



Hwb Gwyddorau Bywyd Cymru
Life Sciences Hub Wales

Achieving Innovation in Health and Social Care: a narrative review

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Foreword

Professor Trisha Greenhalgh, Professor of Primary Care at the University of Oxford

This report makes a powerful case for innovation, which we might pragmatically define as ideas, practices, technologies or ways of working (and quite possibly, combinations of all those things) that are new to the people adopting them. They also have the potential for improving aspects of care delivery, service efficiency, patient outcomes and staff wellbeing.

If you count my formative years as a clinical student and more recently as a full-time health services researcher, I have been working in the NHS for over 40 years. And for as long as I can remember, the NHS has faced challenges with innovation. The problem is, by and large, *not* that nobody innovates. On the contrary, the NHS has an impressive history of coming up with innovations. The problem is that those innovations – even the ones that are quickly shown as useful, affordable and greatly valued by patients and staff – don't catch on. They aren't widely adopted by staff, or they are adopted and soon abandoned. They may also be taken up in a small part of the service, such as a single clinic or ward (and perhaps showcased as a demonstration project), but don't spread far, or even at all, beyond the initial site. Innovations also might be taken up for a while but can't be scaled up across the service or sustained over time. This is because the underlying infrastructure – be it bandwidth, IT support, physical space or hands on deck – can't support them.

These problems: non-adoption and abandonment by individuals, and failure of scale-up, spread and sustainability at organisational level, are so pervasive and intractable that my team developed a framework known as the NASSS to study them. This is covered in more detail on page 19.

Since the report is a comprehensive guide on how to *support* innovation, I thought I'd use this foreword to tell you how to *stifle* innovation. I began with the 'rules for stifling innovation' made famous by Professor Rosabeth Moss Kanter, a US business and management academic, and added a few of my own.

Rules for stifling innovation

Adapted and extended from (Kanter, 2013):

1. Be suspicious of any new idea from below — because it's new, and because it's from below. People right at the top of the organisation will know far better than front-line staff what's most needed and whether ideas will work on the ground. That's why they're at the top.
2. To promote a culture of success, punish failure. Humiliate people publicly if they try something out and then fail to meet expectations. This will stop people taking unnecessary risks (which could cost you money).

3. Keep stories of past failure circulating. If an idea didn't work the last time it was tried, a similar idea is bound to fail – and people need to know.
4. Whatever the problem, technology is probably the answer. Start with technology. Focus on technology. Put most of your funding into technology development (you won't need much for altering work processes to accommodate it or training people to use it). Add as many bells and whistles to the technology as you can think of. If it's state-of-the-art, a technology will drive innovation once it's ready.
5. Plan every aspect of a project in detail, and follow that plan rigidly. Count everything that can be counted, as often as possible. Identify specific metrics of success at the outset and stick to those metrics whatever happens. Discourage people from exceeding their stipulated targets (they should be 'on track'). Insist that all procedures be followed.
6. If you control the purse-strings for innovation, be mean. To get funding for their idea, applicants should justify every budget line meticulously. Sweep any surplus spend into your central account, and eliminate any slack – otherwise people will be wasteful.
7. Keep people busy. The devil makes work for idle hands, so you need to ensure that staff don't have time to get up to mischief.
8. Discourage informal discussions among staff about any innovation: top management's version of what's happening and why is all they need.
9. Make sure that data about the progress of a project are not shared freely (you don't want those data to fall into the wrong hands). Stipulate that requests for information must be fully justified, in writing.
10. When things go wrong, blame staff lower down the hierarchy. It was probably their fault due to weak skills and poor work ethic. Complain frequently about the limited talent pool these days. This will ensure that such staff know their place and don't step out of line.
11. Don't let people bring in ideas from other organisations. If a staff member suggests something that worked well in their previous job, remind them that that was there and this is here. Remember, horizon-scanning is for dreamers.
12. Ensure that strategies and plans are discussed only by a small circle of trusted advisors. After they are signed off, announce big decisions as fully fledged plans. People will be grateful that you didn't trouble them up till now.

These are daft rules, of course. But they're not just a joke - they are each based on sound evidence for what *really doesn't work* when trying to introduce and spread innovation in complex service organisations.

In this report, the authors offer you much of that evidence base. They explain why it's important to:

- Listen to front-line staff.

- Encourage rather than suppress individual creativity.
- Reward rather than punish risk taking.
- Consult and involve staff from an early stage – and make space and time for their concerns and deliberations.
- Create slack for innovation and trust staff to use it.
- Take a systemic rather than a deterministic approach to technology.
- Use participatory co-design methods to shape both the technology and the practices and processes of how it is used.
- Foster a learning culture rather than a blame culture.
- Take an emergent and adaptive approach to change rather than a rigid and mechanistic one.
- Evaluate projects in ways that are transparent and can feed into further improvement.
- Learn from up-and-running examples of good practice elsewhere.

So, unless you actually want to stifle innovation in your organisation, please read this important report and follow the *opposite* of the 12 rules I suggested above.

Executive summary

The international quest for greater innovation in health and social care is long standing. Key stakeholders are continuously challenged by the inertia and complexity of the status quo, limited space for trying new things and difficulties with spreading good ideas. This narrative review of innovation in health and social care examines these problems in order to find evidence-based answers and solutions that are appropriate to the current context of Wales. The resulting document summarises and simplifies best practices and key concepts from a wealth of relevant literature – delivering an accessible and digestible document to help guide stakeholders working across industry and health and social care in Wales.

The information is presented in a logical progression across 14 key themes. It first highlights how delivering successful innovation and overcoming these challenges requires a focus on the process as well as the products involved. The review also showcases results from efforts to improve the value of outcomes, especially those seen from a service users' viewpoint. Another key topic discussed is the mechanisms that underpin how innovations diffuse. While some are passive if the innovation is simple and with obvious appeal, it is often deceptively hard and magic bullet solutions are rare. This is because our health and social care systems vary from organisation to organisation; sometimes for no apparent reason, but often because circumstances are different. Attempts to spread implementation therefore require simplification of the required change to make it less context specific, plus sustained effort to adapt and adopt. The review also highlights the problems of employing a heavy-handed approach without such customisation, and how this can be wasteful and counterproductive.

Implementing a range of best practices can help organisations to improve their innovation abilities. The characteristics that enable successful organisations to sustain and develop excellent services through effective management, improvement and innovation are well understood. Each of these three elements are essential ingredients of an organisation's strategy to ensure managerial grip, attention to the quality of what is delivered and an ability to respond to changing needs. The review found several clear descriptions of what this looks like in practice and an excellent evidence-based tool that allows organisations to assess their ability to manage service quality and plan bespoke development strategies.

Finally, while much of the review focuses on the nature of innovation and the service organisations that they are based in, a key finding of the paper was the importance of utilising networks built on shared objectives and uniting people as powerful innovation drivers. These networks should not be

hierarchical but grounded in socialisation and learning. The aim of these is to allow people to see different aspects of a problem, understand new skills and approaches, share solutions and develop new propositions. The implication for policy makers and those who control resources is that efforts to create flat, multi-agency networks of people are more productive than hierarchical attempts to drive spread.

The key points of the study are:

No.	Key theme
1.	<p data-bbox="272 665 628 703">What is innovation?</p> <ul data-bbox="320 730 1326 1016" style="list-style-type: none"><li data-bbox="320 730 1326 864">• Innovation in healthcare has been much studied and reviewed. There is good evidence about what does and what doesn't work in the encouragement of innovation.<li data-bbox="320 887 1326 1016">• It is important to know what we mean by innovation. New products do not guarantee that processes will improve; better processes do not always rely on new products.
2.	<p data-bbox="272 1039 539 1077">Why innovate?</p> <ul data-bbox="320 1104 1318 1339" style="list-style-type: none"><li data-bbox="320 1104 1318 1189">• The Parliamentary Review concluded that Welsh Health and Social Care services had to change in order to be fit for the present and future.<li data-bbox="320 1211 1318 1339">• The Quadruple Aim is the system for determining health and social care outcomes preferred by the Parliamentary Review. Innovations should be judged according to their contribution to these outcomes.
3.	<p data-bbox="272 1364 1137 1402">Why do health services find innovation difficult?</p> <ul data-bbox="320 1429 1299 1715" style="list-style-type: none"><li data-bbox="320 1429 1043 1467">• The NHS has a systematic problem with innovation.<li data-bbox="320 1489 1230 1527">• Approaches to innovation are too top-down and product focussed.<li data-bbox="320 1550 1299 1632">• Innovation is stifled by risk aversion, focus on performance and targets, short-termism and lack of delegation.<li data-bbox="320 1655 1254 1715">• Progress is less about the creation of ideas than addressing system change.

