture across the whole organisation, and leadership should not be concentrated in one individual, it should be distributed. An example of distributed leadership at SASH is presented in Section 4.3: Four factors that created a receptive context for change.

However, NHS partner trust CEOs warn that the efficacy of a coaching style of leadership can be undermined by a pervasive ‘traditional’ approach to regulatory oversight. They propose the adoption of ‘problem framing’ leadership behaviours by national system leaders as a necessary condition to sustain a CI culture at an organisational level.

Section 3: Implementing new ‘partnership’ ways of working

In 2019 the evaluation published the paper *Improving together: Collaboration must start with regulators* (BMJ, 367:l6392). The paper describes how the Transformation Guiding Board (TGB), a feature of the partnership infrastructure (see Section 2), fostered a safe psychological space for the five NHS partner trust CEOs to work together in partnership with their regulator. The decision in March 2021 to continue the routine meeting of the TGB ‘indefinitely’ is testament to the enduring impact of this relationship, and the value derived from the partnership by all stakeholders.

In this section we examine the how of implementing and maintaining new ‘partnership’ ways of working between NHS E & I and the five NHS partner trusts.

Key findings

- *New partnership ways of working were underpinned by the development and maintenance of a compact.*
- *A compact is an explicit (written) promissory document that outlines the behaviours that each partner agrees to uphold.*
- *To be effective, a compact must be ‘activated’ on a routine basis. In other words, attention to the compact must be deliberately triggered so that the compact remains a ‘living document’, and not something that gets forgotten.*
- *The compact was routinely activated via the monthly meeting of the TGB. This routine activation occurred through a consistent final agenda item ‘Reflections on the compact’. This monthly ritual, whereby each member of the TGB reflected on the compact and what they had learned via the meeting, was a form of acknowledgement that the partnership was working well, promissory obligations were being fulfilled, and built trust among partnership members.*
- *The compact was also ‘activated’ when members of the TGB perceived a ‘breach’ to the compact; in other words, behaviours deemed inconsistent with the promises set out in the compact. In the event of a breach, the TGB provided an opportunity to ‘call out’ the inconsistency and work through the problems together. In essence, calling out a breach facilitates relational ‘repair’, an opportunity to reflect on the relationship, acknowledging that relational change takes time.*

3.1 The TGB: Formal routine, informal relational space

The Transformation Guiding Board (TGB) was a ‘partnership-level’ monthly meeting that brought together the five CEOs, senior representatives of NHS E & I and a senior member of VMI as ‘sensei’⁸. The goal of this monthly (face-to-face) meeting was for each of the five CEOs to share progress in respect of developing Lean capability across their organisation (informal accountability) and discussing the successes and challenges of leading improvement within their hospital context (for peer support and inter-organisational learning). Members of NHS E & I acted as critical friends; the sensei would offer encouragement, advice and support to address and overcome challenges.

This regular face-to-face inter-organisational meeting took place across most of the day at NHS headquarters in central London (pre-pandemic) and was remarkable for its openness, honesty, and for being referred to by all members as “*the best day of the month*”.

It’s quite remarkable really... regulators are usually regulators; they’re usually telling you you’re not doing something very well. But actually, this is different. It’s really important in terms of how you are allowed to create the space to learn and develop, and even when things aren’t going so well, there’s a dialogue to be had.

The above quote underscores the novelty of this partnership relationship; here the CEO refers to a safe space between stakeholders that fosters learning between organisations that in another context would be negatively shaped by asymmetries of power and control. In Burgess et al (2019) we discuss how inherent asymmetries of power and control were mediated via the monthly meeting of the TGB to produce ‘relational authority’, where shared purpose and social norms produced a safe psychological space for inter-organisational learning.

⁸ Sensei refers to an individual who has achieved a level of ‘mastery’ of a particular skill. In this case, the sensei has specialist experience of developing improvement capability in a healthcare context.

3.2 Enabling new ways of working – the role of a ‘compact’

A ‘compact’ is an explicit (written), reciprocal and ‘promissory’ agreement that sets out expected behaviours of parties to an exchange contract. Gary Kaplan, CEO of Virginia Mason, explains how creation and maintenance of a compact was critical for enabling the hospital to override clinicians’ long-held perceptions of ‘entitlement, protection and autonomy’ and align with a new shared vision of being a patient-led organisation:

A compact is a reciprocal agreement. It’s not a job description for doctors or for leaders. It’s not a legal document that you sign. It’s a reciprocal agreement. And, you know, I used to be so proud of saying “We are a physician driven organisation.” I would never say that today. We’re a patient driven organisation. And so, as part of changing that paradigm, that way of thinking, we realised that we had to have a deep conversation within our organisation. We had to challenge the old deal.
(Gary Kaplan, CEO, Virginia Mason)

As outlined above, the purpose of an explicit compact is to override implicit beliefs and expectations about the behaviours and entitlements we expect of ourselves and others. These implicit beliefs represent a ‘psychological contract’ between two or more stakeholders and are drawn from an array of internal and external sources, such as prior experiences, socialisation processes, and interpretations of the employment contract (Rousseau, 1989). Describing why healthcare organisations need a compact, management consultants Kornacki and Silversin (2015) proclaim traditional and implicit beliefs are “a major source of slow change, failed attempts at change and strained relationships” (p.4).

A compact to deliver a shared vision

The NHS-VMI partnership compact was an explicit (written), reciprocal and promissory agreement that sets out reciprocal promises to adhere to an explicit set of behaviours. Figure 3.1 presents an abridged version of the final NHS-VMI partnership compact.

The compact was appended to the agenda of each meeting of the TGB and referenced on a routine basis as the final agenda item: ‘Reflections on the compact’. These ritual reflections were significant in their ability to reinforce the relationship, reaffirm the shared purpose, and build trust among partners that each remain committed to working together towards the partnership shared vision.

Figure 3.1: An abridged version of the compact that governed the NHS-VMI partnership

Partnership Shared Vision:	
The five hospital partners aspire to be the safest in the country and facilitate wider sharing of learning across the wider health system, demonstrating how culture change, alongside stable leadership, can improve patient care and save money. The partnership adheres to a collective ambition for the programme’s success after 5 years and beyond.	
Regulator Responsibilities	Hospital Responsibilities
Creating the right environment - Behave in a positive, respectful and consistent way at all levels of interaction with hospitals, and be open and transparent; - Maintain integrity in positive partnership working even when under external pressure, and show empathy with hospital issues; - Be candid in offering constructive criticism and receptive in receiving it – always assuming good intent.	Creating the right environment - Act in a way that is respectful open and transparent, with a commitment to early warning and no surprises; - When under pressure on wider delivery, look to the method as part of the solution; not a barrier - Work with the wider system so they have understanding of method, process and what is required to maximise benefits.
Fostering Excellence - Enable and support the coaching and development of CEOs in exchange for commitment to remain in post; - Make available specialist expertise, knowledge and tools to support partner hospitals.	Fostering Excellence Promote ambition, innovation and continuous improvement, celebrating success and learning from setbacks.
Listening, Communicating and Influencing - Listen and act in the spirit of shared endeavour and mutual learning to support solutions; - Communicate regularly and clearly with hospital partners and advocate for the programme with stakeholders and the public; - Build coalition of support from the wider system to help hospital partners to implement the method and to realise the potential nationally.	Listening, Communicating and Influencing - Maintain two way clear communications between hospital partners and regulator, seeking and providing feedback; - Foster effective internal and external relationships built on trust and agreement; - Ask for help and support when needed; - Be advocates for improvement work nationally.
Leadership - Be clear, reasonable and consistent regarding expectations on pace and progress; - Facilitate consistent behaviours of other stakeholders; - Commit to supporting hospital leadership and maintaining board stability, and explore avenues to reinforce that.	Leadership - Support board stability and longevity; - Chief executives to personally lead the programme and visibly role model the approach; - Keep commitments on deliverables, timelines and measurement; - Acknowledge collective responsibility with [regulator] and other hospital partners around delivery of the programme and the duty to support each other.

Making a psychological contract explicit involves facilitating ‘deep conversations’ with partners aligned to a clearly defined shared purpose or ‘vision’. In this example, the final version of the compact makes a clear statement of a vision “...to be the safest in the country and facilitate wider sharing of learning across the wider health system...”. This statement indicates a relationship where stakeholders are not committing solely for personal gain, but because they believe they can use their experience to generate wider learning that contributes to the bigger goal of making the NHS the safest health care in the world. In other words, the relationship was anchored by an ‘ideological currency’ common in the NHS, where five CEOs and members of NHS E & I were “*working to do good, not just to do well*” (cf. Thompson and Bunderson, 2001; Yang et al, 2021).

3.3 Relational change is a process

Intentions are one thing, actions are another. Making explicit reciprocal promises at the start of an exciting new ‘journey’ is encouraging but how do we ensure promises set out in a document are implemented in practice? And will those promises endure when times get tough?

Building trust

The routine meeting of the TGB was where the compact was most visible. Interviews with respondents revealed those who were not members of the TGB had little understanding or regard for the compact. Yet, ethnographic observation of the TGB over several months highlighted that the TGB was the mechanism (or trigger) to activate conscious attention to the promises set out in the compact. This was achieved through appending the compact to the monthly agenda and also, spending time at the close of every meeting discussing the compact and the partnership’s ‘fulfilment’ (or otherwise) of the promises that each member of the TGB had explicitly agreed to.

This ritual acknowledgment that the partnership is maintaining promises set out in the compact fosters trust among all members of the partnership: all members are assured that the relationship is progressing in ways that are valued by all members and will help deliver the shared vision. This is an important finding that offers an extension to existing psychological contract theory. Usually, when a psychological contract remains implicit, fulfilment (of perceived stakeholder promises) generally goes unnoticed. When behaviour aligns to expectations, there is no reason for an individual to consciously reflect on the exchange relationship. So, an implicit psychological contract is not activated when partners to an exchange contract behave in ways that are expected. Making ‘fulfilment’ explicit via monthly reflections at the TGB actively fosters a sense of mutual trust among the partners.

Maintaining (or repairing) trust when things go wrong

Most scholarly work has focused on the implicit psychological contract between an employer and employee, and in doing so has recognised that a perceived breach to an employee’s psychological contract generally produces negatively valenced employee behaviours (Morrison and Robinson, 1997; Zhao et al, 2007). For example, an employee that works extended hours over their weekend to complete an important project on time and to a high standard, might expect an employer to recognise and reward the additional effort and sacrifice the employee had made. If reward is not forthcoming (for example, the employee believes they are entitled to additional payment for additional hours), then the employee may experience reduced engagement, they might subsequently reduce their productivity, and potentially the employee will exit the organisation.

When a psychological contract is implicit it is possible the employer is unaware that a breach has occurred. A compact makes the psychological contract explicit, so that a breach is visible to both parties at the same time. Thereby, a breach activates attention to the promises set out in the compact and presents an opportunity to discuss what happened and why. In this instance, the partners may choose to 'renegotiate' the promises they agreed or seek to repair the breach with a discussion about what happened and what the partners need to do differently.

For example, when BHRUT's CEO stepped down in July 2018, members of NHS E & I initiated collective reflection in order to facilitate relational repair. For example, a senior representative of NHS E & I asked: "*why did no-one call [breach] out?*" and "*why didn't we do anything?*", and "*what could we have done better*". These questions deliberately involved all members of the TGB in collective discussion and reflection of a shared experience, with a view to moving forward together. Discussion concluded the incident was "*a reminder of how far we need to go*" (Senior Manager, NHS E & I, observational diary). Thereby, all members of the partnership agreed relational change was a process, and members have to work hard to maintain and demonstrate their commitment to new ways of working.

3.4 How and why was the compact successful at fostering a new relationship?

Our analysis reveals the TGB was the mechanism through which the compact was activated, and new ways of working could be developed aligned to reciprocal promises made explicit via the compact. Ritual reflections on the compact that occurred at the close of each meeting served to maintain conscious attention towards the promises set out by each party and their achievement (or otherwise). This is a novel finding and one that could potentially aid other healthcare partnerships to foster and maintain new and collaborative ways of working.

We also observed how a 'breach' to the compact could lead to positive outcomes. This finding is counter-intuitive and contrary to existing literature. We observed that a breach, when 'called out' via the TGB, would provide an opportunity for reinforcing stakeholders' continued commitment to the shared vision, and the new partnership ways of working required. In support of our findings, researchers have linked the presence of ideological currency to 'a more tolerant zone of acceptance' in the event of breach (Rigotti, 2009), and even increased work effort in the event of under fulfilment (Vantilborgh et al, 2014). We contend that the presence of ideological currency exemplified by the shared partnership vision may help explain why the partnership has been maintained even when things go wrong. Finally, the fact that the TGB continues to thrive as a forum for cross-organisational collective, reflective talk is testament to the impact of the partnership, and its ability to foster system-wide learning and improvement.

Implications for practice

Since there are few examples of successful partnership working within healthcare settings (Dickinson and Glasby, 2010; Perkins et al, 2020), our analysis has important implications for practice. This novel processual analysis reveals how and why an explicit compact can facilitate relational change over time. We contend that our findings can be generalised to facilitate partnership working in any context but particularly where organisational relationships have traditionally been governed by asymmetries of power and control. Specifically, we highlight the relevance of our findings in light of the emerging national context of integrated care, including the newly instituted Integrated Care Systems (ICSs) and Integrated Care Boards (ICBs) across England.

Section 4: Organisational culture and context

In this section we provide an overview of each of the five NHS-VMI partner trusts with respect to the changing internal organisational context both prior to and during the NHS-VMI partnership. We describe how the internal organisational context of each of the five trusts shaped and was shaped by the NHS-VMI partnership.

