

Innovation as a driver of quality and productivity in UK healthcare

Creating and connecting receptive places

Sonja Marjanovic, Megan Sim, Talitha Dubow, Jennie Corbett, Emma Harte, Sarah Parks, Celine Miani, Joanna Chataway, Tom Ling

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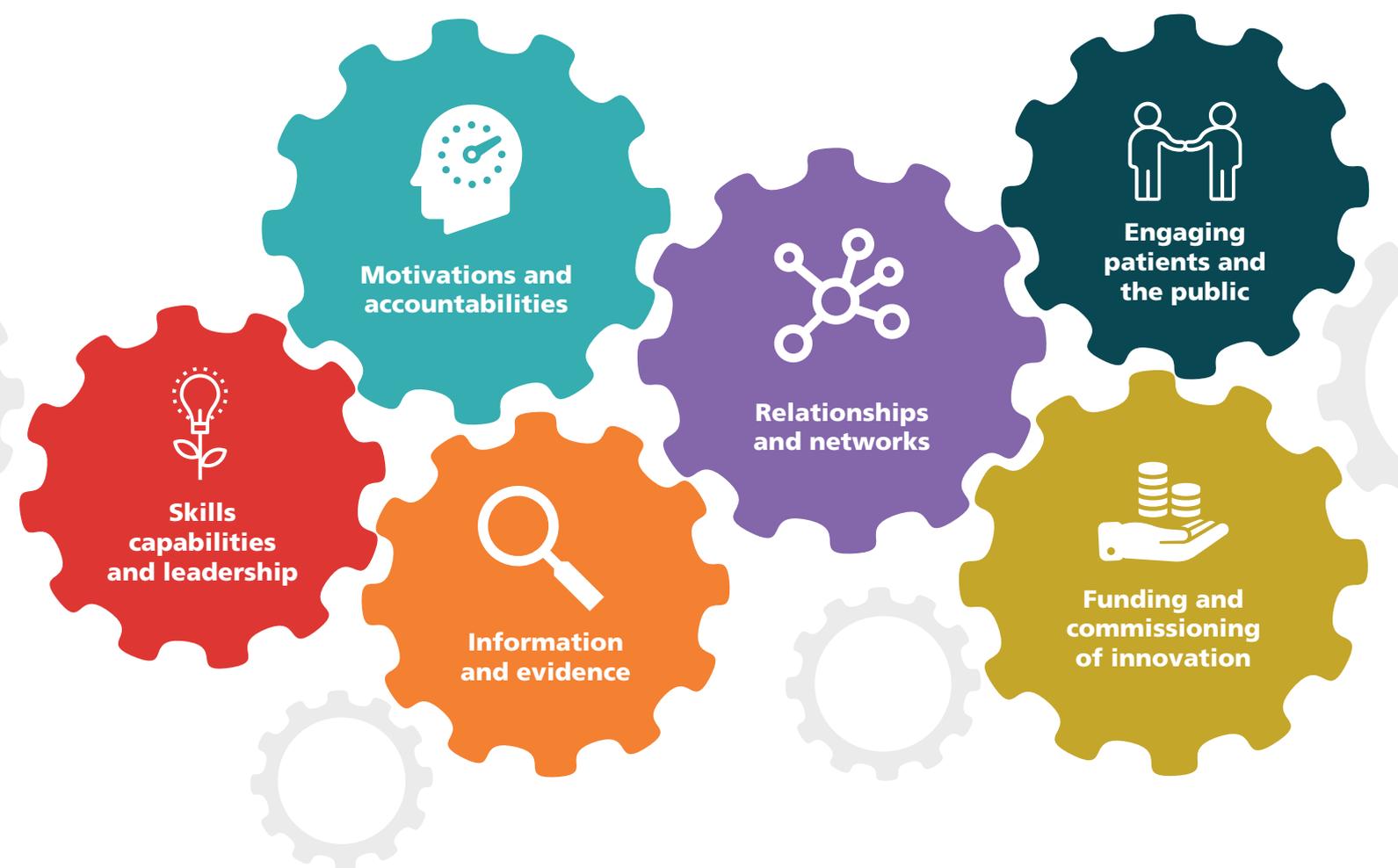
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Working paper: summary analysis of interviews and stakeholder workshops

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Introduction

The demand for health services in England is both growing and changing in nature, yet resources are limited in their ability to respond to the scale and scope of need. As a result, the NHS is under increasing pressures to realise productivity gains, while continuing to deliver high quality care.

RAND Europe and the University of Manchester have been commissioned to conduct a three year study to examine the potential of innovation to respond to the challenges the NHS faces, and to help deliver value for money, efficient and effective services. 'Innovation' in this study refers to any product, technology or service that is new to the NHS, or applied in a way that is new to the NHS, aimed at delivering affordable and improved care. The research is funded by the Department of Health Policy Research Programme, in close collaboration with NHS England and the Office of Life Sciences.

The three year study consists of two stages. Stage 1 was a scoping stage and examined the implementation and outcomes of the *Innovation, Health and Wealth* strategy, which had set out the Department of Health's delivery agenda for spreading innovation throughout the NHS, at the time.² In stage 1, we explored the role of the *Innovation, Health and Wealth* strategy in the national health innovation landscape and its key associated initiatives for taking forward innovation in the NHS,³ with a view to capturing key lessons and informing the design and

implementation of more in-depth work in stage 2. Given the evolution in the national policy landscape, particularly as associated with the *Accelerated Access Review*⁴ and *Five Year Forward view*,⁵ the stage 2 design (discussed further in Section 2) takes account of learning from stage 1 but also focuses on a more comprehensive and timely set of issues.

This document summarises the insights from interviews and stakeholder workshops that have been conducted as part of this two-year study.⁶ We share what we have learnt so far about the types of activities and initiatives that are taking place in the health system to try to support innovation, and highlight some areas to consider in future capacity-building efforts. In the second phase of the study, we will build on the insights gained thus far to identify what are likely to be the highest-impact actions that could enhance the contribution of innovation to health system performance. We aim to establish practical recommendations for stakeholders across policy and practitioner communities. This will be done by: locating the analysis presented in this summary in the context of evolving national priorities; establishing new evidence and insights through qualitative case studies of the uptake of a range of innovations and through engagement with stakeholders to help prioritise actions to support innovation; developing supportive quantitative health economics analyses on the determinants of uptake of proven innovations and on the cost-effectiveness of innovation activity; and triangulating these new data

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- 2 Department of Health. 2011. 'Innovation, Health and Wealth. Accelerating adoption and diffusion in the NHS.' Gov.uk, December. As of 6 March 2017: http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_131299
 - 3 Bienkowska-Gibbs, Teresa et al. 2016. 'Evaluating the role and contribution of innovation to health and wealth in the UK: A review of Innovation, Health and Wealth.' Santa Monica, CA: RAND Corporation. As of 6 March 2017: <http://www.rand.org/randeurope/research/projects/innovation-health-wealth.html>
 - 4 Department of Health. 2016. 'Accelerated Access Review: Final Report.' Gov.uk, October. As of 6 March 2017: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/565072/AAR_final.pdf
 - 5 National Health Service. 2014. 'Five Year Forward View.' England.nhs.uk, October. As of 6 March 2017: <https://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf>
 - 6 This phase of the work was led by RAND Europe.

against what we already know from the existing literature. Further detail on the study design and progress to date is presented in Section 2 of this summary document.

Overall, we aim to gain a richer understanding of how national policy can support regional success, and how in turn regional policies and practices can help shape national policy and strengthen its implementation. We consider both regional and national policy through the prism of how they support actual and specific innovations on the ground (i.e. we are not assessing these against an abstract model of innovation but against their contribution to actual practice). We will look to identify and characterise the priority actions that stakeholders can take to catalyse more innovation-friendly environments in practice and in relation to different kinds of innovation. This will require considering what – among the diversity of current efforts and further capacity-building needs and opportunities that we have identified thus far (and discuss below) – is most relevant, feasible, acceptable, sustainable and likely to facilitate impact at scale and at pace.

In the content that follows, we first describe the background and context to this work (Section 1). We then provide an overview of the study design, methodological approach and progress to date (Section 2). Section 3 presents the emerging learning as it relates to a diversity of health innovation drivers (skills, capabilities and leadership; motivations and accountabilities; the information and evidence environment; engagement with patients and the

public; networks and relationships; and financial resources and the commissioning environment). Finally, Section 4 offers a reflection on the insights gained and on their implications for the evolving health and innovation policy landscape (including for the design and implementation of policy actions), for health innovation practice and for the direction of the next phase of the research.

1. Study context and aims

The NHS, as with all health and care systems, is under pressure to meet the growing and changing demand for services with limited resources. A growing proportion of the population in the United Kingdom is aged over 65 and people are more commonly living with multiple long-term conditions. More widely, the changing nature of the disease burden and more diverse service-user profiles add to the complexity of meeting health and social care needs.⁷ At the same time, new technologies, products, services and ways of working provide opportunities to respond creatively and effectively to growing demands from all age groups. Shaping innovations to respond to changing health and social care needs must be accomplished within well-recognised resource constraints and efforts to achieve efficiencies in how healthcare is delivered.⁸ In this context, realising productivity gains while improving the quality, safety and effectiveness of care is a policy priority. Recent reviews, variously focused on improving quality or cost-effectiveness, include the Accelerated Access Review (AAR),⁹ the General Practice Forward View,¹⁰ the Berwick review,¹¹ the Keogh

7 Age UK. 2017. 'Briefing: Health and Care of Older People in England 2017.' Ageuk.org, February. As of 6 March 2017: http://www.ageuk.org.uk/Documents/EN-GB/For-professionals/Research/The_Health_and_Care_of_Older_People_in_England_2016.pdf?dtrk=true

8 Appleby, John, Amy Galea and Richard Murray. 2014. 'The NHS productivity challenge: Experience from the front line.' The King's Fund, May. As of 6 March 2017: https://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/the-nhs-productivity-challenge-kingsfund-may14.pdf

9 Department of Health. (2016).

10 National Health Service. 2016. 'General Practice Forward View.' England. Nhs.uk, April. As of 6 March 2017: <https://www.england.nhs.uk/wp-content/uploads/2016/04/gpfv.pdf>

11 Berwick, Don. 2013. 'Improving the Safety of Patients in England.' Gov.uk, August. As of 6 March 2017: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/226703/Berwick_Report.pdf

review,¹² Francis enquiries,¹³ and the Carter review.¹⁴ In different ways, these all inform thinking about how best to support improvement efforts and innovation in the health system. The Five Year Forward View¹⁵ provides further focus by emphasising that innovation should be put to the service of reducing inequalities, improving access, strengthening quality and closing efficiency gaps.

