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title **Redesign and innovation in hospitals: foundations to making it happen**

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Executive summary

What is the problem?

Australia's demand for healthcare services is escalating, driven by an ageing population with complex health care needs, rising rates of chronic illness, increasing health care costs and rapid information technology innovation. These pressures may not be adequately met within the health system's current and future economic capacity. Therefore, healthcare services and systems must achieve wide-ranging reform and redesign if they are to meet these challenges.

The key questions for those working as health services leaders are: how can we support the innovation and change required to address this reality? and what should national policy makers do to support this work?

What does the evidence say?

Considerable evidence describes overlapping aspects of successful redesign in hospitals. These include: leadership to achieve change; the use of data to monitor and evaluate change; coherent alignment to organisational strategic plans; the development of organisational culture that is ready for change; and ensuring integration of change into routine practice.

Systems thinking and institutional entrepreneurship offer approaches to change and redesign that take into consideration networks and relationships of individuals, teams and clinical disciplines working within it, resources and current processes and the cultural context of the organisation.

What does this mean for health service leaders?

In order to fully meet the requirements for redesign and innovation, health service leaders will need to address a number of key areas. First and foremost, leaders need to develop their organisational strategic vision around the concept of redesign and innovation and build staff understanding of the importance of these concepts. Staff must be given the capacity and confidence to pursue meaningful change in their everyday operations. Leaders must recognise the benefits of data and analytics and support the development of systems to utilise these tools. Innovative practices from outside of the health sector should be studied and adapted, and partnerships with industry and academia must be pursued.

What does this mean for policy makers?

Policy makers need to commit to investment in the concept of redesign and innovation. They should consider funding models that reward health services for innovation. Policy makers must support health services to pursue and sustain meaningful change while recognising that transformation requires time, perseverance and willingness to learn from success and failure.

Introduction - Why is redesign important?

Australia's demand for healthcare services is escalating, driven by an ageing population with complex health care needs, rising rates of chronic illness, increasing health care costs and rapid information technology innovation. These pressures may not be adequately met within the health system's current and future economic capacity. Therefore, healthcare services and systems must achieve wide-ranging reforms and redesign if it is to meet these challenges.

The key question for those working as health services leaders, as well as state and national bodies, is: how they can support the innovation and change required to address this reality, and what should national policy makers do differently to support this work?

To date, hospital redesign and innovation initiatives have demonstrated improvements in discrete areas, but have had limited impacts and outcomes at a system level. This Issues Brief draws upon relevant literature about frameworks and theories of change, learning from state-based support programs and perspectives from leaders in national bodies. It provides an insight into how hospitals manage and lead the scaled up innovation they need in order to respond in today's shifting and demanding health care landscape. Given the overview of literature and experiences, considerations for policy development are outlined, providing clarity about how health policy can support innovation to turn established knowledge into sustainable practice.

Aims

- Describe the main features of redesign.
- Highlight some examples of redesign work through the implementation experience in the Australian health system, particularly the Victorian Department of Health and Human Service's 'Redesigning Hospital Care Program' (RHCP).
- Provide examples of other academic or state/territory government departments that relate to hospital redesign with a whole-of-hospital approach.
- Present frameworks and drivers of large-scale change in health systems, highlighting the key barriers and enablers of large-scale innovation.
- Briefly describe other approaches to undertaking large scale organisational change and innovation.
- Provide insights to enable policy development that takes into consideration the key levers for effective and sustainable redesign and innovation in healthcare delivery.

What the brief doesn't include is a comprehensive review of all relevant literature about organisational change or approaches. It doesn't include all policy initiatives that have been developed and implemented across Australia or internationally.

Process redesign and its application

Process redesign works to improve processes and originates from operations management principles and experience in the manufacturing industry. In healthcare it refers to "mapping, reviewing and redesigning the patient journey to meet demand and ensure that care is safe, effective and efficient" (1). Process redesign is the underlying methodology for the Victorian Department of Health and Human Services Redesigning Hospital Care Program (RHCP).