Key findings

- Organisations that had engaged in values-based 'cultural work' prior to the NHS-VMI partnership produced a more receptive context for change.
- Values-based 'cultural work' was an important antecedent to the successful adoption of a systematic, organisation-wide improvement programme within healthcare provider organisations.

4.1 The five NHS-VMI partner trusts: Same but different

While each organisation implemented the same method, in the same way, with proportionately similar resource, their journeys are notable for their difference. We explain differences in outcomes with reference to the 'pre-partnership' performance and leadership context, and specifically in relation to the presence or not of 'cultural work' in the years prior to the NHS-VMI partnership.

Performance, leadership and cultural work

All five NHS partner trusts had historically struggled with performance, leadership stability and culture.

In the years prior to the partnership, four of the five NHS partner trusts received the Care Quality Commission (CQC) rating 'requires improvement'; during the partnership (2015-2020), three of the five organisations improved their CQC performance ratings, while performance at two organisations declined. In the two organisations where performance had declined, the CEO was new in post and no 'values-based' cultural work had been established (see Section 4.2). We contend that the presence of values-based cultural work, alongside leadership stability, produced a receptive context for change and generated traction among employees to engage with the partnership associated training and improvement activity.

Table 4.1: Performance, leadership and cultural work

		SASH	LTHT	UHCW	SATH	BHRUT
CQC Inspection rating	Pre-partnership	Good 2014	Requires improvement 2014	Requires improvement 2015	Requires improvement 2014	Requires improvement 2015
	During	Outstanding 2019	Good 2016	Requires improvement 2018	Inadequate 2018	Requires improvement 2018
	Latest report	Outstanding 2021	Good 2019	Good 2020	Inadequate 2020	Requires improvement 2020
Leadership Stability (CEO)	Pre-partnership	Michael Wilson (since 2010)	Julian Hartley (since 2013)	Andy Hardy (since 2010)	Adam Cairns 2010-2012 Peter Herring 2012-2015	Several: 'a revolving door of CEOs' (interview, senior manager) Matthew Hopkins 2014-2018
	During	No change	No change	No change	Simon Wright 2015-2019 Interim Paula Clark 2019-2020 Louise Barnett 2020 to date	Matthew Hopkins 2014-2018 Interim: Chris Bown 2018-2019 Tony Chambers 2019-2021
Was cultural work undertaken at least two years prior to NHS-VMI partnership?		Yes: 'values-based' work and leadership training for clinical leaders. Goal to become 'clinically-led, managerially enabled'.	Yes: 'values-based' work to produce The Leeds Way.	Yes: Together towards World Class. Vision statement with accompanying values.	No evidence of cultural work in the years prior to the partnership	No evidence of cultural work prior to the partnership. BHRUT was in special measures between Dec 2013 and March 2017.

Adopting an interpretative perspective, we align to Gregory's (1983) definition of culture as *"a system of meanings that accompany the myriad of behaviours and practices recognized as a distinct way of life"* (p.364). In this way, we conceive organisational culture as dynamic, shaped by shared values that influence behaviour and interaction. Aligned to this, 'cultural work' refers to planned and deliberate efforts to establish and maintain a shared set of values that all organisational members align to.

SASH, UHCW, and LHT had each engaged in a sustained effort to establish an improvement culture prior to the NHS-VMI partnership. As a result, these trusts were better positioned to leverage the Lean-based intervention than BHRUT and SATH, where 'cultural work' had not been established and embedded in the years prior to the commencement of the partnership.

In the next section we describe values-based cultural work in each of the five NHS partner Trusts prior to the NHS-VMI partnership. We also illustrate how the presence or not of value-based cultural work impacted the receptiveness of the organisational context to the adoption of Lean-based routines and methods aligned to partnership.

4.2 The importance of values-based cultural work

Values-based cultural work at SASH: Clinically-led, managerially enabled

In 2010 SASH was reportedly "the worst performing hospital in the country on every single measure", and in February 2011, SASH unexpectedly found itself at the centre of the Channel 4 documentary *Dispatches* after secret filming revealed an altercation between clinical staff and a seriously ill patient to fall far below expectations. It was around this time the executive team decided the organisation would strive to become "clinically led, managerially enabled". We observed on many occasions the guiding ethos of CEO Michael Wilson: healthcare organisations should harness the intellect of a clinical workforce with years of professional training and enable them to lead in ways that align to professional values of high quality patient care.

Many clinicians are in the top two per cent intellectually, but the systems and processes [the NHS] put in place disable rather than enable them, so people in the NHS feel they have to ask for permission to do stuff. Why would we do that? At SASH clinicians are enabled to lead change at the front line.

(CEO, SASH)

In 2014, a year prior to the commencement of the NHS-VMI partnership, SASH's performance had improved to receive a rating of 'good' from the CQC. Several respondents noted the impact of values-based cultural work on creating a positive improvement culture prior to the NHS-VMI partnership:

[In the years prior to the Lean intervention] the organisation had co-produced values with front-line staff that put the patient and quality of care first, above that of finance, even when our bottom line was poor... We had engaged in a bottom-up process of change, giving front-line staff autonomy in local decision making in recognition they knew best not managers. We facilitated discussions with clinicians about what best to do; we were not autocratic or directive. Working this way we sought to foster a 'one team' [sic] culture.

(Senior Exec HR, SASH)

In February 2019, SASH became one of a small number of hospitals rated 'outstanding' by the CQC. In November 2021 SASH was named HSI's 'Acute Trust of the Year'.⁹

In Section 4.3 we describe four factors that shaped a receptive context for change at SASH.

⁹ <https://www.hsj.co.uk/the-hsj-awards/hsj-awards-2021-acute-or-specialist-trust-of-the-year/7031127.article> accessed 16 March 2022.

Values-based cultural work at LTHT: 'The Leeds Way'

Values-based cultural work was also evidenced at LTHT in the years prior to the NHS-VMI partnership (2013-2015). In 2013, changes in leadership brought with them a desire to transform the organisation. The excerpt below is from an interview with Julian Hartley (CEO) and describes the process of developing 'The Leeds Way' prior to the NHS-VMI partnership, with reference to 'our culture' and 'our DNA':

I wrote a personal letter to a cross section of 2,000 staff, several weeks before I joined LTHT, asking them what they thought our top three challenges were and introducing myself. The response to that was unambiguously clear that they felt we needed engagement, a clear vision, a focus on improvement culture, that the leadership style needed to change from one of sort of hardcore performance management money targets to one that was much more engaging and embracing of all staff, visibility of senior leadership and so on. Now fortunately that is music to my ears... so when I started we embarked almost immediately on the development of what we call the Leeds Way. The Leeds Way is our culture, it's how we do things around here. It's our kind of DNA.

(CEO, LTHT)

Acknowledging the extent of cultural work that lay ahead, LTHT led several staff engagement events to talk about the 'current state' of the organisation. These sessions were followed up with a crowdsourcing approach to enable all 18,000 staff members to provide feedback on what the values of the organisation should be. This process culminated in the creation of a set of cultural values including patient centredness, empowerment, accountability, collaboration and fairness, which constitute The Leeds Way.

The Leeds Way was created through a process of bottom-up engagement and we started with the moment of catharsis where people were able to describe how bad it felt to work here and we publicised and talked about that... We used a technique called crowdsourcing which every one of our 18,000 staff had the opportunity to feed into that to say what they thought we should be doing, how we should be working and they could all see each other's comments and they voted on the best ones and so the wisdom of the crowd led us to The Leeds Way.

Values based cultural work at UHCW: A vision to become ‘world class’

In 2010, CEO Andy Hardy replaced a series of interim and short-term executive leaders. This succession of short-term leadership appointments at UHCW had impaired the organisation’s ability to successfully implement long-term improvement initiatives. In the years prior to Andy Hardy’s appointment, the organisation had engaged various management consultancies to lead improvement work within the organisation including Pricewaterhouse Coopers, Unipart, KPMG, and GE Healthcare. As a consequence, internal improvement capability had not been fully developed or sustained.

It wasn’t a sustained approach, it’s people coming and doing to us rather than grow your own within the organisation to support improvement.

(KPO Facilitator, UHCW)

In 2014, UHCW launched its ‘Together Towards World Class’ (TTWC) organisational development programme, communicating its vision to become a national and international leader in health care. This programme focused on five core areas including ‘world class’ experience, services, conversations, leadership, and people. As part of that commitment towards becoming a ‘world class’ provider, UHCW developed values as a guide for how staff should treat each other, their patients, and community partners. These values include compassion, openness, learning, pride, improving, respect, and partnership.

If we go back to March 2014, we launched a five-year [organisational development] programme called Together Towards World-Class and that was... you know, quite literally our vision was to be a national and international leader in health care... then when we started to understand a bit about Virginia Mason and a bit about this potential partnership, we looked at it and thought “is this going to help us get to where we’ve already said to our organisation that we want to be in a more constructive or a more accelerated way?” And we thought absolutely yes. Key to this was the cultural change required to be world class, but also having the management tools in the toolbox. And so from the start we said: “Look, we want to learn from Virginia Mason, but we don’t want to be Virginia Mason in Coventry and Virginia Mason in Rugby. We want to be UHCW, a world-class organisation learning from the best.” So it just fitted in with that.

(CEO, UHCW)

Talking about the impact of the NHS-VMI partnership, a senior clinician told us:

I don't think [the execs] were quite prepared for how this method really shines a light on culture, and exposes behaviour, relating to the way we work. It's made us very open in terms of patient safety. That's a good thing.

In 2018, UHCW won an HSI award for its work on patient safety.

Absence of cultural work in the years prior to the NHS-VMI partnership: The case of BHRUT

BHRUT did not present an organisational context receptive to the introduction of a systematic approach to continuous improvement. The trust had been placed in 'special measures' since December 2013; when Matthew Hopkins became CEO in April 2014 the priority had been 'getting out of special measures'. As the NHS-VMI partnership commenced in 2015, the executive team was anxious "not to upset the glide path to getting out of special measures" (Senior Executive M).

So we took the view [in 2015] that we wouldn't rush into training and starting rapid improvement workshops straightaway... we took a view that we wouldn't rush. We'd do some of the groundwork, get the leadership team, and understand things. And the question I've got in my mind is were we too anxious at the time to not disrupt the kind of glide path to getting ourselves out of quality special measures from a compliance perspective? Could we have kicked off more quickly?

(CEO 1, BHRUT)

In March 2017, BHRUT was successful at improving performance aligned to regulatory expectations and was no longer deemed to require special measures. However, 2017 also saw CEO Matthew Hopkins take a period of leave due to health issues and the organisation's financial problems identified later that year led the trust to request an emergency loan. In February 2018, BHRUT found itself once again in special measures, this time for finance.

When the evaluation began in 2018 it was clear that BHRUT was considerably behind the other four NHS partner trusts in terms of its engagement and implementation of the improvement method. Reflecting on the trust's lack of progress, CEO Matthew Hopkins exposed a tension between a requirement to comply with regulatory expectations (to move out of special measures), versus investing resource in the implementation and development of Lean-based methods and skills. In practice, he argued, the two objectives were in conflict with one another: "in essence it wasn't really true quality improvement, it was compliance."

In July 2018, Matthew Hopkins left the trust and Chris Bown became interim CEO. At his first attendance of the Transformation Guiding Board (TGB), Chris Bown provided a frank and candid description of the challenges the trust faced, making specific reference to the “*excellent work of the [central improvement team/KPO]*”, but a lack of integration of the Lean-based methods with the organisation. Moreover, the interim CEO was most concerned about the presence of “*a broken culture*”.

I’m going to be candid about where we are at BHRUT. Events of the last 12 months have taken their toll, we’re not in a very good place, that is not to say the value stream work (seeing good stuff coming from that), L4L is working well, but we do have a high dropout rate. Despite best efforts of KPO, (and we have excellent KPO), work we are doing in [local adaptation of Virginia Mason Production System] is in complete isolation to everything else happening in the organisation. The most worrying thing of all, a broken culture... I need to take stock, the board takes stock, and the partnership needs to take stock, because for me the piece on culture... is a great issue for us.

Soon after the departure of CEO Matthew Hopkins, BHRUT’s KPO lead (most senior improvement facilitator) also left the organisation, leaving a very small three-person improvement team. In light of this difficult context, all planned value stream and RPIW work was cancelled, and a decision was taken to prioritise workforce training via the L4L programme. Due to a ‘special measures’ performance context, the KPO was required to share office space with various other improvement specialists including three external consultancies brought in to assist the trust move out of special measures. This assortment of external management consultants working within the same office space as the KPO created an uneasy climate for maintaining the Lean-based CI approach. Echoing reflections from the former CEO at BHRUT, respondents described a tension between the traditional NHS ‘turnaround’ model, where a band of external management consultants is enlisted to rapidly fix performance issues, and the slow pace of incremental CI methods that were central to the NHS-VMI partnership.

[The] dominant NHS model is to bring in a turnaround director, bring in the ‘big 4’ [sic]. If we say no to bringing in external support then we’re in trouble, you’re dammed if you do, dammed if you don’t. But if you do bring in external support, how will they plug into our way of working [the respondent is referencing their local adaption of the Virginia Mason Production System], our way of working being not fully embedded.

(Senior Manager, BHRUT)

Absence of cultural work in the years prior to the NHS-VMI partnership: The case of SATH

Prior to regulatory action in late 2018, evidence of engagement with Lean-based methods at SATH had appeared strong. SATH had trained the most employees in L4L at that point, had the most value streams in operation, and had completed the most RPIWs. However, several respondents expressed concern that the pace of implementation was too fast. Some felt that time was needed to reflect on the efficacy of the improvement activity, and ensure improvements delivered the intended outcomes. Many respondents highlighted that participation in the Lean-based methods (completing the Lean training and participating in RPIWs) was creating a divide between those that had participated, and those that had not. In essence, SATH had pushed the technical side of implementation hard, but the social side of improvement had not been sufficiently addressed. As a consequence, rather than employees feeling inspired by those who had gained knowledge and led change through the implementation of Lean-based methods, many felt “*demotivated and disengaged*”:

Our focus has been more on the RPIWs, the pace, and then the deep engagement. And that’s a bit of a conflict in terms because we have seen that the RPIWs are the framework by which people do become deeply engaged, but we’ve aimed to do 24 RPIWs in a year. That’s absolutely massive... fast paced and I wonder if we should create some space to consolidate, to measure the impact of our engagement, to think about roll-out rather than going at speed with RPIWs.

