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Discussion

Spreading and scaling innovation and improvement: understanding why the differences matter

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ABSTRACT

In this paper, we make a distinction between spreading and scaling innovations and spreading and scaling good practices for improvement, as many healthcare change practitioners often feel there is a “muddle” between them. We argue there are multiple factors where the spread and scale factors are similar for innovation and improvement, such as enabling leadership, the capacity and capability for spread and scale, a process of behaviour change, use of data and evidence and system alignment. However, there are multiple characteristics that may be different, including the level of complexity, the nature of the intervention, the approach to fidelity and adaptability, the source of the innovation or improvement and the outcome metrics. These insights enable us to be better equipped to design and deliver successful spread and scale strategies tailored to the specific intervention and situation and realise the full benefits of our change initiatives.

Spreading and scaling of effective interventions in health and social care is seen as a priority for systems globally, aiming to maximise the value of these interventions and reach those who need them.¹ Yet, spreading—the replication of an intervention from one location to multiple locations and scaling up—requiring infrastructural changes to support implementation at scale widely,² remain huge challenges and topics of extensive exploration among practitioners, researchers and policy-makers.³

Most of the advice available to practitioners, and most research outputs, treat spreading and scaling innovation and spreading and scaling improvement as a similar generic approach. And

despite previous calls for innovation and improvement to be seen as distinct,⁴ they are often blurred into one by researchers and policy-makers.⁵ As the American Society for Quality notes, although the two concepts are different, ‘innovation and improvement are often referred to in tandem’.⁶ We argue that this can lead to suboptimal design processes for spread and scale, confused roles and reduced outcomes.

We make a distinction between clinical innovations and good practices for improvement which is critical when planning for their spread and scale. We define a clinical innovation (herein ‘innovation’) as an idea, technology, medicine or object that is new to accepted standards of care and has the potential to offer a substantial positive impact on health-related outcomes with disruption to current service delivery models while a good practice for improvement (herein ‘improvement’) is a change to an existing practice that has been tested in one or more contexts and shown to improve outcomes, which may be adapted and adopted in other contexts.

The approach for spreading and scaling an innovation may be different to spreading and scaling an improvement. For instance, an innovative medicine such as asthma biologic injections for severe asthma,⁷ or a digital innovation such as the National Health Service App,⁸ or new equipment such as fractional exhaled nitric oxide measurement device,⁹ all represent something new to accepted care, and therefore, require a strategy that recognises this throughout the planning and implementation stages. In contrast, an improvement such as integrating patient



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tracking lists across an Integrated Care System,¹⁰ or introducing General Practitioners with Extended Roles¹¹ or guidance for safe handovers, all represent a change to an existing practice, and therefore, require an alternative approach to spread.

The distinction is not always clear. There is a wide range of practices, technologies, pathways and other interventions to be spread and scaled that do not fit in a binary frame of ‘innovation or improvement’. There are situations where the introduction of an innovation requires changes in practice that could be categorised as an improvement. The spread process could move from one to the other. However, by distinguishing between these two concepts, even with these caveats, we can identify similarities and differences that help our understanding of the challenges and inform our choice of spread and scale strategy.

COMMONALITY: ELEMENTS OF AN EFFECTIVE SPREAD AND SCALE STRATEGY THAT ARE SHARED FOR INNOVATIONS AND IMPROVEMENTS

The literature and synthesis of the tacit knowledge of practitioners¹² identifies shared characteristics that support the spread and scale of both innovations and improvements:

- ▶ Culture and leadership: Having an enabling leadership approach creates the conditions where experimentation, learning and collaboration can flourish. It involves leaders in formal positions—often including working in coproduction with service users and teams working at the point of care to identify and spread solutions to problems. Change in clinical settings requires strong clinical leadership, working with others who can help make the change happen, such as middle managers.¹³ It requires balancing business as usual and the testing of new ways of working and a regulatory environment that supports modification without compromising patient safety. A well-led organisation with elements of a learning health system¹⁴ will provide a more receptive local context for the spread of innovations and improvements.
- ▶ Capacity and capability: Adopters require the resources, time and energy (capacity) and the skills, knowledge and learning potential (capability) to identify, use and adapt the innovations or improvements for their own context. Previous work has highlighted the importance of adopters to be able to distinguish between core elements of innovation, which are well defined, and peripheral elements, that are less clear and more flexible to manipulation by the adopting system.¹⁵
- ▶ Behaviour change: Successful spread and scale involves a process of influencing people’s beliefs, attitudes and actions. People change their own behaviour, in response to other changes, so ‘pushing’ solutions onto people is typically a less effective strategy than supporting the behaviour change of adoptees and creating a ‘pull’ into the system.¹⁶ Professional networks can play a key role in peer to peer influencing for behaviour change.¹⁷
- ▶ Data and evidence: Clear articulation of the evidence of potential benefit is needed to meet the level required by adopters. Different audiences will require different

