NHS Innovation Accelerator:

Understanding how and why the NHS adopts innovation

The Bayswater Institute

The **AHSN** Network
NHS England
NHS Innovation Accelerator
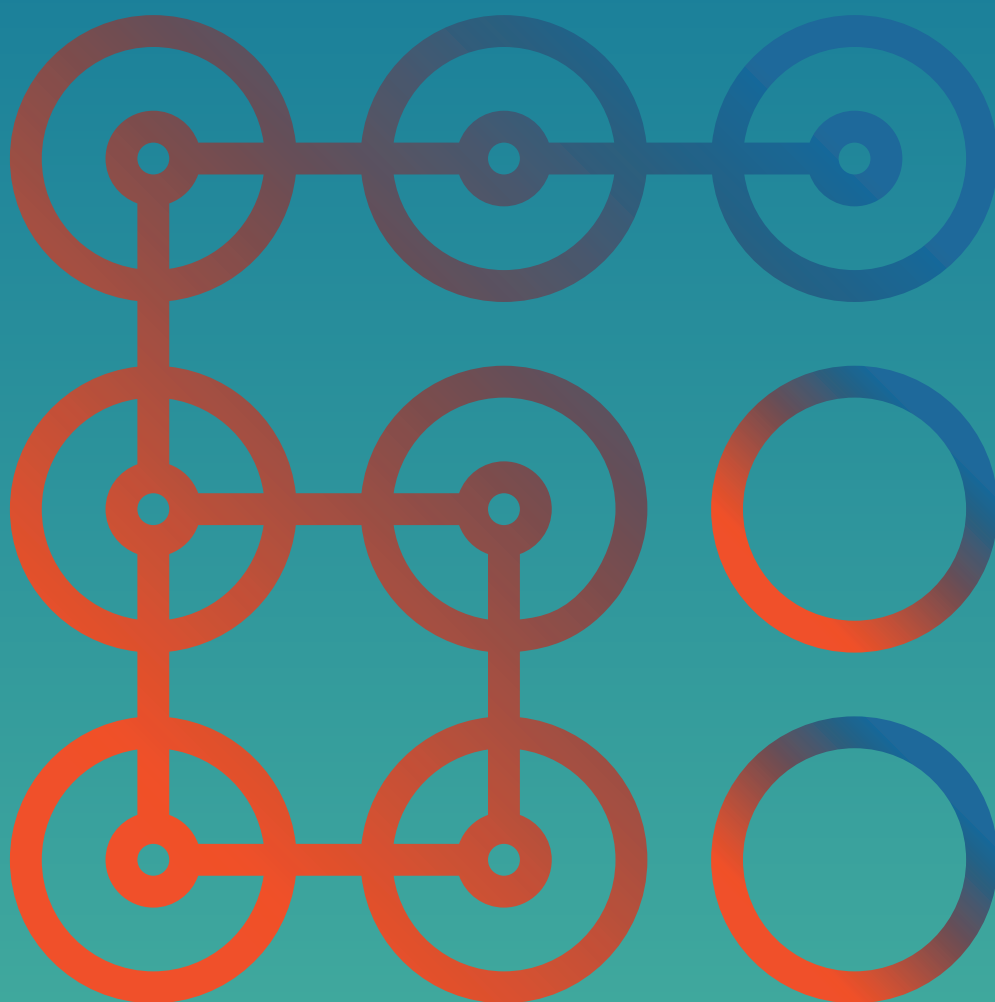
Foreword

Innovation is regularly highlighted as part of the solution to the challenges facing our National Health Service. However, adoption of innovation by NHS organisations is not easy. We recognise that there are a complex range of unique challenges to innovation uptake in the NHS, which means that realising the potential benefits of new technologies and models of care can be delayed.

There are however, an increasing number of pioneering individuals and NHS organisations working incredibly hard to adopt innovation. In doing so, they are recognising some enormous benefits: better outcomes for patients; improved equitable access; more cost-effective integration of care and resources around the needs of their patients and populations. These individuals and organisations should be applauded for their resilience, commitment and tenacity.

We are delighted therefore, that the NHS Innovation Accelerator's research this year shines a light on some of these NHS 'adopter' organisations - capturing their insights and learning as to how they have successfully implemented innovations supported by this national initiative.