Victoria - The Redesigning Hospital Care Program (RHCP)

The RHCP was established by the Victorian Department of Health and Human Services (the Department) as a four-year state-wide initiative in 2008. The objective of the RHCP was to deliver health system improvements through applying process redesign methodologies in Victorian public hospitals (2). The aims of the program as expressed by DLA Piper (2) were to:

- *Increase redesign capacity by training staff across the system to lead projects, implement change, and train their peers*
- *Measurably improve health delivery processes and outcomes across the system*

  In order to achieve the stated objectives, the Department provided:

- *Funding for the remuneration of redesign leads in health services and for specific redesign projects*
- *The necessary tools, techniques and support for health services to plan, deliver and measure improvements in priority areas*
- *Support for the development of collaborative relationships between health services for the purpose of sharing ideas and innovation so the benefits of improvement activities could be realised at a system level* (2, p2)

With a total of $21 million funding for the RHCP, the program consisted of several redesign projects, resource development and capability improvements. In particular these included: support for individual redesign initiatives; funding of a 'redesign lead' to provide local leadership, project management and capacity development in each participating health service; project key performance measures; a progress assessment tool; a range of redesign resources; templates, training and networking opportunities.

In 2012, the Department commissioned DLA Piper to undertake an evaluation of the RHCP and sought recommendations for a future direction for the program. The DLA Piper evaluation reported on the program implementation period of 4 years (2008 – 2012). Detailed findings and recommendations can be found in the DLA Piper report (2) and are summarised here. The stakeholders involved in the evaluation of the RHCP included department staff members, design leads, clinical and non-clinical staff, senior managers, executive sponsors and chief executives of the 32 participating health services. The evaluation was based on data gathered from surveys, interviews and "tollgate reviews" (self-assessment reviews submitted by participating health services).

The DLA Piper evaluation described the strengths of the RHCP and clear positive outcomes after broad stakeholder engagement. It also illustrated variances in survey and interview responses from a range of stakeholders involved in the RHCP. The evaluation also articulated the barriers to introducing redesign in health services.

What worked?

As described in the report, outcome metrics from the Departmental evaluation indicated that 21 RHCP sites reported 426 of 559 defined measures year on year, with 85% of these measures reporting a performance improvement, 10% reporting deterioration and in 5% there was no change. Some of the improvements included: reduced patient length of stay; increased patient throughput; reduction in adverse outcomes from falls, medication errors and pressure injuries; more efficient transfer and referral times; and reduced handover time, or increased direct nursing time.

Increased capability to undertake and support redesign within the health service was reported in terms of having a clear framework for change, access to advice from redesign experts within the organisation and more project management skills. There was consistency of opinion among evaluation stakeholders about the impact of redesign on key operational outcomes that included:

- *staff involvement in improving their work environment*
- *improved patient flow*
- *increased effectiveness of care*
- *staff satisfaction (2, p8)*

Views about the impact on patient care (access, cost efficiency, safety and opportunity for staff to develop patient care skills) were varied with lower positive agreement amongst respondents.

A strong sense of positive organisational cultural change was reported, with the majority of senior executives understanding redesign and recognising the need to invest in it in order to achieve sustained improvements in performance.

Improved knowledge about the data needed by the organisation and its capacity to manage, analyse and interpret data was reported.

In terms of process improvement in health services, the key success factor repeatedly identified by stakeholders was the formal and informal relationship between the redesign team and senior management, including the Chief Executive. The ongoing support of internal change management expertise and workforce was also identified as a key success of the RHCP. The role of the Department was highlighted as a positive support and was a highly regarded resource for the RHCP.

The challenges and barriers to success

The critical barriers to introducing redesign in health services identified through the evaluation survey included:

- *Cultural readiness*
- *Readiness of the service to be challenged by new ways of thinking and working*
- *Temporary barriers such as industrial relations* (2, p17)

In terms of program performance, challenges still ahead for the RHCP include sustainability and scalability of redesign and innovation. Evaluation participants identified that although significant progress had been made, redesign was not yet embedded in the general organisation and functioning of their health services and that access to ongoing targeted funding in the short to medium term was needed. Furthermore, leadership of process improvement in health services identified important threats to ongoing sustainability of redesign work within organisations. These threats were associated with a lack of understanding of the principles or methodologies underpinning innovation and redesign.

The recognition and support of redesign methodologies such as process improvement was evident, however, the evaluation reported "varying levels of understanding of redesign methodologies and the level of investment required to develop sustainable organisational capability" (2, p2), particularly in the face of fiscal constraints. The report describes that "stakeholders were concerned that although in principle understanding of redesign methodology was generally embraced, it was not comprehensively understood by all senior managers or boards of governance. Under pressure to balance performance and financial demands, senior managers' desire for a "quick fix" threatened the support for building and disseminating capability that enables sustainable improvement in performance and strategy, the key elements to process improvement and redesign work. The lack of health

service management models that incorporated redesign or a similar process improvement methodology was also identified as a risk to ongoing support of process improvement and redesign work." (2, p27)

Scalability challenges were expressed in responses that highlighted that clinicians and non-clinicians did not understand that involvement in redesign had benefits (such as access, flow, safety and cost-efficiencies) on the quality of care it delivers; and that staff did not understand the organisational approach to improvement. Consequently the evaluators concluded that health services need to develop mechanisms to ensure staff members are aware of, and understand the organisation's quality improvement priorities.

