

# Why Lean doesn't work for everyone

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## ABSTRACT

Popularisation of Lean in healthcare has led to emphasis on Lean quality improvement tools in isolation, with inconsistent results. We argue that delivery of safer, more efficient, and higher quality-patient focused care requires organisational transformation of which the Lean toolkit is only one component. To successfully facilitate system transformation toward higher quality care at lower cost, Lean tools must be part of a comprehensive management system, within a supportive institutional culture, and with committed leadership.

## INTRODUCTION

Lean, and other industrial improvement methodologies, are increasingly touted as solutions to the quality and cost challenges in healthcare. However, despite infiltration of Lean terminology into the vernacular of healthcare delivery, and the encroachment of exotic 'Kaizen' quality improvement events into hospital conference rooms, results have often been disappointing.<sup>1</sup>

In the year 2000, Virginia Mason Medical Center in Seattle, Washington, USA, for the first time faced severe financial challenges threatening the continued long-term viability of the institution. Following the quality concerns highlighted by the Institute of Medicine reports on patient safety,<sup>2 3</sup> the organisation was shocked in 2004 by the occurrence of an avoidable medical error leading directly to the death of a patient.<sup>4</sup> This stark awareness of quality and cost concerns drove us to explore and subsequently adopt the Lean methodology of the Toyota Production System as our management method.<sup>5</sup> Though our Lean journey is still early when compared to the 60 years of experience at Toyota, one clear lesson has been that the delivery of safer, more efficient, and higher quality patient-centred care requires not simply the use of Lean tools and events, but rather organisational transformation based on Lean principles.

In this report, we summarise what is needed for this arduous journey and explore why Lean doesn't work for everyone.

Transformation at our organisation relies on what we term the 'Virginia Mason Production System' (VMPS), our adoption of the Toyota Production System to healthcare. The use of 'Virginia Mason' emphasises that we have ownership for implementing and improving a methodology that has grown organically at our institution. Implementation at other institutions will cause new eponymous production systems to grow to meet each specific institutional circumstance. We use the term 'Production System' because it is comprehensive, underlying all our work in creating the perfect patient experience. Lean is deployed not simply for quality improvement, but rather as an overall management strategy, coupled with an evolving institutional culture and focused invested leadership.

## ELEMENTS OF VMPS

VMPS is based on the application of Lean tools as part of a comprehensive management system together with institutional culture change and leadership focused on implementing change.

### Lean toolkit

The Lean toolkit has been discussed extensively in the medical literature, but can be summarised as a focus on the identification and elimination of waste from healthcare delivery processes. Waste is defined as any product or activity that does not add value for the patient.<sup>6 7</sup> Processes are standardised, and variability is reduced through dedicated 'Kaizen' quality improvement activities and Plan-Do-Study-Act cycles. Lean tools supporting these efforts include Value Stream Maps, *Andon* indicators for process control, *Kanban* cards for inventory control, and *Jidoka* or human supervised automation.<sup>5 8</sup> These Lean tools



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and events can lead to significant improvements in processes throughout the healthcare enterprise.<sup>9–11</sup> However, the Lean toolkit alone is insufficient for transformational change leading to sustainable success in improving quality and lowering costs.

### Management system

Success in improving quality in a healthcare organisation requires the understanding that quality improvement should not exist as an isolated silo or add-on, but must be the foundation for all management activities, including day-to-day operations. By identifying VMPS as a management system early on, we took 'project based', 'opt-in/opt-out', off the table. All activities from supply chain to operative procedures to primary care visits are based on VMPS value streams, and changes are effected through Lean process improvement workshops and activities. In effect, all management activities are focused on quality improvement; doing the work becomes inseparable from improving the work. This required development of an educational infrastructure to train providers and staff at all levels complemented by a quality improvement division of specialists with deep expertise and full-time work focusing on improvement. It should be emphasised, however, that the quality improvement specialists do not work in isolation but rather in collaboration with operational leaders who have also been through VMPS training.

As an example, to enable important early fluid resuscitation in patients with sepsis, we held a VMPS 2-day improvement event physically on an intermediate care unit, with front-line nurses, physicians and quality improvement specialists together contributing to immediate changes. By the conclusion of the event, the changes had become part of day-to-day operations, with the improvement team now being the management team using the Lean toolkit for implementation. In this way, having VMPS as a management system provides the continuity to help address the challenge of sustaining improvements.

Not every improvement proceeds from a formal workshop. Fundamental to VMPS is empowerment of and respect for the front line workers, who are uniquely positioned to inspect for quality and contribute improvement ideas. Leaders are expected to convene daily team huddles on the work floor allowing for constructive bidirectional feedback. Further, all employees undergo basic Lean training, starting on the first day of work. It is not unusual to overhear conversations between staff, such as two transporters in the elevator talking about mistake-proofing their work.

### Institutional culture

Institutional culture is critically important<sup>12</sup> and probably the most elusive aspect of VMPS. Foundational to institutional culture is the shared vision that value

to the patient is the focus of all activities. This does not mean simply that care is respectful and responsive to individuals, but rather, that all measures of quality (including efficiency, effectiveness, equity, safety, timeliness and outcomes)<sup>3</sup> are viewed from the perspective of the patient. In reality, most healthcare delivery is built around the needs of the doctors, nurses and managers, rather than around the needs of the patients. The simplest example of this is patient waiting rooms. Worldwide, we spend hundreds of millions of dollars building waiting rooms, so that patients can hurry up, be on time and wait for us in what are, in essence, large holding tanks. This extreme waste from the Lean perspective is the antithesis of efficient and timely care from the patient's perspective and representative of the scale of transformation required to truly become 'patient driven' in healthcare. Through VMPS, we have achieved incremental and breakthrough tangible gains in redesigning care around our patients, including opening a clinic with no waiting rooms, and reconstructing our care delivery for conditions like low back pain, headache and breast concerns around same day access and patient needs. Celebrating these patient-focused gains within the organisation reinforces the VMPS institutional culture.