Understanding how and why the NHS adopts innovation is an important and insightful contribution to the growing literature on innovation uptake and spread. Aiming to get to the heart of how decisions are made within NHS organisations, this research considers:

- *How* and *why* organisations take up an innovation
- The *enabling factors* which facilitate the uptake and embedding of an innovation
- The *impacts* of adopting an innovation on organisational practices

In capturing this real-world experience, the NHS Innovation Accelerator (NIA) is not only helping to inform understanding of adoption and key enablers - it also recognises the hard work of each of the adopting NHS organisations which feature in this research. We will continue to support the NIA in its mission to share these learnings as widely as possible, to ensure that more NHS 'adopter' sites can benefit.

Finally, thank you and congratulations to all of the 'adopter' sites and individuals who have contributed to this research. This report is not only a tribute to your hard work in implementing innovation for the benefit of patients and NHS staff; but a celebration of innovation as a solution to the wider challenges facing our NHS.

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Acknowledgements

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Executive summary

The NHS Innovation Accelerator (NIA) is an NHS England initiative, delivered in partnership with the country's 15 Academic Health Science Networks (AHSNs) and hosted at UCLPartners. Created to support delivery of the *Five Year Forward View*, the NIA supports spread of innovation for demonstrable patient and population benefit and provides real-time practical insights on innovation scaling to inform national strategy. Since its launch in 2015 it has supported 36 Fellows to spread 37 innovations across the NHS.

Each year the NIA has a research focus to inform how to scale innovations successfully in the NHS. The focus of the research to date has concentrated on the innovator and innovation - the supply side of innovation.

This research, in contrast, focussed on the role of adopting organisations. It aimed to understand the key factors enabling the uptake of innovation and to determine how decisions are made within NHS organisations.

The areas it aimed to address were:

- *How* and *why* organisations take up an innovation

- The *enabling factors* which facilitate the uptake and embedding of the innovation

- The *impacts* of adopting the innovation on organisational practices

To deliver this research, a representative selection of the 37 NIA innovations were chosen, covering the breadth of innovation 'type' - digital, device, model of care, workforce - as well as including a range of commissioning and purchasing organisations - NHS Trusts, Clinical Commissioning Groups (CCG), GP Federations, Sustainability and Transformation Partnerships (STP). Geographical coverage and ensuring the innovation had spread successfully beyond its initial site were also criteria for selection of the innovation and adopting site.

In total nine of the NIA innovations were selected, with interviews taking place with representatives from 13 of the NHS organisations that had adopted them. These have been written into the case studies that inform this report. The case studies can be viewed from page 28.

The approach to the research included an examination of the theoretical literature on innovation adoption. Eight theoretical perspectives were reviewed and used to guide the interview questions, and provided a lens through which to view the data gathered from the interviews. The data for each innovation was analysed thematically and then themes compared across innovations. This approach allowed themes to emerge from the data. In total more than 80 interviews were conducted across the nine innovations which provided a level of confidence in the key themes identified.

The study offers insights related to how organisational context plays a significant part in adoption as well as highlighting recurrent themes in innovation spread

across the NHS. The analysis is organised into three sections: the adoption journey, the adoption network, and common tasks in the adoption journey. The key themes emerging from the **adoption journey** included:

- **Complex nature of adoption:** The dynamic and non-linear process of adoption within organisations

- **Need for mutual adaption and iteration** between the organisational context and the innovation to facilitate adoption, referred to in this report as 'the negotiating space'

- **Interaction with the adoption network** to facilitate the negotiation and adoption

- The interplay of **push and pull factors** that support implementation and build the capabilities both for the adopting organisation and for the innovator

The analysis of the **adoption network** highlights the role of multiple champions operating inside and outside of the adopting organisation, who are drawn from multiple professional groups. The set of traits commonly displayed by these champions are summarised, including being reflective, skilled in change, well-connected and focused on improvement. A set of **common tasks** were identified across the NHS sites adopting NIA innovations:

- **Getting to know the innovation:** the tasks undertaken to better understand the innovation, which involved a significant focus on trials

- The activities required to **build the case for adoption** of the innovation

- The ways in which **adaption** of the innovation and the adopting site were achieved

- The emergent process followed to achieve **embedding and sustainability** of the innovation

Drawing on the findings and to assist others working in this field, two sets of 'top ten tips' have been developed for innovators and adopting organisations. These can be viewed on page 26-27. In summary, the recurring experiences across all the adopter sites, as captured in the case studies, detail the need for iteration and adaption between adopter

and innovator - referred to as the negotiation space. All nine innovations demonstrated complexity, non-linearity, iteration and longer timescales than originally expected to achieve a level of embeddedness and sustainability.

