Health system readiness for innovation

Putting research into practice to drive effective implementation

The Health Policy Partnership

EHMA
European Health Management Association

ABOUT THIS REPORT

The report was written by Oriana Carswell, Lucy Morgan and Suzanne Wait of The Health Policy Partnership (HPP), and Anett Ruszanov and George Valiotis of the European Health Management Association (EHMA), with guidance from independent experts. HPP's work on this report is part of a broader project on health system readiness, which is funded by Advanced Accelerator Applications, a Novartis Company.

HPP is an independent health policy and research organisation. It works with partners across the health spectrum to drive policy and system changes that will improve people's health.

EHMA is a membership organisation focusing on health management. It sits at the interface between health policy and implementation.

The report is aimed towards healthcare managers and procurers of innovation, but we acknowledge the need for the wider involvement of multiple stakeholders. It expands on discussions from a webinar 'Building readiness: from research to impact', which took place in March 2023. This is supplemented with findings from a literature review and our collective experience of developing and applying frameworks. The report features case studies of implementation, and we pay particular attention to the role of frameworks in supporting effective implementation of innovation.

We would like to thank the following contributors for their insights during the webinar:

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The report complements a policy brief that explored the attributes of an effective framework. The policy brief is available here: https://www.healthsystemreadiness.com/app/uploads/Fostering-system-readiness-in-cancer-care-policy-brief.pdf

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Executive summary

Healthcare is constantly evolving, so it is essential to implement innovations to enable the continued improvement of population health. Innovations can improve life expectancy as well as the affordability, effectiveness and sustainability of healthcare.[1-4] The number of advancements in care is increasing exponentially and they are often complex, making it difficult to embed them into health systems effectively and in a timely manner. Slow or unsuccessful implementation means that people may receive care that is not in line with current evidence, which can be inefficient and costly, and may increase inequities in care.[2 4-8]

Implementation science can help ensure innovations reach people who need them. The extensive field of implementation science bridges the gap between research and practice by assessing potential barriers to integration and presenting methods to facilitate uptake of an innovation.[2 4 9 10]

Health system readiness creates a solid foundation for the implementation process. A 'ready' health system has appropriate policies, infrastructure and processes which can be rapidly aligned with advancements in care.[11 12] Without health system readiness, innovations cannot be implemented into care efficiently, effectively and equitably.[12 13]

To successfully implement innovations into care, healthcare managers and procurers should embrace the following five guiding principles:

Rigorous data collection[2 9 14] to confirm the innovation has value, inform implementation and assess whether a health system is ready.

Systems thinking[2 14 15] to ensure each aspect of the health system is considered when implementing an innovation, and there are no unexpected bottlenecks or shortfalls.

Collaboration[2 9 14] between communities, healthcare professionals and different sectors (in the research and implementation processes) to improve uptake of an innovation, embed an innovation into the wider system and increase health equity.

Understanding the local context[2 14 16] to ensure that real-world factors are considered within the implementation process, so that an innovation can be implemented effectively in different settings.

Iterative improvement[2 14 17] to frequently evaluate effectiveness of an innovation, adapting and optimising the processes in alignment with changes in current evidence or in the health system.

Frameworks are tools that can be used to enable adoption of these key principles. Frameworks can provide: a structure for gathering data in a standardised and objective way;[18-21] a simplified representation of a health system's different components for evaluation;[22 23] assistance in identifying and bringing together relevant stakeholders;[19 24] support in considering context-specific challenges to implementation;[25 26] and a basis for quick and easy evaluation that can be replicated over time.[27]

Challenge: implementing innovation at scale

Innovation is central to advancing population health. From the flu vaccine to electronic health records, innovations in healthcare have substantially increased life expectancy and improved quality of life over the past century.[1] They can help improve the quality, effectiveness, accessibility, affordability and sustainability of healthcare.[2-4] As medicine and technology advance, we need to ensure that health systems are ready to integrate innovations into practice.[2 4 28] Advanced planning for implementation (*Box 1*) can help to provide all people with access to the services that could benefit them most.[2]

BOX 1. **What do we mean by implementing innovation?**

Innovation is a change or adaptation that provides meaningful improvements – in this case, in healthcare and quality of life.[1 2] Examples include new diagnostics, treatments or technologies used in care, as well as shifts in existing practices, services and delivery methods.