4.	<p>An evidence-based approach</p> <ul style="list-style-type: none"> • Innovation is not a passing fad but could become one if it is not understood and addressed as an integral part of service policy and delivery. • Innovation in healthcare has been much studied and reviewed. There is good, maturing evidence supporting the development of innovation in healthcare and what does and doesn't work.
5.	<p>The nature of 'the system'</p> <ul style="list-style-type: none"> • Care systems are complex and adaptive. • Clarity about the context of this system helps us to select the method of change required and how we evaluate its impact.
6.	<p>The nature of innovations</p> <ul style="list-style-type: none"> • The question: "How can an innovation be made more spreadable, more sustainable?" has been much studied over the last 20 years. • Put simply, any involved parties must be convinced (i.e. not just told), that the innovation needs to be as simple and adaptable as possible. • Obviously, there may be a trade-off between simplifying the innovation and delivering real benefit.
7.	<p>Technology</p> <ul style="list-style-type: none"> • Technology is a distinct case of innovation, with implementation usually requiring product and process change to work hand in hand. The apparent attractions of technological innovation and real complexity of implementation have led to significant resource waste. • Fragmentation and lack of systems interoperability has limited development of e-health systems in the NHS

<p>8.</p>	<p>What drives innovation? Value and the Quadruple Aim</p> <ul style="list-style-type: none"> • Measurement and the use of system data are central to determining priorities and performance in healthcare. Outcome measures, especially those concerned with patient experience, should be available to clinical teams to help them to understand the value of services and to test innovations. The relative lack of such information, coupled with the current predominance of performance measures, represents a lost opportunity to engage clinical teams in driving change. • There is overlap and complementarity between the Quadruple Aim promoted by the Parliamentary Review and value-based healthcare.
<p>9.</p>	<p>Spread and scale</p> <ul style="list-style-type: none"> • Notions of magic bullet solutions and rapid implementation may be attractive, but they are naive. • An idea that works in one place may not deliver benefit elsewhere. • There is no universal formula for planning and managing spread efforts.
<p>10.</p>	<p>Achieving large-scale change</p> <ul style="list-style-type: none"> • Spread at scale, especially of complex change where local adaptation is required, requires sophisticated, multifaceted support. Timescales can be long and evaluation difficult. • The Breakthrough Collaborative model has been widely applied in healthcare and proven highly adaptable to different subjects and contexts.
<p>11.</p>	<p>Organisational context</p> <ul style="list-style-type: none"> • Organisational context is at least as important as ideas creation in spreading innovation. • Several simple guides and reviews are available that describe the features of successful innovative cultures. Leadership priority, interdisciplinary networks, learning, useful data and information, decentralisation, trust, spare capacity are shared features. • QUASER is a sophisticated, evidence-based resource to support healthcare organisations to assess their capacity for improvement (innovation is seen as part of improvement behaviour) and plan their development.

<p>12.</p>	<p>Leadership and culture</p> <ul style="list-style-type: none"> • Leadership and culture impact directly on the quality of services and care. • The characteristics of successful leadership for improvement and innovation are well described and demonstrated through interventional study. • Efforts to spread and adopt interventions within organisations need to embrace the complementary roles of managers and professionals in managing services and driving change.
<p>13.</p>	<p>Networks and collaboration</p> <ul style="list-style-type: none"> • There are significant opportunities for sharing expertise and learning through better networking involving services, academia, the life sciences sector and other agencies. • Successful approaches are non-hierarchical, build capacity/capability and develop alignment.
<p>14.</p>	<p>How will we know when we are innovative? Measurement and regulation</p> <ul style="list-style-type: none"> • Outcome data (the Quadruple Aim) are the measures that should guide change. • Regulators have an important role, but their work should be proportionate and support transformation. This requires more focus on good measures of patient experience.

The review also offers an important insight into the challenges and opportunities specific to innovation in social care. Dr Juliette Malley, Assistant Professorial Research Fellow from the Care Policy and Evaluation Centre (CPEC) in the London School of Economics, has provided an excellent appraisal of the similarities and differences that this research has for those wishing to innovate specifically within social care. This can be found on page 36.

Introduction

Cari-Anne Quinn, CEO of Life Sciences Hub Wales

Innovators across industry have a critical role to play in supporting the health and social care services in Wales being fit for the future through the Quadruple Aim (Welsh Government 2018), and the strong innovation strategic landscape invested in by the Health and Social Care Directorate General, at Welsh Government. For this, a key driver is maximising the value of our health and social care through innovation, with a fully integrated, connected landscape for all major stakeholders essential. The strategic mission of Life Sciences Hub Wales aligns with these goals. We aim to accelerate the development and adoption of innovative solutions through facilitating collaboration between industry and health and social care – providing relevant parties with access to the best resources to meet this challenge.

We want this to be an accessible resource to help inform and drive engagement between all parties through simplifying and summarising key concepts and best practices that play an integral role in innovation. Moreover, it has been specifically tailored to provide insight into the health and social care innovation landscape within Wales, offering relevant information for stakeholders operating within this exciting field. It collates important areas of definition and purpose, describing the characteristics of successful innovations, crystallising the key organisational and structural issues that determine such success, and increasing mutual understanding between health and social care and industry.

Significant investment into the innovation landscape by Welsh Government to deliver the achievement of goals set out in A Healthier Wales (2018), includes the establishment of Research, Innovation and Improvement Hubs in each of the Regional Public Board areas, (RPBs), continued investment into SBRI and the Bevan Commission, and the Life Sciences Hub Wales. Health Boards have invested in Innovation Leads and a wide range of transformation projects. This innovation landscape is essential to support the activity and culture change required to activate essential innovative practice.

It is our hope that this achieving innovation resource will inform and inspire industry, health and social care professionals to convene and collaborate on the challenges facing us now, and in the future. This will help us to develop and implement world-class innovative solutions, which improve the lives, health and wellbeing of the citizens of Wales.

A narrative literature review approach was selected to ensure that only relevant work within this field was highlighted, providing an up-to-date toolkit with immediate applications. Between March and August 2020, relevant academic and professional literature was searched and reviewed, with the

search method described in the Appendix. The study evaluated research relating to innovation in healthcare in the UK, Europe, Australia and Canada (countries with broadly similar systems and economies to Wales). The search was limited to 2004 and beyond (the date of the systematic review of the diffusion of innovations by Greenhalgh et al) and to English language publications. The search terms focussed on systems of working, problems and solutions, and evidence-based tools which were available for use: in other words, transferable practice. A small number of key papers beyond this search (from the US for example) were added from wider reading. The intention is to maintain and continuously update the resource, to ensure it remains useful and relevant to all readers, which will be fully accessible through the Life Sciences Hub Wales website.

The basic questions that drove these terms of the literature review were centred around implementing evidence-based innovation – a key driver for making Wales the place of choice for health, care and wellbeing innovation. They focussed on:

- What is innovation?
- How do we know if we are being innovative?
- What is inhibiting innovation?
- What evidence-based solutions are there?

The report follows a logical progression through defining innovation, understanding why it is important and why health services have particularly found it difficult. The review also covers how generation, spread and adaptation of innovation are affected by the nature of the innovation, the strategy of spread and the characteristics of the organisations involved. It also covers networks, underlining the importance of interaction between people in compensating for silos and misalignment between organisations. The relevant evidence base offers many approaches which, when taken together, describe how people and organisations can work to accelerate the development and adoption of innovative solutions for better health and wellbeing.

The resulting report is both encouraging and challenging. It is encouraging because innovation has been studied for multiple decades and there are many good guides and solutions available. The challenge comes from complexity. Like most healthcare problems, the solutions require consistent approaches and strong coordination.

Narrative review key themes

No.	Key theme
1.	<p>What is innovation?</p> <ul style="list-style-type: none"> It is important to know what we mean by innovation. New products do not guarantee that processes will improve; better processes do not always rely on new products.

It is important to frame a concept in order to firstly fully understand, but also ensure that all stakeholders are consistent with their definition. In 2004, Greenhalgh et al. published an authoritative literature review on the spread of innovation (Greenhalgh, Robert et al. 2004). They defined an innovation as follows:

An innovation in health service delivery and organisation is a set of behaviours, routines, and ways of working, along with any associated administrative systems and technologies which are:

- perceived as new by a proportion of key stakeholders,*
- linked to the provision or support of healthcare,*
- discontinuous with previous practice,*
- directed at improving health outcomes, administrative efficiency, cost-effectiveness, or the user experience, and*
- implemented by means of planned and coordinated action by individuals, teams or organisations.*

Such innovations may or may not be associated with a new health technology.

There are more general definitions and slight variants on the above (Bessant 2014, Shaver 2020). However, given the status of the 2004 review and its relevance to the field of health and social care in the UK, the above definition will be adopted here.

To further build on this, Meeus and Edquist (2006) distinguished between different types of innovation. This is particularly important for product innovation and process innovation.

Product innovations are new or better products (or product varieties) being produced and sold; it is a question of what is produced. They include new material goods as well as new intangible services.

Process innovations are new ways of producing goods and services; it is a matter of how existing products are produced. They may be techno-logical or organizational.

The importance of this differentiation has been exemplified through the Covid-19 crisis. Since the start of the pandemic, many have adopted web-based conference tools. Their original development and subsequent improvement were product innovations. Actual uptake and widespread use have additionally required process innovation. This is because lockdowns and social isolation rules have forced people across the world to change how they work and communicate. In other words, they have driven a process innovation as we now meet online. The distinction is important because solving a deficiency in one does not necessarily lead to change in the other. If the NHS tried to solve its innovation problems simply by creating more ideas or novel products, there would be little benefit. Primarily, it is the systems that must change.

A further category, management innovations, refers to innovation of management practice, process, structure, or technique aimed at furthering organisational goals (Colldén and Hellström 2018). While not the primary focus of this review, it is likely that health and social care organisations will need new management processes if they are to change their response to new products and novel ways of delivering services.

Finally, innovation and improvement are closely related and require similar conditions to thrive (Horton, Illingworth et al. 2018). A Health Foundation report distinguished between the two as follows:

Improvement, including formal quality improvement (QI) using a structured method, is often used to describe incremental change within an existing service model, whereas innovation can be used to mean disruptive change that creates a new service model (Horton, Illingworth et al. 2018).

Quality improvement is an essential activity to ensure that information and learning are continuously applied for processes to become increasingly excellent in achieving their goal. But even the original advocates of quality improvement accepted that there were times when processes should be changed, as the current process was no longer the best available. Systems that lack the capacity to innovate become out-dated and, in commerce, lose competitive advantage. Thus, a clear view of the difference between these terms and the importance of both is vital for achieving excellence.