Against this background, the primary aim of the study discussed in this report is to examine the potential of innovation to respond to the challenges faced by the NHS, and to help deliver affordable, efficient and effective services. This aim will be achieved by answering four questions:

1. How do organisations working in, and closely with, the NHS perceive and understand innovation, and how does this influence their actions?;
2. Who drives and contributes to innovation and how might successful innovation have greater scale, scope and impact?;
3. Innovations deliver benefits through complex pathways involving many organisations, regulations, incentives and processes; what practical changes to policy, culture and behaviour can support system-wide improvements to these pathways?;
4. How can we measure the contributions of innovation to the social and economic performance of the healthcare sector (i.e. how will we know whether we are innovating well)?

Central to answering these questions is a detailed understanding of what innovation-friendly environments look like and how they might be nourished. We recognise that support for innovation involves local, regional and national levels. Effective alignment between these levels has historically faced diverse challenges related to issues such as organisational structures, long-standing professional identities, a need for better-developed approaches to patient inputs, and a historical separation between innovation processes and the processes of commissioning and managing services. This study will be practical and pragmatic and identify lessons on how to improve the innovation process, its outcomes and impacts, and help identify the steps stakeholders need to take to catalyse more innovation-friendly environments. This is also an academically robust study intended to contribute to advancing knowledge about health innovation systems. Although the context in which this research was commissioned pre-dates specific health innovation policy developments such as the Accelerated Access Review, it will interpret findings in light of the evolving policy landscape, before making final recommendations. The policy interventions which may be introduced will impact on pre-existing systems. A nuanced understanding of the structures, relationships and behaviours in the health system in which new policy will unfold will provide important learning of relevance for system receptiveness to policy developments and to their implementation.

12 Keogh, Bruce. 2013. 'Review into the Quality of Care and Treatment Provided by 14 Hospital Trusts in England: Overview Report.' Nhs.uk, 16 July. As of 6 March 2017: <http://www.nhs.uk/nhsengland/bruce-keogh-review/documents/outcomes/keogh-review-final-report.pdf>

13 Francis, Robert. 2013. 'Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry.' Gov.uk, February. As of 6 March 2017: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/279124/0947.pdf

14 Carter, Patrick. 2016. 'Operations Productivity and Performance in English NHS Acute Hospitals: Unwarranted Variations.' Gov. uk, February. As of 6 March 2017: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/499229/Operational_productivity_A.pdf

15 National Health Service. (2014).

2. Study design and methodological approach – an overview

The study design is rooted in a systems perspective on health and innovation (as illustrated in Figure 1) and adopts a mixed-methods approach (see Table 1), with qualitative and quantitative data-gathering and analyses (e.g. desk research, key informant interviews across stakeholder groups, case studies, economic modelling).

The pathways through which innovations travel are rarely linear and invariably involve multiple organisations, stakeholders and institutions. Understanding how best to support the translation of high-value innovations into practice calls for a whole-systems approach.¹⁶ Through such a systems lens, innovation in the NHS is not a single process, but, rather, a set of activities, organisations, behaviours, regulations, institutions and policies that work together (or not) to create a health system that is receptive to and drives innovation. Specific innovations happen (or not) within a dynamic health innovation system which itself is nested within the wider healthcare system. Understanding the interactions within and between innovation systems and health systems is key to identifying opportunities for impact on healthcare access, quality, safety, efficiency

and effectiveness. In turn, of course, the whole healthcare system (including innovation) is also shaped by a wider socio-economic, political and cultural context which also exerts influence on these ultimate goals.

Thus, simply generating a supply of innovations (however good) is insufficient for uptake, diffusion and spread. Having innovations that are both useful and seen to be useful requires a wider set of drivers and support mechanisms, including: appropriate information and evidence; supportive funding, commissioning and procurement; skills, capacities and leadership; motivations and accountabilities (including regulation) that protect and nurture innovation; and mature relationships and networks that engage the diverse stakeholders who influence innovation pathways (as illustrated in Figure 1). Finally, although there are some practical interventions that would apply equally to all (or most) innovations, it is also important to note that the support required for innovation may vary across innovations in different therapeutic or cross-cutting areas (e.g. patient safety, self-care, data governance) and different aspects of innovation and healthcare pathways (e.g. development, adoption, diffusion stages of innovation; primary, acute and community care settings). This understanding of the health innovation system, as outlined above, frames our study.

16 The literature on systems of innovation is extensive, but see, for example, Lundvall, Bengt-Ake. 1992. *National Innovation System: Towards a Theory of Innovation and Interactive Learning*. Pinter: London. See also: Freeman, Christopher. 2008. *Systems of Innovation*. Cheltenham: Edward Elgar Publishing; Geels, Frank. 2004. 'From Sectoral Systems of Innovation to Socio-technical Systems: Insights about Dynamics of Change from Sociology and Institutional Theory.' *Research Policy*. 33 (6–7): 897–920. doi:10.1016/j.respol.2004.01.015; Geels, Frank and Johan Schot. 2007. 'Typology of Sociotechnical Transition Pathways.' *Research Policy* 36 (3): 399–417. doi:10.1016/j.respol.2007.01.003. Also see OECD. 2010. 'The OECD Innovation Strategy: Getting a Head Start on Tomorrow.' *Oecd.org*, May. As of 6 March 2017: <https://www.oecd.org/sti/inno/theoecdinnovationstrategygettingaheadstartontomorrow.htm>

Figure 1. A health innovation system – conceptualisation

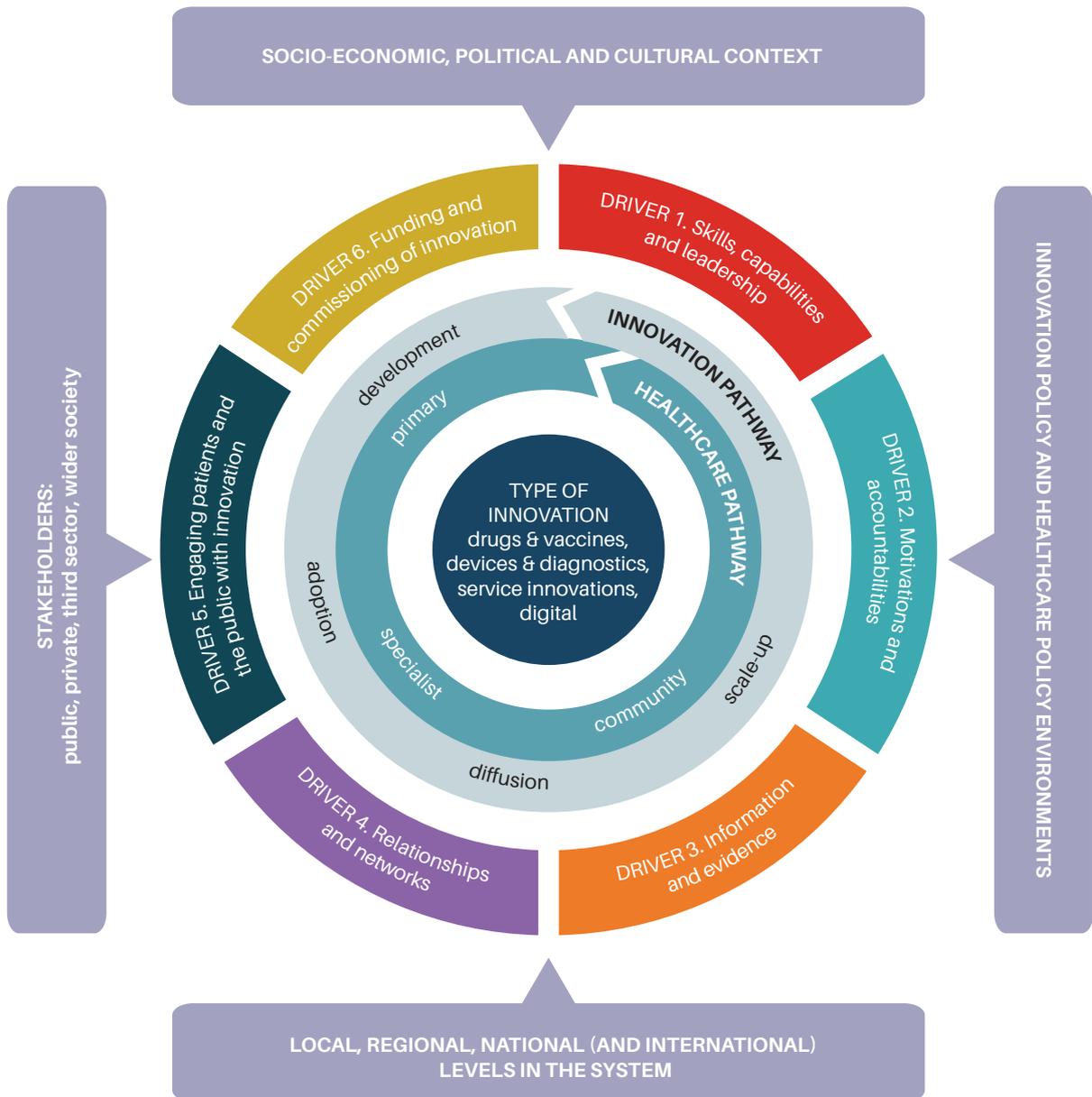


Table 1. An overview of methods for phase 1 and phase 2 of the second stage of the study, and of progress made to date (March 2017)

Qualitative research and analyses			Quantitative research and analyses, including metrics
Completed work-stream	Forthcoming workstreams		
A. Stakeholder workshops and interviews in regional health economies	B. Case studies of innovations in regional health economies	C. National-level qualitative assessment	D. Analysis of health innovation uptake and impact and of improved ways of evaluating innovation performance and associated metrics
(1) To capture and synthesise the knowledge and experience of actors closely involved with innovation and to identify stakeholder perspectives to better understand regional and national health innovation issues as they relate to specific drivers in the health innovation system; (2) To identify current promising practices and perceived gaps. (Completed and reported on in this document)	To identify insights into the often subtle process dynamics and contextual influences driving the progression from innovation development to uptake and diffusion in the NHS, as well as identify reasons why uptake varies. This will be done through case studies of the uptake of innovations (positively appraised by NICE) within and across case study regions. This will help understand how diverse factors interact and relate to each other to jointly enable an innovative health and care system. We will examine this learning in light of the evolution of the policy landscape, and the implementation of policy developments such as AAR and others. (To be conducted in mid-to-late 2017)	To explore cross-cutting issues and the interplay between national and local policy, and to inform practical actions to facilitate innovation-friendly environments across the health system and across the health innovation pathway. This workstream will include a stakeholder prioritisation survey with regional and national stakeholders and workshops to help understand which actions for supporting innovation (amongst the diversity identified in workstream A) are perceived to be the most relevant and feasible priorities for various stakeholders. It will examine how such learning relates to and informs the implementation of AAR and related policy developments. It will also include interviews with national-level stakeholders and key institutions to explore what the findings from case studies of innovations in regional health economies (workstream B) imply for AAR and wider policy implementation. (In progress, to be completed by end 2017)	To examine (1) the uptake of innovations and related impacts, and the use of resources in the health system; (2) to identify ways in which decisions regarding healthcare innovation might be better informed in the future; and (3) to explore improved ways of evaluating innovation performance and associated metrics. This workstream will, through quantitative analysis, provide insights on determinants and predictors associated with different uptake patterns, and complement the qualitative aspects of the study. (Together with insights from qualitative data, to be completed end 2017)
Continual engagement with policymakers and wider stakeholders to ensure timely learning and exchange			

Progress to date and purpose of this summary working paper

Our aim in this **summary analysis of data from interviews and stakeholder workshops** (i.e. working paper) is to share what we have learnt so far about what helps to create 'receptive places' in the innovation landscape (and especially at regional levels), and how they might be enabled to further strengthen innovation. **We**

cannot at this stage propose any definitive solutions – the second phase of our study will be concerned with recommendations and identifying priority areas for action. A full report on the work conducted to date will also be published shortly.