Two key points arise from the understanding generated from this research:

The first is that the adopter sites should be applauded and celebrated for their resilience, commitment and tenacity in adopting innovation. The findings from the case studies highlight just how difficult and challenging adoption is in a complex organisation.

The second is that because the iterative and non-linear nature of the adoption process is not generally recognised as a critical journey for all adopter sites, generalisable learning is not often captured for others to benefit from. Each organisation faces negotiating the adoption process with a new NHS site with no or limited knowledge of how it was achieved successfully elsewhere. There is an opportunity to better capture learning that incorporates the emergent nature of the adoption journey, and then provide this as part of the push factors to assist adopting organisations in their negotiation process. There are already indications that networks are forming around particular innovations where learning can be shared, for example, through the AHSN National Programmes. Further developing this approach may be of great assistance to new adopters.

The eight theoretical perspectives provide insight and guidance to the interview and analysis stage of the study. There is an opportunity to further synthesise the theoretical work to provide better understanding of the organisational pull factors as well as capturing the unique and generalisable learning around the organisational contexts impacted by the innovations. A better understanding of the negotiation process could underpin improved translation of adoption between contexts and give a home to the valuable learning generated by each adoption journey.

Introduction

The challenges facing the National Health Service (NHS) are immense including a rise in the prevalence of long-term conditions associated with precipitating lifestyle factors and demographic shifts, alongside the escalating costs of increasing expectations and technological capacity.

NHS England and the Office for Life Sciences (OLS) have increasingly highlighted innovation as part of the solution. This has been demonstrated recently through plans (e.g. *Next Steps on the NHS Five Year Forward View*), commissioned reports (e.g. *Accelerated Access Review, Life Sciences Industrial Strategy*) and consultations (e.g. Topol Review, Long Term Plan for the NHS), alongside investment in enabling infrastructure, such as Academic Health Science Networks (AHSNs).

However, the adoption of innovation by NHS organisations is challenging - multiple studies have shown it to be slower than in other European countries. This means the potential benefits of innovation in the NHS are delayed. These benefits include: eliminating unwarranted variations in health indicators and the outcomes of care, improving equitable access, giving the best possible experience for patients and carers, more cost-effectively integrating care and resources around the needs of patients and populations.

To help inform understanding of adoption, the NHS Innovation Accelerator (NIA) has focused its year three research on capturing insights from some of those NHS sites who have adopted NIA innovations.

The NIA is an NHS England initiative, delivered in partnership with the country's 15 AHSNs and hosted at UCLPartners. Created to support delivery of the *Five Year Forward View*, the NIA supports spread of innovation for demonstrable patient and population benefit and provides real-time practical insights on innovation scaling to inform national strategy.

Since its launch in July 2015, the NIA has supported 36 innovators to scale 37 high impact, evidence-based innovations to an additional 1,483 NHS sites across England and to raise £60 million in external funding. In its first year alone - according to an independent evaluation - adoption of NIA innovation saved England's health and care system over £12 million (Institute for Employment Studies, March 2018).

Study aims and methodology

Aims

Each year the NIA undertakes research to further the understanding as to what enables innovation spread in the NHS. In previous years, the research has focussed on the supply side - examining the characteristics and impacts of the innovation and innovator.

This year, recognising the amount of work required by NHS organisations to adopt and implement innovation, this research focuses on them: the demand side. It aims to determine how decisions are made within NHS organisations, and in doing so understand:

- How and why organisations take up an innovation

- The enabling factors which facilitate the uptake and embedding of the innovation

- The impacts of adopting the innovation on organisational practices

This research recognises that with limited resources and time, only a selection of the innovations and corresponding adopting sites could be interviewed. Therefore, whilst this work cannot claim to be a comprehensive analysis of every enabling factor that supports innovation uptake in the NHS, it aims to shine a light on some of these factors. It is also intended to highlight and recognise the hard work of each of the adopting NHS organisations highlighted through the case studies.

Methodology

An Evaluation Advisory Group (EAG) was set up to provide strategic direction and leadership for the evaluation and to ensure that key learning was identified and extracted for dissemination. Members were drawn from NHS England, the AHSNs, The Health Foundation, patient and NIA Fellow representatives. A list of members of the EAG can be viewed in the Acknowledgements on page four.