Implementation of innovation refers to the processes of adopting, integrating, sustaining, spreading and scaling the change or adaptation in practice.[4]

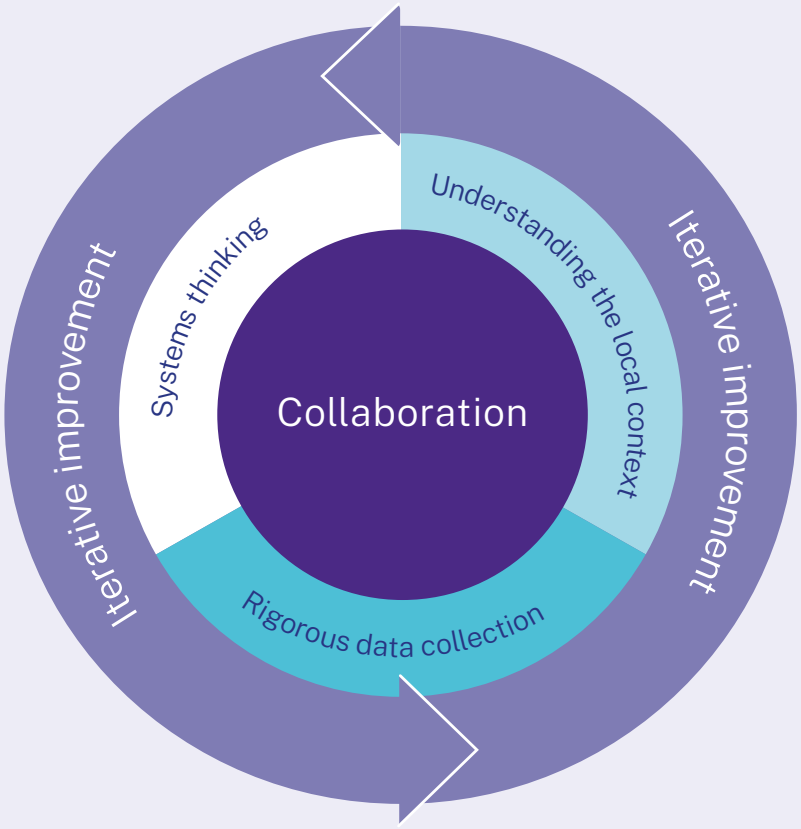
Attempts to implement innovations are often unsuccessful. Researchers have made substantive efforts to determine why, but the potential reasons are seemingly boundless.[2 29 30] After all, innovations can fail at any point in the process of implementation.[4] Barriers to implementation include misalignment of objectives, poor leadership, resistance to change and a lack of financial resources.[29 30]

Unsuccessful or slow implementation of innovation can waste resources and limit the benefit to health system users. A lack of implementation can result in people receiving care that is not in line with current evidence-based best practice and which may, as a result, be costly and inefficient.[5 6 8 31] Barriers to implementation can also cause inequities in care within and between countries.[2 4 7] In some cases, implementation is inefficient due to the time it takes for research to be integrated into clinical practice.[32 33] Delays are also unfavourable for the developers of innovations, as well as healthcare organisations, policymakers and wider society, who do not benefit from the innovation and miss out on returns on their investment.[6 29 34 35]

Planning for implementation

Growing attention is being paid to the processes of effectively implementing innovation. Implementation science aims to systematically bridge the chasm between what is known and what is done.[9] It explores the methods and strategies that facilitate the uptake of evidence-based research into routine practice,[10] looking at all phases from development to widespread diffusion.[9] This extensive field has identified key factors and methods that support successful implementation.[2 4] In this report, we provide an overview of five principles that can help healthcare managers and procurers effectively implement innovation (*Figure 1*).