forms of evidence, such as clinical effectiveness, health economics and service user experience. The quality of evidence required for an innovation or improvement is intrinsically linked to its purpose¹⁸ and the opportunities for benefits and harms to service users.¹⁹

- ▶ Finance and budgeting: Financial mechanisms, such as providing additional financial support for pathway transformation, are key. Alignment with annual health and care budget cycles to allow timely planning for change is important. Payment systems should reflect that improved patient outcomes may occur over a longer time frame, or downstream in the pathway of the point where the intervention was implemented.
- ▶ System cohesion: This includes alignment of stakeholder priorities, clarity on roles and responsibilities for the intervention across the system and ensuring the intervention addresses a shared strategic priority with clearly articulated anticipated benefits. The decision process to identify which innovations or improvements should be prioritised and in which contexts by, for example, inclusion in commissioning or national guidelines, needs to be transparent and consistent. Alignment on how to capture unintended consequences or scale back an unsuccessful intervention should also be considered.
- ▶ Sustainability: How a change is spread and adopted directly impacts on its sustainability.²⁰ Where the spread process is developed collaboratively and people get the opportunity to test and adapt the change in their own context, it is more likely to be sustained than a change that is imposed on them.

DIVERGENCE: ELEMENTS OF AN EFFECTIVE SPREAD AND SCALE STRATEGY THAT MIGHT DIFFER BETWEEN INNOVATIONS AND IMPROVEMENTS

Table 1 identifies 12 characteristics and describes how they might align or diverge for innovations and improvements. Every spread and scale context is unique so these characteristics are heuristics (rules of thumb) that are more likely or might apply in a given context, rather than hard and fast statements.²¹

For illustration, an innovation such as a new drug only for hospital administration is a clearly defined entity with evidence of administration requirements, safety and anticipated benefits and risks. This new drug is likely to significantly advance treatment options or outcomes. Although the process of introducing the drug may be seen as simple,²² as clearly defined and bounded, the context in which it is implemented may be complex so causing disruption. There is likely to be a defined clinical leader who can influence colleagues within the small, connected clinical community.

In contrast, an improvement, such as a new service to treat people needing acute care at home rather than in hospital, may be more difficult to define with its many interdependent components, requiring local adaptation and review during implementation. The intervention is complex in nature, as is the context. Leadership requires developing strong relationships across professional and organisational boundaries to

Table 1 Differences in spread and scale strategy between innovations and improvements