A representative selection of the 37 NIA innovations were selected for the research. The EAG advised this should cover a breadth of the types of innovation supported by the NIA:

- Digital

- Device

- Model of Care

- Workforce

In addition, that it should cover a representative selection of the typical types of organisation implementing or commissioning the innovations:

- NHS Trust

- Clinical Commissioning Group (CCG)

- GP Federation

- Sustainability and Transformation Partnership (STP)

NHS sites were selected to reflect the geographical spread of the innovations across England. The research also aimed to include sites where the innovation had spread from at least one initial site and where it was successfully implemented. In total, nine of the NIA innovations were selected to take part, with interviews taking place with representatives from 13 of the NHS organisations that had adopted them. Nine of these have been written into the case studies that inform this report. The innovations selected can be viewed on page 15.

Each NHS organisation was formally invited to take part in the research. Interviewees who had played a role in the adoption of the innovation were identified via interviews with the NIA Fellows, the local AHSN, and through recommendations from the NHS sites. Interviewees represented the economic, operational, clinical and organisational aspects of the innovation

Interviews were undertaken between June and September 2018 by members of the Bayswater Institute team with support from the NIA team and four MSc students from the London School of Hygiene and Tropical Medicine.

The role of theory and study methodology

The questions that were explored in the interviews and the analysis of the data gathered were informed by a variety of theoretical perspectives on the processes by which innovations are adopted.

Theory has a role to play in forming an 'approach to' and an 'analysis of' the learning from the NIA case studies. However, any intervention in healthcare is subject to complexity. This complexity arises from many aspects of the context, including: organisational dynamics, psychodynamics and the job roles of the people impacted, development of the innovation, economic factors, and the fit between the innovation push and the system pull. It is therefore necessary to draw on a range of theories to support understanding and to explain innovation adoption of a range of interventions in such a complex system. Theory informed several aspects of the approach to analysing the case studies in this report. These included:

- Theories that underpinned the collection and analysis of data that provided understanding about how individual innovations have been adopted by the NHS and other organisations

- Theories that provided insight into understanding the common themes and learning that can be drawn from the similarities and differences between the innovations and their adoption

- Broader theories relating to innovation adoption in general and the impact of context and policy on the success of innovations

Each of these aspects has significant amounts of published literature, often from different academic disciplines, that provide insight. A number of these theories of innovation and adoption are rooted in the private sector and in diffusion of consumer and industrial products and processes. The healthcare sector presents a particular set of challenges to the use of such theories. Some of the factors that differentiate the healthcare sector include:

- The inherent complexity of the structure of NHS and provider organisations and the competition between them due to the purchaser/provider split

- The potential for unintended incentives related to reimbursement models

- The impact of procurement processes

- The challenges to effective communication between independent NHS organisations and lack of integrated datasets

- The complexity of the internal and external environments of healthcare caused by continual change

The application of innovation and adoption theories that apply in the private sector are somewhat confounded by these factors. Theories that address healthcare directly often struggle with aspects such as the complexity of the context. Some of the theoretical underpinning of the approaches adopted in this report are reviewed.

Collection and analysis of data

The approach to the research included an examination of the theoretical literature on innovation adoption. Eight of these perspectives are presented below. These perspectives informed the interview questions and provided a lens through which to view the data gathered from the interviews.

Where themes emerged regarding specific aspects of the innovation, further stakeholders were sought to represent that experience in the data. The data for each innovation was analysed thematically and then themes compared across innovations. This grounded theory approach (Charmaz, 2006) allowed themes to emerge from the data. In total more than 80 interviews were conducted across the nine innovations which provided a level of confidence that key themes were identified.

Perspectives on the adoption of innovations

The literature on adoption of innovations is complex and varied. In their 426-page systematic review of diffusion, dissemination and sustainability of healthcare innovations, Greenhalgh et al quote one reviewer as saying: "[it is] a conceptual cartographer's nightmare" (Greenhalgh, 2004). There have been contributions from many different disciplinary backgrounds each using their own language and concepts. Some of the perspectives focus on a particular kind of adoption process but there is also overlap in what is covered by the approaches.