Our work to date has identified diverse activities and initiatives taking place both within the regions participating in this research and at a national

level, and that seek to support innovation-friendly healthcare environments. We have also been told of perceived gaps in provision, and examined some of the issues facing future capacity building. By bringing to the surface the experiences and knowledge of a wide variety of people engaged in these activities, this work to date has, we believe, brought additional nuance, empirical richness and explanatory power to existing knowledge about improving innovation in the NHS. As mentioned in the introduction, this summary identifies insights from this first phase of research for stage 2 of the overall study, drawing evidence primarily from workshops across four different regional health economies and key informant interviews with health and care providers, commissioners, higher education and research representatives, charities, patient and public involvement bodies, private sector and local authority stakeholders, and innovation institutions and networks.

To select the regional sites, the research team conducted desk research and a document review, and consulted with representatives from the Department of Health, the Office of Life Sciences, NHS England and additional experts. The regional health economies were selected to reflect a range of experiences, approaches and geographies, and to solicit diverse stakeholder views on important areas and organisations to learn from. The four regions are: Eastern, Greater Manchester and North West Coast, South West, and University College London Partners (UCLP) and related actors. Through this process, we have engaged with over 220 individuals with expertise and substantial experience relevant to health innovation. The scale and scope of this research has enabled us to establish a uniquely nuanced and intricate understanding of the different ways in which innovation manifests itself across professions, organisations, geographies and disciplines in England. This phase of the project was primarily concerned with achieving this detailed understanding of the current landscape and identifying efforts (and the specifics of gaps) that might improve one or more aspects of the health innovation system.

In the context of the four core research questions presented on page 2, the analysis of data from interviews and workshops conducted to date (i.e. workstream A in Table 1) has helped inform Question 1 (i.e. How do organisations working in, and closely with, the NHS perceive and understand innovation, and how does this influence their actions?) and Question 2 (i.e. Who drives and contributes to innovation and how might successful innovation have greater scale, scope and impact?). In Section 3 below, the narrative information presents key learning points to date, relating to the actions through which innovation is being supported in the regions participating in this study and to additional areas where capacity building was said to be needed (as perceived by the individuals we consulted). This learning is discussed for individual categories of innovation drivers (as described in Figure 1) which collectively, and through combinatorial effects, determine health innovation system performance and impact. The Boxes that accompany the core narrative in Section 3 provide concrete examples of initiatives taking place regionally to support each driver. Together, this emerging learning paints a picture of an evolving and dynamic system, but one where there is scope for prioritisation of activities and effort, and for more coordinated collaboration both within regions and across them, and in light of national policy developments.

Although we cannot propose definitive solutions to the complexities of creating connected and receptive places for innovation in the health system at this stage of the research, we aim to ensure that the research and analysis that is to follow in the next stage of this study (i.e. workstreams B–D in Table 1) will help us arrive at prioritised recommendations and further mature learning on facilitating scale, scope and impact (which come under Question 2). This will require considering what – among the diversity of current efforts and further capacity building needs and opportunities that we have identified thus far (and which we discuss below and summarise in Figure 2) – is most relevant, feasible, sustainable and likely to

facilitate impact at scale and at pace. It will also require considering this learning in light of the evolving policy landscape. To this effect, the combination of workstreams which remain to be implemented – specifically: (i) quantitative health economics analyses on the determinants of uptake of proven innovations and on the cost-effectiveness of innovation activity (workstream D); (ii) qualitative case studies of the often subtle processes and contextual influences supporting the progression of proven innovations through the pathway from idea generation and development through to uptake and diffusion in the NHS (workstream B); and (iii) national-level analysis (survey, workshops and interviews with key stakeholders) to prioritise and inform national and regional actions and their implementation (workstream C) – will help us draw actionable recommendations to inform Question 3 (i.e. What practical changes to policy, culture and behaviour can support system-wide improvements to these pathways?). Triangulating insights from workstreams A–C against what we know from existing literature, and considering improved ways of evaluating innovation performance and associated metrics (workstream D) will help answer Question 4 (i.e. How can we measure the contributions of innovation to the social and economic performance of the healthcare sector?/How will we know whether we are innovating well?).

Together, this learning will help identify what are likely to be the highest-impact actions to improve the contribution of innovation to the health system, provide insights to inform national policy and its implementation, and advance academic knowledge on innovation for improvement in the health system. For more detail on work-packages, please refer to Table 1.

Caveats

There are some caveats to consider when interpreting the insights from the stakeholder workshops and interviews that we report on in this document.

First, we have engaged with a large number of stakeholders from four regional health economies, but recognise that there are still other individuals and organisations with valuable insights whose views we are yet to include. However, we have been struck by how much the individuals we have so far engaged with have been both aware of other views and have recognised the diversity of contributions needed for the overall health innovation system to function effectively. Given the range and nature of individuals consulted, we believe we have obtained a balanced and rounded view of the current landscape and future opportunities.

Similarly, while the key messages arrived at largely apply across the regions with which we engaged, there are also specific regional differences which have implications for future capacity-building efforts. Some regions have historically focused one or another aspect of innovation and are at different stages of capacity development for innovation. Similarly, there are differences in the scale of expertise and focus on product versus technology versus service innovation. Also, key innovation institutions within regions (such as Academic Health Science Networks [AHSN] and Innovation Hubs for example) have played varying roles. As our work evolves in the next phase of the study, we will explore these regional dimensions in greater depth through case-studies and additional stakeholder engagement, to understand what they imply for the prioritisation of regional activities and for connections between regions.

Finally, the emerging learning discussed in this document is derived from data collection conducted prior to the publication of the AAR final report. However, we believe the insights presented below remain highly relevant and offer important insights on the implications, opportunities and challenges for policy. We highlight some implications below, and will be exploring them further, as well as developing practical recommendations, in the next phase of our study.

With these caveats in mind, the messages we identify below should be understood as well informed but provisional.

3. Key learning from the analysis of interviews and stakeholder workshops: creating receptive places for innovation

We are not alone in emphasising that there is no single ‘magic ingredient’. Successful innovation happens when combinations of drivers come together. Our work to date suggests that these combinations can be thought of as creating receptive places for innovation which have in common: (i) innovation skills, capabilities and leadership; (ii) networks and relationships that connect the different parts of innovation pathways; (iii) incentives and accountabilities in the system that reward managed risk-taking, long-term approaches and service transformation; (iv) financial resources, commissioning and procurement environments and associated governance and regulation that provide the necessary funding, time and permission from management to allow innovators to thrive; (v) engagement with patients and communities who can create added pull for patient-facing innovation at pace and scale; and, critically, (vi) an appropriate information and evidence environment in which to make sound decisions – locally, regionally and nationally.

In the content below, we discuss key insights and messages from the work we have so far conducted, as they apply to each of these drivers. We describe current initiatives intended to ensure vibrant health innovation ecosystems in the regions we have engaged with.¹⁷ We also show what study participants highlighted as important areas to consider as this research evolves and in future capacity building in the system. We aim to share learning that is relevant both for

policymakers and practitioners of healthcare and innovation. For example, we have been told that many frontline healthcare staff and innovators in the regions we engaged with are not aware of the diversity of innovation-related initiatives and opportunities available in their own regions, other regions or nationally. We hope that the examples we present in Boxes 1–6 provide helpful practical information and knowledge in this regard.

The learning we have gained adds considerable depth to the practical discussions presented above regarding how innovation can be first nurtured and then made meaningful and actionable in a variety of settings – this is important given the complexity of health innovation systems and the diversity of elements that need to interact and work together for the overall system to function effectively. We will develop these detailed learning points into a more systematic analysis as the research evolves. However, even at this early stage, there are important insights for policymakers to consider.



1) SKILLS, CAPABILITIES AND LEADERSHIP

A diverse but not infinite set of skills and capabilities are needed to deliver successful innovation in the health system. **As overviewed in Box 1 below, a variety of initiatives at national levels, as well as in the regions we engaged with, are seeking to build innovation-related competencies.** This includes strengthening the skills base via: (i) training and professional development programmes to support innovation supply or capacity for innovation uptake in the health system; (ii) leadership training, coaching and mentoring schemes; (iii) strengthening professional networks to create connected communities with sufficient

17 Some of the initiatives span multiple innovation drivers.

Box 1. Skills, Capabilities and Leadership
SUPPORTING SKILLS, CAPABILITIES AND LEADERSHIP TO ENGAGE WITH INNOVATION IN THE HEALTH SYSTEM: Examples of ongoing efforts and initiatives in focus regions and nationally