Characteristic	Innovation	Improvement
The intervention	Medicines, medical devices, digital therapeutics or diagnostic products, usually require changes to pathways or service design. The intervention is typically easy to define because it is a discrete product.	Changes to pathways, delivery of services or ways of working with many interdependent components may or may not require new technology. The specifics of the intervention may be more difficult to define.
Impact	More likely to have a disruptive impact which significantly advances treatment options or outcomes.	More likely to have incremental impact which improves pathways or service delivery. An improvement may quickly become 'business as usual' because of its iterative nature.
Complexity	An innovation is more likely to be simple or complicated in its nature (it can be dissected and understood), whereas the context is likely to be complex. ²²	Improvements are more likely to be complex in nature (involving interconnected elements and requiring constant adaptation), as is the context.
Implementation	More likely to be a discrete step change in implementing a specific product, often with associated costs. Innovations are more likely to require formal processes, such as information governance and commissioning decisions.	More likely to be an iterative, ongoing or recursive process.
Adopter community	An innovation may have a small, interested community, who are already connected through expert networks. In social network terms, the spread will require a strong tie ²⁴ (peer to peer) strategy with high levels of energy and engagement. More likely to involve preparation activity on 'system readiness' for particularly disruptive innovation, prior to first adoption and subsequent spread and scale	The community that needs to be involved may be system-wide and more diverse. Requires a weak tie ²⁴ strategy (working through multiple channels and sources of influence, networks may need creating and connecting) plus a strong tie strategy. Requires a continued approach to ensure continued engagement and high energy levels
Leadership focus	More likely to be focused within a specific clinical community so requires strong clinical leadership, partnership with influential bodies such as Royal Colleges and clinical charities, often with a clinical champion spearheading it.	Involves dynamic, iterative processes that require strong relationships across networks and boundaries, flexibility and adaptability. More likely to need a system convening ¹² approach which matches the complexity of the approach taken with the complexity of the situation.
The innovator	The innovator may own the intellectual property (IP), invest their own time and money in the innovation and/or may shoulder much of the risk. Innovators are more likely to be active in the spread and scale process, typically in partnership with others. They are often highly motivated for the innovation to spread and may gain commercially from it.	The 'innovator' (they may not consider themselves one) has the idea for the improvement and typically does not own the IP, does not invest their own money or leads the spread process. The benefits they see are improvements for service users and working environment, and the kudos and respect of their clinical community or wider care system. Often the originators need to focus on sustaining the improvement in their setting and may lack the motivation to spread the change. Often the people who are most influential in the spread are not the originators but 'first followers' who harvest the initial idea and engage others in the process. ²⁵
Source	Innovations often come from a commercial source such as small-to-medium enterprises, clinical entrepreneurs, start-ups or private companies.	Improvements often come from teams in the health and care system striving to make a difference for people who use their services and not thinking about the wider potential of their practice
Fidelity and adaptability	Typically have a higher degree of fidelity ²⁶ . Adopters are often taking on a specific patented technology in its entirety. How the innovation is implemented into practice is crucial and may require adaptation of the clinical pathway.	Improvements are often a set of principles that adopters adapt for their specific context—with a greater risk of the original concept getting diluted or lost. The principles and the implementation are likely to need adaptation in different contexts.
Governance	Operating within a developed legal, regulatory and standards environment. Processes vary according to the type of innovation, with continuous development of the regulatory standards for some products such as artificial intelligence (AI) software. ²⁷	Limited commercial regulatory environment. Focus is on ensuring improvements fit within professional standards around quality and safety. Can be difficult if a decision is made to follow a commercial route as often the evidence required has not been generated.
Real-world evaluation	Real-world evidence ²⁸ can be generated throughout the development and deployment of an innovation. Requirements for evidence differ significantly between categories of innovations, such as medicines and AI solutions. Once innovations have been through regulatory approvals, innovations typically have a high level of both internal and external validity; the testing process has determined cause and effect and generalisability of the product or service for other service users in other settings.	Improvement approaches are more likely to be heuristic rather than algorithmic, ²¹ that is, if you want to achieve outcome X in situation Y, something like Z might help. Benefits are likely to be less predictable because every local context is different. Improvements need to be tested continuously on an iterative basis.
Outcome metrics	More likely to be able to identify specific, tangible outcome measures that show direct patient benefits if evaluated in direct comparison to existing standard of care.	More likely to have interdependent variables, leading to fewer direct or tangible measures of outcome. This may lead to metrics by association or process measures as a proxy for outcomes. There may not be the process/capability to collect metrics.

connect a large, diverse community across many health and care sectors.

CONCLUSIONS

The authors of this paper include a group of health-care change practitioners who have felt this 'muddle' between spreading innovation and spreading improvement over two decades of practice. We have discussed the issue with hundreds of fellow innovators and improvers who agree that this is an issue but no one has written about it before.