Eight perspectives are reviewed here and the way they influenced the acquisition and analysis of the data is described. It is beyond the scope of this report to explain each of the different perspectives in detail as they represent significant areas of study in themselves. The goal is to provide an overview of how the complexity of healthcare interventions may be mapped onto many areas of theoretical thinking.

1. The diffusion of innovation approach

This theory developed by Everett Rogers, a professor of communication studies (Rogers, 1962 and 2003), has been very influential. Adoption typically follows an S curve through early adopters and the early majority to the late majority and the laggards. The significant mechanisms for diffusion are the relevant social systems and the communication channels available within them. The theory has developed a great deal over 40 years of its existence, but the main focus remains the way consumer products diffuse through the population. Its applicability to healthcare interventions is confounded by the types of factors mentioned previously. Diffusion of consumer products is dependent upon resources to acquire the product and communication of the benefits, and more recently, aspirational value. This is why communication is the underpinning theme. In a scoping review produced by the Social Science Research Unit of University College London it was stated that, for NICE guidance: "Overall, there is growing recognition across disciplines that

getting evidence to influence and change practice is a complex undertaking." (Kneale, 2016).

The research team used this perspective to explore with interviewees the communication channels by which they had heard about the innovation and whether, as adopters, they became part of the process of diffusion across the healthcare sector.

2. The evidence-based adoption model

This approach, derived from medical research, sees the primary driver of innovation in organisations as the gathering of good quality scientific evidence of the value of an innovation to provide a convincing clinical and business case. The gold standard has been double-blind randomised control trials to provide quantitative evidence. Again, even where this evidence exists, the quote from the scoping review above points to contextual challenges. There are now wider interests in, for example, (a) understanding what kind of evidence case is required in different contexts, and (b) other kinds of evidence. The Health Foundation report on scaling innovations, Against the Odds, for example, draws attention to the value of qualitative evidence in producing compelling narratives that 'capture hearts and minds' (Albury, 2018).

The research team used this perspective to explore with interviewees the kind of evidence base that influenced decisions at the beginning of the adoption journey, what further evidence was collected within the adopter site and what influence local sources of evidence had on subsequent developments.

3. The organisational readiness model

This approach comes from organisational development theorists and examines how ready an organisation is to embrace a specific innovation. 'Readiness' may have many dimensions, from the very specific (the innovation meets a specific need of the organisation) through to the organisation's capacity to take it on

board (the 'organisational slack' available to do the extra work involved), to the general climate in the organisation.

A popular development of this line of thinking is 'the learning organisation'. The approach was developed by Peter Senge and colleagues, and published in *The Fifth Discipline* (Senge, 1990.) Five aspects of a learning organisation are identified: systems thinking, personal mastery, mental models, shared vision and team learning. The challenges in becoming a learning organisation are identified in *The Other Side of Innovation* (Govindarajan, 2010.) Although this publication focuses on private sector innovation, it identifies some universal issues with adopting innovation. It describes the daily operation of most organisations as the "performance engine" recognising that: "business organisations are not built for innovation; they are built for efficiency." A quote from Ray Sata, founder and chairman of Analog Devices is revealing: "The limits of innovation in large organisations have nothing to do with creativity and nothing to do with technology. They have everything to do with management capability." It is here that the innovation push and the system pull meet in the ability of the organisation to engage with the change necessary to adopt the innovation.

The research team used this perspective to explore organisational capabilities of the adoption site with interviewees. Aspects such as 'pull factors' that facilitated adoption were explored. Examples included a pre-recognition, for example, that a need exists that the innovation may be able to meet. Exploration of the recognition and experience in the disruption of innovation was also discussed.

4. The project management approach

This approach is concerned with the phases of work necessary to put an innovation in place and have it 'up and running'. Project management methods are most advanced in the construction industry and in IT where PRINCE2 is a widely used tool. Historically, projects have been defined as a linear sequence of activities (the 'waterfall model') but in a complex, uncertain and risky world there is now a lot of interest in more iterative and agile approaches based on action research (Stringer, 2014) that facilitate learning and guide the process towards effective solutions. Agile software development has a focus on self-organising teams with

cross-functional capabilities. The approach is iterative, incremental and evolutionary, and incorporates a lot of the test and learn thinking that has arisen out of social media and eCommerce technology platforms. Purposeful Program Theory (Funnell, 2011) is an exemplar of an approach that factors in context to the development of programme and project planning. In a complex, continually changing world, linear project management is being augmented by rapid cycle test and learn approaches that incorporate learning and understanding.