- The **NHS Innovation Accelerator (NIA)** supports an annual cohort of fellows to find a route to market for healthcare innovations assessed to have potential for high impact. Through mentorship, partnerships with the AHSNs and others, peer-to-peer exchange and learning, educational events and bursaries, the NIA seeks to accelerate NHS uptake of mature, evidence-based innovations at scale, and to foster a more innovation-friendly environment. The UCLP AHSN hosts the NIA nationally.
- **The Clinical Entrepreneur training programme** aims to equip health professionals with the skills, expertise and capacities to develop as entrepreneurs and leaders within the NHS. It offers enhanced professional development opportunities and skill development to support the delivery of innovations into the healthcare system, as well as contribute to economic growth. Fellows are given time out from their clinical responsibilities and are supported by an integrated programme of mentoring and coaching, placements and internships, network facilitation, educational courses and events, and funding. The programme is managed by NHS England and Health Education England.
- **Other training programmes for building innovation capabilities and leadership (regional examples):**
 - Health Innovation Manchester is developing an integrated strategic leadership model. This model will convene leaders with different expertise and backgrounds to exchange skills and build collective capacity for engaging with health innovation.
 - Innovation leadership training for Innovation Scouts and Champions in Greater Manchester and North West Coast focuses on skills for connecting different healthcare communities around health innovation issues.
 - Innovation Leader training provided by NHS Innovations South West (NISW) helps nominated individuals from regional NHS Trusts to understand the innovation pathway, intellectual property (IP) issues, and how to make a successful business case for the NHS. NISW has received funding from NHS England to make this training available online.
 - Health Enterprise East offers market research consulting services and training to strengthen innovation skills (especially as they relate to entrepreneurship, commercialisation and the development of a business case).
 - The Eastern AHSN (EAHSN) 'Primary Care Accelerator' facilitates access of GP practices to skills needed to implement innovative concepts in primary care.
 - The Clinical Effectiveness Group, based at Queen Mary University of London, supports primary care professionals to develop their implementation skills, for example, by increasing their information technology literacy.
 - Clinical network leadership groups in UCLP and related actors' region of influence exchange learning and build skills for scaling up promising innovations and practices (e.g. skills for influencing people, negotiating, and presenting a persuasive business case).
 - The Board of Barts Health NHS Trust uses a pool of industry experts to access expertise and advice for clinicians on innovation issues.
- **Coaching roles within Trusts** – where individuals trained in innovation skills or with innovation-related functions mentor others (e.g. Innovation Scouts, Leads or Champions, Innovation Panels).
- **Problem-solving forums** for healthcare professionals and innovators to pose questions, exchange views and collectively explore solutions (e.g. the North West Coast hosts 'Hackathon' events, a similar model is being tested in the South West, and the 'ideaSpace' in the Eastern region offers a forum for innovators to develop ideas with support from multiple stakeholders and peers).
- **Information and knowledge exchange institutions** to build capacity for learning and awareness-raising on innovation opportunities and activities (e.g. AHSNs, Innovation Hubs, the Advancing Quality Alliance (AQuA) and the DigitalHealth.London Accelerator – see Box 3 and Box 4 for more detail). In Greater Manchester, Trustech (an Innovation Hub) works to plug knowledge and capability gaps in the region. For example, Trustech acts as a go-to source for information; it has worked with Oldham Clinical Commissioning Group (CCG) to evaluate a number of innovations; it has developed a 'league table of innovation' with heads of procurement in order to foster a culture of procuring successful innovations; and it has created a 'multi-stage programme of due diligence and evaluation' to help ensure that evaluation resources are invested in the most promising innovative products.

knowledge-management capacity to access and use innovation-related information and evidence for responding to service improvement challenges; and (iv) well-facilitated problem-solving and idea generation events and forums bringing together entrepreneurs, healthcare professionals, investors, mentors and the wider health and care community. There was also a perception amongst the individuals we consulted that innovation capability-building in the UK has historically focused more on the supply side of the innovation pathway than on skills for adoption and scale-up. However, the perception was that this imbalance is gradually being redressed.

Our research to date also suggests that strengthening skills, leadership and capabilities for innovation may in addition require the following aspects of capacity building, to be examined further in the next phase of the project:

- **Scaling up of skills and training programmes** in specific aspects of innovation, including skills and capabilities for: **needs assessment and problem articulation; networking, brokerage and leadership; matching innovation supply and demand;** more sophisticated **health economics** analyses; enhanced **evaluation and data analytics** as well as **interpreting and communicating evidence; implementation and change management;** and making a more compelling **business case for innovation uptake**. These capability-building areas are all important when considering the scale-up or evolution of existing programmes (e.g. Clinical Entrepreneur training, NIA, regional Innovation Lead training), or for introducing new skills-focused initiatives.
- **Embedding innovation thinking and training into educational curriculums and Continuing Professional Development** for both clinical and management staff in the health system.
- Strengthening capacity to engage with

innovation through **cross-sector learning** (e.g. greater engagement with the private sector especially around ways to conduct public sentiment analysis, and business case and commercialisation skills).

- **Sustaining investments in existing regional institutions** such as AHSNs and Innovation Hubs. These are important for strengthening skills to match innovation supply and demand, and to broker relationships and ensure a critical mass of connected innovation leaders, required for progressing innovations throughout the pathway from idea generation through to development, adoption, diffusion and scale-up.



2) MOTIVATIONS AND ACCOUNTABILITIES

As illustrated in Box 2, there are diverse practical mechanisms within health and care organisations to incentivise innovation, although at present there is little evidence on the cost-effectiveness of different approaches. Improving the **quality of care for patients, financial incentives** for individuals and organisations, opportunities for **professional development, reward and recognition are seen to be key motivators** for individuals and organisations to innovate. Other approaches to translating motivation into action include: releasing resources (time, funding) to incubate ideas and pursue innovation-related activity; sharing evidence on impacts from innovation; and establishing reward and recognition schemes, financial returns and performance-related incentives. Alongside such approaches designed to motivate innovation, there are diverse formal innovation roles and functions in provider organisations (e.g. Innovation Leads, Innovation Scouts, Directors of Innovation and Improvement). Often working together in regional and national networks, these seek collectively to support innovation-friendly environments.

However, despite the variety of individual and organisational motivations, there is a **lack of scale, connectedness and consistency in**

Box 2. Motivations and Accountabilities



SUPPORTING MOTIVATIONS AND ACCOUNTABILITIES TO ENGAGE WITH INNOVATION IN THE HEALTH SYSTEM: Examples of ongoing efforts and initiatives in focus regions and nationally

- **Trust schemes and programmes which buy out health professionals' 'time and headspace' to engage with innovation.** At a national level, the NIA and Clinical Entrepreneurship training programmes give fellows time out from their clinical responsibilities.
- **Formal innovation roles in (some) Trusts or innovation remits embedded within improvement roles,** with responsibility for facilitating high-value innovation-related activities (e.g. Innovation Leads, Scouts and Champions, Directors of Improvement, Directors of Patient Experience, Innovation Panels).
- **Recognition and rewards schemes for innovation activities in Trusts** which facilitate professional development and enhance reputations (e.g. the Bright Ideas Scheme and Innovations Database competitions in the South West).
- **Funding for innovation, including mini-competitions for seed funding in Trusts to incentivise a culture of innovation and the incubation of ideas** (e.g. 'Dragon's Dens' competitions, see Box 6).
- **Financial incentives for organisations** (e.g. royalties from innovation, system-level efficiency and cost-effectiveness gains, and outcome-based commissioning models such as in Somerset and Torbay, that may help recoup upfront organisational investments in innovation).
- **Financial incentives for individuals** (e.g. royalties and licensing arrangements stemming from innovations).
- **Data may also be used to identify opportunities for innovation.** For example, in the South West, as part of the Somerset primary and acute care system Vanguard, the Clinical Support Unit collaborated with York University to provide user-friendly datasets on the whole of health and social care across Somerset. This data helped map challenges and population needs, and helped identify appropriate service design innovations.
- **Networked initiatives with a specific innovation remit and joined-up governance structures are considered to help strengthen accountabilities for innovation in the health system.** Although still in early days, examples of such approaches may include those taken by Health Innovation Manchester and the Care City Test Bed in London, and in evolving roles for AHSNs and Sustainability and Transformation Plans.
- **Metrics-based incentives.** For example, Improving Medicine with Innovation and Technology (MIMIT) and the Local Enterprise Partnership (LEP) in Manchester are designing key collective innovation metrics to measure progress and to promote accountability.

these incentive mechanisms across regions and at the national level. **Addressing this requires further system-level interventions** to enhance incentives and accountabilities for innovation. In addition, **approaches for further exploration were suggested by study participants** including:

- **Strengthening and scaling up permission to innovate in provider organisations.**¹⁸ For example, some potential avenues that we will explore further might include:

(i) buying out programmed activities; (ii) embedding innovation into job descriptions and performance reviews; and (iii) funding incentives to address the upfront costs of innovation and to facilitate benefit-sharing.

- **Mechanisms to build a collective identity and sense of community for innovating health and care professionals,** including efforts aimed at health professionals' education and early career development (e.g. visible and stable leadership for

18 The scaling up of permission to innovate is needed so that individuals can have more time and scope to engage with innovation, and so that a critical mass of interested and appropriate individuals can be offered innovation-related opportunities.

innovation at different organisational levels, teamwork on innovation challenges).

- **Addressing risk cultures in the NHS, through the promotion of responsible and accountable risk management** (e.g. through the creation of standards, clear communication from leadership, and engagement with other sectors to exchange insights on risk management).
- **Additional incentives for innovation uptake specifically, as well as associated decommissioning** (e.g. awards for the uptake of proven, high value-for-money innovations developed elsewhere; improved information and evidence flows on innovation performance; performance indicators linking innovation to accountability).
- **Additional incentives for being entrepreneurial**, including through clarity around financial benefits and innovation priorities in the NHS, and clarity on NHS IP policies and benefit-sharing arrangements for innovators.



3) INFORMATION AND EVIDENCE

As shown in Box 3, the current knowledge exchange and knowledge management landscape on innovation is characterised by a plurality of efforts including: (i) regional innovation and health improvement networks which play a role in facilitating the spread of innovation-related information and evidence; (ii) individuals with innovation roles in regions who serve as an important go-to source of information and as boundary-spanners and entry points into relevant networks; (iii) regional and national-level face-to-face and virtual platforms for sharing ideas and evidence of impact from innovation, within and between organisations (e.g. meetings, committees, institutional boards, Trust websites, national platforms like the Academy of Fabulous Stuff); and (iv) legal mechanisms to reduce blockages to information- and evidence-sharing (e.g. Non Disclosure Agreements (NDAs), royalty arrangements).

There is a wealth of information and evidence on innovation available in the health system, but the **sources are fragmented and the content often lacks appropriate communication and targeting**. Addressing this will require **capacity building to curate, interpret, translate and better target relevant information** to various stakeholder groups. Among other steps, this will involve:

- **Responding to key information priorities**, including: (i) improved evidence on population needs as they pertain to proposed innovations; (ii) platforms for better signposting to innovation actors; (iii) information about innovation opportunities to raise awareness among frontline staff; iv) information about available means of commercial support for innovators; (v) information about opportunities for bringing innovations into the NHS; and (vi) baseline and outcomes data (including real-world evidence) to inform decision making by commissioners and providers. Better evaluative evidence, including on factors for successful implementation, is also needed to support the commissioning and scaling up of innovations in the NHS. It would also help to clarify to innovators the standardised expectations of the burden of proof required to justify innovations.
- **A more explicit strategy for managing and communicating information and evidence at national and regional levels**. This should be based on a **mixed-methods approach combining digital and ‘real-world’ face-to-face interactions**, which recognises the multiplicity of information sources that stakeholders consult. For example, there may be a role for a national but targeted and interactive information platform, complemented by strong regional information exchange environments based on face-to-face interactions, and investment in interoperable IT systems for data-sharing and linkage. There is a need for an active strategy, rather than overreliance on passive communication mechanisms.