Furthermore, the evaluation indicated that although competencies had developed in the health services with the introduction of the RHCP, organisations were still "operating at a relatively low level of capability in relation to the ability to identify data requirements to manage the business, the ability to extract and analyse data and identifying and prioritising improvement activities." (2, p20)

Other challenges to the success of redesign work included:

- Limited medical engagement with redesign work
- Difficulty in releasing staff to attend redesign and process improvement training. The report also noted that, "Stakeholders placed very high value on the opportunity to gain formal qualifications in redesign and other process improvement methodologies." (2, p28)

Other jurisdictions

While redesign and innovation are supported by several state governments in Australia, the NSW Agency of Clinical Innovation (ACI) (3) and the University of Tasmania (4) are highlighted here because they demonstrate application of similar programs albeit using very different structures of services and governance.

NSW

The ACI works with clinicians, consumers and managers within NSW public health services to design and promote better healthcare. It achieves this by applying redesign and evaluation methodology to review and improve the quality, effectiveness and efficiency of service redesign. It provides specialist advice on healthcare innovation to assist healthcare providers and consumers and develops a range of evidence-based healthcare improvement initiatives to benefit the NSW health system. The ACI also provides expertise and resources for consumers and healthcare providers to assist delivery of healthcare innovations into practice across metropolitan and rural regions.   It promotes knowledge sharing by

partnering with healthcare providers to support collaboration by way of an Innovation Exchange portal and works with healthcare providers to build capability in redesign and change management through the Centre for Healthcare Redesign (3).

Key areas that ACI also aims to address in terms of enhancing and sustaining innovation and improvement projects include:

- Advancing leadership capabilities by using an accelerated implementation methodology, which is a practical approach to effectively managing change by overcoming personal and cultural barriers.
- Enhancing organisational culture which enables innovation to occur by emphasising the need for project ownership from within organisations, promoting the alignment of organisational strategic plans with innovation projects and clearly prioritising this area of work within the health service.
- Developing expertise within health services around data management and analytics.

Tasmania

The Australian Government Department of Health has funded the University of Tasmania to undertake and facilitate a program of Clinical Redesign for Tasmania (4). The University heads a consortium of partners and facilitates collaboration between the Tasmanian Health Service, the Department of Health and Human Services, Primary Health Tasmania and the Australian Government Department of Health. The University of Tasmania is funded to undertake and facilitate a $12 million Clinical Redesign program. This program focuses on "improving the state's acute patient care, boosting hospital efficiency and delivering better satisfaction for health care professionals" (4). With a vision of sustainable improvement in the quality, effectiveness and safety of care delivery through education, evaluation, and strategic innovation, Health Services Innovation Tasmania offers a unique model of a state-based clinical redesign program coordinated and delivered by a university. Their mission is to embed evidence-based clinical redesign by building capacity for clinical redesign. This is done by enabling clinicians and health system managers to identify and drive changes, collaborating with health leaders across Tasmania to implement clinical redesign projects and by contributing to skills and knowledge transfer in clinical redesign (4).

The uniqueness of this model comes from the education and research components of the program, where health service innovation leads are provided with tertiary level education and qualifications in clinical redesign methodologies as part of the capability building process. Health service research is conducted within the health service ensuring a strong evidence base that acutely addresses clinical redesign challenges. While it is too early to measure the outcomes of the program, it is well placed to provide support and insight into a significant challenge in practice and policy in healthcare and other areas of public service innovation.