The research team used this perspective to explore the kind of project management approach adopted. Attention was paid to the ability to undertake linear, well-planned stages or whether there was need for iteration, and what learning was derived from the project management experience.

5. The 'transitional system' or temporary organisation approach

This is not so much an approach as a set of findings that recur in case studies of innovation. For innovations to diffuse and be adopted, relationships need to be built between the innovators and all the key agents in the adopter system. A recent systematic literature analysis of current research on innovation champions, from both an individual and an organisational perspective (Reibenspiess, 2018) identified a total of 56 traits, 26 skills and 11 knowledge types that were representative of innovation champions. The most important of each of these were considered to be as follows:

- **Traits:** creativity, enthusiasm, self-confidence, risk-taking, persistence, optimism, and proactivity

- **Skills:** supportive skills, innovation skills, networking skills, transformational leadership skills, and social skills

- **Knowledge**: technical knowledge and organisational knowledge

A common characteristic across all the cases studied was that the adoption process required the engagement of many members of the adopting organisation. There is a network of people who came into play at different stages of the adoption process, here defined as the 'adoption network'. Reibenspiess

et al point to the complete lack of research looking at the individual or organisational factors that are important in encouraging effective enabler networks for adoption to develop. Many types of champion may be needed in an adopter site for the adoption process to gather and sustain momentum. For diffusion across sites, facilitation may be required by the networks that link significant players in the relevant domain. Each innovation needs to build a temporary organisational structure to support it and move sites towards adoption; what Amado and Ambrose call a 'transitional system' (Amado, 2001).

The research team used this perspective to explore the number and types of champions that played a part in the adoption of the innovation. Attention was paid to partnership networks where champions may be required across departments or even organisations to facilitate adoption.

6. The sociotechnical systems change model

Coming from general systems theory, sociotechnical systems theory originated in the Tavistock Institute of Human Relations in the 1950s. The first use of the term sociotechnical systems was in the study of the introduction of mechanisation into coal mining (Trist, 1951) and weaving (Rice, 1953). A paper in 1965 recognised that: "A main problem in the study of organisational change is that environmental contexts in which organisations exist are themselves changing, at an increasing rate, and towards increasing complexity." (Emery, 1965). The basic tenet is that a work organisation is a complex sociotechnical system and any innovation has to be absorbed into the existing system. The innovation may be disruptive to the part of the system where it is targeted and may have consequences (unexpected and unwanted) elsewhere in the system. The approach has been used to predict barriers, to manage organisational change processes and to re-specify innovations to match the system requirements of the adopter site. The approach has a long history in studying healthcare such as the study into electronic health records (Eason, 2012). Studying interventions as sociotechnical systems brings in many other disciplines such as ergonomics, user-centred design and human factors. This is very powerful in revealing why many top-down systems fail to result in the envisioned behaviour change from the bottom-up.

The research team used this perspective to explore the degree to which the adoption of an innovation had the potential to disrupt the existing system delivering healthcare and, if so, what those impacts were.

7. The embeddedness, routinisation and sustainability approach

To provide a lasting contribution, an innovation has to become a normal part of the delivery of a service. Normalisation Process Theory (May, 2009) describes the process by which agents in adopter sites work through processes such as 'cognitive participation' to modify their practices to fully integrate the innovation into their normal working lives. In related work, Klein and Eason (Klein, 1991) describe the process of 'institutionalisation' where not only the practices of the most relevant agents change but interdependent parts of the system also change. For example, funding mechanisms, care pathways, training schemes, human resource policies and IT systems, etc., may also need amending to absorb the innovation into the work system on a sustainable basis. The development of frameworks and new ways to analyse the challenges continue (Greenhalgh, 2017). Modification of Normalisation Process Theory to extend its ability to handle complexity is also in development (May, 2016), as is the development of understanding of behaviour change models to better understand how innovations can be adopted (Michie, 2011). All of this work is trying to bridge the chasm between what we understand about organisations, human behaviour, processes, context and complexity, and what happens when you try to disrupt any part of the system.

The research team used this perspective to explore the degree to which the innovation could be described as embedded into the normal practice of health delivery and what had changed in the organisation to enable that to happen.