Box 3. Information and Evidence



SUPPORTING INFORMATION AND EVIDENCE ENVIRONMENTS FOR INNOVATION IN THE HEALTH SYSTEM: Examples of ongoing efforts and initiatives in focus regions and nationally

- **Regional innovation and health improvement networks play an important role in facilitating the spread of information on innovation opportunities, evidence of impact, and stakeholders to contact for innovation support:**
 - AHSNs, Innovation Hubs, Vanguard and Test Beds help coordinate information and evidence and capture learning around implementation.
 - In Greater Manchester and North West Coast, the Knowledge Transfer Network produces a monthly newsletter with information on relevant innovation initiatives and funding opportunities.
 - NISW (an Innovation Hub) disseminates information on funding opportunities for innovation through a monthly grant scanner.
 - Health Innovation Manchester is developing a strategy for appropriately cascading relevant information to partner organisations.
 - In the North West, AQUA helps sift and structure information for innovation.
 - The Greater Manchester AHSN leads the Datawell project to share health and social care data across NHS organisations.
 - The Innovation Agency has an Innovation Exchange platform which showcases new innovations that professionals in the healthcare sector want to share with colleagues. Other AHSNs in the area have set up similar platforms.
 - The Local Government Association Health Integration Network in the Eastern region brings together different stakeholders in health and social care (with increasing representation from housing as part of the preventative care agenda) to share good and emerging practice around healthcare funding and delivery and to prevent duplication of efforts, including in areas related to innovation.
 - The three AHSCs in London meet each month to share information and evidence for innovation.
 - London Cancer has pathway boards and expert reference groups for different types of cancer. They support clinical leadership within the region to define best practice.
- **Information exchange forums (face to face and virtual) for sharing ideas and evidence of impact from innovation, within and between organisations.** Some examples include:
 - Innovation meetings and roundtables in Trusts (e.g. 'Innovation Breakfasts' in the South West, and knowledge cafes or 'randomised coffee trials' in the Eastern region).
 - Digital platforms, such as the Academy of Fabulous Stuff, at a national level.
 - At a regional level, some examples of digital platforms include:
 - LifeSystem, a quality improvement project portal developed by the South West AHSN, now used in over 12 AHSNs in England.
 - An idea management system managed by NISW that captures and shares new models of care around primary care.
 - Jive, an internal social media platform used by partners in the South Somerset Symphony Programme Vanguard to share documents and discuss key issues.
 - EAHSN meets with private sector organisations to explain the information and evidence requirements of the NHS. This is common to regions across the country.
- **Formal mechanisms (e.g. legal instruments, commercial advice) to facilitate the sharing of information on innovations, when potential commercial sensitivities may apply:**
 - Regional NDAs have been set up by the South West AHSN for its member organisations in order to enable critical feedback between Trusts on early-stage innovations. Such feedback is useful for informing the development of a potential innovation.
 - NISW provides information on IP and legal issues.
- **Individuals with formal innovation roles help raise awareness of innovative activity and play an information brokerage role between relevant networks** (e.g. Innovation Scouts and Leads, Directors of Innovation and Improvement, and Innovation Panels in Trusts).



4) RELATIONSHIPS AND NETWORKS

The value created by the innovation landscape is in part determined by diverse initiatives, relationships and networks within and between regions (see Box 4). These span institutions such as AHSNs, Vanguard, Test Beds, Innovation Hubs and Catapults which are linked to national transformational initiatives but are managed at the regional level. In addition, there are various region-specific catalysts of innovation, including health R&D networks, patient safety collaboratives, quality improvement networks, and entrepreneurial initiatives such as accelerators and incubators. Regional collaboration is increasingly central to the health innovation system's architecture, with new and evolving roles for AHSNs and other actors.

Despite a fertile and diverse landscape of actors, it is not clear that the system – as it currently stands – has the capacity to manage and take full advantage of the complexity of opportunities and initiatives. In terms of future needs, stakeholders interviewed in our study or participating in workshops identified the following areas for further consideration as the research and policy landscape evolves:

- **Clarifying and making more visible the roles, remits and complementarities of specific initiatives** would reduce barriers to collaboration arising from exacerbated competition and unclear or duplicated mandates or remits.
- **Scalable joint working mechanisms**, such as secondments, dual roles and greater multi-profession representation at senior levels on boards, should be considered as potential levers for further strengthening cross-network (e.g. AHSNs, Vanguard, Test Beds), cross-sector (e.g. NHS/health and social care and voluntary) and cross-profession (e.g. primary, acute care) collaboration. However, their feasibility, acceptability, appropriateness and sustainability will need to be further examined

as the work evolves, and they are not likely to work in isolation from other levers.

- In general, collaboration between the NHS and the private sector is perceived by study participants to be less developed than relationships between the NHS and universities, research institutes or charities. Areas for attention include **capability in the private sector to articulate a compelling business case for the NHS** (i.e. which addresses issues such as decommissioning needs and the practical realities of implementation), and **improving the NHS's ability to articulate its innovation needs to the private sector and clarify routes to the NHS market** (including via broker organisations and networks such as AHSNs).
- Our respondents suggest that **AHSNs are primarily geared towards providing information, evidence, network brokerage and innovation functions that can support the progression of innovations across the pathway.** However, **specific regions highlighted additional areas where AHSNs might also provide support**, such as **implementation, legal and IP advice**, and **evaluation** expertise. **AHSN metrics will need to be revisited to reflect the evolution of their roles** and to address some unintended effects of the current metrics approach (such as a lack of focus on incentives for uptake of innovations developed elsewhere – i.e. non-home-grown innovations). AHSNs also need to be supported to work together as a national network, to exchange information and evidence of best practice, and to raise awareness of local priorities.

While most of our data collection involved individuals who are engaged in innovation activities, they were also well aware of the far larger number of NHS staff for whom innovation is not part of their core functions. However, even those less directly involved have an important role to play in making the NHS, as a whole, a welcoming and receptive place for innovation.

Box 4. Relationships and Networks



SUPPORTING ENABLING RELATIONSHIPS AND NETWORKS FOR INNOVATION IN THE HEALTH SYSTEM: Examples of ongoing efforts and initiatives in focus regions and nationally

A diversity of national and regional institutions play a role in collaborating and coordinating innovation:

- AHSNs, Innovation Hubs and Test Beds play an important regional coordination and relationship brokerage role, most directly related to healthcare innovation.
- Healthcare innovation activity is supported by broader innovation and quality improvement networks and enterprise organisations, such as the Knowledge Transfer Network, Collaborations for Leadership in Applied Health Research and Care (CLAHRCs), LEPs and AHSCs.
- Vanguards of new models of care were seen as important networking institutions in the service improvement space (but more indirectly to service innovation).

Other examples of key institutions involved with creating and connecting receptive environments for innovation, as identified in the regions involved in this phase of the project:

Greater Manchester and North West Coast

- The Innovation Agency (AHSN) in North West Coast has outlined four principal goals for 2016–2018: (i) accelerating the delivery of safer, better care; (ii) developing a network of health innovation centres; (iii) supporting economic growth through SMEs and industry; and (iv) driving digital innovation that empowers citizens and the workforce. It seeks to achieve this by building on three core capabilities: brokering collaboration and networks; showcasing high-impact innovations; and putting innovation into practice and evaluating impact. It has also led the piloting of a rapid-turnaround open-innovation approach, where business sector representatives go on-site in Trusts to identify needs and develop solutions.
- The Greater Manchester AHSN (GM AHSN) has a key role in supporting networks in the region and improving the flow of information and data. GM AHSN is working together with the Greater Manchester Health and Social Care Partnership to shape and develop a pipeline of innovation that can be supported at the regional level. Working together with Trustech, GM AHSN also hosts the Innovation Nexus, which helps companies with innovative products and services engage with the NHS.
- Lancaster Health Hub brings together ten university and NHS partners to increase local research collaborations and knowledge exchange.
- The Innovation Scout network brokers new contacts and relationships around innovation.
- The MedTech Centre offers small spin-out companies incubation support services.
- The Northern Health Science Alliance is a membership organisation brokering relationships across sectors.
- The North West Healthcare Science Network brings together healthcare scientists working in different areas in order to share cross-disciplinary learning around innovation.
- The Genomic Alliance Network in the North West has set up a Translational Research Laboratory which works closely with the Centre for Genomic Research.

South West

- The South West AHSN has recently shifted its focus from supporting the development side of innovation to a greater facilitation of demand, uptake and diffusion. Its focus over the next five years is on prevention/early intervention and person-centred coordinated care, as well as on forming closer relationships between its member organisations. The AHSN articulates three main strategic aims for its innovation work: (i) helping to create conditions for the adoption and acceleration of innovation from external markets; (ii) accelerating the development of innovations which have some existing evidence of effectiveness; and (iii) accelerating the adoption of innovations into practice in the South West and facilitating spread.
- NISW offers access to expertise and information on IP and legal issues and wider-scale commercialisation activity.
- Somerset Symphony Programme Vanguard conducts regional health assessment using both health and social care data to inform innovation and improvement needs.
- Torbay and South Devon NHS Foundation Trust (FT) and South Devon and Torbay CCG hold a commissioner-led, community-wide monthly panel with primary care, local authority and private sector representatives focusing on product innovation.
- Development of a shared strategy between the CCGs of Devon and Cornwall to instigate strategic innovation on their patch.
- PenCLAHRC facilitates NHS–university collaboration in a range of clinically relevant areas.

SUPPORTING ENABLING RELATIONSHIPS AND NETWORKS FOR INNOVATION IN THE HEALTH SYSTEM: Examples of ongoing efforts and initiatives in focus regions and nationally

Eastern

- The Eastern AHSN (EAHSN) was historically seen as: (i) a matchmaking platform for innovators and funders, including through hosting the Small Business Research Initiative (SBRI) scheme; (ii) a source of seed funding and health economics support for innovators; and (iii) a platform facilitating NHS engagement with the private sector. EAHSN recently extended its focus from particular clinical pathways to acute and primary care. Current leadership sees the role of EAHSN as being to create a culture and infrastructure that promotes the penetration of innovation into the NHS by: (i) helping to link innovators outside of the system with relevant stakeholders within the NHS; (ii) helping innovators within the NHS to navigate the innovation pathway outside of the NHS (e.g. around IP, procurement) while maintaining effective relations with their Trust; (iii) mapping the innovation landscape in the Eastern region to see who is engaged and available to contribute to innovation and bringing these people and organisations together; and (iv) carrying out needs identification to help match solutions to needs.
- EAHSN is working with Health Enterprise East to support a network of Clinical Entrepreneurs (e.g. through forums for networking and information exchange).
- EAHSN's 'Provider Efficiency, Effectiveness and Quality' programme will bring providers and industry together to identify needs and develop and implement innovation solutions.