FIGURE 1. **Five principles to guide the implementation of innovation**



We believe that effective implementation of an innovation requires health system readiness. We define health system readiness as the ability of a health system to promptly and sustainably adapt its policies, infrastructure and processes to support the integration of innovative approaches into care.[11] A 'ready' health system provides a solid foundation for a more efficient, effective and equitable implementation process.[12 13]

Ensuring health system readiness requires the engagement of all relevant stakeholders. Healthcare managers and people procuring innovations should work with patient communities and those at the front line of care when implementing an innovation, to understand potential barriers and facilitators.[36] Together, these stakeholders can foster the integration of innovations into existing systems, processes and pathways.

A number of resources are available to support effective implementation. Theories, models and frameworks have been developed to serve as useful resources to support implementation.[26 37] This report highlights the role of frameworks,* which have gained traction in recent years.

Frameworks provide a simplified representation of a health system. In doing so, they can help users:[26]

- outline and plan the processes involved in turning research into practice
- describe factors that influence implementation outcomes
- evaluate the effectiveness of implementation.

*Other theories and models can be used alone or in conjunction with frameworks to close the gap between research and practice.

Principles to guide the implementation of innovations

Rigorous data collection

The importance of rigorous data collection

Timely and appropriate data on the efficacy and value of an innovation are fundamental for implementation. An innovation should be confirmed as safe, efficacious and cost-effective before implementation into routine practice is considered;[4 9 38] these data are critical for decision-makers. However, it can take years to collect and analyse sufficient high-quality data, hindering the opportunity to make quick, evidence-informed decisions against the backdrop of rapidly changing health systems.[33 38 39] This situation has led to an increasing demand for the timely, yet rigorous, evaluation of innovation.[38] The ongoing collection of data after implementation is also important to distinguish between successes and failures, and to re-evaluate investment.[37]

Data are also essential to understand how ready a health system is to integrate a given innovation. A comprehensive understanding of the health system context is necessary to ensure it can be adapted to effectively implement an innovation (*Case study 1*).[9] With appropriate data, healthcare managers and policymakers can put in place all of the necessary resources – including infrastructure, technology, staff and funding – to implement an innovation.

How can frameworks help achieve this?

Frameworks are useful for gathering data to inform implementation. They enable researchers to take a robust approach to evaluating health system operations in a standardised and objective way.[18-21] Frameworks identify the essential components of a health system and map the relationships between them, helping to uncover gaps in available data. This enables the stakeholders to understand where changes or additional research are needed to support implementation.[24] By providing a set of questions to be addressed, frameworks can be deployed rapidly, helping stakeholders make efficient, evidence-informed decisions.

CASE STUDY 1.

Mapping vaccination journeys to identify obstacles to vaccination

The Overcoming Obstacles to Vaccination project aims to identify, understand and make recommendations to reduce barriers to vaccination.[40] It is a three-year undertaking funded by the European Health and Digital Executive Agency (HaDEA) on behalf of the European Commission.[40 41] The project consists of mapping vaccination services in all EU Member States for seven vaccines: COVID-19; human papillomavirus (HPV); influenza; measles, mumps, rubella (MMR); meningitis; polio; and tetanus.[40]

Through a multi-layered approach, the project has worked with health authorities and experts to identify a range of barriers that different groups of citizens face when accessing vaccines. Data were collected via literature reviews undertaken by national experts and in-depth interviews with health authorities.[40]

As part of the data collection, health authorities submitted suggestions for interventions to overcome physical, practical and administrative obstacles. Practitioners and health authorities visited sites to observe promising practices and had further opportunity to discuss barriers.[40]

Data collected from the mapping exercise have helped build a comprehensive picture of the obstacles to vaccination uptake across different countries, including administrative, financial, geographical, staffing and supply factors.[42]

The next stage of the project is to pilot some of the best practices in different contexts, before developing recommendations for EU Member States.[42] The organisations involved in the project are: Kantar Public, the EHMA, Fundacion Fisabio, ifok, the European Academy of Paediatrics, and the European Regional and Local Health Authorities.[41]