(Senior Clinical Leader, SATH)

In 2019, staffing issues combined with regulatory pressure led to the stalling of planned improvement activity aligned to the NHS-VMI partnership; instead executives began to “*stand things down*” (KPO Facilitator, SATH). Mirroring the experience of BHRUT, regulatory action led to the cancellation of planned improvement workshops, diverting activity to ‘*firefighting*’ with a focus on compliance. In both cases, regulatory action produced an **improvement paradox**: the rhetoric of improvement as a mechanism for improving performance gives way to a reality of compliance, a mechanism to rapidly align performance to a target. The interview excerpt below provides a vivid and detailed description of the compliance-performance tension:

For me, there’s the compliance bit you kind of have to do to feed the beast, to feed NHS E & I and our commissioners and whatever. So you’ve got the compliance bit that [nurses] get and then you’ve got the continuous improvement that they’re excited by. But sometimes they haven’t got the capability or capacity to do both and often they conflict.

(Senior Executive, SATH)

In summary, there was little evidence of cultural work taking place prior to the NHS-VMI partnership at SATH or BHRUT. Respondents report an organisational culture historically resistant to change, while workforce shortages and regulatory pressures produced a very challenging context within which to embed a culture of CI capability. We found evidence at BHRUT and SATH that **regulatory pressures produced an improvement paradox: regulatory requirements to improve led both BHRUT and SATH to ‘stand down’ improvement activity and focus on compliance.** Unlike BHRUT however, we note that SATH had made the most progress in terms of implementing the technical elements of the systematic approach to improvement, but in the absence of a culture receptive to change, the ability to foster a CI culture was curtailed. We explore this finding further in Section 5: Lean is socio-technical.

4.3 Four factors that created a receptive context for change: The case of SASH

In light of the transformation observed at SASH, we were motivated to explore further the mechanisms employed by SASH prior to the NHS-VMI partnership that shaped a receptive context for change. Examination of qualitative data revealed the following four factors:

1) Organisational values that are simple, unambiguous, aligned to clinical values and communicated regularly

At SASH organisational values were directly aligned to clinical values of prioritising the highest quality patient care. The rationale: “The patient is the one consistent thing that everybody’s got in common. It’s the one reason why we’re all here and if you keep framing it in that way you can’t really lose.” (CEO, SASH)

Clear statements about organisational priorities and expected behaviours reduces complexity and emboldens clinical decision making in favour of prioritising patient outcomes. We note the CEO was consistent in his message to clinicians:

If you talk to the doctors here, they’ll say to you “Well, [the CEO] only ever talks about four things.” I used to get all [senior doctors] in a room and I used to say, “Well, you’ve got to do a lot of stuff, but I want you to focus on four things. Just four things, that’s your job. And for these four things you took an oath and that’s it. Spend all your time on patient experience, on quality, patient safety and getting the best clinical outcomes” and they’d look at me and say, “Is that it?” and “You’re not going to talk about 90 per cent [waiting time target]?” No, I’m not because I know that if you focus on those four things that’ll just happen.

2) Values-based HR practices

Aligned to the goal of becoming a values-based organisation, SASH developed HR practices that were values based. For example, when recruiting, applicants were asked to describe how their values aligned with the organisational values (dignity, respect, compassion, one team, and quality). If an applicant was unable to demonstrate alignment with organisational values, then the applicant would not be successful. The CEO explains the practical importance of recruiting individuals whose values align to the organisation:

You could have the most fantastic clinician, but if they're a pain in the backside then it's going to be a nightmare forever. So you're better off appointing people who really align to your values. I'm on record for saying this many times. I've got hundreds of medical consultants and I don't have any difficult clinicians in my organisation.

3) Distributed leadership

Aligned to a vision to become 'clinically led-managerially enabled', clinical leaders at SASH undertook a two-year training programme with a goal to "getting them to focus entirely on leadership from a completely different perspective" (Senior Manager, SASH). The rationale for distributing leadership to the clinical front line was couched in terms of promoting (rather than disabling) professional jurisdiction and autonomy, while also developing clinicians' ability to lead others in ways that align with professional values. Following the leadership training programme (2012-2014), six of the most senior doctors became integrated with the executive team. This infrastructural change further reinforced alignment between clinical professionals and management, providing a platform for clinical-managerial knowledge exchange that was less vertical and more lateral enabling more effective clinical and managerial interaction.

When I first arrived [as CEO] I needed to really embed a culture of progressive improvement, but to do that I needed to find something that was going to bring people together, and that was clinical leadership. So we put all our senior clinicians through a two-year development programme focused mainly on clinical leadership instead of appraisals, about developing clinical autonomy and leading from the front... So we did that for two years and we saw some remarkable effects actually of how you could bring together a large group of clinicians and get them to focus entirely on leadership from a completely different perspective. Because they trained as doctors and what we wanted them to do was think about the leadership skills that were going to be required then and into the future and how we would embed some of those leadership skills across the wider organisation.

4) Formal routines that bring groups of people together for collective, reflective talk

The practice of bringing professional groups together in the same room (e.g. junior doctors) emerged as a formal management-led routine at SASH, and presented an important mechanism for connecting front-line clinicians with management on a regular basis for informal relational exchange: “giving [clinicians] the opportunity to talk to [managers] in a way that’s unsolicited – they’re free to say whatever they want, and they do”.

I see all our junior doctors every six weeks, right. One Tuesday every six weeks we buy £100 worth of pizzas and it gets them in the room... then every three months every specialty has a junior doctor who’s their specialty lead and usually I’ll have breakfast with them or we have an evening meal and they give you a bit more detail about some things that are going on and if there are issues we tackle them, you know, because people are people and there will be issues... I had lunch yesterday with all the matrons in the hospital. So we do this about once a quarter... Next week I’ll have lunch with about 40 ward managers... It’s their opportunity to spend time with me and the chief nurse, and tell us how it is, what’s making a difference, what’s on their minds, and often we do stuff. You know, we try and fix things, you know, but again it goes back to talking to people and giving them actually the opportunity to talk to us in a way that’s kind of unsolicited and they’re free to say whatever they want, and they do.

(CEO, SASH)

Implications for practice

Our analysis reveals the importance of ‘cultural work’ undertaken prior to the NHS-VMI partnership, which produced a receptive context for change. We refer to cultural work as planned and deliberate efforts to establish and maintain a shared set of values that all organisational members align to. Cultural work takes time, commitment, and stable leadership.

Further, analysis of SASH’s transformation from the worst trust in the country in 2010 to winning the HSJ award for ‘Acute Trust of the Year’ in 2021 identified *four factors that produced a receptive context for the improvement method to ‘plug into’*:

1. *Organisational values that are simple, unambiguous, aligned to clinical values and communicated regularly.*
2. *Values-based HR practices.*
3. *Distributed leadership.*
4. *Formal routines that bring groups of people together for collective, reflective talk.*

Section 5: Lean is socio-technical

The implementation of Lean relies upon both technical improvement capability *and* social relationships and connectedness. You can't have one without the other. Having the skills, enthusiasm and passion to improve isn't a sufficient condition for change if you are not able to corral the enthusiasm and collaboration of others. This is especially true for healthcare organisations characterised by a professionally dominant core (i.e. doctors are powerful actors known to be instrumental in the success or otherwise of attempts to implement new ways of working).

We present Section 5 in two parts. The first part focuses on the progress with the Lean for Leaders training programme in each trust, and the value derived from L4L reported via our survey of L4L participants. The second part examines the social side of implementation. We use social network analysis to examine how knowledge about Lean improvement is mobilised within organisation networks.

Key findings

- *The Lean for Leaders training was comprehensive and generally highly valued by participants in all five NHS partner trusts.*
- *SATH and SASH had achieved similar numbers of employees completing their training in L4L but achieved very different performance outcomes.*
- *The highest performing NHS partner trust (SASH) had the most distributed social network; the lowest performing NHS partner trusts (SATH and BHRUT) had the least connected network.*
- *Social connectedness of trained participants appears correlated to the efficacy of improvement activity.*
- *Social networks that are distributed, where "everybody is talking to everybody else" have high capacity for knowledge mobilisation and collaboration.*

Section 5 - Part 1: Lean for Leaders (L4L) training

Training healthcare leaders (at all levels) in Lean-based methods was a central element of the continuous improvement (CI) infrastructure, focusing primarily on the technical aspects of Lean-based improvement methods. Lean for Leaders (L4L) and Advanced Lean Training (ALT) were two template-based training programmes, the content and materials of which are licensed to VMI. Formal training of participants in Lean-based methods was facilitated by the central improvement team (the KPO).

L4L training involves completion of six modules, and typically takes between nine and twelve months to complete. The first three modules are about system wide leadership and change management while the second three are more technical, concerned with tools for daily management, involving the creation of production boards, huddles, 5S, value streams and root cause analysis. Each module is assessed and participants must submit (practice-based) 'homework' associated with each module.

ALT training is more classroom based and skills focused than L4L, aiming to enable participants to teach the concepts of Lean-based improvement methods to others. ALT is delivered via formal teaching with one piece of 'gemba work' (situated within participants' place of work) in relation to each taught concept. 15 modules are completed across 12 weeks and ALT participants are assessed via a 'teach-back' method.

5.1 An assessment of training progress in each NHS partner trust

L4L training was delivered to cohorts of 20-30 participants at a time, led by members of the KPO who themselves had completed an intensive training programme led by VMI. Table 1 shows a breakdown of the numbers of employees that had completed or were currently undertaking L4L training (and ALT) up to March 2021. Across the five trusts, over 1,000 participants have completed L4L training and/or ALT. At time of writing, 763 participants were currently undertaking L4L/ALT training.¹⁰

Table 5.1: Number of participants in Lean for Leaders training as of March 2021

Trust	Trust size	Lean for Leaders training (L4L)		Advanced Lean Training (ALT)		Total (L4L and ALT)		Diffusion of Lean training (%)
		Complete	In progress	Complete	In progress	Complete	In progress	
BHRUT	6,500	60	54	27	0	87	54	2%
LTHT	17,500	103	353	38	46	141	399	3%
SATH	4,200	274	59	22	0	296	59	8%
SASH	5,500	233	94	34	3	267	97	7%
UHCW	8,600	278	154	14	0	292	154	5%
Total	42,300	948	714	135	49	1,083	763	4%

The percentage of employees completing L4L at the end of the five-year partnership may appear low, but it should be remembered that the training programme was comprehensive, involving practical as well as classroom-led activity, and subsequently taking individuals many months to complete. This proportionally low level of training completion serves to further underscore the importance of social connectedness to foster knowledge mobilisation for collaborative improvement as discussed in Section 5 - Part 2.

5.2 Measuring impact: A survey of L4L participants

In November 2018 we conducted a survey of L4L participants to examine their perceptions of the Lean training programme, specifically: the perceived value of the training, the benefits in terms of tangible and intangible impact, and the barriers to implementing Lean in practice. The survey was sent to 765 L4L participants across all five NHS partner trusts using the online survey platform Qualtrics. 333 persons clicked the survey link, and 321 persons started the survey, achieving a response rate of 42%. In total, 285 persons completed the entire survey achieving a completion rate of 89%. Table 5.2 reports the number of survey responses per trust.

Table 5.2: L4L participant responses and progress by trust

	BHRUT	LTHT	SASH	SATH	UHCW	TOTAL
Trust size	6,500	17,500	4,200	5,500	8,600	
No. of survey invitations sent	103	205	188	114	155	765
Response rate (by trust)	38%	31%	51%	56%	37%	
No. of responses	39	64	96	64	58	321
Responses (sample size)	12%	20%	30%	20%	18%	100%
L4L graduates	7	23	63	45	30	168
L4Ls in progress	30	40	31	17	26	144
Total responses	37	63	94	62	56	312

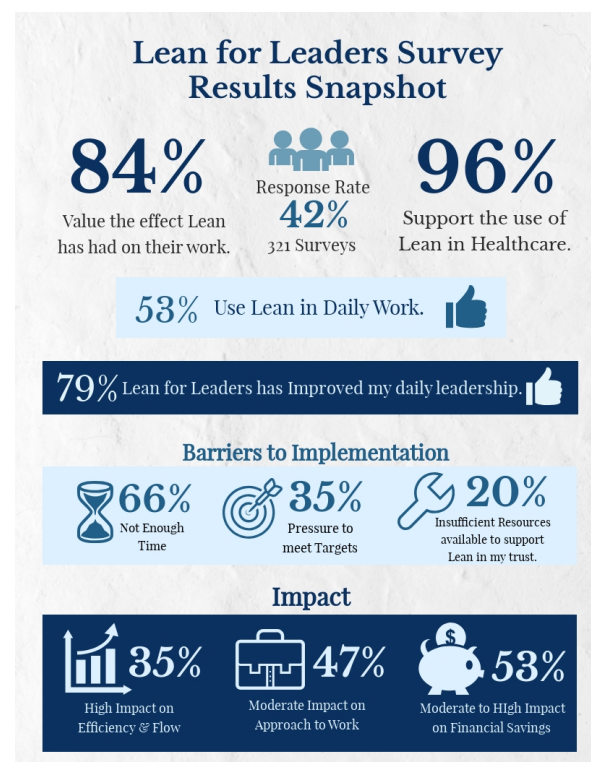
The objective of the L4L training was to enhance participants' technical knowledge of Lean-based methods of improvement and to use those methods to drive improvement as part of their leadership approach and daily management. To this end, our survey found:

- 96% of respondents agreed L4L training allowed them to develop new skills and knowledge that facilitated meaningful improvement.
- 85% of survey respondents value the impact that the methods have had on their work.
- Across the trusts, SASH and LTHT were more likely to report higher impact in terms of both quality and efficiency.
- Respondents in nursing roles and at BHRUT and UHCW were less likely to agree than respondents in non-clinical roles, whereas the majority of respondents from SASH were much more likely to agree than the other trusts.
- 65% of respondents agree that their colleagues believed Lean was worthwhile.
- We identified significantly higher 'belief' in the programme from respondents at SASH compared to SATH and BHRUT.
- Evidence of the relationship between L4L effectiveness and organisational culture is demonstrated as respondents from SATH were less likely to agree with the effectiveness of Lean-based methods in their departments and the trust as a whole, while respondents from SASH were much more positive about the methods' effectiveness.