International

The United Kingdom National Institute for Health Research funded *Collaborations for Leadership in Applied Health Research and Care (*CLAHRC) in 2008 to address the problem of translation from research-based evidence to routine healthcare practice. "CLAHRCs are a time-limited funded initiative to form new service and research collaboratives in the English health system" (5). Nine applied research units across England have been established to undertake this work and have "an ambitious goal of creating a new, distributed model for the conduct and application of applied health research that links producers and users of research" (6, p8). An example is the greater Manchester CLAHRC which sets out to design and evaluate a large-scale implementation strategy that can manage and respond to local complexities of implementing research evidence into practice. They present a model that promotes "adopting an integrative, co-production approach to planning and evaluating the implementation of research into practice, drawing on an eclectic range of evidence sources." (7, p1). The Nottinghamshire, Derbyshire, Lincolnshire CLAHRC uses a model of organisational learning theory to address the social and situational barriers and enablers to implementation, and adopts a philosophy of co-production as its underlying premise (8). The South London CLAHRC is a research organisation made up of researchers, health professionals and NHS managers working at universities and NHS organisations. This collaboration investigates ways of making sure that healthcare professionals, including GPs, use the latest research to inform their clinical work, and that NHS managers and commissioners make it possible for them to do so. Support with undertaking implementation work is provided by an expert partner organisation and capability building in implementation is soon to be provided by the Kings Fund in the form of a Masters course in Implementation and Improvement Science (9).

Given the relatively recent establishment of the nine units and the articulation of their models for actions, outcomes are still developing. However, a recent evaluation of CLAHRCs (5) reported that there is a high degree of diversity with individual CLAHRC plans and that they are influenced by the local context and participants involved in the implementation of models of actions. The evaluators conclude that "strategies for change are not built independently from the context in which they are embedded" (5, p23)

Other organisations such as the US Institute of Healthcare Improvement (IHI) also exist to innovatively lead quality improvement in healthcare at scale. This organisation describes itself as "a recognized innovator, convener and generous leader, a trustworthy partner, and the first place to turn for expertise, help and encouragement for anyone, anywhere who wants to change health care profoundly for the better." (10) . The IHI provides resources and tools for capability building and quality improvement initiatives, based on key prinicples of change that includes a focus on capability building; person and family centred care; patient safety; quality, cost and value and a triple aim for populations (10).

Frameworks and drivers of change in health systems

Despite abundant evidence of the efficacy of affordable, life-saving interventions (11), there is limited evidence about how to deliver those interventions effectively in health service systems. A great deal of research has explored frameworks, enablers and barriers to implementation, innovation and improvement (12, 13). This section summarises key messages from the international literature.

Drivers of large scale change in complex systems

A review commissioned by the Sax Institute, an organisation dedicated to supporting the use of research in policies, programs and services to improve health and wellbeing, examined enablers and barriers to successful and sustainable large-scale change (12). They identified implementation frameworks that guide system change initiatives. The review specifically addressed the following questions (12, p5):

1. *What are the common and diverging features of implementation frameworks for scaling up initiatives to improve the quality of health service delivery across a complex system?*
2. *What key factors have been identified as critical enablers of, and barriers to, successful large-scale change?*
3. *To what extent does the successful implementation and sustainability of large-scale change depend on standardisation versus flexibility in implementation and post-implementation phases?*

While not a comprehensive systematic review, it nevertheless provides a useful and coherent overview of vast amounts of literature published about implementing changes at scale within healthcare systems. The authors wrote the review in response to the growing concern about ever increasing "gaps between evidence and practice, variable performance in the safety and quality of care, inequitable patterns of utilisation, consumer dissatisfaction and unsustainable cost increases [that] have contributed to the call for transformational change in healthcare systems." (12, p5)

The Sax Institute report provides in depth detail about: practical guidance in the form of implementation frameworks for scaling up initiatives; key factors; critical enablers and barriers to successful large-scale change; and the extent to which successful implementation and sustainability of large-scale change depends on standardisation versus flexibility in implementation and post-implementation phases.

In terms of implementation frameworks for scaling up, a literature review (14) was included in the Sax Institute report that described both common and diverging features of twenty-one implementation frameworks. This review distils the following drivers for large scale

change initiatives: Strategic planning; infrastructure; individual and group dynamics; organisational factors; system factors; process of change; performance measures; evaluation and alignment. Only seven of the implementation frameworks were applied to guide large-scale change initiatives to improve the quality of health service delivery and only one study of a large-scale change initiative investigated the initiative's impact with sufficient rigour to meet Cochrane quality standards. This reflects 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 initiative" (12, p10).