No.	Key theme
2.	<p data-bbox="272 264 539 300">Why innovate?</p> <ul data-bbox="320 309 1321 546" style="list-style-type: none"><li data-bbox="320 309 1321 389">• The Parliamentary Review concluded that Welsh Health and Social Care services had to change in order to be fit for the present and future.<li data-bbox="320 407 1321 546">• The Quadruple Aim is the system for determining health and social care outcomes preferred by the Parliamentary Review. Innovations should be judged according to their contribution to these outcomes.

It is important to understand the drivers behind the need to innovate within health and social care in Wales. The central rationale was set out in the 2018 Parliamentary Review (Welsh Government 2018). It stated that the current system is not fit for the future, with new models of seamless care required. The report said:

This will come about through the power of service users and communities to press for change, the ability of the workforce to test and learn what works and to accelerate change, new technology and innovation and the ability of leaders to take bold decisions.

The report asserted that maximising the benefits of innovation had a critical role play to in increase the value achieved from health and social care in Wales. This formed one of the central recommendations of the review:

Recommendation 7: Harness innovation and accelerate technology and infrastructure developments. Maximise the benefits of technology and innovation to pursue the Quadruple Aim and deliver more effective and efficient care. This needs the right culture, behaviours and leadership to embrace innovation, embed collaboration and support prudent risk-taking.

In summary, the ultimate aim of healthcare innovation is to improve outcomes and reduce inconsistencies, error and harm – all of which are pervasive features of healthcare (American Health Consultants 2011).

No.	Key theme
3.	<p>Why do health services find innovation difficult?</p> <ul style="list-style-type: none"> • The NHS has a systematic problem with innovation. • Approaches to innovation are too top-down and product focussed. • Innovation is stifled by risk aversion, focus on performance and targets, short-termism and lack of delegation. • Progress is less about the creation of ideas than addressing system change.

This question was addressed in a report from the Nuffield Trust in 2017 (Castle-Clarke, Edwards et al. 2017). The authors listed five issues that they say are commonly overlooked, which focus on the varying approaches to innovation, costings and the relevant stakeholders and individuals:

1. *There is an overly supply-driven and top-down approach to innovation. Shifts towards the co-production of solutions between clinicians and industry are encouraging, but initiatives such as the Innovation and Technology Tariff (while useful in some regards) do little to move the NHS away from a supply-driven approach, which starts with products first.*
2. *Identifying the most pressing problems and looking for solutions is rarely built into anyone's day job – least of all clinicians. This is further compounded by a lack of clarity around how far chief executives should be involved in adopting innovation. Chief innovation officers with board oversight of the innovation process could make a fundamental difference.*
3. *Evidence generation (and the bodies that support it such as NIHR) are often not conducive to assessing real-world innovations in a timely way – particularly where there is a focus on cost effectiveness (rather than cost benefit).*
4. *Too often procurement departments and organisations as a whole look to innovations to produce short-term cash-releasing savings, rather than identifying where innovations can transform care pathways and lead to more efficient services. This requires adaptive leadership that can work across boundaries.*
5. *There is a tension between the policy push towards large-scale organisations (such as accountable care systems) and the capacity of SMEs to fulfil the needs of large contracts.*

The Kings Fund also reported on this topic in 2018, looking at the work of the Academic Health Science Networks in England (Collins 2018). They studied eight examples of successful

entrepreneurship that were often faced with difficulties in spread. Their report drew this comment online from John Mortimer, a consultant with Impro Consulting (Mortimer 2018). He detailed the difficulties in transforming services within the NHS compared to local authorities:

I have much sympathy with the author, about a topic that cannot be the most exciting in the realms of the NHS at present... I have been working successfully transforming services in local authorities for 13 years and trying to do the same in the NHS. I am happy to do more in LAs, but I found the experience in the NHS as being almost impossible. And this is why.

In any organisation, the key to innovation is not in getting a group to come up with innovative approaches – that's easy. When those approaches are implemented, there are very good reasons in the system that act as barriers against that initiative. The key is that those reasons can be changed in LAs, but in the NHS they cannot. Why?

- 1. The current poor practice is a result of how leaders and managers have set up the current system. The first thing to do is to identify, recognise and accept this.*
- 2. The basis for innovative approaches must be the transformation of that which exists. Therefore, taking point 1, those root causes of why the system works as it does have to be replaced. An example here is KPIs and the RAG report. They are one of the most divisive and damaging parts of the system and its behaviour. And they can't be replaced unless leaders go through point 1.*
- 3. The whole design of the NHS rests on functionalisation. it is how it is structured. Many innovations show that by working together, we can overcome. Well, if the NHS was not so functionalised, the innovation would be normal practice. So when they try and implement the innovation, the budget restraints, and the initiatives and the target reporting prevent the innovation from succeeding.*
- 4. Based on the above, when an innovation is implemented, it has to sit in a current of behaviours and characteristics of managing, that is like sitting in a strong current battling against the flow. Then ultimately, those working with the innovation cannot sustain the push against the current anymore. An example of this is referrals. Referrals and departmental assessments are one of the most functional and greatest barriers to working together. Everything about them forces in delay, waste and a mindset that works against integrated working. Yet, I know of no initiative that succeeds in replacing referrals and functional assessments.*

The answer is to allow the underlying system to change, looking at the system systemically, so that innovations can be implemented, and they go with the current - so to speak. This

means releasing the shackles of functional design, units of work, and measures, and allow leaders to design workflows that mirror how the work flows.... And no it's not rocket science, and it's not complex to do.

The Policy Foundation reported an additional difficulty, detailing that risk aversion and preoccupation with targets and budgets across the NHS meant that there was little priority given to quality and improvement (Barlow 2008). New money was mainly available to implement top-down initiatives. Indeed, little investment was made in the spread and encouragement of good practice, with shifts in investment requiring too many permissions. To address this, they recommended greater freedoms for individual healthcare organisations to pursue change coupled with national systems of standardised coding, definitions and transparency. These changes would encourage innovation while reducing interoperability barriers.

Health services also have problems with assessing cost and value. A short-term cost to a functional budget may produce savings across a pathway. However, these may not match the assessed long-term costs (Adang and Wensing 2008).

Taken together, these authoritative reports confirm that innovation is happening in the NHS, but it is often 'against the flow'. They suggest that widespread entrepreneurship and the adoption of innovation needs more than just the creation of new ideas. New systems are required, and some existing systems and approaches must be replaced because they actively resist innovation.

Currently, several organisations are engaged in evaluating innovation and improvement in UK health services. This is to better understand how to increase, spread and sustain their impact. For example:

- RSET and BRACE are NIHR funded and working on a UK-wide basis to evaluate service innovations, understand how innovations do and do not flourish and spread learning.
- THIS institute based in Cambridge University has been funded by the Health Foundation to develop the evidence base for improvement in healthcare. Their programme of work includes large scale research projects to understand “what works, what doesn't and why”.

No.	Key theme
4.	<p>An evidence-based approach</p> <ul style="list-style-type: none"> • Innovation is not a passing fad but could become one if it is not understood and addressed as an integral part of service policy and delivery. • Innovation in healthcare has been much studied and reviewed. There is good, maturing evidence supporting the development of innovation in healthcare and what does and doesn't work.

There is a danger that innovation will be perceived as a fad: the latest fashion in a line of ideas and buzz words that promise much and ultimately deliver little. Psychologist Rob Bryner describes how to recognise fads and why humans are drawn to simple, fashionable ideas. He says we are hardwired to favour so-called System 1 thinking (fast, emotional, low effort with cognitive short cuts), rather than System 2 (slow, more critical, and higher effort). This view mirrors the work of Daniel Kahneman and his book "Thinking fast, thinking slow" (Kahneman). Bryner advocates evidence-based practice in management to support decisions about what constitutes important problems or opportunities, as well as the most likely solutions.

This paradigm of thought highlights the value of understanding the importance of innovation and applying its opportunities in an evidence-based fashion. A System 1 (fast) approach is unlikely to account for the careful work required to produce change. This will not yield results, instead squandering effort and goodwill. Fortunately, there is a maturing evidence base for what works in innovation. It must be acted upon in an organised way (Cox 2016). The remainder of this review will examine the current state of that evidence as it relates to health and social care.

There is a parallel between the task of achieving process innovation in healthcare and the need for management innovation in the way the NHS works. They both require translation of established knowledge to change a system, are prone to resistance and barriers and vulnerable to System 1 thinking.

No.	Key theme
5.	<p>The nature of 'the system'</p> <ul style="list-style-type: none"> • Care systems are complex and adaptive. • Clarity about the context of this system helps us to select the method of change required and how we evaluate its impact.

The belief that linear, top-down approaches to implementation are successful has been described as naive (Braithwaite, Churruca et al. 2018). Health systems are complex, nuanced and behave unpredictably, so it is unsurprising that simple approaches rarely deliver intended outcomes. This paper studies two intervention programmes to conclude that change approaches must be based on seeing healthcare organisations as complex adaptive systems. Change needs a triggering mechanism and to succeed, change strategies must take account of existing networks, social practices, local structures and opportunities.

An informed choice on how best to intervene within a system must be influenced by fully understanding its nature and the proposed change. Theories that help provide such understanding and underpin successful scale and spread include implementation science (and quality improvement), complexity science and social science (Greenhalgh and Papoutsi, 2019). This recent paper illustrates the roles of three very different conceptual frameworks and the importance of understanding the relationship between the intervention, people, organisation and wider context.