Our survey also found the impact of L4L training on improving healthcare delivery was shaped by organisational factors such as leadership commitment, organisational support systems, and the culture of the trust.

Overall, the L4L programme had a less favourable impact in trusts that were challenged by leadership and organisational culture. Participants at trusts with stable leadership had more favourable responses to all areas measured by the survey, including the relevance and likely use of the Lean-based methods in their daily work. Figure 5.1 presents an infographic that further summarises the key findings of the L4L survey.

Figure 5.1 Infographic summarising key findings of L4L impact survey



Part 2: Mobilising improvement knowledge: Relationships matter!

Lean is socio-technical: implementation relies upon technical capability *and* social connectedness. Talking about and collaborating for improvement is vital for the development and maintenance of a continuous improvement culture.

Our survey of L4L participants was designed to collect social network data to understand to what extent L4L participants were talking and collaborating with others for improvement in each of the five NHS-VMI partner trusts.

Data collection and analysis¹¹

We collected social network data using a simple data collection tool that requires respondents (participants in L4L) to name between two and five people (up to a maximum of 10) with whom they interact in relation to improvement, and the nature of that interaction (e.g. for expertise, advice, influence). We used the comprehensive software package UCINET (Borgatti et al, 2002) to examine the structure, reciprocity, and types of brokering relationships within the identified social networks. Table 5.3 presents a summary of our data sample at each trust; Table 5.4 presents quantitative data to illustrate the nature (reciprocity) of relational interaction present within each organisation's social network.

Table 5.3: Summary of social network data collected from each trust

Network data collected	SASH	LTHT	UHCW	BHRUT	SATH
No. of survey invitations sent	198	195	155	103	114
Total number of respondents	94	70	67	49	67
Response rate	47%	36%	43%	48%	59%

Table 5.4: Relational knowledge interaction

Network data collected	SASH	LTHT	UHCW	BHRUT	SATH
Number of respondents (L4L participants)	94	70	67	49	67
Number of collaborators identified (core professionals)	153	111	100	84	120
Network size (No. of actors in each network)	247	181	167	133	187
Number of ties	389	273	269	194	279
Simple connectivity (2 ties) – simple brokering	258	180	278	170	355
Reciprocated incoming brokering (3 ties) ‘popularity’	116	118	122	45	40
Reciprocated outgoing brokering (3 ties) ‘activity’	102	61	83	36	83
Mutually reciprocated brokering (4 ties)	11	12	9	3	1
Reciprocated brokering total	229	191	214	84	124

¹¹ Social network analysis conducted in collaboration with Dr Emily Rowe. For more information and a consultation please contact: emily.rowe@arcturaconsulting.com

5.3 Findings: relationships matter!

Our findings reveal that NHS partner trusts leading values-based cultural work prior to the Lean-based intervention embodied significantly higher levels of social connectedness, producing a higher capacity for knowledge mobilisation and collaboration for improvement. We found the nature of relationships, measured by the reciprocity of interaction between actors, were very different (see Table 5.4).

- SASH had the highest levels of 'reciprocal' knowledge brokering (rated 'outstanding' by CQC in 2019), followed by UHCW and Leeds respectively.
- BHRUT and SATH had the lowest levels of reciprocal knowledge brokering (both rated 'inadequate' by CQC in 2019).
- SATH had the highest levels of 'simple brokering', indicating relational exchanges were predominantly uni-directional, i.e. messenger.
- There was zero improvement-based knowledge mobilisation identified among managers at SATH.

Visual depictions of social structure

Visual depictions of social structure produced by our survey data further highlight the striking differences in relational connectedness at each of the five NHS-VMI trusts. We discuss each in turn below.

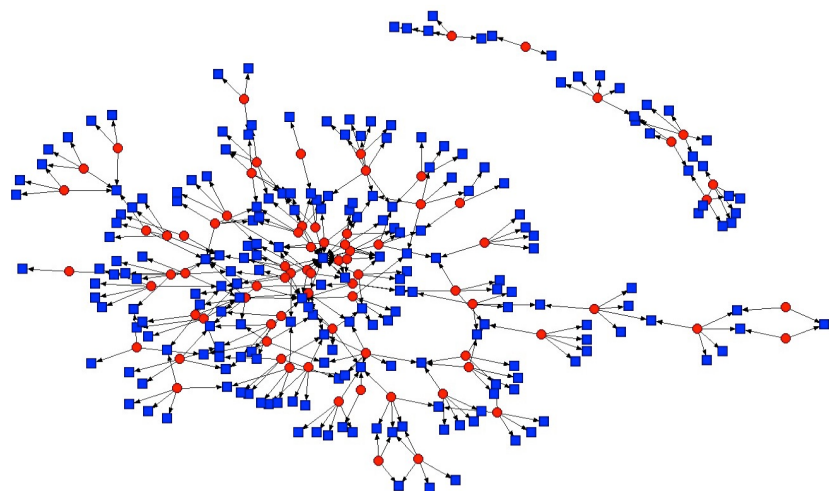
SASH

Figure 5.2a represents the social network for SASH (circles denote L4L participants and squares denote collaborators). The social network graph for this NHS-VMI trust is striking in comparison to the other four organisations for its high degree of connectivity and interaction: everyone is talking to each other. Figure 5.2a reveals dense clusters and groupings indicative of collaboration and a high capacity for knowledge exchange and learning. This finding is supported by qualitative data:

Most people know about the Lean for Leaders [training]. Whether they've been on it or not, everyone talks about it.

(Clinician, SASH)

Figure 5.2a: Social network graph - SASH



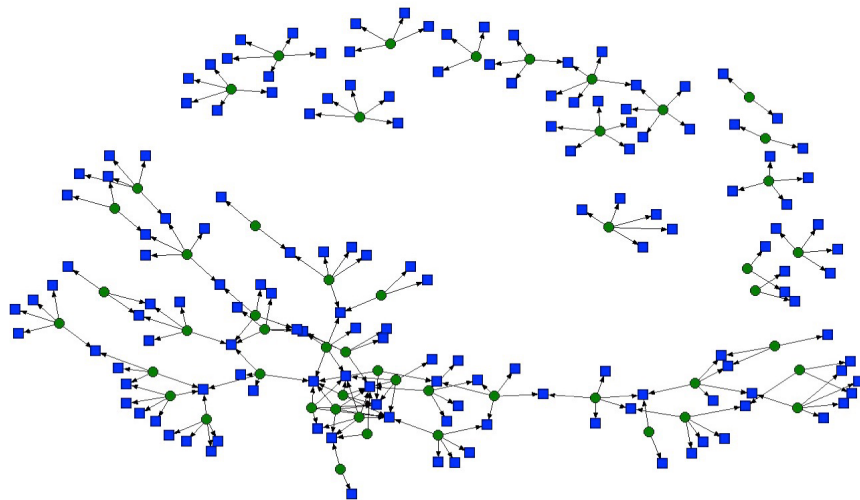
¹² We are grateful to Dr Emily Rowe of Arctura Consulting for her assistance with collection and analysis of social network data. Organisations interested in analysing social networks should contact emily.rowe@arcturaconsulting.com

Further, Table 5.4 reveals SASH had the highest degree of reciprocity at the network level and among brokers (L4L participants). SASH's network is thereby associated with close relationships, mutual collaboration, and feedback between actors, a finding supported by qualitative analysis of interview data.

SATH

Figure 5.2b presents the social network graph for SATH. The sample size is similar to that of SASH but the connectedness of L4Ls to others is visually different, with a third of L4L participants disconnected from the core network. Figure 5.2b signals low to moderate connectivity indicative of a low to moderate degree of interaction, engagement, and knowledge sharing.

Figure 5.2b: Social network graph – SATH

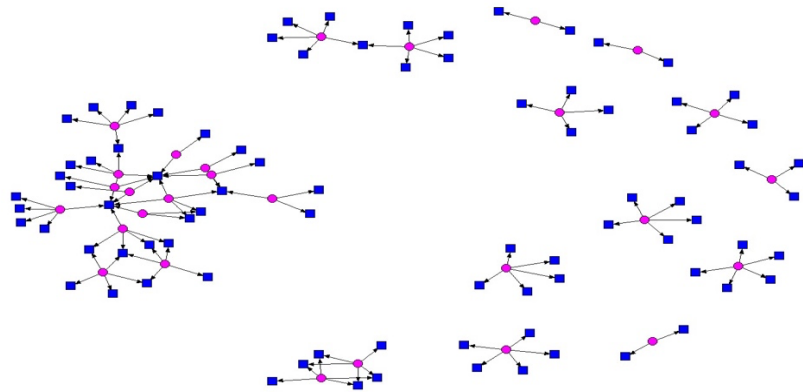


SATH network data exhibited a low degree of reciprocity both at the network level and among brokers, limiting feedback and the opportunity to generate shared understandings between brokers and the network in general. Since there are 187 actors in SATH's network this suggests that each person had approximately two brokering relationships; in other words, L4L participants were active in terms of sharing information. However, Table 5.4 reveals SATH's network was characterised by a very high degree of simple brokering, suggesting L4L participants primarily acted as messengers, rather than improvement collaborators.

BHRUT

Figure 5.2c presents the social network graph for BHRUT. Since BHRUT had made the least progress with training employees in L4L at the time of data collection (December 2018), and had also experienced leadership instability, regulatory pressure and a bullying culture, it should come as no surprise that social connectedness among employees and collaboration for improvement was very low.

Figure 5.2c: Social network graph - BHRUT

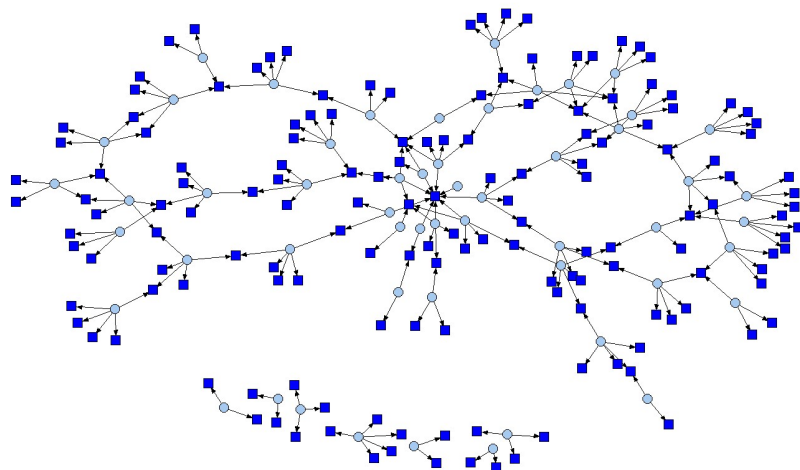


LTHT

The social network graph for LTHT was also strikingly different to the other four NHS-VMI trusts. LTHT had engaged in cultural work prior to the NHS-VMI partnership, hence we might expect employees to be receptive to Lean-based improvement methods and collaborating for improvement. However, since LTHT is more than twice the size of the second largest NHS-VMI partner trust, we might expect to see patterns of interaction that are different.

Figure 5.2d reveals LTHT's social network comprising two circular chains. While chains facilitate information flows that efficiently disseminate messages (similar to SATH), circular networks are associated with 'open communication' and a high capacity to facilitate knowledge exchange. While the presence of a 'chain' could be indicative of a predesigned communication structure, given the nature of questions asked (*who do you talk to about improvement*), we believe these circular chains indicative of a strong informal communication network.

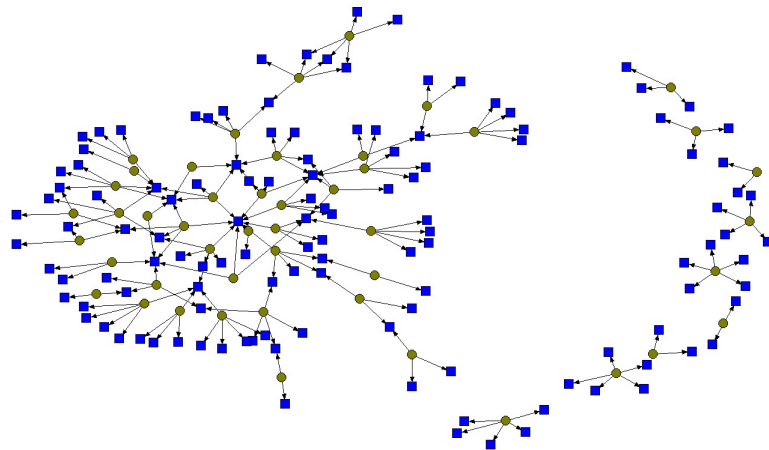
Figure 5.2d: Social network graph - LTHT



UHCW

Figure 5.2e presents the social network for UHCW. The graph depicts a moderate degree of connectivity with nearly a fifth of the respondents disconnected from the core network (9 isolated components). Unique to UHCW's social structure is the presence of a small number of popular collaborators creating a polycentric network. In other words, some collaborators were more popular sources of information and knowledge regarding improvement work.