8. Learning and knowledge management

Recognising that adoption of innovation in complex systems is subject to iteration, emergence and non-linear processes has an impact on evaluating the outcomes and capturing the learning from the experience. As the innovations are taken up, they engage with a range of stakeholders and adapt to accommodate the context. This requires that the evaluation strategy evolves with the adoption process

to consider the stakeholder's different viewpoints. This has led to real-world approaches to evaluation. Realistic evaluation (Pawson, 1997) considers context by changing the research question from 'what works?' to 'what works for who and in what circumstances?' Developmental evaluation (Patton, 2010) goes a step further by asking 'what is the definition of works?' This takes a stakeholder dependent view of the outcomes. The development of the evaluation strategy in sympathy with the adoption process offers the opportunity to learn about the aspects of the process that may translate between organisational contexts and those that are organisationally unique. This formative view of evaluation of the adoption therefore offers insight into the process. Summative evaluation approaches lock in a model of the adoption process at the beginning and therefore have difficulty adapting to the changes exhibited as adoption develops. In the study we examined when and how evaluations were conducted and the extent to which their findings influenced subsequent developments.

The research team used this perspective to explore how the learning from the adoption of the innovation had been evolved and how this contributed to embedding. This was also linked to the approach to evaluation and benefits realisation.

Summary

An exhaustive review of all potential perspectives is beyond the scope of this report. All of the eight perspectives discussed provide insight and the opportunity to think about the studied innovations in different ways. They derive from different fields of study and disciplines and represent a useful set of perspectives through which to view the innovations.

Case studies:
Innovation overview

The following table provides a summary of the innovations selected, their type and setting(s) of use. Full case studies can be viewed from page 28.

Name	Type of innovation	Setting of care studied as part of this research	Description
AliveCor's Kardia	Device	Primary, community	Mobile ECG monitor that analyses and interprets heart recordings, identifying atrial fibrillation (AF), a leading cause of stroke
Scarred Liver Pathway	Model of care	Primary, secondary	Diagnostic pathway for the early detection of chronic liver disease
Serenity Integrated Mentoring (SIM) and the High Intensity Network	Model of care	Community	Model of care in which a partnership between specialist police officers and mental health practitioners supports high intensity users of emergency services
Lantum	Digital	Primary	Cloud-based tool to help NHS providers build virtual clinical staff banks and fill empty shifts in rotas
ORCHA	Digital	Primary, community	Health app portal allowing professionals easy and clear access to a verified resource
Non-Injectable Arterial Connector (NIC)	Device	Secondary	Medical device enhancing safety by requiring an arterial line in operating theatres and in intensive care
DrDoctor	Digital	Secondary	Online and SMS-based service enabling patients and staff to manage hospital bookings
ESCAPE-pain	Model of care	Community, secondary	A six-week group programme for people with osteoarthritis (OA)
Sleepio	Digital	Self-care	A digital sleep management programme available via the web

Analysis

In presenting the themes emerging from the nine case studies, the research team first offer an overall characterisation of the adoption journeys that were undertaken. This is followed by an examination of the people in the 'adoption network' that had undertaken these journeys and finally describes some of the key tasks in the adoption process.

The nature of the adoption journey

This section describes the dynamic nature of the adoption journey, the degree of adaption required for innovations to be embedded and the range of factors that influenced the interaction between the innovation and the adopting organisation, namely, the wider adoption network, mediating factors and push and pull factors.

Dynamic and non-linear

In its simplest form, the adoption process might be considered as a linear process where an established innovation is embedded through the completion of a pre-planned sequence of tasks. A representation of this linear adoption process is shown at the top of Figure 1.

The evidence from the case studies demonstrates that the adoption process is generally more complex. There is often interaction between tasks resulting in iteration and sometimes the revisiting of earlier stages in light of new information. This real-world adoption process is better represented as an interconnected set of tasks being required to embed an innovation (Figure 1).

The example of Alivecor's Kardia highlights the multiple iterations that were required for it to be embedded into practice. Local testing of Kardia highlighted not only the need for further training to optimise the use of the device within busy community pharmacies but also that its use had inadvertently created extra steps in the care pathway. As such, before the device could be embedded, redesign of the care pathway was required in the form of a one-stop clinic to ensure rapid confirmatory diagnosis and treatment.

Mutual adaption of the innovation and organisation

In describing the adoption process, interviewees highlighted that the innovation created a level of disruption within an adopting organisation, and in turn the adopting organisation also created a level of disruption to the innovation.