Reed and colleagues developed three strategic principles (and 12 associated simple rules) for the translation of evidence into practice in complex systems (Reed, Howe et al. 2019). They are:

1. *'Act scientifically and pragmatically' – knowledge of existing evidence needs to be combined with knowledge of the unique initial conditions of a system, and interventions need to adapt as the complex system responds and learning emerges about unpredictable effects.*
2. *'Embrace complexity' – evidence-based interventions only work if related practices and processes of care within the complex system are functional, and evidence translation efforts need to identify and address any problems with usual care, recognising that this typically includes a range of interdependent parts of the system.*
3. *'Engage and empower' – evidence translation and system navigation require commitment and insights from staff and patients with experience of the local system, and changes need to align with their motivations and concerns.*

Similarly, evaluation of interventions needs to be context specific to reflect local conditions and requirements (von Thiele Schwarz, Nielsen et al. 2020).

While von Thiele et al. are concerned with “organisational interventions”, the Reed et al. paper focuses on evidence based clinical practice. Its steps ensure that the fit between current and new practice are understood, that consequences to wider work systems are anticipated and that people issues are addressed. Meanwhile, Greenhalgh and Papoutsi have provided a uniquely practical guide to three

theories of implementation. They show that the selection of theory must be based on the type of analysis advocated by Reed et al.

No.	Key theme
6.	<p data-bbox="272 412 735 450">The nature of innovations</p> <ul data-bbox="320 456 1337 741" style="list-style-type: none"> <li data-bbox="320 456 1337 539">• The question: “How can an innovation be made more spreadable, more sustainable?” has been much studied over the last 20 years. <li data-bbox="320 555 1337 638">• Put simply, any involved parties must be convinced (i.e. not just told), and the innovation needs to be as simple and adaptable as possible. <li data-bbox="320 654 1337 741">• Obviously, there may be a trade-off between simplifying the innovation and delivering real benefit.

Everett Rogers famously described the attributes of an innovation that are most likely to lead to it being diffused (Rogers 2003). That list was then developed by the Greenhalgh review to apply to organisation and system contexts in addition to individuals (Greenhalgh, Robert et al. 2004). The attributes are:

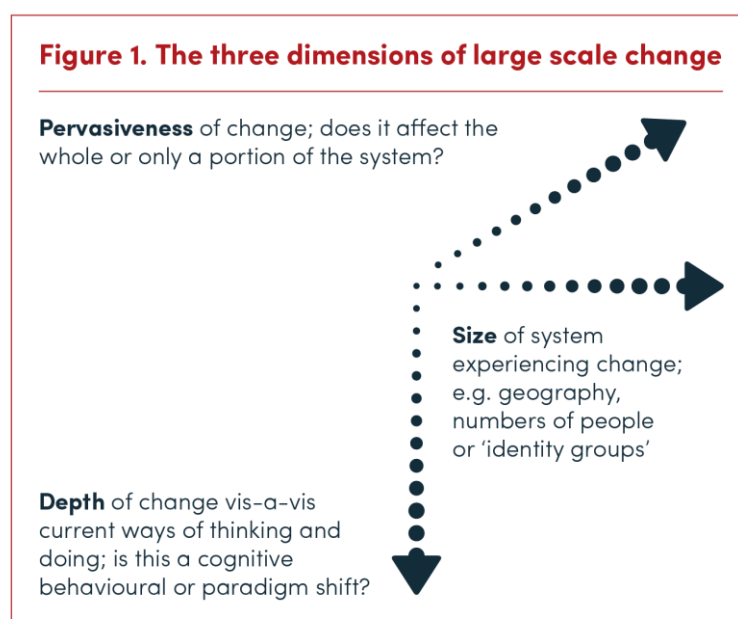
- *Relative advantage: the innovation is better or more efficient than whatever is currently used.*
- *Low complexity: the innovation is simple to understand and use (or, if complex, can be broken down into simpler components).*
- *Compatibility: the innovation and its use align with prevailing values and ways of working.*
- *Observability: the effects of the innovation are easily observed and measured and can be unambiguously attributed to it.*
- *Trialability: the innovation can be tried out on a small scale before people commit.*
- *Potential for reinvention: users can customise the innovation to suit personal preferences and/or local circumstances.*
- *Ease of use (for technologies): the innovation is easy to use and/or comes with adequate technical support.*

Originally proposed in 1962, these attributes have stood the test of time and are still recognisable in later, more sophisticated models such as the NASSS (non-adoption, abandonment, scale-up, spread, sustainability) framework (Greenhalgh 2018).

Diffusion implies a passive process whereas other terms (spread, implementation, translation, adoption, adaptation) signify an active, planned approach. Whether using the seven attributes or the NASSS framework, the first step must be to work on the innovation to ensure that it has the best chance of success. Greenhalgh emphasises relative advantage as the most important factor. If a clinician cannot see the point of a change, they are unlikely to make it. This was born out in the seminal ‘Matching Michigan’ study which established that a failure to make the case for a change meant that English intensive care teams failed to replicate gains from clinical bundles achieved in Michigan (Dixon-Woods, Leslie et al. 2013).

The remaining attributes essentially cover how easy it is to assimilate an innovation into current working. The ‘See and Treat’ programme from the then Modernisation Agency was reviewed by Fitzgerald, 2019 (Fitzgerald and McDermott). The perceived success in spread of this alternative to triage in A&E was driven by political imperative and the simplicity of the required change. Championed by local clinicians, it could be achieved in most settings regardless of the local context. However, ‘See and Treat’ probably failed in producing necessary wider, sustainable changes in systems. The analysis questions whether spread of an innovation is necessarily the actual improvement goal.

The second strategy, when the attributes are optimised, is to understand the scale of the change required and plan accordingly. A successful approach is attributed to Mohrman (1989) and adopted by the Large Scale Change Team in NHS England (Sustainable Improvement Team and the Horizons Team 2018). The approach measures a change according to three dimensions. *Figure 1* shows these dimensions as axes of Pervasiveness, Depth and Size. The dimensions are independent of each other. The further along each axis, the greater the scale of the required change:



Sustainable Improvement Team and the Horizons Team (2018)

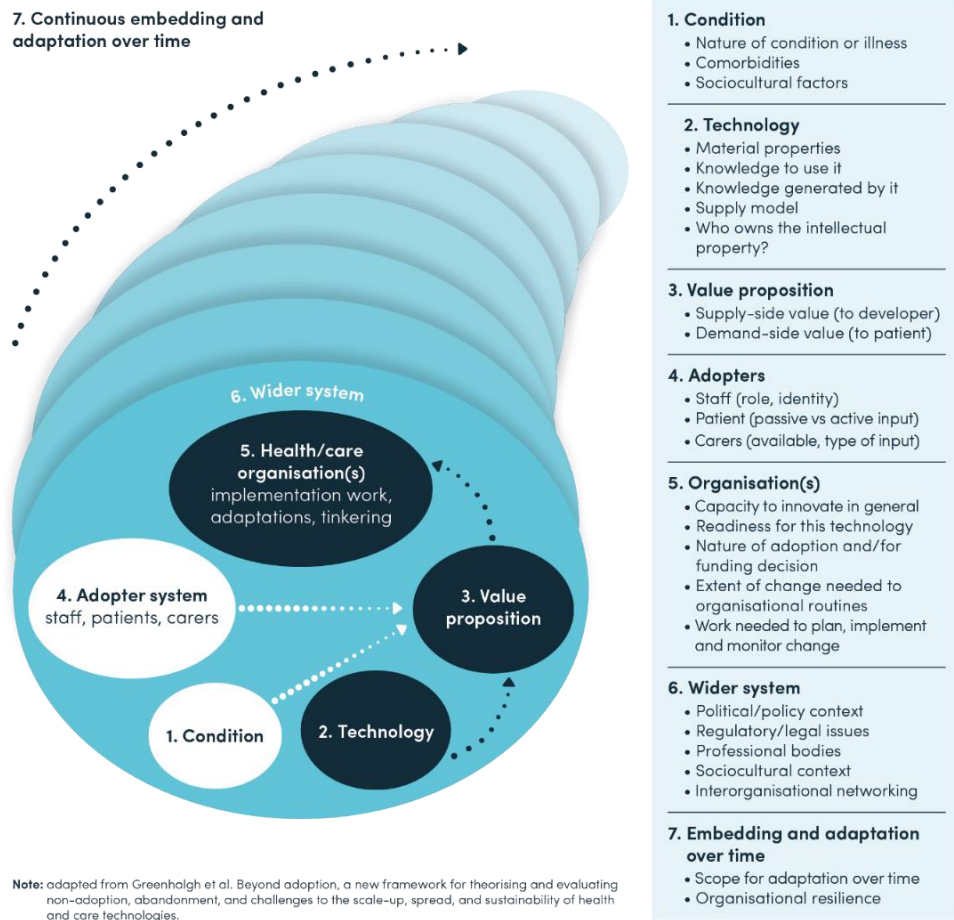
No.	Key theme
7.	<p>Technology</p> <ul style="list-style-type: none"> • Technology is a distinct case of innovation, with implementation usually requiring product and process change to work hand in hand. The apparent attractions of technological innovation and real complexity of implementation have caused significant resource waste. • Fragmentation and lack of systems interoperability has limited development of e-health systems in the NHS

Innovation through new technology is a distinct area of study. As Harold Thimbleby has argued, there is often an assumed benefit in introducing technology into healthcare (Thimbleby 2017). The title of his paper ‘Trust me, I’m a computer?’ epitomises this argument. Even when they have potential benefit, computers may be unreliable and incompatible with the systems they are introduced to, with their incorporation not leading to the intended effect. Unintended effects are also common. While many examples are small scale, Wachter described how UK and US governments have invested, and wasted, huge amounts in attempts to digitise healthcare (Wachter 2015). Projected savings and efficiency gains were based on incorrect assumptions about the simplicity of the technical and social systems involved and naivety about how readily these could be overcome.