When considering the critical enablers and barriers to successful large-scale change, the Sax Institute report used the seven applied frameworks to articulate three components important for change: antecedents of change; process of change; and maintenance and evolution. The Sax Institute report describes the following (12, p8):

1. Antecedents of change require several elements that need to be in place prior to implementation of the change:
   • Leadership structures and management support
   • Microsystem capacity (training and resources for frontline staff)
   • Infrastructure
   • Alignment between initiative goals and organisational priorities
   • Systems perspective and broad engagement of stakeholders
   • Credibility of evidence-based initiative
2. Process of change factors to consider during the implementation phase:
   • Engagement and peer support
   • Attention to changing organisational culture
   • Approach to roll-out of initiative
   • Intervention fidelity with implementation flexibility
   • Equipping frontline staff with tools for problem solving
   • Monitoring and evaluation of progress
3. Maintenance and evolution of change initiatives:
   • Integration of the change into routine practice; moving beyond the implementation phase with the start-up resources and integrating the change so that it is sustained through routine service delivery is an important part of large-scale change.

Reflecting on standardisation versus flexibility of approaches to successful implementation of large-scale change, the Sax Institute review explains that "successful and sustainable

large-scale change is best achieved through a balance between top-down, strategic system-wide goal setting and bottom up learning and application"(12, p30). The review describes evidence that consistent strategies and initiatives, messaging, care practices, workflows, methods and resources promotes a shared sense of purpose for co-ordinated and successful large-scale change. Alternatively, a body of the evidence also expressed a cogent consensus that "externally generated solutions imposed on clinical and administrative staff, delivered with a strong fidelity message increases the likelihood of resistance to initiative uptake" (12, p31). This evidence emphasised that local contexts vary enormously, signifying that there was no one uniform solution with only one way to implement it to a setting. This is emphasised by the point that "multifaceted and complex change initiatives require local customisation and innovation to optimise their effectiveness" (12, p31). This is echoed in a Cochrane Review about tailored interventions and the need to address local enablers and barriers to achieve effective professional practice change (15).

In summary, the evidence presented in the Sax Institute review indicates that flexibility to accommodate contextual adaptation and implementation with a common set of principles that has strategic alignment of goals, specialised resources and operational support that capitalises on available resources can achieve system-level changes leading to healthcare improvements.

Large scale change in practice

A recent publication from the Health Foundation examines key success factors across the UK National Health Service (NHS) that have accelerated change across health services (13). The report was comprised of relevant literature, opinion from front line healthcare personnel and leaders in national bodies as well as the experience from their funded improvement programs. The findings of the report established that there was broad consensus on the components of positive change with seven success factors for change at any level of the health system which included (13, p6):

1. *Committed and respected leadership that engaged staff*
2. *A culture hospitable to, and supportive of, change*
3. *Management practices that ensured execution and implementation*
4. *Capabilities and skills to identify and solve problems*
5. *Data and analytics that measured and communicated impact*
6. *Resources and support for change*
7. *An enabling environment which supported and motivated change.*

Further analysis identified particular barriers to change in four areas: "recognition of the need to change, having the motivation to change, headspace to make change happen, and the capability to execute change." A corollary to this report was another Health Foundation

review (16) that included both international evidence and research undertaken in the UK NHS. The report highlighted the following potential barriers to improvement (16, p7):

- *Characteristics of the initiative itself*
- *Practical issues relating to implementing improvement*
- *Characteristics of the individuals involved*
- *Organisational factors*
- *Contextual/ environment factors*

What supports and drives change and innovation in healthcare?

Using the collective knowledge presented here in terms of examples of redesign programs, large scale drivers for change, evidence about frameworks of change including the barriers to change in health systems-a map has been created outlining the overlapping constructs and influencing factors. Change concepts are mapped against the literature and established change programs in Table 1 (Appendix A).

Of interest is noting where the examples of redesign programs (RHCP, NSW ACI and University of Tasmania) target their efforts and where they do not. Particularly, management policies and aspects of the intervention being introduced are not target concepts of these redesign programs. Given that the redesign programs are delivered externally to their partner health services, it is worthwhile highlighting this as an area that may require further development. External agencies may need to engage more deeply with their partner health services to understand the management issues as well as providing more direction with respect to the intervention being introduced, for example, a state wide guideline or a state based priority.

The Sax Institute review (12) and the Health Foundation Report (13) highlight very similar elements that impede change. Some of these factors have been experienced in the RHCP in Victoria and are faced by many health services in the NHS. Table 2 (Appendix B) highlights the similarities described by the two major reviews as well as indicating where the RHCP has also reported barriers, as explained in the DLA Piper evaluation.