Systems thinking

The importance of taking a systems approach

Taking a systems approach means considering how all aspects of a health system interact. The World Health Organization identifies six domains of a health system: leadership and governance; service delivery; health workforce; health information; financing; and medical products, vaccines and technologies.[43] Systems thinking means considering all of these domains and placing emphasis on the relationships between them when conducting research, recognising that they are inextricably linked. Such a holistic perspective is essential to understanding the complexities and interdependencies that may hamper the successful implementation of an innovation.[2 44]

Coordination across the health system is required to implement an innovation. Innovations are increasingly complex, involving a broad range of people, resources, sectors and institutions.[45] Problems implementing innovation can occur in any domain of a health system or due to a breakdown in the relationships between them.[45] Owing to this complexity, linear approaches to implementation, which assume that implementation moves stepwise from one domain to another, are insufficient.[9 46 47] An alternative approach based on systems thinking is required, but many countries' national health research strategies and policies are currently not comprehensive enough to encompass broad systems thinking,[48] which may reduce the benefits of the research. National research strategies should, therefore, be updated to involve a systems approach that can be adapted in line with any changes in the country's circumstances.[49]

How can frameworks help achieve this?

Frameworks can facilitate systems thinking. Researchers, managers and procurers can use frameworks to take a step back, see the whole picture and think through all the possible changes required to implement an innovation.[22 23] Various models exist that encourage systems thinking. For example, the Health System Performance Assessment (HSPA) Framework for Universal Health Coverage outlines the various functions of the health system, so users can clearly see all of its different aspects and the links between them (*Case study 2*; *Figure 2*).

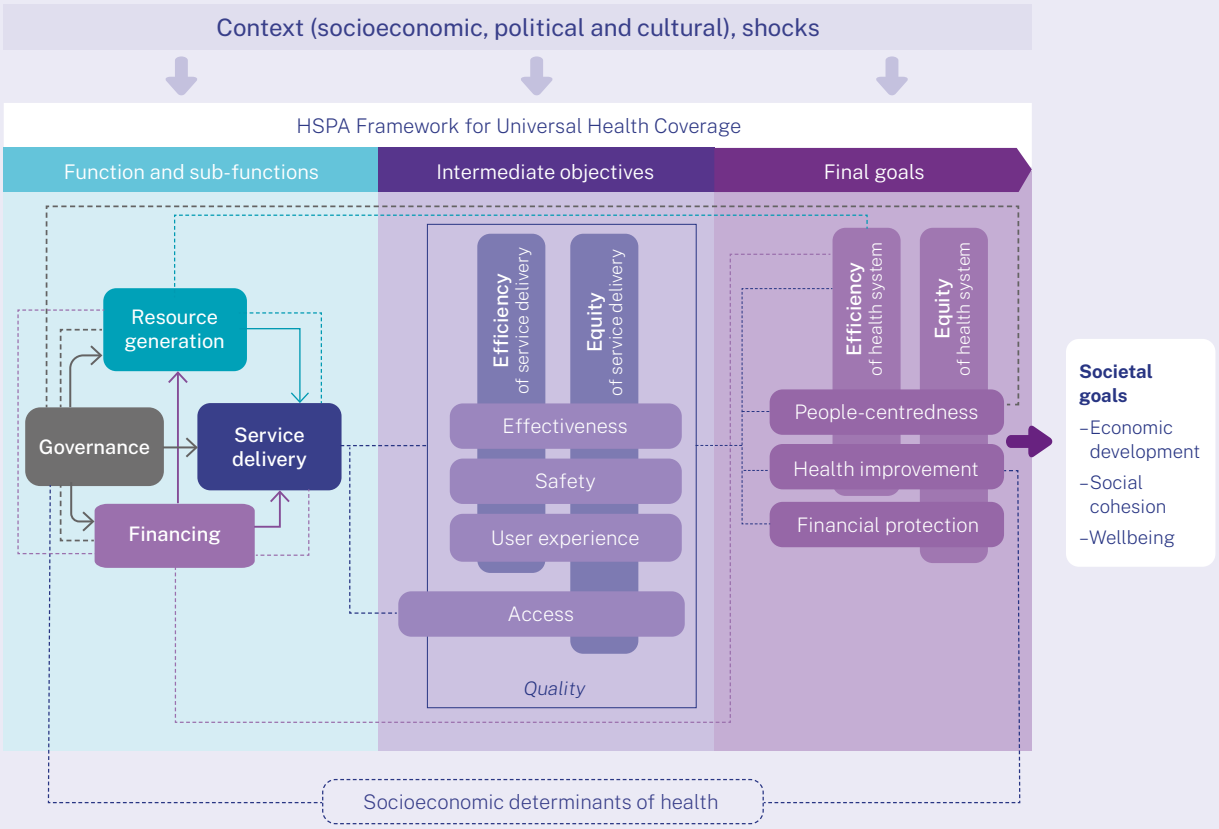
CASE STUDY 2.