UCLP and related actors

- UCLP sees its primary remit as connecting actors and innovation initiatives with a view to enabling uptake, adoption, diffusion and scale-up. The key collaborators are the Vanguard, Test Beds and Innovation Hubs, various Accelerators, pharma and SMEs. In addition to its matchmaking role, UCLP has invested particularly in assimilating and disseminating information and promoting evidence-based best practice. UCLP also hosts the national NIA programme.
- The three AHSCs in London meet each month to discuss collaboration.
- Care City Test Bed's Innovation Exchange brings together health partners and community representatives to identify community needs and shape the development of innovative solutions.
- King's Health Partners is leading the development of clinical academic networks, termed 'institutes', responsible for the outcomes of every patient in their local clinical pathway – including through innovation and quality improvement efforts.
- The Health Innovation Network collaborates with its local CLAHRC on testing implementation projects.
- The Digital Health Institute is a multi-agency collaboration to facilitate the development and uptake of digital health technologies.
- In Hackney CCG all pathways are led by GP–consultant pairs: these pairs collaborate to identify areas of each pathway where improvements are needed, and then to develop solutions.
- The DigitalHealth.London Accelerator programme supports SMEs to engage with the NHS and accelerate uptake of their innovative products.

Across the variety of national and regional initiatives described by research participants, **operational, physical and relational mechanisms to facilitate cross-organisational collaboration** (for example through co-location, dual roles, secondments and reciprocal representation on Boards) were seen as important for embedding a culture of multi-organisational working and exchange.

This has encouraged us to reflect that there is a division of labour in which a small number play a role fully committed to leading both innovation initiatives and cultural change in the NHS, with a larger and more distributed group routinely managing and facilitating innovation, and a third, even larger group, whose roles do not include innovating as a core function, but whose behaviour will determine whether the NHS is receptive to and uses innovation or not. Each

group requires a different kind of engagement, but each group is important for overall success.



5) ENGAGING PATIENTS AND THE PUBLIC WITH INNOVATION

There is growing recognition that a sustainable and effective health innovation system needs to involve patients and the public throughout the innovation pathway (i.e. in prioritising needs,

articulating demand, contributing to innovation programme and project implementation, and enabling and advocating for the uptake of effective innovations and their evaluation). **Across the regions considered in our research, health and care actors are working to engage patients with health innovation through dialogue, awareness-raising, advocacy**

with the third sector and demonstrations of innovations at wider community events, or through web-based platforms and institutional patient and public participation or reference groups, as some examples (see Box 5). Our insights to date suggest that a **multi-pronged approach will be needed going forward**, as the sources of engagement which patients and the

Box 5. Patient and Public Engagement



SUPPORTING PATIENTS AND THE PUBLIC TO ENGAGE WITH INNOVATION IN THE HEALTH SYSTEM: Examples of ongoing efforts and initiatives in focus regions and nationally

- **Efforts by health and care actors across regions to routinely engage communities with health innovations** (e.g. mocked-up home environments and demonstrations of devices, for example, at football matches, in supermarkets and through housing associations and rental agencies).
- **Web-based platforms for patient and public involvement:**
 - At the national level, the Academy of Fabulous Stuff celebrates innovative ideas and solutions in the NHS and makes this information available to the wider public. The Patients Know Best Platform is a forum for soliciting patient-led ideas.
 - In Taunton and Somerset NHS FT, the Friends and Family Test uses a 3S online touchscreen Survey Tool to send feedback from patients and families direct to hospital management.
 - Torbay CCG uses social media to secure patient feedback on cross-cutting issues, including innovation.
- **Patient reference groups or patient engagement roles are being mobilised around innovation in some organisations as part of Trust and CCG structures, AHSNs and Test Beds but are limited in scale at present.** Examples include:
 - The South West AHSN's patient experience function.
 - PenCLAHRC has established a network of skilled patients (focused more on research than innovation at present, but with potential for greater engagement with innovation).
 - GP practices within City and Hackney have their own patient participation groups, which feed into consortia-wide patient groups that interact with the CCG's Patient Participation Committee. This Committee has a small funding pot to test and evaluate small-scale patient-driven innovations.
 - In Tower Hamlets, a patient leadership programme gives patients the skills needed to engage with general commissioning processes and decision making, including for innovation.
 - Care City Test Bed has developed a new model of community dialogue around innovation.
 - As part of the Connected Health Cities Project, and run by the Innovation Agency, the Citizen's Jury recruits members of the public to act as jurors on innovation ideas as part of four-day sessions for which they are compensated for their time.
 - The East of England Citizens' Senate works to enhance the quality and value of patient and public inputs into care and innovation pathways through relevant information-sharing.
- **Engagement with consumer-led private sector organisations to help NHS providers to better capture customer experiences and views, with potential applications for driving innovation:**
 - In the South West, health providers have engaged with John Lewis to draw transferable learning from their approach to public sentiment analysis that could be applied to patient and public engagement in the health and care context.
 - Torbay and South Devon NHSFT is collaborating with industry partners to explore how best to take value and learning from patient stories.
 - Although not an example of engagement with the private sector, Devon Partnership Trust is working with Oxford University to use linguistic processing to extract narratives from patient records.
- **Patient-driven innovation.** For example, in the South West patients in collaboration with PenCLARHC have designed a keyring to help manage anxiety, a bungee cord fixed to a belt that helps patients suffering from multiple sclerosis to walk, protective Kevlar socks for fragile skin, and a new approach to preventing acute urinary retention.

public consider and respond to, innovation-wise, are diverse and context-specific. Understanding the variety of ways by which patients and the public make sense of and give meaning to innovation will impact on the establishment of effective engagement strategies and platforms. As part of this process, it is important to consider how the sources of information which patients consult more generally on health issues (e.g. such as health professionals, websites, peers, and others), can integrate innovation-specific roles and remits.

However, and despite progress in the area, effective patient and public involvement was seen to be very challenging, resulting in some concerns over tokenistic attitudes and limited, fragmented and highly variable practices.

In terms of building further on current momentum and effort:

- Our insights suggest that **the research and charity landscape**, including through the efforts of the National Institute for Health Research (NIHR) (e.g. INVOLVE, the James Lind Alliance), medical charities, umbrella organisations (e.g. National Voices) and patient engagement portals (e.g. Health Unlocked, Patients Know Best), **offers lessons for patient and public engagement in the innovation space.**
- In addition, **many of the patient engagement initiatives that currently exist within regions span quality improvement, research engagement and innovation spaces**, suggesting that **a more coordinated approach** to public and patient engagement across these complementary spaces might lead to greater efficiency and effectiveness.
- Insights from interviews and workshops highlight that **empowering patients to engage with innovation requires improved information and evidence environments, multi-stakeholder commitments to involve patients at all stages of the innovation pathway, and training programmes** for effective engagement. These should

be geared at both public and patient representatives and health professionals.

- **Sharing examples and evidence of positive experiences and their outcomes** was also seen as important for enabling wider-scale change in attitudes across the system.



6) FUNDING AND COMMISSIONING OF INNOVATION

The funding landscape for innovation is characterised by **diverse sources of funding from both national funding pots and regional and organisational resources (as summarised in Box 6**, based on schemes highlighted by participants in the work conducted thus far). However, this **funding landscape is fragmented and often unable to achieve critical mass and scale to support innovations across the pathway** – from idea generation through to uptake and scale-up across the system. There is **a need for better visibility of the funding sources** available and a mapping of where they sit in the innovation pathway, as well as for **better coordination** of current funding. This should happen within **an environment that more explicitly recognises how commissioning and procurement can support innovation within the wider context of organisational, cultural and behavioural levers in the health system**. New commissioning models which reward performance and evidence of impact on the healthcare system are being explored, and the scalability and uptake of some schemes (e.g. commissioning through evaluation, outcome-based commissioning) remain to be seen, given wider-level systemic changes that would need to happen concurrently (e.g. in terms of budget cycles and planning, decommissioning).

In terms of capacity building, insights from our work to date suggest **a need for commissioners and innovation funders to:**

- **Support promising innovations across the whole healthcare innovation pathway** to ensure that promising innovations do not

Box 6. Funding and Commissioning



FUNDING AND COMMISSIONING FOR INNOVATION IN THE HEALTH SYSTEM: Examples of ongoing efforts and initiatives in focus regions and nationally

Funding for innovation development:

- **National funding programmes.** Examples identified by stakeholders include:
 - SBRI Healthcare.
 - Innovate UK funding (e.g. grants for health and life science enterprise).
 - NHS England Innovation funding, including for the NIA and Clinical Entrepreneur programmes.
 - NIHR Invention for Innovation (i4i) programme.
 - Funding through Accelerators, Catalysts, Catapults.
 - European Union funding programmes, including framework programmes and European Regional Development Funds.
 - Private sector funding.
 - Philanthropic funding, e.g. through the Health Foundation and medical charities.
 - GrantFinder – a web-based search system for finding small pockets of funding, including for R&D, although predominantly for research grants.
- **Mini-competitions for seed funding in Trusts, CCGs and AHSNs,** for example:
 - ‘Dragon’s Den’-style competitions in the London, Greater Manchester and North West Coast and Eastern regions.
 - Small ring-fenced pots of innovation funding put aside by City and Hackney CCG.
 - An Eastern region Health Enterprise East-led collaboration has recently launched a MedTech Accelerator, offering proof-of-concept funding to progress medical technology and software innovations that meet unmet clinical need in the NHS.

Commissioning for innovation:

- **New outcome-based commissioning models.** For example:
 - Somerset CCG, as part of Somerset Together, is working towards a full outcomes-based structure for its population, designed to release innovation in the system by providing an outcomes bonus on top of the traditional activity payment.
 - The South West AHSN is exploring models for paying provider organisations for both the delivery of outcomes achieved and system change.
 - In Tower Hamlets, confederations of GP practices were commissioned to reduce blood pressure and cholesterol in patients with diabetes and heart disease. Thirty per cent of the payment for this contract hinged on the clinical outcomes of all patients in the region, meaning that all practices had to work together and engage with innovation to meet this target.
 - In City and Hackney, GP practices are commissioned under a Clinical Behaviours Contract, which specifically pays GPs to improve quality of care, thus incentivising them to adopt an innovative mindset, engage in reviews of clinical practices and referrals, attend monthly CCG meetings and pathway launches, and use the Consultant Advice line.
- **Initiatives for greater pathway integration,** such as Devolution Manchester and the Devon integrated care organisation, may allow for a commissioning model that better takes into account the potential costs and benefits of an innovation across the whole pathway.
- **Monetary incentives** via the Commissioning for Quality and Innovation or the Quality and Outcomes Frameworks offer **potential financial incentives for implementing innovation at organisational levels.**
- **The commissioning through evaluation scheme** allows innovations to be commissioned at a small scale, with data collected about their effectiveness, to evaluate their potential to be implemented more widely.

hit ‘valleys of death’ and that those with a low likelihood of success fail ‘smartly’. Achieving this calls for more **strategic coordination between schemes and funders of different innovation pathway stages.**

- **Recognise the different timescales for the development and uptake of different types of innovations** (e.g. medicines, digital, devices, diagnostics).
- **Facilitate a hybrid model of governance**

and management of innovation funding at national and regional levels through a framework that would: (i) incorporate both national and regional elements in decision making, fund implementation and evaluation; (ii) consider accessibility by a broad range of actors to facilitate capacity building for engaging with innovation across the system; (iii) balance nationally relevant and locally relevant needs, as well as recognising unmet niche areas and underserved groups; and (iv) balance support for transformation with meeting immediate financial targets.

