Drivers of large-scale change in complex health systems: a rapid review

Executive Summary

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An Evidence Check review brokered by the Sax Institute for the NSW Agency for Clinical Innovation

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**EXECUTIVE SUMMARY**

This rapid review aimed to determine the evidence for successful and sustainable large-scale change in complex health systems. It identified critical enablers of, and barriers to, system change, and examined the frameworks which work best to guide the change process.

The three questions addressed in this review were:

1. What are the key features of frameworks for scaling up initiatives to improve health care across a complex system?
2. What key factors are critical enablers of and barriers to successful large-scale change?
3. To what extent do successful large-scale change initiatives depend on standardisation versus local adaptation?

To investigate these questions, the peer-reviewed and grey literature from 2000-2013 was searched in three stages (refer Figure 1):

**Figure 1: Search strategy**

<table>
<thead>
<tr>
<th>Stage 1: Identification of frameworks</th>
<th>21 frameworks for large-scale change identified</th>
<th>Question 1 addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 2: Applications of frameworks from Stage 1</td>
<td>Seven frameworks applied to large-scale change initiatives identified</td>
<td></td>
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<tr>
<td>Stage 3: Articles reporting on initiatives from Stage 2</td>
<td>15 large-scale change initiatives identified and analysed</td>
<td>Question 2 addressed</td>
</tr>
<tr>
<td><strong>Outcome:</strong> 13 Key factors identified as critical to the success and sustainability of large-scale initiatives</td>
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</tbody>
</table>

A coding matrix was used to identify the important elements of each of the frameworks included in this review. Only frameworks developed for high income countries with similar socio-political features to Australia were included (e.g. UK, Western Europe, Canada, US, NZ). A qualitative content analysis was performed to examine observational studies and case reports of the large-scale change initiatives (refer Table 1).
### Table 1: Large-scale change initiatives analysed to derive the key factors critical for successful large-scale change

<table>
<thead>
<tr>
<th>Framework</th>
<th>Institution/Location</th>
<th>Large-scale change initiative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centers for Disease Control and Prevention (CDC) Replicating Effective Programs</td>
<td>International</td>
<td>Packages to scale-up evidence-based interventions in a number of countries to reduce risky behaviours related to HIV¹</td>
</tr>
<tr>
<td>Clinical Support Systems Model</td>
<td>Australia</td>
<td>Towards a Safer Culture initiative to improve the translation of evidence-based guidelines for cardiac and stroke management into clinical practice²,³</td>
</tr>
<tr>
<td>Hybrid Model for Quality Improvement</td>
<td>Ontario, Canada</td>
<td>Quality improvement initiative to implement routine screening for cancer patients seen in Regional Cancer Centres throughout the province⁴</td>
</tr>
<tr>
<td></td>
<td>New Mexico, US</td>
<td>Quality improvement initiative in school-based health centres across New Mexico⁵</td>
</tr>
<tr>
<td>Institute for Healthcare Improvement (IHI) Framework for Execution of Strategic Improvement</td>
<td>University of Washington Health System, US</td>
<td>Initiative to achieve sustainable elimination of healthcare associated infections across a five-state region⁶⁷</td>
</tr>
<tr>
<td></td>
<td>Kaiser Permanente Health System, US</td>
<td>Initiative to embed improvements into operations throughout the entire organisation⁷</td>
</tr>
<tr>
<td>Institute for Healthcare Improvement (IHI) Framework for Spread</td>
<td>Veterans Health Administration, US</td>
<td>Advanced Clinic Access Initiative to reduce wait times in more than 1,800 clinics by spreading improvements in operational systems⁸⁹</td>
</tr>
<tr>
<td></td>
<td>Mayo Clinic Health System, US</td>
<td>Initiative to develop an institution-wide venous thromboembolism prophylaxis program¹⁰</td>
</tr>
<tr>
<td></td>
<td>Institute for Healthcare Improvement, US</td>
<td>100,000 Lives Campaign to avoid 100,000 unnecessary deaths in US hospitals¹¹,¹²</td>
</tr>
<tr>
<td>Quality Enhancement Research Initiative (QUERI) Framework</td>
<td>Veterans Health Administration, US</td>
<td>QUERI initiative to implement collaborative care for depression on a national scale¹³</td>
</tr>
<tr>
<td>Veterans Affairs (VA) Systems Improvement Framework</td>
<td>Veterans Health Administration, US</td>
<td>VA Mental Health System Redesign Initiative¹⁴</td>
</tr>
<tr>
<td></td>
<td>Veterans Health Administration, US</td>
<td>Quality improvement initiative to improve inpatient flow and reduce waiting times in emergency departments¹⁵</td>
</tr>
</tbody>
</table>

The key results of the rapid review are discussed below:

- **Framework identification.** Frameworks can provide an overarching structure and common language by which critical enablers of success can be communicated and implemented at all levels of the system to optimise the chance of system change. Twenty-one frameworks for large-scale change in health systems were identified. Seven frameworks had been applied in practice to guide change initiatives, such as improving healthcare service delivery or implementing new programs across a health system.
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• Thirteen key factors identified as vital to the success and sustainability of the change initiatives. It was outside the scope of the current review to determine which factors are more or less important than others. It is probable that the importance of each will vary in different contexts and for different change initiatives. The 13 factors are summarised in Table 2.