Assessing health system resilience using the HSPA Framework

Resilient health systems are able to learn from shocks and continue with service delivery when shocks occur. The importance of health system resilience has gained prominence over the past decade,[50] especially in light of the COVID-19 pandemic.[51] In recognition, the European Observatory on Health Systems and Policies and the Organisation for Economic Co-operation and Development (OECD) are using the Health System Performance Assessment (HSPA) Framework to test health system resilience to shocks as part of a project funded by the European Commission.[52] The project aims to develop a methodology to help policymakers assess their own health systems' resilience in relation to specific shocks.[52]

The HSPA Framework can be used to determine how a specific shock has impacted, or is likely to impact, health system performance.[23] It outlines key elements of a health system (functions and sub-functions), assessment areas, intermediate and final health system goals, as well as linkages where these elements interact.[23 52] It allows users to map out specific vulnerabilities in the health system in relation to a particular shock and identify pathways for remedial action.[53] The framework can be applied in a flexible way, as users can start either from the functions of the health system or from its goals, depending on what is being assessed.[53]

FIGURE 2. **An overview of the HSPA Framework**



Source: Papanicolas *et al.* 2022[53] © World Health Organization 2022 (acting as the host organisation for, and secretariat of, the European Observatory on Health Systems and Policies). Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercialShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; https://creativecommons.org/licenses/by-nc-sa/3.0/igo).

Collaboration

The importance of collaboration

Collaborative research approaches can help speed up implementation while making innovations more useful for end users. In participatory co-design and co-production methods, health system researchers work with the people who will use their findings, generating practical evidence that may pre-empt or help solve relevant implementation problems.[9 31 32 54] These methods are increasingly viewed as important in implementation research.[24 55] Engaging people using the health system (such as patients and carers) in each stage of the research process also enables direct and improved knowledge translation,[56] helping break down barriers to implementation such as power imbalances and lack of trust.[24] The engagement of healthcare professionals in research is also essential as they will often use or have a role in implementing the innovation,[9] so their buy-in is valuable.[4 57]

Participatory approaches can also contribute to improving health equity. Engaging with communities, particularly underserved groups, throughout the research process can help guarantee that all voices are heard.[58] This can ensure representation of cultural values, helping create systems where everyone who could benefit can access the innovation[58 59] and supporting person-centred care.[4 60]

Engaging and collaborating with stakeholders outside of the health sector is important when implementing complex innovations. Many innovations require action beyond healthcare.[9 24] For example, efforts to address non-communicable diseases by focusing on unhealthy diets require cross-sectoral government engagement, including ministries of social welfare, trade, industry, agriculture, education and energy, and the local government.[61] Collaboration among sectors can support the development of a shared set of goals and visions that everyone is invested in and working towards.[4 36 39 61] This can help reduce barriers to implementation and improve health equity by ensuring that the research meets the diverse needs of stakeholders.[7 36 62 63]

How can frameworks help achieve this?