- **Respondents also highlighted the importance of factoring innovation into procurement and commissioning contracts** – for instance, through the Innovation and Technology tariff, or by ring-fencing a proportion of commissioning budgets for commissioning by evaluation and outcome-based commissioning schemes. The successful implementation of such schemes will in part depend on the availability of a supportive data infrastructure.

4. Reflecting on the emerging insights and evolving policy landscape

Recent policy developments such as the AAR lay out a framework and process for addressing the diverse drivers of innovation discussed above in a more coordinated and streamlined way, across the entire innovation pathway – from idea generation through to innovation uptake, diffusion and scale-up. Central to the AAR framework is improved alignment between national policy and actors (e.g. regarding regulatory approval, the National Institute for Health and Care Excellence (NICE) Health Technology Assessment, NHS England commissioning and reimbursement), regional innovation activities and actors, and local diffusion. The interventions outlined in the AAR resonate with many of the insights highlighted in our research. In particular, this applies to the need for enhanced coordination

and clarity about health innovation activities, and closer relationships between key innovation practitioners, health system actors and national bodies.

There will inevitably be both synergies and tensions in approaches which seek to integrate (i) collaboration, (ii) coordination and (iii) a degree of competition. The balance between these three forces is a critical issue for the health system more widely, and for the successful landing of innovation policy and practice within it. Better-coordinated collaboration will be critical for effectively managing the interdependencies between the innovation drivers we have discussed above and for strengthening the combinatorial dimension of health innovation. Interventions highlighted in the AAR, including the Accelerated Access Partnership, regional innovation exchanges, new pathways for patient engagement, transformative innovation designations (announced earlier this year by NHS England), and distinct pathways of support for different types of innovations (including the Paperless 2020 initiative for digital innovations), lay out an enabling infrastructure and receptive environment that can respond to the coordination and collaboration challenges.

Our insights also suggest that getting the best returns from the UK's health and care innovation requires designing approaches to innovation that:

1. **Use the opportunities of interdependencies between health and care sectors as an asset rather than a barrier, drawing on the expertise of both clinical and allied health and social care professions, and focusing on cross-cutting and complementary health sector priorities** (e.g. prevention and early intervention, self-care and management of long-term conditions, patient safety and health data infrastructure). Many innovations (e.g. digital platforms as one example) are likely to require engagement from multiple sectors in order to achieve needed impact. Similarly, population needs across health and

social care are likely to influence prioritisation processes for innovation – at regional as well as national levels.

2. **Attend to, and take advantage of, the relationships between macro-scale change (i.e. new policy developments driven by the national level), meso-level regional structures and processes (e.g. interconnected regional institutions that are both receptive to national policy and can help shape it), and micro-scale interventions (e.g. centred around individual and organisational motivations and incentives).** Enabling conditions and receptive environments at the organisational level – in commissioning groups, in individual provider organisations and within specific communities of practice – requires alignment and mutual adaptation across these levels. Successfully ‘landing’ the recommendations in the AAR will depend as much on formal structures, processes and resources as on informal relationships and networks. Together these can create clarity and opportunity in an evolving policy environment.
3. **Use both structural and behavioural interventions to progress innovations across the health innovation pathway.** This includes: institution-building (such as the evolving role of AHSNs); nurturing the boundary-spanning and brokerage roles; and supporting both formal processes and informal networks and communities of practice. It also includes allowing individuals and groups to find the creative time to engage with innovation across acute and primary, as well as social care pathways. A focus on creating enabling structures should not come at the expense of nudging behaviours across different levels in organisations, regionally and nationally.
4. **Coordinate innovation and improvement policies.** The links between these are critical when prioritising investments and coordinating complementary efforts. They are also important for making a more effective

business case for innovation to the NHS. Historically, healthcare professionals have become more familiar with the discourse of improvement than innovation, and understanding the place of innovation within improvement landscapes and efforts will be essential for the creation of ‘receptive places’. As shown by the examples in Boxes 1–6, many initiatives simultaneously address both innovation and improvement issues.

5. **Adopt a portfolio approach to innovation – responding to both quality and cost considerations.** This is critical for the transformation of the health system and for creating receptive places for innovation. It requires first taking a view on the total size of the innovation portfolio and ensuring the system has the capacity to absorb such a volume. Secondly, it involves attending to the balance of the portfolio, having considered not only different levels of risk but also the motivations of different stakeholders. Our expert respondents also recognised that different types of innovation require different kinds of ‘receptive places’ and this needs to be considered in the planning of an innovation portfolio at national and regional levels. Medicines and vaccines, devices and diagnostics, service innovations and digital innovations all require the involvement of different scientific disciplines, patient and carer inputs, types of private sector involvement, and delivery models.

Looking towards the next phase of this study

The next phase of our research will focus explicitly on what these (and other) issues imply for the development of targeted and actionable recommendations for stakeholders. These will build on the **learning gained thus far (as summarised in Figures 2 and 3 below)** and respond to the recent policy developments following the AAR, by bringing in new qualitative and quantitative insights. For example, to date we have identified a range of initiatives

and actions that are taking place to support innovation in the regions we engaged in this study, and that are related to specific innovation drivers (**these actions and initiatives are summarized in Figure 2 and elaborated on in Boxes 1-6**). We will conduct a survey and workshops with stakeholders to examine in more detail their views on the priorities amongst these, in light of relevance, feasibility, scalability and sustainability. We will also examine how these actions relate to the implementation of new policy developments, many of which are expected to unfold in the coming months. [Similarly, we have identified additional areas which stakeholders perceive to be important for building capacity for receptive and connected health innovation environments (**as summarized in Figure 3**) and we will explore these in workshops as well as the survey]. The workshops will also consider stakeholder perceptions on the implementation-related contextual requirements for AAR. In addition we will, through detailed qualitative case studies and quantitative analysis of the determinants of innovation uptake, examine how different drivers interact with each other (in reinforcing or undercutting ways) to influence uptake, what trade-offs are being made in decisions on uptake locally, and how local realities interact with national policy to influence policy implementation. Examining stakeholder perceptions on priorities and factors influencing implementation, as well as learning from historical experiences and case-studies of

how stakeholders delivered innovation will be important for shaping how new policy unfolds. In order to best engage stakeholders, we need to understand their perceptions and learn from their experiences. Interviews with national-level stakeholders and key institutions with innovation in their remit will help further refine learning that is relevant for implementation of policy developments and for interpreting the findings from the surveys, workshops and qualitative and quantitative analyses of innovation in case-study regions.

The focus will be on informing practical action, and on identifying and prioritising the highest-leverage combinations of actions that provider communities, commissioning bodies, innovators and patient and public representation bodies can take to ensure receptive environments at scale. Similarly, particular gaps highlighted by participants in the research (as summarised in Figure 3) will also be examined further in the context of arriving at capacity-building solutions and practical actions. This will be examined alongside improving the evidence base on how national and regional bodies can work together most effectively. Last but not least, the detailed and comprehensive evidence we are gaining should enable us to contribute to a more interdisciplinary perspective on innovation theory and its links to improvement research as the next phase evolves.

Figure 2. Examples of existing efforts to create receptive places for innovation in health and care – priority and scalability to be explored in phase 2 of this study