Several authors have commented on the slowness of the NHS to implement eHealth and digitisation, despite widespread local innovation. This failure is attributed to fragmentation and a lack of interoperability (Asthana, Jones et al. 2019). Fragmentation refers to the cut off between sectors: primary care systems are well developed but do not generally connect with social services or secondary care. Interoperability refers to common languages and codes that enable systems to talk to one another. Moreover, this separation also results in digitisation efforts addressing work systems that already exist rather than looking at new ways of working.

Still on the subject of evaluation, the previously mentioned NASSS framework brings together research evidence to offer health services and their partners a method for planning and conducting technology-based innovation (Greenhalgh 2018). It presents seven interacting domains that may affect the success of a technology projects: its non-adoption, abandonment, and barriers to spread, scale-up and sustainability. They are interactive in the sense that they reflect a complex system and must continuously be managed rather than ticked off like a checklist. They are represented diagrammatically in *Figure 2*.

Figure 2. The NASSS framework: multiple interacting domains affecting the adoption, non-adoption, abandonment, and barriers to scale-up, spread and sustainability of health technologies



Greenhalgh (2018)

No.	Key theme
8.	<p>What drives innovation? Value and the Quadruple Aim</p> <ul style="list-style-type: none"> • Measurement and the use of system data are central to determining priorities and performance in healthcare. Outcome measures, especially those concerned with patient experience, should be available to clinical teams to help them to understand the value of services and to test innovations. The relative lack of such information, coupled with the current predominance of performance measures, represents a lost opportunity to engage clinical teams in driving change. • There is overlap and complementarity between the Quadruple Aim promoted by the Parliamentary Review and value-based healthcare.

The Welsh Parliamentary Review confirms that the Quadruple Aim should be used to define and measure the outcomes for Welsh Health and Social Care (Welsh Government 2018). As the name implies, the Quadruple Aim uses four dimensions to measure outcomes (Sikka, Morath et al. 2015). They are:

1. *Improving the individual experience of care*
2. *Improving the health of populations*
3. *Reducing the per capita cost of care*
4. *Improving the experience of providing care*

The aim is to focus effort on what matters: increasing the value of care, shifting to a preventative, population focus and ensuring that people's needs drive the system. All four dimensions require a dramatic shift from traditional systems of measurement but the focus on people as opposed to functions is probably the greatest challenge. Battaglia emphasised the change of mindset and systems if patients and carers are to become true partners in the design of healthcare (Battaglia, Furlong et al. 2019). They list multiple current blocks to this approach and propose strategies to transform patients from end-users to engaged collaborators. For example, in oncology, there is evidence that clinicians are often unable to interpret and apply patients' wishes to treatment choices (Blayney 2015). More generally, there may have to be a trade-off between standardisation and customisation (Davies 2017).

The required shift has been characterised as P4 medicine: predictive, preventive, personalized and participatory (Flores, Glusman et al. 2013). To that end, the medical technology industry has developed an ESTHER initiative, which in turn reflects work on the Innovative Medicines Initiative by the pharmaceutical industry (Coentro, De Pieri et al. 2019). Both confirm an intent to change thinking and to ensure that future innovation is driven by patients' needs.

Several healthcare systems across the world have collaborated in developing Value Based Healthcare (Porter and Teisberg 2004). Its aims are:

1. *Organize care into integrated practice units,*
2. *Measure outcomes and costs for every patient,*
3. *Reimburse through bundled payments for full care cycles (from onset to end-stage),*
4. *Integrate care across different facilities,*
5. *Expand services with the best outcomes across geography, and*
6. *Create enabling information technology platforms.*

Whilst originally proposed as an alternative to the US healthcare system, the concepts are being developed in many countries having state and insurance funded systems of healthcare.

Finally, the benefits of patient-centred design (and a useful bibliography) are included in the Royal Academy of Engineering report on systems engineering in healthcare (Clarkson, Bogle et al. 2017).

No.	Key theme
9.	<p data-bbox="272 562 584 600">Spread and scale</p> <ul data-bbox="320 607 1345 797" style="list-style-type: none"> <li data-bbox="320 607 1345 689">• Notions of magic bullet solutions and rapid implementation may be attractive, but they are naive. <li data-bbox="320 707 1345 745">• An idea that works in one place may not deliver benefit elsewhere. <li data-bbox="320 763 1345 797">• There is no universal formula for planning and managing spread efforts.

While the NHS does invest in innovation, the spend is skewed towards idea generation with very little in spread (Barlow 2008). An important paper by Dixon Woods reviewed the history of quality improvement in healthcare (Dixon-Woods and Martin 2016). The paper draws four conclusions, including: “stop looking for magic bullets – focus on organisational strengthening and learn from positive deviance”. The authors give several examples whereby an intervention interacts with its context. The context contributes to the appropriateness and the success of the change. It follows that interventions can rarely be carved out as universal “plug-and-play” solutions.

Nonetheless, the terms spread and scale have become ubiquitous. It is attractive to think that an idea that works in one place will deliver the same benefits everywhere. It is important to calibrate what is meant by spread or scale for any given exercise in implementation (Shiell-Davis, Wright et al. 2015). It may not mean precise replication, especially for complex innovations, and there must be a focus on how a change becomes embedded within existing systems. Influence and advocacy are better drivers for spread than power and authority. It cannot be assumed that an innovation has the potential to deliver the same benefit in a new setting as it did in the original context (Aarons, Sklar et al. 2018). This must be demonstrated.

It is also intuitive (and often fallacious) to assume that knowledge should lead to change, especially when potential benefit has been demonstrated. If people in part of the system understand the value of an innovation, then one may assume that this is enough to equip others to achieve the same benefit. However, there is a huge gap between research findings and clinical practice. Many strategies are available to bridge that gap, although the best approach is not always obvious (Bucknall and Fossum 2015). For example, active involvement in clinical research offers an opportunity to achieve

spread. Beckett *et al.* (2011) suggest that healthcare organisations could use a number of strategies to increase clinicians' participation by reducing barriers and providing greater support (Beckett, Quiter *et al.* 2011). A review of evidence reinforced this argument, finding that single strategies such as audit and feedback were less likely to succeed than multifaceted approaches (Boaz, Baeza *et al.* 2011).

The requirement for fidelity (the need to be true to the original), or its opposite, capacity for translation (described by Rogers as capacity for reinvention), are important determinants of spread and potential benefit (Kemp 2016). Rigid implementation and apparent compliance with well-evidenced interventions such as the surgical checklist or sepsis bundles may not deliver measurable benefits in patient care (Gillespie, Harbeck *et al.* 2018, Green, Smith *et al.* 2019). More flexible translation may be more effective, especially for large-scale or loosely defined interventions. This is likely to be the case for management innovations such as value-based healthcare (Colldén and Hellström 2018). Alternatively, careful process mapping and systems reengineering are required if a precise implementation is required (Hagg, Workman-Germann *et al.* 2008).

When often deceptively complex innovations meet complex organisations, either the innovation or the organisation must change to accommodate the other. Implementation strategies must take account of the nature of the change, context and people involved (Harvey and Kitson 2015).

There are several published spread strategies based on empirical research such as (Damschroder, Aron *et al.* 2009, Bradley, Curry *et al.* 2012, Yano, Green *et al.* 2012, Bousquet, Farrell *et al.* 2016, Laur, Bell *et al.* 2018, Wolak, Overman *et al.* 2019). However, there is a widespread acknowledgement that the science of implementation design is underdeveloped, especially in the patient involvement field (Dixon-Woods 2019, Wensing and Grol 2019). There is never likely to be one best practice. A spread intervention needs to take account of the circumstances, which is explained in 'Horses for Courses' by Wilkinson and Frost (2015). The Grol and Wensing (2020) Implementation of Change model summarises the considerations and steps.

No.	Key theme
10.	<p>Achieving large-scale change</p> <ul style="list-style-type: none"> • Spread at scale, especially of complex change where local adaptation is required, requires sophisticated, multifaceted support. Timescales can be long and evaluation difficult. • The Breakthrough Collaborative model has been widely applied in healthcare and proven highly adaptable to different subjects and contexts.

Large-scale change programmes are frequently used to spread multiple and complex evidence-based innovations. Changes that score highly on the three-dimensional model require sophisticated and multifaceted spread efforts. Adaptation is often vital but necessitates space, time and a good understanding of local context. Evaluation is also difficult: timescales are long (at least two years) and endpoints hard to define (Clay-Williams, Nosrati et al. 2014).

The most familiar model is likely that of the Breakthrough Collaborative (Berwick 2015). The term refers to a method for supporting teams in applying evidence-based change in real care settings. The method differs from simple implementation because it allows the spread of improvement and innovation through learning and customisation to local circumstances. One of the largest examples in the UK was the Safer Patients Initiative. Funded by the Health Foundation, it aimed to increase safety performance in four UK hospitals. The evaluation of the first wave concluded that it had beneficial effects on some aspects of culture (Benn, Burnett et al. 2009) but it was unclear whether significant improvement in care when compared with ten control hospitals (Benning, Ghaleb et al. 2011).

No.	Key theme
11.	<p>Organisational context</p> <ul style="list-style-type: none"> • Organisational context is at least as important as ideas creation in spreading innovation. • Several simple guides and reviews are available that describe the features of successful innovative cultures. Leadership priority, interdisciplinary networks, learning, useful data and information, decentralisation, trust, spare capacity are shared features. • QUASER is a sophisticated, evidence-based resource to support healthcare organisations to assess their capacity for improvement (innovation is seen as part of improvement behaviour) and plan their development.