Figure 5.2e: Social network graph – UHCW



Changing network structures

Figures 5.2a-5.2e reveal some organisations were more adept at sharing knowledge and collaborating for improvement than others.

It is important to note that these networks represent one time period, and that over time, networks change: connectivity, density, and patterns of interaction change, and the actors within the network or the organisation changes (Clegg, Josserand & Pitsis, 2016). Networks evolve based on the interactions of the persons within them and these dynamics are driven by formal and informal mechanisms associated with the types of cooperation, coordination and governance within an organisation (McEvily, Soda & Tortoriello, 2014; Dagnino, Levanti & Destri Li, 2016).

A fundamental yet existential question within network research concerns the 'how' of creating network structures conducive to collaboration. The answer to this question is underpinned by the cultures of norms and reciprocity among persons within an organisation. Understanding who do persons go to when they need support and how can they create and maintain relationships over time (Kilduff & Brass, 2010) are central to supporting development of a CI culture.

Our discussion of 'cultural work' prior to the Lean-based intervention (Section 4) highlights the impact of norms and culture upon the receptiveness of context for embedding change.

Implications for practice

Continuous improvement approaches such as Lean are socio-technical. This means we should pay as much attention to the social side of change (for example relationships and social structures that foster collaboration, engagement, psychological safety, and employee wellbeing), as the technical side (the infrastructure, training, methods, and tools employed to drive change). Our findings suggest high levels of technical capability are a necessary but insufficient condition to foster a sustainable culture of continuous improvement.

Visual depictions of social networks are a powerful illustration of social (relational) structure.¹² At a glance we can infer that one organisation is more socially connected than another, and that an abundance of relational interaction reflects an organisation's cultural norms. But it is the nature of relational exchange (i.e. the presence or absence of reciprocity) that helps us differentiate between a high performing organisation and one that is struggling.

In summary, for CI to become *"the way we do things around here"*, organisations must foster opportunities for employees to connect, talk, and work together towards shared organisational goals.

Section 6: Aligning priorities, objectives, and metrics for strategic impact: The ‘golden thread’

Measuring performance within the NHS-VMI partnership requires explicit articulation of strategic goals at each level of the programme and an agreement between decision makers on appropriate measures of performance. Alignment between the strategic goals of the organisation and at each level of the programme is necessary to facilitate top-down performance monitoring and bottom-up changes aligned to organisational priorities.

In 2015, partnership stakeholders jointly agreed that the five NHS partner trusts would not be subjected to an additional set of performance targets in relation to the partnership. The decision was taken in light of an operating context characterised by a proliferation of performance metrics that all NHS trusts in England must respond to; and recognition that the NHS-VMI partnership was ultimately about developing improvement capability and learning how to foster a sustainable CI culture across the NHS.

Not appending a suite of performance metrics to a high-profile intervention is unusual for the NHS, and reflective of a commitment to try something different. It also reflects the holistic nature of the intervention and the desire to foster a sustainable culture of continuous improvement. While an absence of performance metrics specific to the NHS-VMI intervention presents a challenging context for a quantitative assessment of impact, it does offer a unique and exemplary opportunity to examine: *what actually happens when organisations are encouraged to target improvements in areas of their own choosing?*

Section 6 adopts the concept of a ‘golden thread’ to describe how priorities, objectives, and metrics should align to deliver strategic impact, and how failure to explicitly align the NHS-VMI partnership with national priorities produced a differential impact across the five NHS partner trusts.

Key findings

- *Failure to explicitly align the NHS-VMI partnership with national priorities produced a differential impact across the five NHS partner trusts.*
- *Decisions taken to not explicitly associate the NHS-VMI partnership with specific performance objectives meant the ‘golden thread’ between national priorities, organisational objectives, and process improvement was not always clear, and sometimes neglected altogether.*
- *Organisations identified improvement priorities (value streams) in different ways:*
- *Where values-based cultural work had been conducted pre-intervention, improvement priorities were selected based on their alignment with organisational strategic priorities.*
- *Where organisations had not engaged in values-based cultural work prior to the intervention, improvement priorities were not aligned to organisational or national priorities. In these organisations, value streams were selected through bottom-up processes that sought to engage employees in the Lean-based intervention.*
- *At a process level, all five NHS partner trusts struggled to define metrics in ways that matter.*

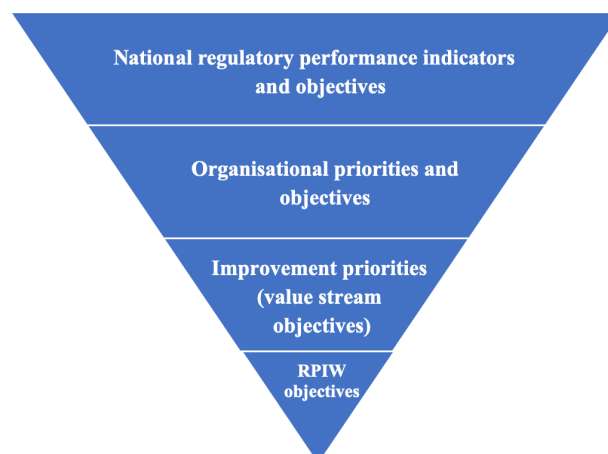
6.1 In search of the 'golden thread'

In the context of the NHS-VMI partnership, we might expect the golden thread to align externally derived goals (i.e. national priorities and targets) with organisational values and strategic priorities, and for improvement priorities (value streams) and corresponding improvement activity (e.g. RPIWs) to contribute to organisational values and priorities, which in turn contribute to national priorities (see Figure 6.1 below). In other words, the improvement activity aligned work to selected value streams should in theory deliver improvements aligned to organisational objectives, which in turn are aligned to external objectives.

Golden threads are present if objectives, targets, and indicators are consistent throughout the different levels from central government to service delivery.

(Micheli and Neely, 2010, p.592)

Figure 6.1: The golden thread: Aligning strategic priorities to improvement activity



In the early months of the partnership, discussions between senior members of NHS E & I and the five NHS trust CEOs led to a decision not to subject the five trusts to additional performance metrics beyond those they must already subscribe to as NHS provider organisations. Testament to a genuine desire to try something different, NHS E & I agreed that emphasis should be placed upon sustainability achieved through developing internal improvement capability, with the rationale that adding an additional set of metrics could distract from the foundational work required to continue the journey after the five-year partnership concludes.

We were trying to create a partnership that was something different to the traditional regulator/regulated dynamic... Normally at national level you create a programme, you then performance manage the outcomes... We did flirt with the idea at the start [but] (a), we couldn't pick what measures the trusts wanted to improve [and] (b) we couldn't give extra prominence to a separate set of measures from the performance framework they were already part of... That was not an easy thing for us to do, our traditional instincts are "Right, what are the 60 things you're going to measure?"

(Senior Manager, NHS E & I)

Measurement in the NHS is prolific. While literature cautions the unintended consequences of an over-zealous approach to performance measurement (see Gubb and Bevan, 2009), the decision not to attribute additional sets of targets was to allow the five partner organisations 'headroom' to fully commit their organisations to developing a management system that engenders a sustainable CI culture. Not everyone agreed with this sentiment though; some expressed frustration that accountability for improvement work appeared to sit outside of the traditional 'performance regime of national targets', when in reality national targets matter the most:

*Feels like being in a bubble, of having this [CI] method [being part of NHS-VMI partnership]. There's no two ways about it. My understanding is this [intervention] is about devising culture in an organisation with a management method. It was always about engagement, shifting the culture. But expectations of senior people are that it absolutely should allow us to achieve constitutional standards. It should allow us to achieve financial performance. So there's a synergy there. **But we are absolutely not sitting in a world outside the other.***

(Senior Executive, LTHT)

Did good intentions to foster sustainable improvement capability distract from delivering 'improvement that matters'?

While there were no explicit performance metrics associated with the NHS-VMI partnership, each of the five NHS-VMI trusts must still respond to the same set of metrics as every other trust in England. Some argue that this was an opportunity to invest in improvement that aligns directly to priorities of national importance. However, without the explicit identification of performance metrics, it's possible that some organisations were drawn towards broad notions of improving, rather than targeting improvement in areas that mattered.

... So, in the performance regime of national targets and stuff, if we'd better connected with that at the start... the organisation would be in a very different place.

(Middle Manager, BHRUT)

For the NHS partner trusts that were performing well in respect of national targets, freedom to improve processes at will was generally unproblematic. For example, a senior manager at SASH (an organisation rated outstanding by the CQC) told us *"all improvement matters"*. But for organisations that were not performing well, adopting an 'all improvement matters' ethos could result in organisations that are *'hitting the point, but missing the target'*. In other words, a scattergun approach to improvement that results in missed opportunities to target improvement in areas aligned to national priorities and a corresponding set of performance indicators.

6.2 The measurement problem: Inexplicit targets produced vague objectives

With freedom from performance metrics at the level of the partnership (between NHS E & I and the five NHS partner trusts), the five CEOs cast organisational level objectives loose to reflect what they hoped to see as a result of their five-year partnership with VMI:

We had a long debate about this – but we agree – we hope to see improvements across three areas: quality of care, staff morale, and financial position.

(Observation field diary, Dec 2018)

These broad objectives reflect an intrinsic confidence that developing CI capability will deliver sustainable organisation-wide performance improvement over time. However, measuring performance against such broad objectives is complex. For example, 'quality of care' embodies multiple subjective and objective measures, ranging from the NHS 'friends and family test' through to patient waiting times, length of stay, and mortality indicators. Trends in staff morale might be measured by the NHS Staff Survey, but then how do we relate changes in the staff survey directly to the NHS-VMI partnership. Similarly 'changes in financial position' are likely to be the result of myriad initiatives, improvements and process changes that may or may not be direct outcomes of the NHS-VMI partnership.

Compounding the measurement problem in relation to financial impact, the five NHS partner CEOs were extremely careful to avoid any kind of narrative association between the NHS-VMI partnership and 'cost reduction'.

Why were CEOs reluctant to associate cost reduction with the NHS-VMI partnership?

The CEOs of all five NHS partner trusts took care not to link the CI methods to cost improvement. Two reasons were identified. First, the majority of respondents felt ‘narrative’ was important: a narrative of cost improvement would negatively impact clinical engagement. Second, quantifying savings related to improved care delivery is complex, and the allocation of financial savings without the tangible removal of expenditure is considered contentious at best (See Box 6.1: A CFO’s opinion on capturing the financial impact of the NHS-VMI partnership).

We talked about this being a programme that was looking at working practices and the aim was to improve working practices. What we didn’t say was that it was absolutely about reducing the amount of money that’s spent. And that was deliberate ... if this had been presented to the organisation as a “You’re going to save money as a result of it” right, then people would resist it because they’ve seen this kind of programme happen many, many times before and they would have just seen this as “Here we go again. This is a posh way of dressing up a cost improvement programme.”

(Senior Manager, SATH)

I think people have been scared to mention money. It’s always been about quality. We’re doing this for quality reasons and safety reasons and not monetary reasons.

(Middle Manager 11, SASH)

Only one of the five organisations made a concerted attempt to attribute financial savings to the improvement work (see full report for estimated ROI at LTHT). Again, the CEO was very clear that narrative is important: ‘waste reduction’ is fundamentally more appealing than ‘cost improvement’ since few people like the idea of performing work in a way that doesn’t add value to the patient.

We've completely changed the way we talk about money... We don't talk about a cost improvement programme – every trust will have its CIP [sic]. We adopt the narrative of waste because waste reduction is part of the [NHS-VMI] programme and the training is identifying seven types of waste. So, for front-line teams, waste is everywhere in the hospital, but it resonates with clinicians because they see waste, so giving them a way of removing the waste by using the tools means that we're having an impact on efficiency and savings, at the same time adding value to the patient. So, whatever isn't adding value to patients, why are we doing it?

(CEO, LTHT)

Box 6.1: A CFO's opinion on capturing the financial impact of the NHS-VMI partnership

So it would be possible to take the activities that we've undertaken and put a value associated with the productivity gain that you have delivered through the various value streams that we've delivered upon. My point is we can describe a number, but if you were to ask me "Can you tell me, put simply, which budgets did you change as a consequence of these changes?" I can't tell you that. What expenditure, physical expenditure, changed? I don't witness it, so...

...I can be as creative as anyone. If you want me to describe to you a level of saving the organisation's achieved from [partnership], give me a day and I could produce you that number...[But] there's no real value for me saying "By the way, we've saved £7.2m." ... in some ways, **describing the financial benefit of this that isn't tangible money out is quite difficult because actually push it too far and actually it won't have any resonance anyway because people will just go bullsh*t.**

As the NHS-VMI partnership has matured, some cost savings have become more readily observable, leading some to question whether there should be some attempt to capture them after all:

There are savings and efficiencies around quality of life and length of life and that's not something we can really capture here. We wouldn't capture that. So, we've kept it very much on the savings in terms of maybe length of stay in intensive care, but even that's arbitrary because actually you may end up staying longer in intensive care because we identified your illness and we moved you to intensive care as opposed to you dying on a ward. So it's a bit tricky really... So we're always working with the finance department to look for savings and efficiencies all of the time... but I think that still causes some of us some anxiety.

(Middle Manager, SASH)

What I see the Leeds Improvement Method doing is it's a cumulative build-up of lots of little bits. So, we release time to care rather than taking that resource out of the ward for example. Certainly, some of the other [improvement work] that's not been the case and, you know, you can absolutely point to "Look, we've earned some more income," or reduced the cost of stock or whatever.