Our motivation in writing this paper is to set out some of the differences between scaling and spreading innovations and improvements to support practitioners to make better choices in planning spread and scale strategies (figure 1). We recognise that it is sometimes difficult to differentiate between two separate buckets labelled 'innovation and 'improvement' and that there is some overlap. However, our belief is that practitioners of innovation and improvement will be able to create more effective spread and scale strategies for action by taking account of the factors

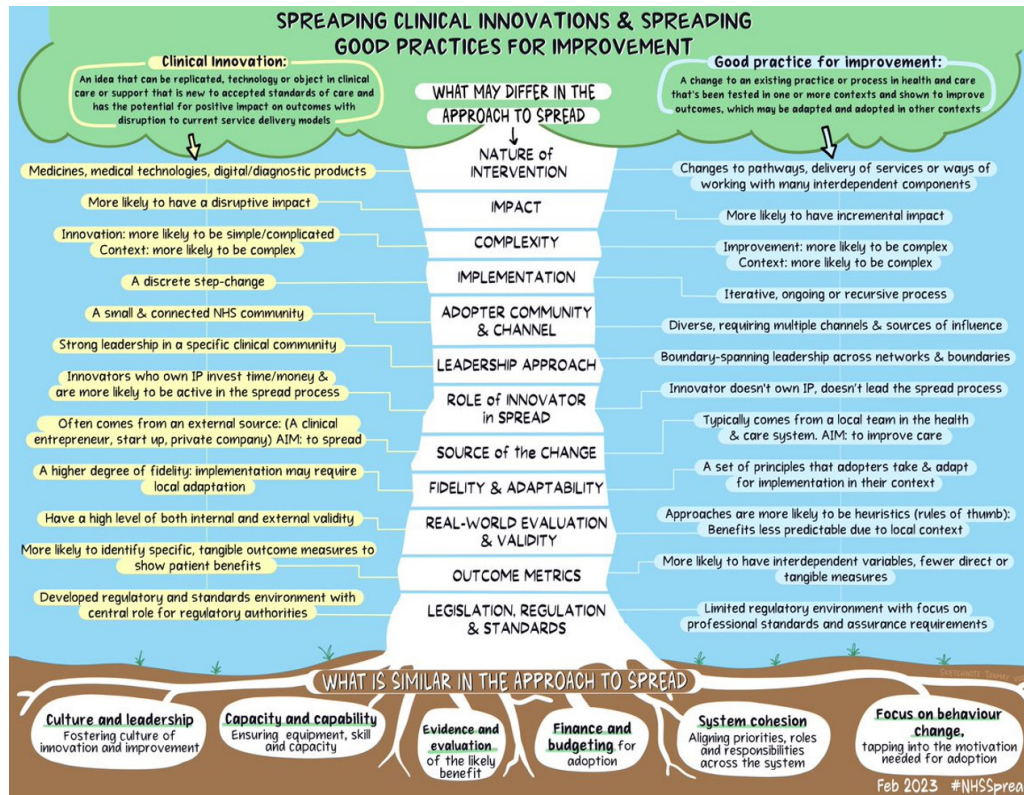


Figure 1 Spreading clinical innovation and spreading good practices for improvement.

we have identified. We have created this opinion piece to reflect practitioner need and focus in this area, and also in the hope that by shining a light on this topic, it can be the focus of further research.

What we offer is a set of factors that we have observed through many years of practice in scale-up and spread initiatives, at national and local levels in the UK and with other health and care systems internationally.²³ Not every factor will apply in every spread and scale project. The ability to spread and scale remains one of the greatest challenges for leaders of change in the health system. We hope that by encouraging reflection about these factors, we can make it the smallest bit easier.

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REFERENCES

- Peterson HB, Dube Q, Lawn JE, *et al*. Achieving justice in implementation: the lancet Commission on evidence-based implementation in global health. *The Lancet* 2023;402:168–70.
- Greenhalgh T, Papoutsi C. Spreading and scaling up innovation and improvement. *BMJ* 2019;365:l2068.
- Horton T, Illingworth J, Warbuton W, *et al*. The health foundation. 2018. Available: www.health.org.uk/publication/spread-challenge
- Hartley J. Innovation in governance and public services: past and present. *Pub Money Manage* 2005;25:27–34.
- Care Quality Commission. Learning, improvement and innovation. 2024. Available: <https://www.cqc.org.uk/guidance-regulation/local-authorities/assessment-framework/4-leadership/learning-improvement>
- American society for quality (2023) what is innovation? 2024. Available: <https://asq.org/quality-resources/innovation>
- NHS England. NHS accelerated access collaborative, asthma biologics – rapid uptake product. 2023. Available: <https://www.england.nhs.uk/aac/what-we-do/innovation-for-healthcare->