Øvretveit argues that improvements and innovations are usually, to some extent social. In contrast to drugs which are marketed based on experiments that (virtually) guarantee reproducibility, meaning it is possible to predict the effect when taken by a new patient, the context in which an innovation is introduced will affect its implementability and success (Øvretveit 2011). Hence, we need to understand what elements of context are important if we seek to achieve and spread change. A useful summary of how the nature of organisations can influence patient care was provided by Fulop and Ramsey (Fulop and Ramsay 2019).

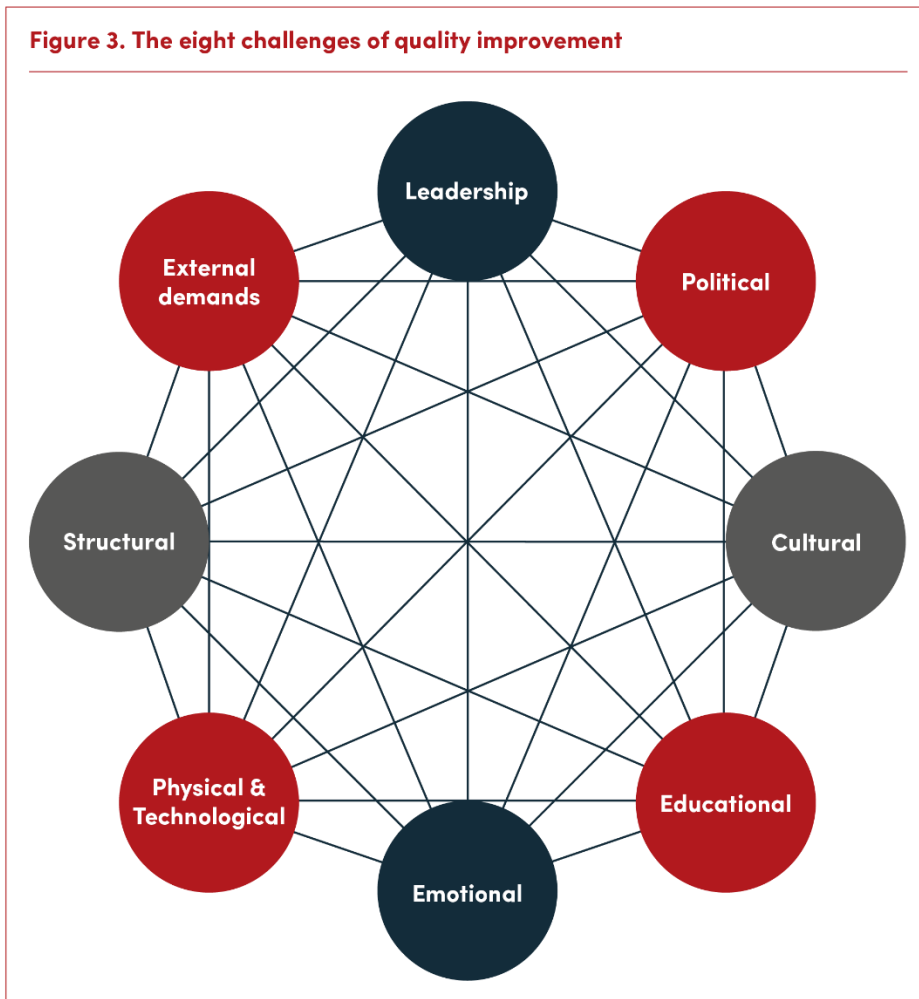
Organisations and boards that are mature in quality improvement and encouragement of innovation have the following characteristics: explicitly prioritising quality improvement; balancing short-term (external) priorities with long-term (internal) investment in quality improvement; using data for quality improvement, not just quality assurance; engaging staff and patients in quality improvement; and encouraging a culture of continuous improvement. These characteristics are seemingly enabled and facilitated by board-level clinical leaders in particular (Jones, Pomeroy et al. 2017).

Greenhalgh offers 10 tips for promoting organisational innovation (Greenhalgh). These are based on literature and personal reflection. They are an extremely helpful high-level summary of literature based on a career's work in this field. The first five of these are concerned with organisational context:

1. *Do as much as you can to flatten and decentralise the management structure. This includes ensuring that teams are empowered to make decisions without sign off from a complex hierarchy. "My advice: if you trust your staff, leave them alone to do their job (and if you don't trust them, what are they doing in charge anyway?)".*
2. *Create and distribute slack resources. Teams need some leeway if they are to pursue ideas.*
3. *Foster a risk-taking climate.*
4. *Nurture relationships. This means building networks and avoiding 'us and them' language.*
5. *Build absorptive capacity. This is essentially about how knowledge is valued, shared and applied.*

The QUASER team researched the current literature and worked with a large range of stakeholders to compile a reflective guide for organisations (Anderson, Robert et al. 2019). The aim is to equip healthcare leadership teams to assess capability and design evidence-based action plans across the eight challenges originally identified by Bates in 2007 (published a year later in the UK) (Bates, Mendel et al. 2008). A modified schematic of this by Anderson et al. (2019) is shown in *Figure 3*.

Figure 3. The eight challenges of quality improvement



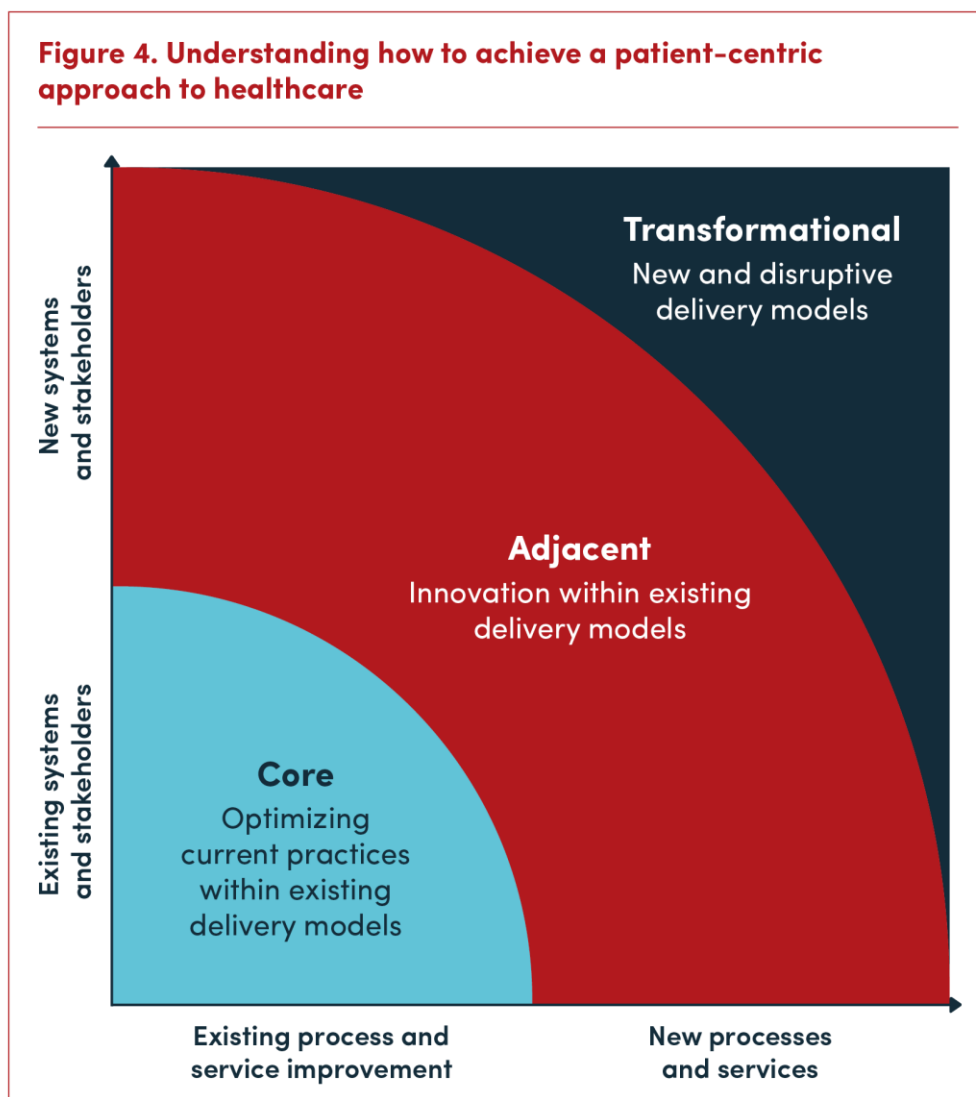
Anderson et al. (2019)

The QUASER tool is available as a free resource at:

https://www.eur.nl/sites/corporate/files/QUASER-GuideForHospitals_0.

While several reports have suggested that a senior executive within an organisation must be charged with responsibility for innovation strategy, work at the Mayo Clinic and in Australia suggest that a sophisticated infrastructure is also required if adoption and adaptation are to be encouraged within an organisation (Wutzke, Benton et al. 2016, Anderson, Chung et al. 2019). Similarly, a study of healthcare in the US Department of Veterans Affairs looked at efforts to transform the organisation into one with a patient-led, innovation focus (Bokhour, Fix et al. 2018). The authors found that the change strategy had to be multi-pronged. Even when leadership and engagement had changed, organisational priorities and regulations still had the potential to reinforce the status quo, and therefore required realignment.