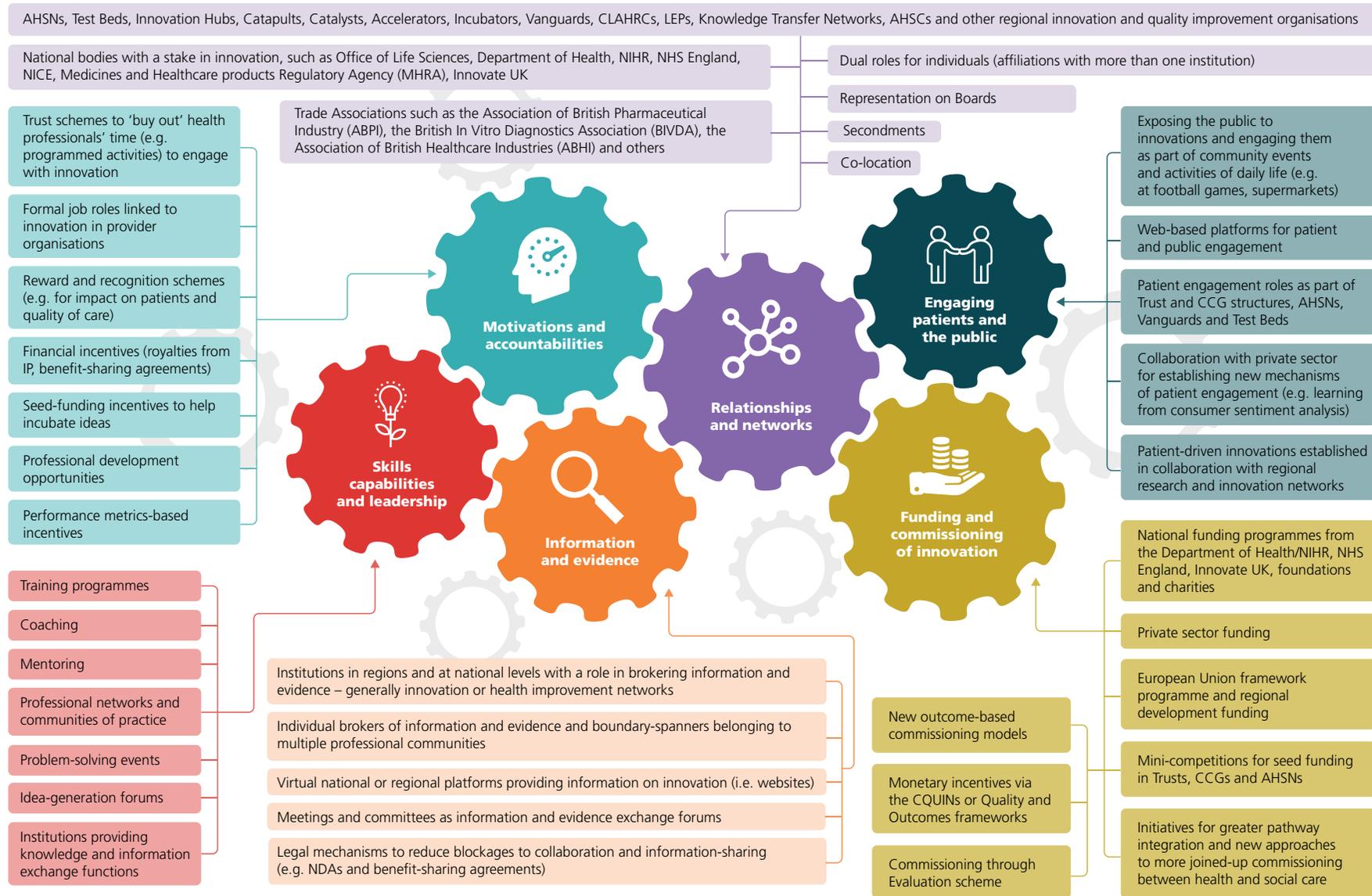
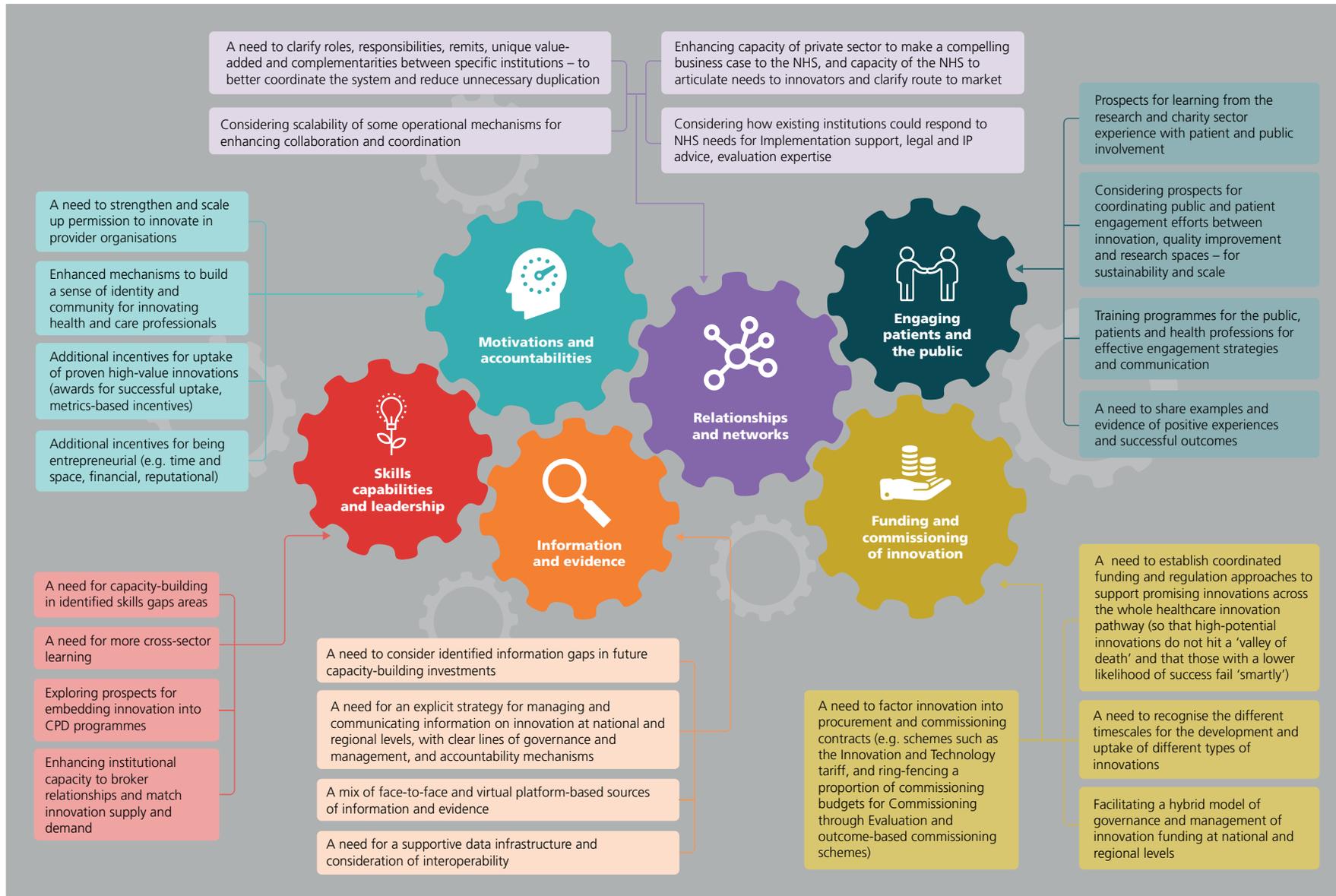


Figure 3. Specific capacity-building gaps highlighted by participants in the research – to be explored in phase 2 of this study



Perspectives on innovation in healthcare - quotes from interviewees

On changing attitudes to innovation

‘Innovation is currently seen as “nice to have” as opposed to a “must have” in the NHS. That’s something that definitely needs to change’ – *Policy representative (UCLP and related actors) (commenting on national landscape)*

On the need for cultural change from early in the career pathway

‘[It is important to]...embed the idea of innovation at the very start of someone’s career within the NHS, because if you do that, it becomes the foundation stone on which you build your career’ – *Innovation institution representative (North West Coast and Greater Manchester)*

On visionary leadership

‘...what you have to have is really inspirational leadership that has that oversight of all the components... [looking at] the pathway to adoption right from the outset. So it’s that integration that I think is absolutely key’ – *Innovation network representative (North West Coast and Greater Manchester)*

On a portfolio approach to motivations and incentives

‘I think it’s not a great idea to go down the route of using innovation to produce a 20 per cent cost improvement saving, because it’s the wrong way round.... I see it as a portfolio of innovations, so some innovations will be cost neutral, some innovations will cost you very little, but give you a bit back, and some innovations will cost a lot, but give you a lot back, so it’s around having a portfolio and it’s managing that portfolio’ – *NHS Trust representative (North West Coast and Greater Manchester)*

On permission and valuing innovation

‘I would say the most important motivator is just the basic recognition by your employer organisation that the innovation has value and...contributes to the development of the organisation. I think that is very motivating and powerful’ – *NHS Trust representative (Eastern region)*

On the role of individual champions and communities of practice

‘If people are working in a system where people all around them are innovating and, you know, doing stuff and starting up companies, then they follow’ – *Higher education representative (UCLP and related actors)*

On success stories as a key incentive

‘What we need more than anything else are success stories, to be able to demonstrate that investment in innovation is more than just talk; it is something which not only can improve healthcare, but can also be revenue generating...’ – *Innovation institution representative (South West)*

On metrics and reporting

‘...[to] enhance that information-sharing on a national basis, we have to have one clear and relatively light set of metrics that we can all report into with clear definitions, to show the impact of innovation. And it doesn’t necessarily mean that we’re all one organisation, but that we agree that we all report in the same manner...’ – *Innovation institution representative (North West Coast and Greater Manchester)*

On the importance of data and analytics to inform adoption

‘...I’d want access to clinical information systems that could allow me to assess the impact of the innovation in real time and accumulate knowledge as to how it was helping or harming...’ – *Higher education representative (Eastern region)*

On the importance of targeted and well-communicated information flows

‘Any effort made to educate or broaden knowledge needs to be very personalised’ – *National-level innovation institution representative*

On the importance of breaking down barriers

‘...it would be nice to think that we could overcome that silo mentality just by better partnership working, but sometimes I think you need a bit of leverage and that’s either through funding – which we know is in sort of scarce supply in the sector – or through having a governance structure that allows you to do that’ – *Innovation network representative*

On creating a shared understanding of organisational identities and remits

'We've done a lot of work over the years in clarity around organisational roles, responsibilities and boundaries, so that we almost work as a seamless continuum. And I think it's absolutely essential; otherwise you get everyone tripping over each other' – *Innovation institution representative*

On creating the headspace and opportunities for reflection and learning

'...people go and listen to what has gone well, what hasn't gone well, and there's an honesty and integrity about it that [means that] people feel comfortable to ask awkward questions' – *Charity and patient advocacy representative*

On exploring creative ways to engage with patients and the public

'...but where we get real benefit is by engaging with people through the things that those people like to do and need to do. So we'll engage with citizens through the services that they engage with, through the houses that they live in, through the activities that they are enjoying, whether that's football, music or what have you. So we really max our community assets in that respect...' – *CCG representative (North West Coast and Greater Manchester)*

On avoiding jargon in communications

'...if you train them [patients] they become, they start to become professionals and experts and...they start to use those acronyms and that language and the whole point is the other way round: it is [up to] the system to talk in plain English to people' – *Charity and patient advocacy representative (UCLP and related actors, emphasis inserted)*

On representativeness

'I think that there are many opportunities for the patient and the carer voice to be heard. I think, unfortunately, what tends to happen is that it is the usual suspects that engage' – *Charity and patient advocacy representative (Eastern region)*

On the importance of "reinvestment"

'Invest for change, but harvest back for reinvestment in change elsewhere' – *Private sector representative (UCLP and related actors)*

On the NHS's short-term orientation

'...we tend to kill schemes off too quickly before they have really had a chance to show the benefits, and that is because of the very short-term nature of the NHS' – *Vanguard representative (Eastern region)*

On accountability for the use of funds

'The money has to be ring-fenced. And there has to be rules that, if it's going to be for an innovation, it is for the innovation; it's not to prop up a failing system somewhere else...' – *CCG representative (South West)*

On outcomes-based commissioning

'The more we can move towards commissioning that is based on outcomes or bundles, whole pathways of care together, to encourage different parts of the provider landscape [...] to actually come up with different ways of working together so that we can operate within an envelope payment for an entire pathway – those are things which we need to do in the NHS' – *NHS Trust representative (UCLP and related actors)*

On short-term budget cycles as a barrier to commissioning of innovation

'There are examples of good innovations which will have good returns on your money, but normally it's two or three years. Now, if you're in a business and someone says "listen, I can double your money in two to three years," you'd be out at the bank manager saying "come on, give us a loan." Not the NHS. The NHS says "no, you can't do that, you've got to have financial balance..." It's an enormous barrier' – *CCG representative (South West)*

On reforming the nature of procurement

'The NHS must "procure for a solution" rather than for a product' – *Private sector representative (Eastern region)*

On the potential of commissioning by evaluation

'...what we need is a model that is a bit like they have in specialised commissioning, [i.e.] Commissioning through Evaluation, so that someone can say "we want to use up a third of our Commissioning through Evaluation budget to commission a hundred thousand units from this company to see if it really does do what it did in the pilot."' – *Innovation institution representative (North West Coast and Greater Manchester)*