• The importance of balancing centralised planning and coordination with local-level autonomy. Large-scale initiatives require a balance between centralised strategic planning and coordination, and autonomy and empowerment at the local level to generate innovation and more sustainable engagement. Investing in the skills and resources at the frontline of clinical care is vital but needs to be supported by an overarching body that can provide: high-level strategic alignment; large-scale coordination; consistent provision of standardised and specialised resources and training; and the removal of obstacles that are beyond the ability of local departments.

• The value of a systems perspective. Initiatives often ignore systemic issues that can undermine their success. By targeting only local-level barriers and motivators to change, achievements are inadvertently limited to local-level outcomes or ‘first-order shifts’ in the system. To achieve sustainable change in large and complex systems, solutions should target the root causes of barriers to change rather than symptomatic problems, both during the design phase and iteratively throughout implementation as the system evolves.

• Lack of empirical evidence. Only one study of a large-scale change initiative investigated the initiative’s impact with sufficient rigor to meet Cochrane quality standards, reflecting the difficulty of rigorously evaluating large-scale change in complex and dynamic systems. This study demonstrated a lack of effectiveness of the change initiative in achieving sustainable performance improvements, and suggested the importance of factors such as alignment between the initiative and organisational priorities, integration of the change into routine practice, and standardisation of processes for future initiatives. Non-traditional integrative research methods and new approaches to data linkage, modelling and simulation may be required to gain new insights and solutions for transformational change in the future.

Table 2: Factors influencing large-scale change in healthcare

<table>
<thead>
<tr>
<th>Preparing for change: factors that need to be in place prior to rollout of the large-scale change initiative</th>
<th>Enablers of change:</th>
</tr>
</thead>
</table>
| 1. Leadership structures and management support | • Establishment of a leadership structure appropriate for the intended scale of the initiative. This should include both overarching and local management structures  
• Engaged and supportive leadership with clinical and managerial expertise to oversee the change process |
| Barriers to change: | • The sole use of quality experts (e.g. quality or risk management consultants) rather than shared governance with operational leaders |
| 2. Microsystem capacity: ensuring frontline staff have sufficient training and resources to implement initiatives that are effective and sustainable | Enablers of change: |
|  | • A robust induction process, a system for ongoing training and customised coaching, and a structure for peer interaction and learning |
| Barriers to change: | • Limited skills and training among frontline staff in the implementation of initiative components |
| 3. Infrastructure | Enablers of change: |
|  | • Adequate human resources, communication and data infrastructure at the local level to implement the initiative |
Table 2: Factors influencing large-scale change in healthcare

| 4. Alignment: between initiative goals and organisational priorities | Enablers of change: Alignment of objectives at all levels from the strategic goals of the overarching organisation to the daily improvement priorities of local management  
Barriers to change: Project fatigue resulting from opportunistic selection of quality improvement initiatives and poor alignment of multiple competing priorities |
|---|---|
| 5. Systems perspective and broad engagement of stakeholders | Enablers of change:  
- Systems mapping exercises conducted by leadership to: locate and exploit critical pathways in patient care; help prioritise, sequence and align multiple initiatives; expose the scale of resource infrastructure required; and identify key stakeholders to engage  
- Partnerships between practitioners, operations experts, universities, health departments and the private sector  
Barriers to change:  
- System-level barriers that are beyond the ability of frontline staff to influence |
| 6. Credibility of evidence-based initiative | Enablers of change:  
- Development of an evidence-based initiative in collaboration with stakeholders that includes information systems, protocols and tools to support implementation  
Barriers to change:  
- Lack of consensus on the effectiveness of an initiative due to insufficient credible evidence |
| Process of change: factors to consider during the implementation phase |  
**7. Engagement and peer support**  
Enablers of change:  
- Continual process of engagement, orientation and peer support  
- Cultivation of clinical champions and other forms of leadership and relationships such as the physician-administrator relationship  
Barriers to change:  
- Poor leadership support, heavy clinical loads and limited opportunities for participation  
- Lack of occasions for frontline staff to share experiences in personal face-to-face mode  
- Frequent turnover of staff and key clinical leaders |
| 8. Attention to changing organisational culture | Enablers of change:  
- Fostering a culture of accountability through a number of strategies including promotion of local ownership and strengthening of internal and external social systems  
Barriers to change:  
- Obstructive organisational culture |
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<th>Factor</th>
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<th>Barriers to change</th>
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</thead>
<tbody>
<tr>
<td>9. Approach to roll-out of initiative</td>
<td>• Selection of a scaling up approach that is compatible with the complexity of the initiative being implemented, and allows initial experimentation with the implementation system and capitalisation on lessons from previous change phases</td>
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<tr>
<td>10. Intervention fidelity with implementation flexibility</td>
<td>• Achieving balance between allowing local customisation to fit the culture and processes of each setting, and maintaining adequate fidelity to the evidence-based components of the initiative</td>
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<tr>
<td>11. Equipping frontline staff with tools for problem solving</td>
<td>• Providing frontline staff and local-level leaders with a variety of tools/methodologies to solve local implementation problems early and often (such as Plan-Do-Study-Act, communication tools, flow charting and systems mapping)</td>
<td></td>
</tr>
</tbody>
</table>
| 12. Monitoring and evaluation of progress                            | • Accurate, reliable and systematic data systems to track progress, identify target areas for improvement and build a track record of the initiative’s success  
  • Simple electronic data-collection processes focussing on a few vital performance indicators  
  • A rigorous evaluation framework to assess progress on: the implementation process; intervention fidelity at the organisational and patient level; impact on patient outcomes; and return on investment | • Lack of integration of performance data into daily operations  
  • No systematic recording of indicators across the system which threatens the validity of aggregated data and undermines the credibility of initiative outcomes |
| Maintenance and evolution: preparing for sustainability             |                                                                                  |                                                                                  |
| 13. Integration of the change into routine practice                  | • To build a foundation for lasting change, messages should shift from creating a sense of urgency (important for initial engagement) to encouraging institutionalisation of the change | • Without integration into the culture, structure and processes of an organisation, initial clinical improvements can be lost when organisational attention shifts to a new priority |