Frameworks can help to identify and unite the relevant people who should be involved in research and implementation. Frameworks that use a systems approach can assist researchers in identifying and engaging all the stakeholders who will influence implementation. By creating a shared language, frameworks can support knowledge-sharing between stakeholders from different sectors and backgrounds, enabling the creation of a cohesive understanding and vision from the outset.[19 24] A designated 'change agent'* with experience of implementing changes may be beneficial for coordinating the application of a framework and ensuring that all relevant stakeholders are engaged.[2]

*A change agent is an individual or organisation that influences end users' decisions around innovation through building strong relationships.[64]

Understanding the local context

The importance of understanding the local context

Failure to consider real-world factors may constrain implementation. Clinical research usually focuses on the efficacy and safety of interventions, with limited consideration of the real-world contextual factors around how best to deliver these interventions across a range of settings and populations.[9] As a result, translating findings from clinical research into practice can be difficult,[9] particularly for complex innovations that require behavioural shifts or extensive system changes.[16 30] Lack of consideration of contextual factors – such as availability of time, resources, staff training and support, as well as infrastructure[65 66] – also makes it difficult to expand implementation efforts.[57] Proactive consideration of potential obstacles can help generate more useful evidence that is applicable to a real-world setting.[55 57 67]

A universal approach to implementation is not appropriate. Every setting will have its own unique resource constraints, workflows and cultural considerations, so awareness of the local context is vital.[9 16 68] Research that starts at the international level must be adapted before it can be used to implement an innovation at the local level.[4 9 21 57] This is particularly important when working to ensure there is equitable care within a country, as different settings face different challenges that require specific adjustments to effectively implement an innovation.[7] Wider contextual factors, including the cultural, political and historical forces that affect implementation, should also be considered to ensure that an innovation is implemented in an equitable manner.[7]

How can frameworks help achieve this?

Frameworks can help facilitate the acknowledgement of contextual factors affecting implementation. Generic frameworks are valuable to researchers, policymakers, health administrators and practitioners as they outline the core concepts that should be considered in all implementation efforts.[69] They can include questions or comments about context-specific challenges that may arise when implementing innovation,[25 26] which can then be adapted to the local context (*Case study 3*).[69] This can help in making a framework usable in different contexts,[25] which is valuable to policymakers.[16]

CASE STUDY 3.

Adapting a framework to the country setting to assess health system readiness for an innovative cancer therapy

The Radioligand Therapy Readiness Assessment Framework is an international tool that supports the evaluation of system-level integration of radioligand therapy, including what is needed for the successful implementation of this innovation.[70] The framework outlines a set of questions built around the domains of health systems, which should be adapted and applied to individual countries. The Health Policy Partnership piloted this approach in the UK, with guidance from a multidisciplinary expert advisory group.[71]

The international questions were adapted to the UK context to ensure that the right questions were being asked to effectively assess health system readiness for radioligand therapy.[71]

Tailoring the framework allowed for the development of a comprehensive summary of UK health system readiness for radioligand therapy. After identifying specific barriers, it was possible to generate relevant policy recommendations to support the therapy's implementation.[72]

Iterative improvement

The importance of iterative improvement

Health systems are constantly evolving and facing new challenges, necessitating regular appraisal of their efficacy. An initial assessment is useful to prepare for implementation in an evidence-based manner.[2 27] Subsequently, assessing both intended and unintended consequences of implementation facilitates feedback loops for iterative improvement.[4 73 74] Continued evaluation allows health system researchers and managers to adapt and optimise processes in line with changes in the system and to keep up to date with current evidence – both of which are key to achieving successful, sustainable implementation.[4 31 36 75] This evaluation can help validate choices, guide improvements and gather lessons learnt for use in future implementation (*Case study 4*).[9 76]

CASE STUDY 4.

Sharing implementation problems to help others implement electronic systems

Marina Salud, a healthcare organisation, is responsible for managing public healthcare in the Marina Alta region of Spain through a public–private partnership with the ministry of health of the Valencia region.[77] As part of this remit, Marina Salud established the Denia Hospital, which became operational in 2009.[77] Designed to be fully paperless, the hospital has implemented electronic systems at every part of the care process, including a closed-loop medication administration process.[77] The lack of previous implementation efforts meant that Marina Salud had no other experiences to draw on when implementing the administration process.[77]

The organisation regularly assessed and highlighted the implementation challenges it faced. Some of the issues included:[77]

- insufficient details about medication, making it harder for doctors to prescribe
- the use of generic medication names when doctors were familiar with brand names
- not establishing enough pharmacists to help manage the process of verifying medication.