Consideration of other approaches to achieving large scale change

Systems thinking

The process of implementing and evaluating changes at scale can be facilitated by using a systems thinking approach. Systems thinking seeks to understand the holistic and dynamic

nature of systems, the relationships that exist within them, the way resources are used and long term approaches to change. Willis et al (17) describe the key features that characterise the strengths of system thinking for large system transformation as:

- A focus on the value of relationships: understanding, fostering and supporting interdisciplinary and inter-organisational connections
- A long-term vision that seeks to understand the lasting changes associated with transformation (both those expected and unexpected)
- A recognition of context (local and historical) and the impact this has on transformative initiatives
- An emphasis on the practical rules that promote successful self-organising behaviour that will most likely lead to large system transformation
- An explicit effort to better identify, distil and use knowledge

The researchers emphasise that these 'features' are not steps to be followed but "represent broad, overlapping, and often non-linear principles, which may assist in framing ongoing approaches to system transformation. "…they provide a solid foundation and sensible starting point for helping to guide the development of coherent evidence-informed policy strategies with which to transform health systems and for building integrated research platforms that maximise comparative learning opportunities." (17, p125)

Interestingly, Willis et al (17) also propose critical conditions for large scale transformation that include: creating strategic realignment; recognising organisations as the drivers of change; working with professional cultures; creating enabling environments; increasing patient and public engagement; and supporting development and implementation of evidence informed policy. This overlaps with the literature described in Table 1, noting the key elements required for successful change and innovation are leadership, culture, supportive management and infrastructure, and stakeholder engagement.

Institutional entrepreneurship
The concept of 'institutional entrepreneurship' refers to actors (organisations, groups of organisations, individuals or groups of individuals) 'who leverage resources to create new or transform existing institutions' (18, p84). Such actors initiate 'divergent changes', the breaking away from existing institutional models operating within business/service models of hospitals and participating actively to drive change through the mobilisation of required resources. This concept is highly relevant to the central problem of scale-up of discrete innovations to a system level as it provides a framework for multi-level analysis from an individual's actions through to individual organisations to services at the system level (5). Understanding how actors or clinical leaders can be engaged as 'entrepreneurs' in innovation and redesign projects and how 'entrepreneurship' can become an embedded

feature of healthcare organisations themselves, provides insight into making large scale and sustained change a reality.

Insights to enable policy development

Drawing together the literature and healthcare experiences, there are critical actions to consider in terms of policy development for hospital redesign and innovation.

State government based delivery of health redesign programs provide supportive and valuable expertise to health services. The methodologies are similar and encompass comparable services and resources. The principles behind the programs are similar and include elements of building capability, establishing strong leadership, engaging all levels of the health service in the change process and the need to manage data to monitor change and measure quality improvement in the organisation and in healthcare outcomes. Of particular interest is that the Victorian Department of Health and Human Services (1) provides funds to appoint an improvement leader within the health service as well as providing resources and expertise from within the government department. The University of Tasmania (4) as an academic institution provides support for capability building as part of formal tertiary study, which could lead to better trained improvement leaders in organisations who develop competence to achieve large scale change.

Considerable evidence describes overlapping aspects of successful change and redesign in hospitals. These include but are not limited to: leadership; capability to achieve change; use of data to monitor and evaluate change; coherent and well communicated alignment to organisation strategic plans; development of an organisational culture that is ready for change with staff engagement; and ensuring integration of change into routine practice.

Systems thinking and institutional entrepreneurship offer approaches to change and redesign that take into consideration the networks and relationships of individuals, teams and clinical disciplines working within it, the systems, resources and processes operating, and the cultural context of the organisation.

Conclusion

Given the established knowledge about effective, sustainable redesign and innovation in healthcare delivery, health care leaders, policy makers and developers now need to consider what can be done to support innovation in healthcare. While these groups may

share overlapping roles at different times, there are significant and consistent messages that emerge throughout the literature.

For health service leaders

- An organisational strategic vision around redesign and innovation, alongside the establishment of a stable leadership team who share the vision and who inspire their staff members to align improvement strategies to this vision. Further to this, the realisation that in order to achieve this vision, an investment in capability building is essential to achieve transformational change.
- Investment in the engagement of frontline staff. Focus on building their capabilities and confidence to identify the need for change and then to undertake the required steps (in alignment with their organisation's strategic vision and outside of everyday operations).
- Recognition of the power of data analytics in monitoring and evaluating change in healthcare. Support for the development of infrastructure and systems that enable analysis of change across the health system.
- Promotion of the use of innovation from non-health sectors; establish and promote partnerships between healthcare, industry and academia.