- inequalities-programme/rapid-uptake-products/asthma-biologics/
- 8 NHS (2023) about the NHS app. 2023. Available: <https://www.nhs.uk/nhs-app/about-the-nhs-app/>
 - 9 NHS England. Accelerate access collaborative Fractional Exhaled Nitric Oxide (FeNO), 2023. Available: <https://www.england.nhs.uk/aac/what-we-do/innovation-for-healthcare-inequalities-programme/rapid-uptake-products/fractional-exhaled-nitric-oxide/>
 - 10 Health Business UK. Shared patient waiting lists: how to manage NHS capacity as a system. 2023 Available: <https://healthbusinessuk.net/features/shared-patient-waiting-lists-how-manage-nhs-capacity-system>
 - 11 RCGP (2024) general practitioners with extended roles. 2024. Available: <https://www.rcgp.org.uk/your-career/gp-extended-roles>
 - 12 NHS England. Leading the spread and adoption of innovation and improvement: a practical guide. 2023. Available: <https://www.england.nhs.uk/spread-and-adoption/>
 - 13 Hardie at al. Developing learning health systems in the UK: priorities for action. The Health Foundation; 2022. Available: <https://www.health.org.uk/publications/reports/developing-learning-health-systems-in-the-uk-priorities-for-action>
 - 14 Boutcher F, Berta W, Urquhart R, *et al.* The roles, activities and impacts of middle managers who function as knowledge brokers to improve care delivery and outcomes in Healthcare organizations: a critical interpretive synthesis. *BMC Health Serv Res* 2022;22:11.
 - 15 Denis J-L, Hébert Y, Langley A, *et al.* Explaining diffusion patterns for complex health care innovations. *Health Care Manage Rev* 2002;27:60–73.
 - 16 Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implement Sci* 2011;6:42.
 - 17 Zappa P. The network structure of knowledge sharing among physicians. *Qual Quant* 2011;45:1109–26.
 - 18 NICE. Evidence standards framework (ESF) for Digital health Technologies. 2023. Available: <https://www.nice.org.uk/about/what-we-do/our-programmes/evidence-standards-framework-for-digital-health-technologies>
 - 19 MHRA. Guidance for manufacturers on reporting adverse incidents involving software as a medical device under the vigilance system. 2023. Available: <https://www.gov.uk/government/publications/reporting-adverse-incidents-involving-software-as-a-medical-device-under-the-vigilance-system/guidance-for-manufacturers-on-reporting-adverse-incidents-involving-software-as-a-medical-device-under-the-vigilance-system>
 - 20 Burd H, Hallsworth M. Spreading change. The Health Foundation; 2016. Available: <https://www.health.org.uk/publications/spreading-change>
 - 21 Plsek P, Bibby J, Whitby E. Practical methods for extracting explicit design rules grounded in the experience of organizational managers. *J Appl Behav Sci* 2007;43:153–70.
 - 22 Greenhalgh T, Wherton J, Papoutsis C, *et al.* Analysing the role of complexity in explaining the fortunes of technology programmes: empirical application of the NASSS framework. *BMC Med* 2018;16:66.
 - 23 NHS Horizons. Approaches to spread and scale. 2023. Available: <https://horizonsnhs.com/spread-approaches/>
 - 24 Granovetter M. The strength of weak ties. 2023. Available: <https://www.leadershipcentre.org.uk/artofchangemaking/theory/the-strength-of-weak-ties/>
 - 25 Blanchard K, Miller M. The higher plane of leadership. *L to L* 2007;2007:25–30.
 - 26 McNicholas C, Lennox L, Woodcock T, *et al.* Evolving quality improvement support strategies to improve plan-do-study-act cycle fidelity: a retrospective mixed-methods study. *BMJ Qual Saf* 2019;28:356–65.
 - 27 NICE. Artificial intelligence (AI) and digital regulations service. 2023. Available: <https://www.nice.org.uk/about/what-we-do/digital-health/multi-agency-advisory-service-for-ai-and-data-driven-technologies>
 - 28 NICE. NICE real-world evidence framework. 2022. Available: <https://www.nice.org.uk/corporate/eecd9/chapter/overview>