Finally, two papers from very different sources described what a strategy or culture of improvement and innovation looks like in practice. The first, based in a successful Canadian primary care organisation offered 10 tips for how a culture of improvement can be achieved (Kiran, Ramji et al. 2019). The second gave a more generic view of how organisations can develop a strategy that balances three types of activity: core process management, improvement, and innovation (Nagfi and Tuff 2012). It explained that while each has an important function, innovation cannot be achieved without effective work in the other two areas. Innovation requires ten per cent of management capacity, improvement twenty percent and core process management seventy per cent. The application of this model in healthcare and the role of different methods to achieve patient-focussed services was described by (Bhattacharyya et al. 2019), and is shown in *Figure 4*.



Bhattacharyya et al. (2019)

No.	Key theme
12.	<p>Leadership and culture</p> <ul style="list-style-type: none"> • Leadership and culture impact directly on the quality of services and care. • The characteristics of successful leadership for improvement and innovation are well described and demonstrated through interventional study. • Efforts to spread and adopt interventions within organisations need to embrace the complementary roles of managers and professionals in managing services and driving change.

There are several studies that used empirical research to develop measures of leadership related to organisational readiness for change, with four examples given focus here. Firstly, a US study developed and validated a scale to measure implementation leadership as a predictor of one element of context for implementation of evidence-based change (Aarons, Ehrhart et al. 2014). Similarly, the SCORE scale offered a measure to assess organisational readiness for improvement, in this case focussing on the workforce (Adair, Quow et al. 2018). Another US paper found that hospitals with higher rates of staff engagement in improvement activity were more likely to score highly on a composite quality of care scale (Foster, Kenward et al. 2017). Finally, the 'Theory of Motivating Change' was developed from interviews with staff in 'successful' change organisations (Breckenridge, Gray et al. 2019). It emphasised alignment between staff and organisation drivers and constant work to develop trust and avoid negativity.

A research team at Yale School of Public Health used an empirical study to demonstrate that several aspects of leadership culture within healthcare organisations were associated with higher quality of healthcare, and specifically, lower levels of mortality (Curry, Linnander et al, 2015). A follow up paper then used an interventional design to change culture. The extent of the culture change and the effect on service quality were recorded. (Brewster et al. 2018, Curry, Brault et al. 2018). This 2018 study is thought to be the first demonstration that a culture-based intervention was associated with a change in clinical outcomes. Their work is incorporated in the review of organisations cited earlier (Fulop and Ramsay 2019). The five domains of a successful leadership culture were found to be:

1. *A learning environment*
2. *Senior management support*
3. *Psychological safety*
4. *Commitment to the organisation*
5. *Time for improvement.*

Leadership is sometimes used as a generic term which, in the complex settings of healthcare, does not necessarily align with the contrasting roles and styles of leadership required in practice. A surgeon leading an operation and a senior auditor both need leadership skills, but not the same skills. If organisations are not simple hierarchies, we need a more sophisticated view of how leadership is successfully exercised in practice. A recent study of the role of leadership in innovation used longitudinal case studies to understand the role of leaders in the successful adoption of complex innovations in several healthcare settings (Currie and Spyridonidis 2019). It demonstrated distinct roles for managers, doctors and nurses across a four-year timeline, where managers lead at initial stages providing the mandate and organisational space for the innovation. Medical leaders gained the involvement of their professional peers by presenting the evidence and gaining consensus. Nurse leaders ensured local adoption and support. The roles are distinct, interdependent, and complementary. They are also sequential but with a great deal of overlap.

No.	Key theme
13.	<p data-bbox="272 969 767 1003">Networks and collaboration</p> <ul data-bbox="320 1010 1331 1245" style="list-style-type: none"> <li data-bbox="320 1010 1331 1144">• There are significant opportunities for sharing expertise and learning through better networking involving services, academia, the life sciences sector and other agencies. <li data-bbox="320 1160 1331 1245">• Successful approaches are non-hierarchical, build capacity/capability and develop alignment.

Innovation and improvement work benefits from networks of people. The Q network, established by the Health Foundation has become a successful medium for bringing professionals together for learning support and sharing (Bray and O'Malley 2017). Industry and academia are likewise developing strong links to harness expertise (Coentro, De Pieri et al. 2019). Networks and collaborations that straddle industry, academia and health services require trust and a readiness for disruptive change (Germann, Schuhmacher et al. 2013).

The establishment of Collaborations for Leadership in Applied Health Research and Care (CLAHRCs) in England demonstrated the value of academia as an evaluation partner to health services (Harvey, Fitzgerald et al. 2011). Risk associated with large-scale implementation of change can be mitigated by flexible, integrated evaluation. Similar benefits are present when embedded researchers support translational implementation (Wolfenden, Yoong et al. 2017).

Wider questions emerge when academia, industry, policy makers and services try to work together. While the aim of achieving better value services through innovation is simple and attractive, the reality is more complex and vulnerable to the competing values of each sector (Greenhalgh, Fahy et al. 2018). While there are good examples of achievement, the mismatch causes avoidable waste. Recognising and working through these differences requires sustained and multi-layered effort. Fortunately, there are established models from which to learn. Like CLAHRCs (now Applied Research Collaborations, ARCs), the English Biomedical Research Centres (BRCs) are useful mechanisms to agree cross sectoral priorities and stimulate a range of activities which drive network formation and support teams to address real life problems. They are partnerships between healthcare and academia but foster much wider partnerships with other organisations. A review of over 10 years work by the Oxford BRC looks at capacity building, alignment of innovation with patient priorities and how this work will develop into the future (Greenhalgh, Ovseiko et al. 2017).

A useful review of literature resulted in identification of five antecedents for effective collaboration between healthcare and the life science sector to achieve organisational change: the review focussed on value-based healthcare. These are: multidisciplinary (people, disciplines and organisations working together across current boundaries); use of appropriate technological infrastructure (exploiting technology that works); capturing meaningful metrics (working hard to extract and use information, especially concerned with outcomes); understanding the total cycle-of-care (focus on people and their lives, not care episodes, hand-offs and buildings); and financial flexibility (rules and incentives that encourage the use of resources in new ways) (Rees, Bates et al. 2020).

Please note that the parenthesised explanations are ours and not from the study. The paper recognises that there are currently few examples of extensive service/sector collaboration. However, the antecedents resonate strongly with previous aspects of this review. The pressing need to change health and social care services requires innovative new models of services which focus on better outcomes. The best strategy to achieve change is to apply new principles (antecedents) to our systems of work and organisation.

No.	Key theme
14.	<p data-bbox="272 264 1299 344">How will we know when we are innovative? Measurement and regulation</p> <ul data-bbox="320 349 1326 591" style="list-style-type: none"><li data-bbox="320 349 1326 430">• Outcome data (the Quadruple Aim) are the measures that should guide change.<li data-bbox="320 452 1326 591">• Regulators have an important role, but their work should be proportionate and support transformation. This requires more focus on good measures of patient experience.

As long ago as 2007, the Policy Foundation argued that UK governments had wrongly preferred process data to outcome and quality of care information as tools to drive improvement (Hamblin 2007). They argued that organisations such as the Veterans Health Administration in the US have successfully driven up quality by focussing on outcome measures and involving frontline teams in fixing problems. By contrast, the UK approach had excluded clinicians and patients from focussing on quality. The same argument is made by the OECD in its review of healthcare quality across Europe (Busse, Klazinga et al. 2019). Outcome measures encourage innovation and change: process measures do the opposite.

Changing the measures must be accompanied by complementary change in the expectations of staff. An interview-based study of the use of a safety thermometer (measuring the implementation of four harm reduction strategies) showed that the value of the outcome data was compromised by NHS staff's fear that information would be used for blame (Armstrong, Brewster et al. 2018). The implication was that performance culture is deeply embedded, with sustained strategies required if an improvement focus is to be achieved.

In England, leaders of NHS organisations have made a plea for regulation and inspection that is sympathetic to the need to transform services (NHS Providers 2018). It is critical for this to be proportionate in its scale and burden whilst locally flexible to reflect needs.

One author, Joy Furnival, has extensively reviewed the role of regulators in assessing organisational capability in improvement (Furnival, Boaden et al. 2017, Furnival, Boaden et al. 2018). Of eight dimensions of organisational focus, regulators tended to focus on two (process improvement and learning, and strategy and governance) with little attention to patient engagement. This emphasis was possibly due to the type of evidence available.

Finally, it is important to discuss measuring patient satisfaction, which could perhaps help to explain regulators' difficulties. Such surveys are widely practised and may be part of a desirable shift towards greater patient focus. However, they are often simplistic and may cause unhelpful change if they distort behaviour towards popular but valueless change (Junewicz and Youngner 2015).

An insight into innovation within social care

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Innovation in adult social care is like innovation in healthcare: it often fails to deliver. There are many ideas and innovations with great potential, but there can be difficulties in their national spread. When they do spread, implementation problems can affect the extent to which innovations across different geographies achieve scale and become routine practice. Many are abandoned when the money runs out or conditions become less benign. Others may achieve reasonable spread, but remain small, niche alternatives sitting on the periphery of the adult social care system; never quite changing mainstream practice and delivering their promised radical system shift.

Can we therefore expect that this narrative review's lessons apply equally to the adult social care context? Our answer is mostly yes. This review helpfully summarises many tools and frameworks that provide general lessons about factors to consider when innovating. When used judiciously, these tools can and should help people innovating in adult social care to improve success rates.