For policy makers

- Commitment to a long term investment with resources that enable health services to continue to undertake and sustain innovation in health care delivery ensuring the provision of safe, high quality and timely care. This commitment needs to recognise that transformational change requires time, perseverance and scope to innovate (which will include failures and successes). A move from using "a narrow view based on short-term performance to include the conditions for successful change and resilience" (13) to an approach that also considers a long term view, whole system method.
- Consideration of policy funding models that pool strands of funding and reward health services contingent upon performance in innovation. Setting up a system that judiciously distributes funding to health services that make innovation an enterprise-wide priority and have a record of achievement in transformational change and innovation in their organisations (19).

Key readings

Atkinson J, Patel C, Wilson A, et al. Drivers of large-scale change in complex health systems: an Evidence Check rapid review brokered by the Sax Institute for the NSW Agency for Clinical Innovation, 2013.

Allcock C, Dormon F, Taunt R and Dixen J Constructive comfort: accelerating change in the NHS: Policy Analysis. Health Foundation 2015.

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19. Health Foundation and the King's Fund. *Making change possible: a Transformation Fund for the NHS.* 2015

Table 1: Map of change concepts: explanations from the literature and illustrations from established change programs

Change concepts	NHS constructs for change Health Foundation (13)	Implementation Frameworks Constructs Sax Institute Review (12)	Target concepts of large scale change programs		
			RHCP (1)	NSW ACI (3)	Uni of Tas (4)
Leadership	Committed and respected leadership engaging the staff with a clear vision for change. Leadership needs to be collective and distributed throughout different levels of an organisation, with leaders facilitating collaboration and sparking enthusiasm	• Leadership actions to support change efforts: ▪ Engaging staff ▪ Articulating the vision to the workforce ▪ Identifying the target population ▪ Making the work a priority ▪ Committing time and resources to achieve objectives ▪ Aligning organisational goals Champions/Change agents: A positive influence, who model new behaviour and influence thinking about the innovation	Promotes boards, senior managers and clinicians buy-in across health service participants	Promotes: • alignment of organisational strategic plans • prioritisation of redesign work within the health service	Promotes strategic innovation within health services

Change concepts	NHS constructs for change Health Foundation (13)	Implementation Frameworks Constructs Sax Institute Review (12)	Target concepts of large scale change programs		
			RHCP (1)	NSW ACI (3)	Uni of Tas (4)
Culture	A culture hospitable to, and supportive of, change	Individuals engagement with innovation	Provides a government-based comprehensive and integrated process improvement program with health services across Victoria.	Enhance organisational culture	
Management policies	Management practices that ensure execution and implementation	• Strategic planning • Large-scale initiatives in healthcare may require a more diverse and flexible skill set			
Data and analytics	Data and analytics that measure and communicate impact	• Data infrastructure • Measurement and feedback	Undertakes comprehensive and consultative evaluation of the program and promotes this through preferred redesign methodology	Promotes knowledge sharing by partnering with healthcare providers Develops expertise within health services around data management and analytics	

Change concepts	NHS constructs for change	Implementation Frameworks Constructs	Target concepts of large scale change programs		
	Health Foundation (13)	Sax Institute Review (12)	RHCP (1)	NSW ACI (3)	Uni of Tas (4)

Capabilities and skills	Capabilities and skills to identify and solve problems	• Capability and capacity development:
		  • Provide access to appropriate skills training
		  • Create and embed specific roles with a remit for advancing the modernisation agenda
		  • Recognise the key role of middle managers in executing the vision and ensuring that frontline views are heard
		
		• Establish continuous learning networks to maximise workforce improvement capability
			Aims to enhance health service redesign leads' capabilities	Builds capability in redesign, project management and change management	Embeds capacity and capability development within academic structures

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Change concepts	NHS constructs for change Health Foundation (13)	Implementation Frameworks Constructs Sax Institute Review (12)	Target concepts of large scale change programs		
			RHCP (1)	NSW ACI (3)	Uni of Tas (4)
Resources and support	Resources and support to do the work of transformation	Resources, include personnel, project management, time, funding, and investment in infrastructure	Financial support for redesign leads in health services. Provision of: • expert internal and external consultancy / support services • educational and mentoring approaches • return-on-investment tool	Provision of: specialist advice on healthcare innovation implementation expertise and resources for consumers and healthcare providers	
An enabling environment	An enabling environment which support and drives change	Organisational and system capability and capacity to introduce and sustain change			