(Senior Manager, LTHT)

In summary, while there is widespread recognition that cost improvements are desired outcomes of improvement work, there is considerable anxiety to avoid a narrative that associates improvement work with financial savings. The following quote summarises the sensitivity of the topic and the tension between evidencing outcomes aligned to external objectives (national indicators):

*A couple of times we have almost formed a group that says let's not make it about money, but let's have a **secret group** that sits alongside it that does try to demonstrate the financial benefit. So we would definitely lose some people in the organisation if it became widely thought that this was just a cost-saving programme, but if you were to sit with most staff you would be heard in saying "Well no, it's about quality, but we believe by getting quality right and efficient we will also save money and that gives us more money to spend on other things.*

(Senior Manager, SASH)

Box 6.2 highlights the perspective of two CEOs regarding evidence of financial savings arising from their organisation's involvement in the NHS-VMI partnership. We look in more detail at the financial impact of the NHS-VMI partnership, specifically the return on investment, in the full detailed report.

Box 6.2: Evidence of financial impact

While all five CEOs have been cautious not to associate the improvement method with the pursuit of cost improvement, CEOs at LTHT and SASH each credit the NHS-VMI partnership with delivering improvements in financial position:

“Here we are two and a half, three years later having deployed the Leeds Improvement Method and continue to deploy it with 6,000 staff having been trained in some way with six value streams and with Lean for Leaders making a difference. And I think lots and lots of examples of what it’s achieved, but the trust overall has moved in terms of the absolute measures from a £100m deficit to a £19m surplus, from a position of poor quality through requires improvement to good CQC, from one of the worst staff surveys to one of the best. So we can demonstrate and evidence the impact of the Leeds Way but also the Leeds Improvement Method.”

(CEO, LTHT, interview July 2018)

“So here we are in 2018. We have reference costing in England. It’s a measure. 100 is the average for a hospital in England. Ours is 83. We’re the most efficient trust in the country based on that metric. That’s NHS England and NHSI. It’s national data. So according to their data sets, that’s what we are. We produced a £13.6 million surplus last year. It doesn’t matter how we got there, that’s what we produced. We wouldn’t have done that if we hadn’t have been doing this. People are thinking differently; rather than just asking for more resources to do something better, they’re reviewing what they’re already doing with the resources that they’ve got. That wouldn’t have happened before.”

(CEO, SASH, interview August 2018)

6.3 Decisions about where to focus improvement activity

Processes for deciding ‘where should we focus our improvement effort’, differed across the partnership. Two NHS partner trusts chose value streams using processes that they believed would engage clinical leaders and the wider organisation in improvement; the remaining three adopted a more top-down approach to target improvement in areas that made sense from a strategic perspective.

SATH and BHRUT adopted a bottom-up approach to selecting their value streams, asking employees where they thought the initial improvement work should focus. The goal here was to engage employees with the Lean-based intervention and encourage ownership. We note that in these two organisations, cultural work prior to the intervention had not taken place, hence organisational values and behaviours were not explicit or collectively held. Subsequently, the need to incite engagement among healthcare professionals in these two organisations was greater than for SASH, LTHT and UHCW, where organisational values and priorities were understood and collectively held prior to the intervention.

Bottom-up value stream selection: Emphasising employee engagement

Both BHRUT and SATH selected their initial value streams through engaging staff in a discussion about the organisation’s biggest challenges. At BHRUT staff were reportedly told: “You tell us which ones you want to start with”. The rationale: “Employee ownership. It’s that engagement piece, really. It’s your local hospital, it’s your place of work”. (CEO 1, BHRUT)

Subsequently, a bottom-up approach engendered a focus on the organisation's biggest, most complex problems. One respondent tells us that rather than engaging staff in improvement, inviting staff to voice their views on the 'biggest problem' created a perception of 'finger pointing' and blame:

If you Googled BHRUT in 2014 or 2015 you probably could have guessed our two biggest problems. So actually, what you did was create a massive public finger pointing exercise.

(Middle Manager, BHRUT)

Named 'the first 24 hours' "because this was when most of the problems were occurring", the value stream created a great deal of confusion: "People just went 'Wait, what are we talking about? What's the aim of this?'" (Middle Manager, BHRUT). While the lesson of choosing a value stream that was too broad (and too complex) was learned fast, the confusion and subsequent failure did little to build staff confidence and engagement.

We learned very quickly that we did it too large... obviously it did knock over [sic], unfortunately we could only simulate [prospective] improvements.

(Middle Manager, BHRUT)

At SATH a similar process of bottom-up value stream selection also produced disappointing results.

I'm aware of discussions where staff were asked where the biggest areas of risk were. There was some engagement led by the comms director at the time in terms of what do you think we should be going at?

(Middle Manager, SATH)

Another respondent voiced frustration at the unstructured process for selecting value streams, noting the desire to engage ‘key individuals in improvement’ through allowing them to select areas where they desired improvement to be targeted, rather than paying attention to formal data sources indicating ‘burning platforms’ (i.e. issues relevant to the national regulatory framework):

It was almost like, “Well it’s your turn to choose. What do you want to do?” ... We’ve got burning platforms out there and we should have been focusing on those... and we should have considered other data sources when we were agreeing measures for the value streams.

(Senior Manager, SATH)

Top-down value stream selection: Aligning improvement to organisational priorities

SASH, LTHT and UHCW adopted a more directive approach, making decisions about where to focus improvement at an executive level with an attempt to align improvement work with specific national and organisational priorities related to finance, productivity, and care quality.

At LTHT the first value streams were selected to address financial and productivity issues, while SASH selected its value streams to align with strategic and operational priorities.

You’ll recall we were in significant financial deficit... Our finance director came from Salford; he’d been used to being in surplus foundation trusts and couldn’t understand why our orthopaedic elective surgery wasn’t cracking on and delivering... so he chose the first value stream.

(Middle Manager, LTHT)

LTHT’s orthopaedic elective value stream was situated within a ‘self-contained hospital’; in other words it was less entangled with other services present on an acute general hospital site. Selected by a senior executive, the value stream was chosen to align with national priorities of efficiency and productivity in relation to orthopaedics. Not only was the orthopaedic elective value stream underperforming in terms of efficiency and productivity, it was also a safe space to learn about the method without the complexities inherent in many hospital-based services.

At SASH, the first value streams were chosen to reflect known strategic and operational issues. For example, the cardiology value stream was selected because the organisation had already invested money into the department and they wanted to ‘optimise it’; ‘management of diarrhoea’ was chosen because it was an issue that would affect the whole trust and therefore improvements would be visible organisation wide. And the outpatients value stream was chosen because it was an area that the CQC inspection highlighted ‘requires improvement’.

Like BHRUT, members of the KPO at UHCW discussed whether they should focus on the emergency department given this had historically been an issue for the trusts. Sensibly they concluded “*you wouldn’t want to cut your teeth on something as big and challenging as that whilst we’re going through the learning process of understanding how to do all this*”. Like SASH, one of UHCW’s first value streams – ‘patient safety’ – cut across all sections of the trust. As a result, significant improvements were made in the way that patient safety incidents were dealt with. This value stream also won the HSJ award for patient safety in 2018 and was featured in The Economist, creating an encouraging backdrop for the partnership and the methods to flourish. Below, the improvement team lead at UHCW explains why the patient safety value stream was chosen:

[We] wanted patient safety to be our first value stream mainly because [we] wanted to dispel any potential cynicism around Lean in this organisation. People will see that we’ve not used Lean to save money or to threaten jobs, we’ve used this to actually make the hospital safer... there’s a purity to it. It’s the purest patient thing you can do.

(Improvement Team Lead, UHCW)

6.4 Decisions about setting metrics at value stream level

Once value streams were selected, each NHS-VMI trust was tasked to set metrics through which it could measure improvement. These ‘metrics’ should be capable of measuring change arising from the improvement activity delivered through associated RPIWs. The five partner trusts adhered to template methods advocated by VMI prescribing ‘high-level’ metrics aligned to five categories: Quality, Service, Delivery, Morale and Cost.

Unfortunately, many respondents admitted they didn’t understand *how* to formulate metrics under the five template categories that were capable of measuring the change they wanted to see.

We were pants at setting overarching metrics. I’m pretty sure every trust would tell you the same thing, like no one had any clue. You’re looking at this thing that you don’t know how it’s going to work going “How will we measure its success in the future? I don’t know...!”

(Middle Manager, BHRUT)

This lack of understanding led to three further issues:

- *Misalignment between metrics collected at a process level and the higher ‘value stream’ level.*
- *Assumptions that the NHS trusts would learn through trial and error – an approach referred to as ‘failing forward fast’.*
- *A perceived lack of discretion to make changes to the metrics if they are found to not measure the desired change.*

Learning through trial and error: fail forward fast

While VMI advocated template methods to guide implementation, it was non-directive in relation to metric setting. Trusts were offered some guidance but overall, the maxim ‘fail forward fast’ was VMI’s method of choice. In other words, lessons learned through a process of trial and error were considered the most effective and efficient way of developing a deeper level of understanding, contributing to development of sustainable CI capability. In some cases, this was effective; in others the ‘forward’ element of failing was far from ‘fast’.

For example, a respondent at SASH gave a candid reflection of the fail forward fast method, concluding that ultimately the process was painful but valuable:

*The original learning when we were setting high-level metrics was very challenging... Because you don't know what you don't know and originally we set high-level metrics and I suppose one of the things I would reflect on with VMI is that they knew we were setting these high-level metrics, they knew we were never going to deliver them... Now originally I was a bit frustrated about that because I thought you could have saved me a lot of time by telling me we were never going to meet them, but actually I now recognise that **the most powerful thing has been to learn about how you have to go back and set those metrics right in the first place** and that requires a deeper understanding and more patience than what we had... I think they must have looked at us when we were setting them thinking “Oh boy, you're going to find them difficult!” I wondered at the time why [VMI] just never told us, but I understand why they didn't now because we are so much better at setting them ourselves. So it was a learning process.*

(Senior Manager, SASH)

Others felt let down by the ‘fail forward’ approach that they claim left them “*stumbling around in the dark for too long*”. Overall, three out of five of the NHS partner trusts felt that more guidance was needed to assist with the processes of metric setting. This lack of guidance was further compounded by a perceived lack of discretion to change the metrics initially set, for fear of ‘cheating’:

Even our execs were like, “you're not allowed to touch the [value stream] metrics”.

(Middle Manager, Anon)

Usually one of the drawbacks of performance measurement and management in healthcare settings is a tendency for stakeholders to ‘game the system’, producing workaround processes designed for ‘hitting the target’, but very often ‘missing the point’. Yet where trusts were given the freedom to set their own metrics, they were reluctant to change them for fear of ‘cheating’. Box 6.3 illustrates the importance of setting the right metrics through the case of the ‘Theatres’ value stream at UHCW.

Box 6.3: Metric misalignment – the case of ‘Theatres’ (UHCW)

Some of the metrics were too high level and actually the best example of that is on theatres where we’ve seen a change in urology theatres, certainly with one theatre, but when you’ve got over 30 theatres and you’re doing a high-level metric which looks at theatre productivity full stop, it’s a marginal impact. It just nudges the dial sometimes and so it could even go the other way and you can’t see it. So the metrics were just too broad, too high level, so we have changed a number of metrics through the Trust Guiding Team to be more specific to what is truly being or should be affected by those value stream pieces of work.

6.5 Setting metrics that matter

We conclude this section with a reminder that learning is a process. For some organisations, learning to set metrics that measure what matters occurred relatively quickly, while others took much longer to develop a deep understanding of how to set metrics for example. Between July and September 2020, the evaluation team undertook further interviews with members of the KPO improvement team at each trust to reflect on the learning across the five years of the partnership. With the benefit of hindsight, many respondents told us they would “connect improvement work with national priorities much sooner than we did”.

For some, years four and five of the NHS-VMI partnership brought the realisation that metrics should be aligned to a clear and relatively simple set of measurable objectives attached to strategic priorities: “we gave ourselves permission to go, ‘These [metrics] are not right, let’s change them’”.

Implications for practice

The absence of performance targets aligned to the NHS-VMI partnership was beneficial to all five partner trusts in providing the necessary ‘headroom’ for making mistakes and learning from mistakes in a manner that aligns to VMI’s ‘fail forward fast’ approach. In other words, there is a lot that can be learned by getting things wrong.

However, our analysis suggests the absence of externally set targets impacted decisions about where to focus improvement activity in different ways. Where organisational performance was already strong, an ‘all improvement matters’ approach was appropriate and successful for developing a CI culture. But in organisations where cultural issues prevailed, the guiding influence of externally set targets may have been beneficial.

We contend that the absence of cultural work prior to the NHS-VMI partnership led BHRUT and SATH towards a ‘bottom-up’ approach to selecting improvement priorities, as a deliberate mechanism for engaging their staff with the programme. This bottom-up approach however neglected to align improvement activity to the most salient priorities the organisations were facing at the time. In both cases, performance shifted into ‘special measures’ in 2018.

Section 7: Evidencing impact at an operational level

In Section 6 we foreground our data analysis with a critical assessment of measurement practices at both strategic and operational levels in respect of the NHS-VMI partnership. In this section we attempt to illustrate the opportunity for, and achievement of, process-level improvement, making use of improvement data collected by each of the five partner trusts. Section 7 presents a snapshot of quantitative impact at a process level.

Key findings

- 62% of all process time targeted by RPIWs was reduced across the five trusts (i.e. 3,020 hrs/126 days of process time was reduced by RPIWs).
- 67% of all quality defects targeted for improvement by RPIWs were corrected across the five trusts.
- All trusts reported 50% improvement and over in all outcomes targeted for improvement by RPIWs.
- Improvements in process time, quality and environment, and health and safety (EHS) achieved through RPIW interventions were statistically significant.
- RPIWs had a large standardised effect on process improvement. This suggests that improvements in performance were not just statistically significant, but comparable to other studies.