Physician culture at VM also had to adapt to the VMPS. Traditional models of healthcare delivery that feature physician hierarchies separate from that of nurses, support staff and administrative personnel, do not support efficient patient-focused care. Customary physician expectations of autonomy, protection and entitlement can conflict with care quality, safety and patient-centeredness. To address physician culture, we engaged in a year process led by front-line physicians to formulate a new physician compact, a reciprocal agreement between providers and the organisation.<sup>13</sup> Provider's responsibilities include implementing evidence-based practice, respecting all team members, and willingly embracing innovation and organisational change. Organisational responsibilities include providing tools and information necessary to improve practice, supporting career development and professional satisfaction, and being transparent about organisational priorities and business decisions. The compact defines the relationship between organisation and physicians and is incorporated into provider orientation, performance management and annual review.

Cultural change is not rapid, and requires constant commitment from leadership. Not everyone at VM was initially accepting of VMPS, and evolution in the institutional culture required time. There was resistance, particularly early on, to change in general, and to the concept of using a manufacturing approach in healthcare, as 'patients are not cars.' Acceptance increased gradually, prompted by trips to Japan and other industry visits for many leaders, and by gradually increasing visibility of VMPS successes. A small

number of providers left as a consequence of VMPS, but at the same time, others came to VM specifically because of the institutional focus on quality and safety.

### Leadership for implementation

Leadership is required for a quality healthcare system. At its core, quality improvement is about change, and the large-scale and transformational changes required in healthcare can only be achieved with active, unwavering leadership. At Virginia Mason, the entire executive team, including the board of directors is required to undergo deep training in VMPS, and to participate in training trips to Japan for in-depth study of Toyota and other Lean companies. All leaders undergo formal training in VMPS, and are expected to use the tools to lead events and to support teams, through daily management. This ensures consistency in leadership throughout the institution, that is not dependent on any one individual.

VMPS also requires leaders to move from the ‘hero mentality’ of problem solvers to being coaches who build learning teams that use VMPS for long-term improvement. This implies a change from the usual physician or administrative leadership model with its silos and advocacy for one’s own chain of control to transparency and systems-thinking. At Virginia Mason, we developed a uniform ‘standard work for leaders,’ a series of tools and processes designed to improve communication between leaders and staff (daily huddles and leadership rounds), to increase the visibility of the daily work and goals (production boards and visual controls), to enable early identification of problems in daily work (dashboards and root cause analysis), and to improve accountability of leaders and staff (leadership checklists and *Genba*

observations). All leaders learn standard work for leaders as part of their VMPS training, and the uniform application of these tools promotes transparency and accountability. As a consequence, teams learn to identify and solve problems on their own, and leaders become managers of the system rather than problem solvers. The visibility of leaders deploying VMPS also contributes to the institutional culture.

Our journey was not without challenges. Early on, we focused too much on the Lean toolkit, and teams equated success with use of the tools alone. This misinterpretation led to overzealous regimentation by a few managers. We also overestimated the scale of change from a quality improvement event, expecting instant transformation rather than iterative improvement. Finally, we underestimated the challenges in leading people through change. Simply developing solutions in Lean quality improvement events did not equate with long-term improvements. Instead, to implement and sustain improvements, we rely on the key strategies discussed above throughout the institution ([table 1](#)).

### CONCLUSION

In the first decade of the Lean journey at Virginia Mason, we have succeeded in improving quality and lowering costs.<sup>14</sup> Even more importantly, however, we have demonstrated that Lean principles can provide a structure for the transformational change needed in healthcare. Why then does Lean not work for everyone? Because simple changes from the use of the Lean toolkit in isolated quality improvement silos are not enough. Instead, transformation requires using Lean as part of a comprehensive management system in concert with institutional culture change and new leadership approaches to all aspects of healthcare delivery.

**Table 1** Key strategies for VMPS

Unrelenting focus on the patient	All activities are evaluated by whether or not they add value from the patient’s perspective, a unifying shared vision
Uniform improvement method	A common language and approach used by all, for us, Lean
A strategic plan that serves as the organisation’s compass	Strategic plan is highly visible, presented at the start of all improvement and management meetings, with the relevance of that meeting to the strategic plan defined
Integration of daily management and quality improvement	The same teams and the same tools for daily management and quality improvement. In effect, all management is quality improvement, which is critical to sustain gains
Leadership present on the shop floor, understanding and supporting teams	Leaders can best know what is going on in the organisation, and can best coach and support teams when physically present where the work is occurring
Daily leader routines that are transparent and predictable	Leading by example requires standard work by leaders, and transparency promotes bidirectional accountability for managers and staff
Respect for people	All staff are empowered to contribute to improvement, and all are valued for their contribution to the institution
Physician, leadership and board compacts	Reciprocal agreements between the institution and physicians, leaders and board members defining the responsibilities and expectations for all parties.
A visual environment so one easily sees operational conditions	Work is made open and visible so that any problems become apparent and can be addressed in real time. Production dashboards are publicly displayed
Long-term thinking	Constancy of purpose among leadership, ensuring continuity independent of specific individuals
Alignment	Alignment from the board of directors through frontline staff. All must understand the unwavering commitment to the patient focus and the VMPS method

VMPS, Virginia Mason Production System.

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