Change concepts	NHS constructs for change Health Foundation (13)	Implementation Frameworks Constructs Sax Institute Review (12)	Target concepts of large scale change programs		
			RHCP (1)	NSW ACI (3)	Uni of Tas (4)
Change process		• Large scale efforts must provide explicit guidance to organizations on how, and not just what, to change. • Information technology (IT) is an accelerator of large-scale spread • Three key dimensions: 1. Natural diffusion versus active dissemination 2. Underlying change theory 3. Spread mechanism	Promotion of redesign methodology and tools	Promotion of redesign and evaluation methodology	Promotes evaluation processes
Change intervention / initiative		Consideration of the intervention to be introduced "Simplicity in large-scale interventions is key because of the increased scope and the risk that complex interventions" (14, p4)			

Table 2: Challenges to Change

Factors influencing the stages of change	Findings from the literature		Example from the field
	Sax Institute Review (12)	Health Foundation Report 24 (16)	RHCP (1)
Designing Change			
Initiative/intervention to be introduced	Credibility of evidence-based initiative	Design and usability of specific improvements (Not fit for purpose)	
Individuals involved	Microsystem capacity to ensure frontline staff have sufficient training and resources to implement initiatives that are effective and sustainable.	• Lack of Confidence • Attitudes and resistance • Lack of skills and competence	Difficulty in releasing staff to attend redesign and process improvement training so as to build capability within the organisation.
Leadership	Leadership structures and management support	• Lack of strong leadership and clear shared vision for improvement, including at board level • Hierarchical leadership structure rather than transformational or engaging leadership • Not ensuring leadership and autonomy for improvement at multiple organisational level • Lack of accountability for improvement	Need to identifying and prioritising improvement activities.

Factors influencing the stages of change	Findings from the literature		Example from the field
	Sax Institute Review (12)	Health Foundation Report 24 (16)	RHCP (1)
Organisational	• Adequate human resources • Adequate communication and data infrastructure • Alignment between initiative goals and organisational priorities	• Lack of culture of improvement • Insufficient teamwork and collaboration across disciplines • Organisational instability • Limited management Skills • Adequate use of information and data to evaluate change • Limitations to IT infrastructure • Management of time allocations required • Limited financial resources	• Cultural readiness • Readiness of the service to be challenged by new ways of thinking and working • Limits to resign work being embedded in the general organisation and functioning
Contextual	Systems perspective and broad engagement of stakeholders	• Policy/NHS culture/regulation • Stability of NHS system/ • Reconfiguration • Incentives • Funding streams	Temporary barriers such as industrial relations
Delivery Change			
Method of change	Approach to roll-out of initiative		
Initiative/intervention to be introduced	Intervention fidelity with implementation flexibility	• Usability of equipment/ tools • Fit with existing practices	
Individuals involved		• Attitudes/resistance • Role demarcation within a discipline	Limited medical engagement with redesign work

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Factors influencing the stages of change	Findings from the literature		Example from the field
	Sax Institute Review (12)	Health Foundation Report 24 (16)	RHCP (1)
Organisational	Attention to changing organisational culture	• Culture • Leadership • Use of information and data to support change • Management of time allocations required • Financial resources	
Capability	Equipping frontline staff with tools for problem solving	• Lack of knowledge and skills (individuals and management levels)	Difficulty in releasing staff to attend redesign and process improvement training so as to build capability within the organisation.
Monitoring systems	Monitoring and evaluation of progress	• Use of information and data to support change • IT infrastructure	Capability to extract and analyse data
Context	Engagement and peer support	• Stability of NHS system/ • Reconfiguration - Conflicting priorities, perverse incentives and guidelines from regulatory authorities • Partnership working - Lack of relationships between organisations or with policy makers and commissioners • Incentives and funding streams - lack of strong policy context or guidelines for improvement	
Maintaining Change			

Factors influencing the stages of change	Findings from the literature		Example from the field
	Sax Institute Review (12)	Health Foundation Report 24 (16)	RHCP (1)
Initiative/intervention to be introduced		Maintaining currency of the initiative as the evidence based is updated.	
Organisational	Integration of the change into routine practice. Encouraging institutionalisation of the change into structures and process.		• Challenges with sustainability and scalability. • Lack of health service management models that incorporated redesign
Context		Policy/NHS culture/regulation Partnership working	Ongoing pressure to balance performance and financial demands