To achieve large-scale change across the NSW health system, it is recommended that the Agency for Clinical Innovation (ACI):

- **Align strategies for large-scale change to the 13 critical factors.** The 13 critical factors identified appear to be relevant to the NSW context, and should be viewed as a practical tool for guiding the development of strategies to optimise the success of large-scale change initiatives.

- **Leverage its unique position to pioneer innovative research.** While it is not possible to determine which of the 13 critical factors are more or less important in the context of the NSW health system, the analysis suggests that individual factors alone (such as funding...
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incentives or engaging clinical champions) are unlikely to achieve and sustain large-scale change. Research is crucial to determining the mix of factors that are most important in different clinical contexts within the NSW health system, for different initiatives (e.g. models of care or improving IT systems) and for different stages of change. Through rigorous evaluations of the effectiveness of its work, the ACI has an opportunity to contribute important evidence on the drivers of large-scale change. To create new knowledge in large-scale change and position themselves as pioneers in this field, it is recommended that the ACI should: conduct routine evaluation of initiatives, including the development of appropriate key performance indicators and data collection systems; and compare approaches to scaling up in relation to setting, context and the type of change being addressed. The scope of evaluations should include: the implementation process; intervention fidelity at the organisational and patient level; impact on patient outcomes; and return on investment.

- **Use existing structures to support centralised planning and decentralised implementation.** This analysis suggests the importance of a degree of centralised strategic planning and coordination for large-scale implementation of quality improvement initiatives, for which the ACI is well positioned to provide. In particular, the ACI could be instrumental in strategically aligning objectives across all levels of the system, providing standardised resources and training to support change, and identifying and removing system-level obstacles, all of which have been identified as important for successful large-scale change. However, given the multiple variably independent organisational units that comprise the NSW health system, this analysis would suggest that a top-down approach to implementation is unlikely to be effective. A degree of local flexibility is critical to enable local adaption and innovation. The relationships the ACI and its Clinical Networks, Institutes and Taskforces have with their partners, such as Local Health Districts, could provide this local capacity and guide the formation of implementation teams with multidisciplinary representation at all levels of the health system hierarchy.

- **Use innovation from non-health sectors.** Systems science has been widely applied to sectors such as engineering, economics, ecology and business since its inception in the mid-1950s. Learning from applications in these non-health sectors, systems science methodologies have been used to help map and understand complex public health problems such as childhood obesity\(^{18}\), diabetes\(^{19}\), and heart disease\(^{20}\), as well as optimise operational aspects of healthcare capacity and delivery such as patient flows in emergency\(^{21,22}\), disease screening\(^{23}\), demand for services\(^{24,25}\), and workforce requirements\(^{26,27}\). Systems methodologies can systematically analyse a range of initiatives and organisational policies and solutions prior to implementation and identify leverage points in the system (places to intervene) where small inputs result in large impacts\(^{28}\). They can also be used to identify and analyse key stakeholders and linkages with non-health sectors, and to explore critical relationships between networks or organisations and individuals that can drive or block successful scaling-up of initiatives. A systems approach to guide the ACI and their clinical partners in strategic planning, ongoing decision making, and research to support system change initiatives holds promise. To achieve large-scale change, a systems approach requires: an in-depth knowledge of the organisations in which it is being applied, including management and funding arrangements; a clear outline of the specific problem being addressed; engagement of stakeholders representing each of the components of the system being mapped and/or modelled; and consultants/researchers with expertise in systems approaches to facilitate co-development of credible, feasible and effective evidence-based initiatives.
References