Marina Salud has addressed these initial barriers to implementation through iterative consideration. At the end of 2009, it created the Clinical Transformation Office, made up of eight clinical professionals from different areas of the hospital, responsible for making the organisational and technical changes necessary to maximise the benefit of the installed technology.[78] Changes were completed through the use of improvement proposals, where barriers were evaluated and prioritised, with necessary changes documented.[78] Any new processes were then validated and training proposals were developed and implemented, ending one cycle of the improvement loop.[78]

This has increased patient safety and led to Denia Hospital receiving the Healthcare Information and Management Systems Society's Analytics Europe Stage 7 for the implementation of its electronic system, the highest certification in this area.[77 79] In addition, by sharing the barriers to implementation that it faced, Marina Salud has helped others trying to implement a closed-loop medication administration process in their own settings.

How can frameworks help achieve this?

Frameworks can be used to encourage an iterative approach to implementation. Frameworks include a set of questions that facilitate quick and easy assessment at multiple timepoints.[27] Their repeatability can make assessments more efficient and cost effective,[9 25] helping stakeholders make evidence-informed decisions based on current information in a rapidly changing health system.

Frameworks also encourage knowledge-sharing, particularly when a single core framework is used across multiple settings. Health system researchers, healthcare managers and decision-makers can avoid common implementation issues and take advantage of proven successful strategies by leveraging existing knowledge. This can help to accelerate the implementation process.

Conclusion

To integrate innovations in healthcare, healthcare managers and procurers of innovation need to focus on ensuring that research translates into practice. The field of implementation science has provided the tools to help with this by breaking down each stage of implementation and highlighting potential barriers to be addressed. Frameworks build on the wider principles of implementation science. They provide a structure for describing, guiding, analysing and evaluating implementation, helping to facilitate the advancement of the key principles of implementation science.[27]

By utilising frameworks, healthcare managers and procurers of innovation can ensure that health systems research and implementation:

- are data-driven
- engage systems thinking
- are co-produced with all stakeholders who impact and influence implementation
- are applicable to local contexts
- involve iterative improvement to promote sustained and successful implementation.

These principles for effective implementation are intrinsically linked. For example, collaboration is needed to fully understand the local context, collect all the appropriate data and gain a comprehensive picture of the wider system, and these processes should be repeated frequently through iterative improvement.

Frameworks support the pursuit of the principles of effective implementation. As such they are a useful tool for building health system readiness for an innovation and ensuring it is implemented successfully across different settings and at scale. In this way, we can ensure that people receive the care they need in a timely manner, and support wider sustainability of health systems.

Further resources

Frameworks and models we have come across in our research for this report include:

Generic frameworks	Frameworks for a specific innovation
Action Scales Model[46]	Health System Performance Assessment (HSPA) Framework for Universal Health Coverage[53]
integrated-Promoting Action on Research Implementation in Health Services (i-PARIHS) framework[80]	Paediatric Oncology System Integration Tool (POSIT)[81]
Partnership for Health System Sustainability and Resilience (PHSSR) assessment framework for health system sustainability and resilience[82]	Radioligand Therapy Readiness Assessment Framework[70]
Readiness Assessment Framework[11]	Framework to support the implementation of LDCT lung cancer screening[83]
WE-CARE Roadmap[84]	Missing Billion Health Systems Framework[85]
Consolidated Framework for Implementation Research (CFIR)[86]	
Non-adoption, abandonment, scale-up, spread, and sustainability (NASSS) framework[87]	
Generic Implementation Framework (GIF)[69]	
Context and Implementation of Complex Interventions (CICI) framework[88]	
Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) framework/Practical Robust Implementation and Sustainability Model[89]	
Theoretical Domains Framework[90]	

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