7.1 Background: Value streams and RPIWs

Value streams refer to a linked set of processes that deliver a specific outcome for the customer. Processes for selecting value streams were discussed in Section 6, alongside challenges of setting metrics to measure improvement at the value stream level. Rapid Process Improvement Workshops (RPIWs) are 3-5 day planned events that bring together a group of employees (as a temporary team) to focus attention on ways to improve processes that form part of the wider value stream.

RPIWs (also known as Rapid Improvement Events and Kaizen Workshops) are a core vehicle for driving process improvement as part of Lean implementation. Typically, an extensive period of planning occurs prior to the RPIW (for NHS partner trusts, this was typically eight weeks). During this period, data was collected relating to process performance and members of the team were carefully selected for their knowledge of the process and their ability to lead and influence change. Crucially, RPIWs should include a patient representative to ensure improvement activity remains focused on delivery of value from the perspective of the patient.

7.2 How did RPIWs impact operational performance in the healthcare processes that were targeted for improvement?

As of July 2019, the evaluation team had received data from each of the five NHS partner trusts, producing a combined data set of 28 value streams and 113 RPIWs. Table 7.1 provides a summary of RPIWs across the five trusts.

Table 7.1: Summary of value streams and RPIWs as at July 2019

NHS trust	Value streams	Number of RPIWs developed	RPIWs with complete measures
BHRUT	4	12	7
LTHT	5	21	12
SASH	6	23	16
SATH	8	38	34
UHCW	5	19	13
Total	28	113	82

Although 113 RPIWs were executed, only 82 had reported with complete measurements (i.e. baseline and post-intervention measures). The organisation that had instigated the most value streams and RPIWs as of July 2019 was SATH.

Measuring performance

For each RPIW completed, as many as eight performance metrics were recorded and progress was monitored at 30, 60, and 90 days (sometimes 120 days) after the RPIW concluded. RPIW template reports captured the number of quality defects per total output of the process targeted by the RPIW. However, given some inconsistency in reporting, both total defects and the percentage of defects to total output (quality defects ratio) were used to show improvements in quality. These measures of process time and quality defects were not so much about 'productivity' in this context, but very much indicative of improvement in quality and safe patient care.

Process lead time refers to the amount of time it takes patients/materials/resources to flow through a process from start to finish (as defined at the outset of the RPIW). For example, an RPIW related to an 'ophthalmology value stream' might focus on the process time through an ophthalmology outpatient clinic. In this case, the process lead time would be measured from the point of patient arrival at the clinic to the time the patient leaves the clinic. Other connecting processes might be the focal subject of other RPIWs, for example, there may be an RPIW to examine and improve the ophthalmology outpatient clinic 'bookings process'. In this case, process lead time might consider the time from GP referral to the time an appointment is made and communicated to the patient, or the time between GP referral and the appointment day itself.

Quality defects refers to any aspect of the process that was not conducted in the way intended, including activities that need to be corrected or reworked. Quality defects are often very minor (e.g. a form that wasn't completed or completed incorrectly), but also include more serious errors and mistakes even if no harm occurred. The RPIW reporting template sought to capture all quality defects in a process with a goal to identify and subsequently eliminate them.

Data analysis

Two measurement conditions were associated with RPIWs: the baseline measurement of process performance prior to the RPIW, and the measurement of performance after improvements had been made. Both measures created quasi-experimental conditions that could be used to understand how the RPIW as an intervention changed performance within the targeted process.

We used a t-test to assess differences in the mean of two experimental conditions. In this case, lead time, total errors, and rate of defect were performance outcomes for which two samples of data were collected (baseline and post intervention).¹³ This creates the case for a simple quasi-experiment.

Finally, the importance of the effect of the difference in performance before and after the intervention is assessed using effect size calculations.¹⁴ Measuring the effect size establishes whether differences in performance (significant or not) are meaningful to the research context, by standardising the effect of the intervention on the performance measures using Pearson's correlation coefficient r . By presenting a standardised effect size the results of the effect of the RPIWs can be objectively compared to effects from other studies. Effect sizes are interpreted as small, medium or large effects (i.e. $r = .1$, $r = .3$, $r = .5$) with effects higher than .3 being most desirable. The following section details the results of the analysis.

¹³ Field, A. et al (2012). *Discovering Statistics Using R*. London: SAGE Publications Ltd.

¹⁴ Cohen, J. (1990). Things I have learned (so far). *American Psychologist*, 45(12), 1304-1312.

7.3 Findings

Interpreting findings: we offer a word of caution in interpreting these results in isolation of context: the value streams and RPIWs selected by each of the five NHS partner trusts varied significantly in terms of the opportunity and scope for improvement. Therefore, change in performance must be compared within trusts and not between trusts. In other words, we do not propose comparison of the efficacy of the intervention at each trust via this analysis mechanism.

Analysis for RPIWs was completed for all trusts simultaneously due to the small sample

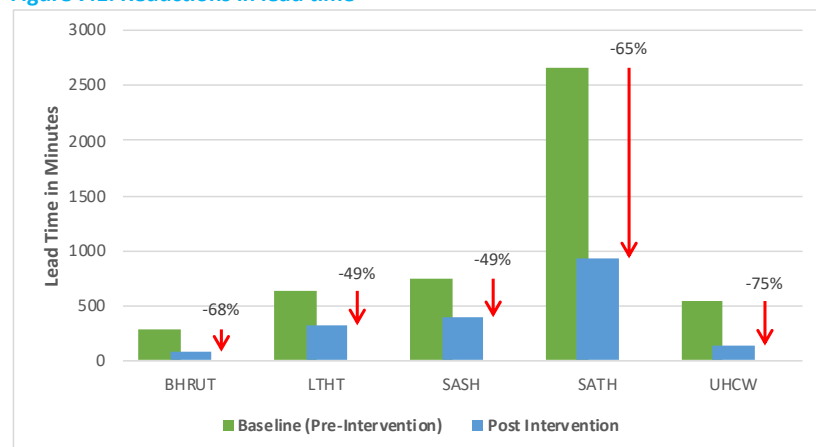
	Lead time (hrs)			Process defects targeted for improvement			Average ratio process defects		
	N	Baseline (pre-intervention)	Post-intervention (90 days)	N	Baseline	Post-intervention (90 days)	N	Baseline	Post-intervention (90 days)
BHRUT	10	287	90	9	382	114	11	.62	.28
LTHT	16	634	324	16	1,916	647	16	.58	.23
SASH	17	753	387	17	551	209	18	.49	.25
SATH	29	2,663	924	12	336	76	34	.65	.20
UHCW	10	541	133	0	*	*	11	.49	.10
Total	82	4,878	1,858	54	3,185	1,046	90	.57	.21
* Data not available									

Some RPIWs were excluded from our analysis because either they did not have a paired baseline and post-intervention measure, or there was insufficient reporting. The difference between the baseline measurement and the post-RPIW outcome tells us how much improvement had taken place. For example, the total amount of time for patients and resources at BHRUT to exit the healthcare processes targeted by RPIWs was 287 hours. Following RPIW completion, process times for patients and resources in processes were reduced to 90 hours, representing a 68% reduction in lead time (see Figure 7.1).

Reduction in lead time for processes targeted for improvement at each trust

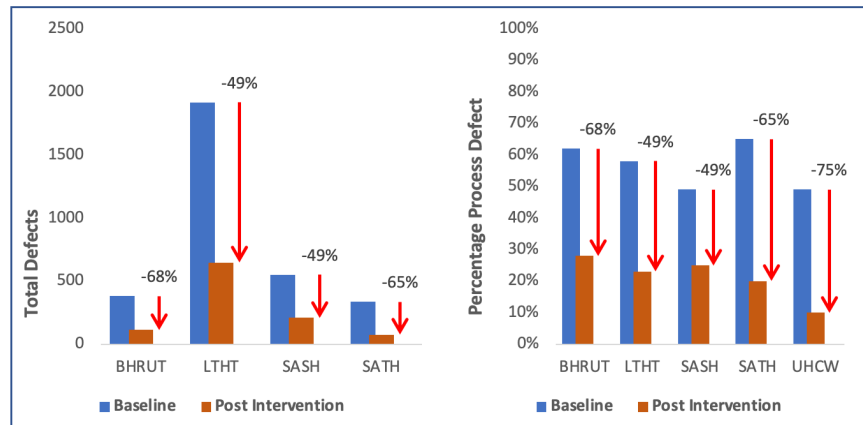
Across the five NHS partner trusts (for the 82 RPIWs included in this analysis), a total of 4,878 hours of processing time was targeted for improvement and 3,020 hours were removed from healthcare process time, collectively reducing process times for patients by 62%. Figure 7.1 visually depicts reductions in lead time for each of the five NHS trusts.

Figure 7.1: Reductions in lead time



Reductions in process errors for processes targeted for improvement at each trust

In measuring defects or process errors, data was captured as total defects, rate of defects or both. Therefore, both measures are assessed independently to improve accuracy in measuring the impact of RPIWs on quality. All trusts showed quality improvement by reducing defects (see Figure 7.2). 54 RPIWs were identified with metrics related to the total defects in the processes targeted for improvement. Overall, 3,185 defects or errors were identified for correction by RPIWs. These errors were reduced by 67% after intervention. 90 RPIWs were included in the measurement of the ratio of quality defects to all process output. 57% of all resources in processes targeted for improvement had defects or errors. After process improvement, reductions in 63% of process defects were achieved.



Statistical significance of improvements in process time and quality following RPIWs

Table 7.3 provides a summary of t-test analysis between baseline and post-intervention measures. A dependent t-test was conducted to compare the difference between baseline measures of each variable and the last post-intervention measure reported by each trust. Measures of performance were aggregated across the five NHS trusts. Given that each RPIW had two measurements, 164 observations were included in the lead time analysis, 108 in the analysis of total defects, and 180 performance observations of the rate of defect.

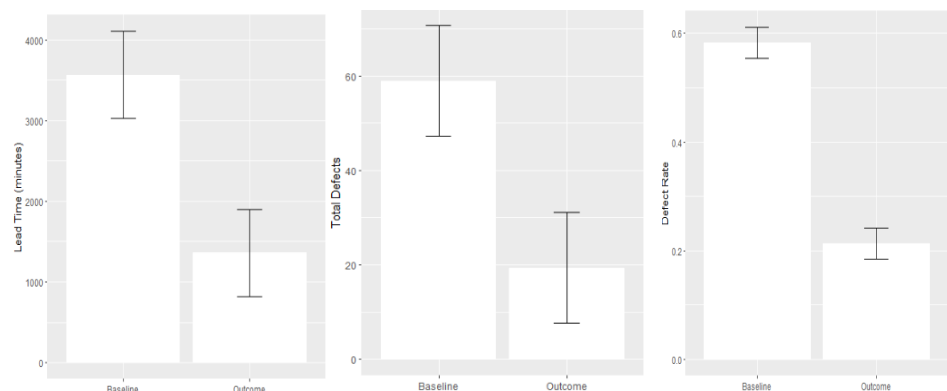
Table 7.3: Summary statistics for process time (mins) and quality

Variable	Mean (standard errors)		Welch's t-test		(Effect sizes)
	Baseline	Post-intervention	t	df	
Process/Lead time	3,569 (829)	1,360 (100)	4.077***	81	.413
Total process defects	58.998 (17.596)	19.377 (7.304)	3.385***	53	.422
Percentage defects	.582 (.026)	.213 (.022)	12.768***	89	.804
* $p < .05$, ** $p < .01$, *** $p < .001$					

The results of the t-test showed that post-intervention process times were significantly lower than baseline measures, $t(81) = 4.077, p < .05$. The size of the effect that RPIWs had on process time was medium to large effect, $r = .413$.

The total defects identified in the healthcare processes were also significantly improved, $t(53) = 3.385, p < .05, r = .422$. The rate of defects in the processes targeted by RPIWs was also significantly improved, $t(89) = 12.768, p < .05, r = .804$. All effects of the intervention achieved medium to large effect sizes demonstrating that the improvement in performance resulting from the RPIWs is important. The results are summarised in Figure 6.3. Given the limited size of the sample for some trusts assessing the effect of the intervention on each trust was not attempted. **However, given all trusts show evidence of process improvement the continued use of RPIWs for process improvement is supported.**

Figure 7.3: Comparison of baseline and post-intervention measures



Conclusion: Reductions in lead times and process errors were significant

We conclude that all measures of performance (i.e. lead time, total defects and rate of defects) were improved by the RPIWs and those improvements also showed lasting effects beyond three months of intervention. *The effect of the RPIWs on performance was not superficial as standardised effect sizes showed that the improvement in performance achieved medium to high effect sizes.*

Implications for practice

Our analysis supports the role of RPIWs in providing timely solutions to the flow, quality of care, and environmental safety of patients and staff within specified value streams. As well as delivering 'rapid improvement', or 'quick wins', RPIWs provide an important opportunity for cross-functional collaboration, boosting staff morale and fostering employee empowerment.

Section 8: Quantifying impact at an organisational level

Quantifying impact as part of an organisation-wide approach to continuous improvement (CI) requires clear identification of the goals of the initiative and how the achievement of these goals will be measured at each stage of development (Anand et al., 2009; Malmbrandt & Åhlström, 2013). In Sections 1 and 6 we explained why no quantitative performance-related targets were established at an organisational level. We outlined the rationale for the absence of target setting, drawing upon interview data with senior NHS leaders and middle level managers. However, when asked ‘what does success look like’, the five CEOs collectively agreed: *“we hope to see improvements in finance, quality of care, and staff morale”*.