However, being armed with this knowledge is very different from using it. An important question for innovation research is despite existing knowledge, why do people and organisations continue following strategies that we know are unfeasible? Some studies have developed strategies and solutions to help make it easier and more likely that people will follow the lessons to increase the chances of success. This work is important, we would urge caution here in applying lessons from this review. While both sectors would like radical change, often along very similar lines, we think it is unlikely that strategies and solutions designed for the health sector will easily transfer to the adult social care context. It is starting from a very different position to the healthcare system and should follow a different path.

In the first phase of the Supporting Adult Social Care Innovation (SASCI) project, we set ourselves a question like that posed in this review's study area three: understanding why adult social care services often find innovation difficult. We reviewed available evidence and spoke to a cross-section of innovators and adult social care stakeholders to understand their innovation experiences. We aimed to identify areas that required most attention in the adult social care context to guide the later work programme. Those familiar with adult social care may be unsurprised that our analysis of why growing and spreading adult social care innovations is difficult only has a modest similarity with the reasons identified for healthcare.

This review describes the difficulties of implementing change within large, publicly owned organisations; structured around different functions that impede communication and collaboration. This is describing hospitals, but adult social care has no equivalent of a hospital. Adult social care services delivery is fragmented because social care services are mostly provided by a patchwork of mostly small and independently owned organisations, instead of divisions within organisations. These organisations often compete to win contracts with local authorities for publicly funded clients and/or custom from those self-funding care because of not qualifying for publicly funded services. This is a different and more commercially orientated world from most healthcare systems. Although local authorities provide a large amount of the funding for adult social care, they have a mostly peripheral role in its delivery – shaping and overseeing the market and intervening where necessary.

Many argue that these competitive pressures should drive innovation, so why does this often fall flat in adult social care? People working in this field tell us that its significant fragmentation and limited resources make innovation spread difficult. To illustrate: there were 673 care homes in Wales in April 2015, with approximately half the places in care homes run by single-site providers. The largest provider owned just 18 sites in April 2015 (Moultrie and Rattle 2015). Moreover, many of these social care provider organisations have thin management structures. Single-site businesses may have just one owner and manager, and larger businesses with multiple sites will have a small management teams – perhaps consisting of regional managers and a small central group. There is little slack after over a decade of austerity and, staff shortages across the sector also mean that managers frequently work at the front line to cover absences or manage recruitment. It is challenging to find time for innovation when staff have little capacity to think beyond the everyday, and where competition makes cooperation between providers or local authority commissioners of care difficult.

It is also unclear how far adult social care suffers from innovations being supply driven – a complaint typically associated with healthcare technology innovations. Adult social care has not seen the level of investment in high-tech solutions found in healthcare (although several large technology firms are now beginning to invest in products to support an active and independent later life). Running counter to the supply-driven narrative are many examples of innovations, especially of practice and service models, developed from the bottom up by organisations embedded in local communities or people with lived experience of care (e.g., Shared Lives, Direct Payments). So, although some innovations may not help to deliver change that the sector needs because they are driven by supply side rather than demand side concerns, there are certainly a good number that do not fit this description. Indeed, many working in adult social care would argue that it has a good record of working with people with lived experience of care, although there is always room for improvement.

Innovation in adult social care can face different difficulties to those that impact healthcare. We need to forge a path for change that works for adult social care, with sector-specific strategies and solutions. This is the goal of the SASCI project. We aim to build evidence about how to support the adult social care sector to develop, grow and spread relevant innovation. The project will explore innovation capacity within organisations and the wider system, seeking to understand both how organisations and the wider infrastructure can influence the innovation process. The project aims to help policymakers, managers and practitioners develop policies and make decisions that will foster innovation in adult social care and help it flourish and improve people's lives.

Learn more on [SASCI project website](#).

Dr Juliette Malley, on behalf of the SASCI team

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Appendix

Search method

This narrative review employed a literature search of four electronic databases as follows:

Search strategy	
Databases	MEDLINE; Web of Science (core collection), Scopus and NICE
Search terms	Healthcare OR Health care OR Health service* OR NHS AND (Quality management) OR improv* OR innovat* OR implement* OR (process knowledge) OR (product knowledge) AND Spread OR scal* OR translat* OR (accelerate uptake) OR (evidence translation) OR (research into practice)
Inclusion	UK, Europe, Australia and Canada and only papers in the English language
Exclusion	Pre-2004

Additional papers were included through reference checking of relevant papers, additional reading and database update alerts.

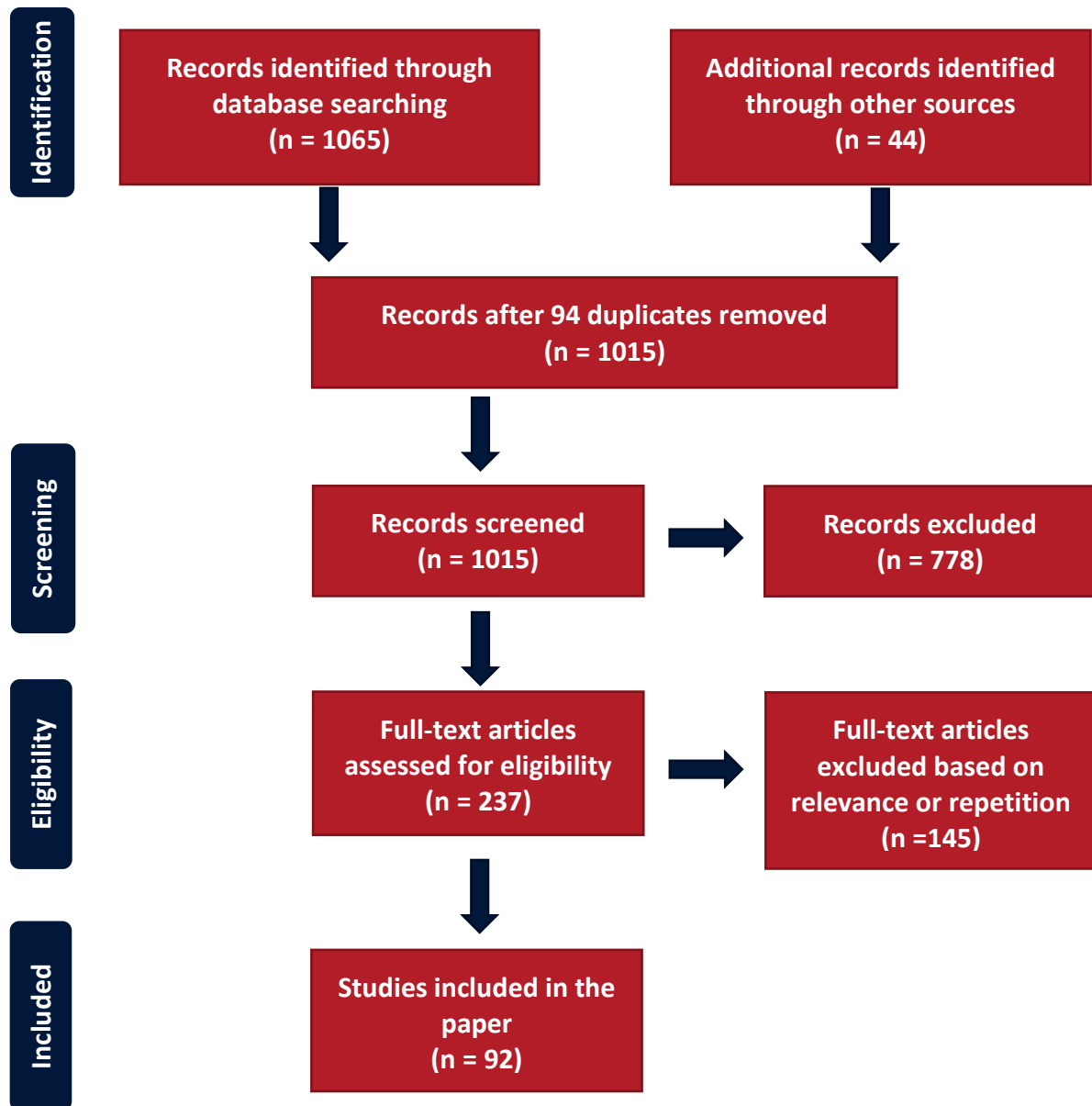
The search was not restricted to peer reviewed papers. The bibliography includes several key textbooks and previous relevant reviews by other authors. Web-based commentary and content has been included where it exemplifies and clarifies academic material.

The database searches produced 1065 papers, 971 excluding duplicates. 44 references were added through additional reading. Irrelevant papers were excluded through review of title and abstracts. The most common reason for rejection was focus on individual service changes and implementation efforts. The final text cites 92 references.

The writing style of the study has attempted to bridge academic and more narrative styles so that the content can reach a wide audience.

Prisma flow diagram

The process by which literature was assessed.



About Life Sciences Hub Wales

Life Sciences Hub Wales aims to make Wales the place of choice for health, care and wellbeing innovation. We help to advance innovation and create meaningful collaboration between industry, health, social care, government, and research organisations.

We want to help transform both the health and economic wellbeing of the nation:

- accelerating the development and adoption of innovative solutions that support the health and social care needs of Wales, and;
- partnering with industry to advance economic improvement across the life sciences sector and drive business growth and jobs in Wales.

We do this by working closely with health and social care colleagues to understand the challenges and pressures an organisation may face. Once identified, we then work with industry to help source and support the development of innovative solutions to respond to these challenges with agility.

Our team provides bespoke advice, signposting and support to accelerate all innovation journeys, whether supporting a clinician with a bright idea or a multinational life sciences organisation.

Life Sciences Hub Wales helps to catalyse system-wide change by convening and orchestrating a cross-sector innovation ecosystem. These connections enable us to create valuable networking and matchmaking opportunities.

To find out more, visit: lshubwales.com

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