In this section, we use organisational-level data retrieved from healthcare administrative data sets (via the Model Hospital and NHS Digital) to examine whether improvements in quality of care and staff morale were detectable, and whether the extent of improvements (or otherwise) was greater than would be expected had the organisation not participated in the NHS-VMI partnership.¹⁵ Using interrupted time series analysis (ITS) we compare the performance trajectories of the ‘treatment’ organisations (i.e. the five NHS partner trusts) against the performance of similar ‘peer’ hospital trusts that were not subject to the partnership intervention, in an attempt to link organisational-level improvements to the NHS-VMI partnership.

Key findings

Despite the challenges of quantifying impact, the evaluation team made near exhaustive attempts to analyse the impact of the NHS-VMI partnership at an organisational level. The results present novel insight to the how of quantifying impact using the Model Hospital database. We found the ‘peer’ facility¹⁶ of the Model Hospital database a valuable mechanism for assessing the impact of an intervention upon ‘treatment’ organisations against the performance of ‘untreated’ but similar organisations. In this summary report we present an outline of our findings, limited to the availability of consistent time series data that pre-dates the intervention. Full detailed description of ITS methods and findings for each of the five NHS partner trusts can be found in the full detailed report available on request.

8.1 Quantifying impact: Changes in care quality, staff morale, and patient safety

Since placing the patient at the heart of process improvement activity represents a core element of a CI methodology such as Lean, we focused our analysis on the patient satisfaction scores derived from the annual NHS Friends and Family Test (FFT) as a measure of care quality from the perspective of the patient. The FFT is used by the NHS to monitor performance and identify potential issues in patient satisfaction. Low values or a drop in ratings in any of these measures may point to a decline in care quality.

Our second variable was ‘staff turnover’. We use staff turnover as an indicator of staff morale, with lower values indicating an improvement in staff morale. The source of the staff turnover data is the leaver rate from NHS Digital, provisional NHS hospital and community health service (HCHS) monthly workforce statistics. Note, we also associate improvements in both variables (patient satisfaction and staff turnover) with improvements in patient safety.

We acknowledge that the indicators identified above are two of many that could have been selected. However, we selected the two indicators because the original data sources (i.e. the FFT and workforce statistics) are one of only a small number of data items that are both collected monthly and relate to a period before the commencement of the NHS-VMI partnership in 2015. This makes variables collected via the FFT and workforce data amenable to the statistical method known as interrupted time series analysis (ITS).

¹⁵ Analysis of financial impact is presented in the full detailed report, available on request.

¹⁶ The Model Hospital database facilitates selection of organisational ‘peers’ (hospitals that share similar characteristics for purposes of comparison) and therefore offers a promising platform for examining performance improvement over time against a ‘control’ set of organisations. Each of the five NHS partner trusts had a unique set of 10 peer hospitals to compare performance against; the 10 proposed peers were those with the smallest Euclidean distance to each of the five trusts (NHS Digital, 2019). Further detail is available in the full detailed report.

Using interrupted time series analysis (ITS) to evaluate impact

We use ITS to explore the following research questions (RQ):

- *RQ 1: To what extent have trends in patient satisfaction and staff turnover at NHS partner trusts changed since the commencement of the NHS-VMI partnership?*
- *RQ 2: To what extent do trends in patient satisfaction and staff turnover at NHS partner trusts differ to similar (peer) hospitals that were not part of the NHS-VMI partnership?*

ITS analysis is used to measure changes in performance due to an intervention over time. This statistical method uses regression modelling to compare the before and after effect of an intervention within a sample. Thereby ITS presents a powerful quasi-experimental method for comparing the effect of an event or intervention.

Measures of performance

Measures of performance used for this study were:

- **Accident and Emergency (A&E) scores** – *measures the percentage of people who would recommend the trust for A&E services. We obtained monthly data for A&E satisfaction scores between April 2013 and February 2020.*
- **Staff turnover** – *measures the number of leavers (headcount) for the NHS trusts divided by the average of the number of staff at the beginning and end of the period. We obtained monthly data for staff turnover between 2009 and February 2020.*

Control group ('recommended peers')

The five NHS-VMI partner trusts are considered the 'treatment group' and the application of VMI's systematic approach to implementing CI is the 'treatment'. The treatment group has an 'untreated time series' (i.e. the timeline before the intervention), and a 'treated time series' (i.e. the timeline after the point of intervention). The 'point of intervention' refers to the time in which the intervention commenced (i.e. July 2015).

The use of a control group enables the comparison of the performance of the five VMI partners with a set of 'recommended peers' determined by the Model Hospital default algorithm and helps to control for the effects of extraneous variables such as seasonality. These peers are recommended based on a range of factors including patient attendances, deprivation, patient profile, and location profile.

8.2 Outline summary of findings

Study 1 - Analysis of trends in A&E patient satisfaction scores (linked to care quality and patient safety):

- *Four NHS-VMI partner trusts achieved A&E satisfaction scores above 80% prior to the intervention (BHRUT was performing just below the other partner trusts at 79.10%).*
- *BHRUT improved the trend in A&E scores during the intervention and performed better than 'peer' trusts.*
- *LTHT did not improve its trend in A&E scores during the intervention or differentiate itself from peers. LTHT maintained an average A&E score of 85.61%.*
- *SASH had exceptional satisfaction scores prior to the intervention, achieving an outstanding 99% in July 2014. There is evidence that SASH's A&E scores are trending downward, but this is similar to peer trusts.*
- *SATH experienced a downward trajectory in A&E scores but is performing significantly better than peer trusts.*
- *There is no evidence that UHCW had produced significant changes in the trend of A&E scores during the intervention and is not performing as well as peer trusts.*

Study 2 - Analysis of trends in staff turnover (linked to staff morale and patient safety):

- All five NHS-VMI partner trusts show an improvement trend in the number of staff leaving the trusts.
- BHRUT and SASH showed significant improvement in staff turnover during the intervention period compared to the pre-intervention period. There were no significant changes in turnover trends in other trusts.
- Peer trusts in all cases were also experiencing improvements in staff turnover. This highlighted the possibility that other forces may be linked to improving staff retention in NHS trusts across England.

8.3 Limitations of analysis

As stated in the introduction to this section, the evaluation made exhaustive attempts to explore ways of quantifying the impact of the NHS-VMI partnership at an organisational level. Given the complexity of the intervention, the lack of alignment between improvement work and organisational level indicators, and the time lag between the 'treatment' and the impact, all approaches to measuring impact at an organisational level were deemed imperfect. We highlight the following limitations to our analysis:

- Performance measures (i.e. A&E scores and staff turnover) were not explicitly targeted by the NHS-VMI partnership. This makes linking changes in performance to the intervention programme inconclusive. These measures were selected because of the availability and consistency of the measure as time series data before and after the NHS partnership.
- Competing organisational influences (i.e. contextual variables) were not included in this analysis because of the lack of clarity around targeted measures of performance highlighted previously.
- The controlled ITS depends on the validity of the peers. While we use the suggestions of the Model Hospital, precision in matching performance between partner trusts and peers before the intervention was not possible. Therefore, changes in peers may have led to different results.

Despite the limitations above, our analysis shows that quantitative assessments of organisational impact are possible once quantitative measures are aligned to the improvement interventions.

Implications for practice

The ability to confidently show a causal relationship between an organisation-wide intervention such as the NHS-VMI partnership and performance improvement is challenging. Not least because hospitals are complex systems subject to a multitude of interventions and regulatory pressures at any one time, but also because developing a 'culture of CI capability' takes several years. So how can we know that improvements at an organisational level have occurred because of a specific intervention and not because of other contextual factors that might also influence performance? Our analysis shows that quantitative assessments of impact at an organisational level are possible once quantitative measures are aligned to the improvement programme. The Model Hospital presents a promising platform for conducting this type of analysis.

Section 9: How the NHS-VMI partnership shaped the strategic and operational response to the global pandemic

On 23 March 2020 a national lockdown was imposed across the UK in response to the global pandemic. The goal of the lockdown was clear and simple: make sure the NHS is not overwhelmed. The role of the public was also made clear: ‘stay home, protect the NHS, save lives’. While the world was struggling to contain the spread of the novel coronavirus, hospitals and healthcare professionals had to act fast to design new processes that would protect staff and save lives.

By March 2020, the partnership was reaching the end of the five-year contract and all five NHS partner trusts had invested significantly in infrastructure, training, and nurturing leadership behaviours conducive to fostering a sustainable culture of continuous improvement.

Between May 2020 and September 2020 the evaluation team conducted 39 semi-structured interviews (approximately eight per NHS partner trust) and approximately 20 observation hours to examine how learning from the NHS-VMI partnership had shaped the response to COVID-19.

We conclude our report with a summary of the ways in which the CI methods and practices developed via the NHS-VMI partnership were used to help the five NHS hospital trusts navigate a global health crisis. Our key findings presented below signal the importance of developing CI capability across the NHS and illustrate the role of continuous improvement in shaping sustainable health care.

The following key findings were common across all five NHS trusts:

1) Quality improvement practices were central to enabling strategic oversight, rapid decision making and efficient communication during crisis (top-down).

Application of daily management practices such as huddles, production boards and standard work were extensively used to enable real-time strategic oversight, rapid decision making and efficient communication.

- *In each of the five NHS trusts, KPO specialists (trained in improvement facilitation) worked alongside senior leaders as part of gold, silver and bronze response teams, assisting with implementation of daily management practices that facilitated strategic oversight, rapid decision making and efficient communication.*
- *Production boards (a form of visual management that facilitates rapid communication of situation updates and performance) were reportedly ‘everywhere’, with many of them remaining in use after the first wave had passed.*
- *Senior leaders reflected on the uncertainty created by the pandemic with guidance changing rapidly and sometimes daily. Alongside the tools of quality improvement, principles of visible and respectful leadership were vital for “listening, learning and connecting the dots for people”.*

2) QI methods and tools were central to enabling front-line staff to respond to the pandemic.

Respondents at each of the five NHS partner trusts recounted many examples of the application of quality improvement methods and tools (e.g. PDCA, set-up reduction, takt time, and value stream mapping) used extensively to resolve issues central to the crisis response. Examples include but are not limited to:

- *Managing the procurement, distribution and decontamination of PPE.*
- *Remodelling departments and designing new patient flows to avoid potential cross-contamination of COVID and non-COVID patients.*
- *Expanding the number of intensive care beds and expanding the workforce through staff redeployment and cross-functional working.*
- *Decreasing the turnaround time for COVID swab testing.*
- *Developing innovative new processes to facilitate communication between patients and their loved ones and between healthcare professionals and patient family members during a time where visiting was not allowed.*
- *Introducing new standardised and simplified policies and procedures.*

3) Alongside production boards¹⁷, huddles¹⁸ and standard work¹⁹ emerged as critical tools for managing the organisation's response to the pandemic.

- Alongside their usual role facilitating efficient communication of operational status, operational challenges, and improvements, 'huddles' emerged as an important mechanism for 'checking-in' with staff and supporting one another to cope with the emotional toll of the pandemic.
- Extensive use of standard work fostered efficient sharing of information in relation to new and existing processes. For example, standard work was created for new processes unique to the pandemic such as 'flipping' wards from non-COVID to COVID and vice versa, documenting new decontamination processes for PPE, and new processes for facilitating communication between patients and loved ones.
- Standard work was also fundamental to enabling cross-functional working. Many healthcare professionals were redeployed²⁰ to take on jobs and tasks outside of their professional roles; standard work facilitated an efficient transfer of information to enable cross-functional team working.

4) Several process improvements and innovations developed during the first wave of COVID-19 should be regarded as revolutionary to long-term service delivery.

- For example, citing the successful adoption of video-based clinics, one respondent reflected "knowing what I know now, I would have accelerated telemedicine way before I ever knew COVID existed".²¹
- At a strategic level, the power of a collective shared goal (keep patients and staff safe, save lives) alongside a burning platform for change has fostered reflections about how to maintain a sense of collective urgency to drive a sustainable culture of continuous improvement.

5) Knowledge and experience of improvement methods and tools gained through the NHS-VMI partnership enabled the five NHS partner trusts to rapidly assess which improvement methods and tools would be important and prioritise these elements above others.

- Some of the routines and practices that were central to the NHS-VMI partnership prior to the pandemic have been less relevant to the pandemic response due to the urgent and rapid nature of improvement required. For example, value stream work had ceased since COVID-19 disrupted patient care pathways to the extent they no longer existed.
- Other routines associated with the NHS-VMI partnership were adapted to take place either in a socially distanced way or via virtual platforms (for example, some elements of the L4L training programme were adapted for online delivery; daily huddles and leadership huddles were delivered in a socially distanced way).
- Daily management methods and tools such as production boards, huddles and standard work and the use of PDSA to conduct rapid experiments were amplified.

A full detailed report of how a systematic approach to quality improvement shaped the response to COVID-19 is available on request.

¹⁷ A production board is a visual management tool that is frequently updated to enable rapid at-a-glance and real-time communication of process status as well enabling monitoring of performance over time.

¹⁸ Huddles are short multidisciplinary briefings where team leaders come together to share clinical information, review events, and plan for the day ahead.

¹⁹ Standard work refers to the documentation of process steps in an unambiguous manner to reduce variation in the way a process is conducted. While standard work is prescriptive about how work should get done, it can be updated in the event that process improvements are identified.

²⁰ From a workforce perspective, COVID-19 severely altered patient demand for certain services. For example, while intensive care units required many more beds and staff to cope with patient demand, elective surgery was halted. At the same time, staff numbers were depleted due to staff shielding and sickness.

²¹ While the growth in the number of video consultations has been one of the most dramatic changes of the pandemic, we still don't know much yet about their impact on outcomes; some concerns have been expressed about their impact on quality. See: <https://q.health.org.uk/blog-post/shifting-gears-and-risking-losing-momentum-emerging-insights-about-video-consultations/> accessed 17/2/22.

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