Within the adopter sites a series of negotiations were undertaken during the adoption process, resulting in changes to both the organisation and innovation in order to achieve a greater fit between the two.

Drawing on the sociotechnical systems theory, the adoption process can be thought of as a 'lock' and 'key'. As shown in Figure 2, the innovation starts out as an uncut key and becomes embedded through the mutual shaping of the innovation and the organisational context.

Serenity Integrated Mentoring (SIM), for example, needed to adapt to fit the new context of Surrey - a larger geography than the Isle of Wight with multiple police forces and health settings. NIA Fellow, Paul Jennings, identified the eight core principles of SIM that need to be retained, whilst also enabling flex in delivery and the name in order to enable local adoption and ownership.

Interaction with the wider adoption network

The case studies revealed that the negotiation between the innovation and the adopting organisation interacted with, and was affected by, a wider adoption network.

In some case studies, the wider NHS context facilitated further adoption. For example, Lantum adopted beyond a single GP practice into a GP Federation; ORCHA utilised within schools, general practice and forming part of a Sustainability and Transformation Partnership's digital exemplar programme. This expansion was facilitated by policy change, alignment of aspirations across organisations and a willingness for other organisations to also change practices. In some cases, success was reliant on external agencies engaging; for example, being able to utilise gym space in local leisure centres to enable adoption of ESCAPE-pain.

Furthermore, a number of case studies identified the critical role of innovation infrastructure in supporting negotiation, including the NHS Test Beds, for AliveCor's Kardia; and AHSN's for ESCAPE-pain and the Scarred Liver Pathway. Others highlighted commissioning and clinical networks, for example, Sleepio and the NIC.
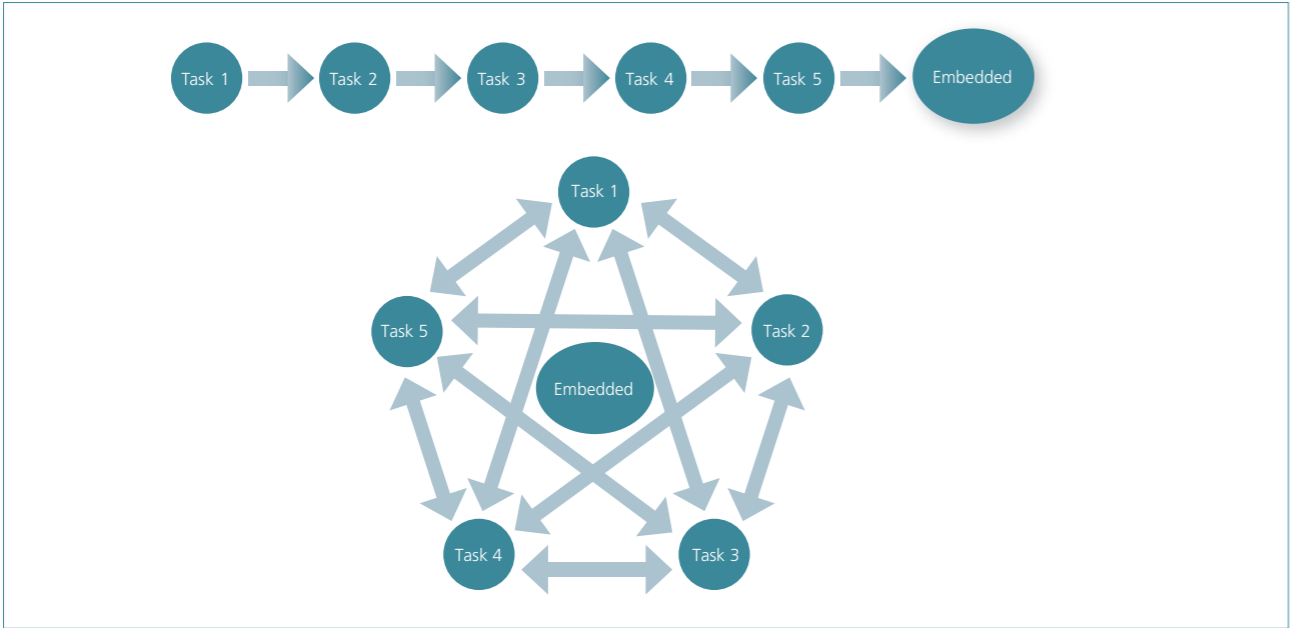

Figure 1: A simple, linear adoption process versus real-world experience
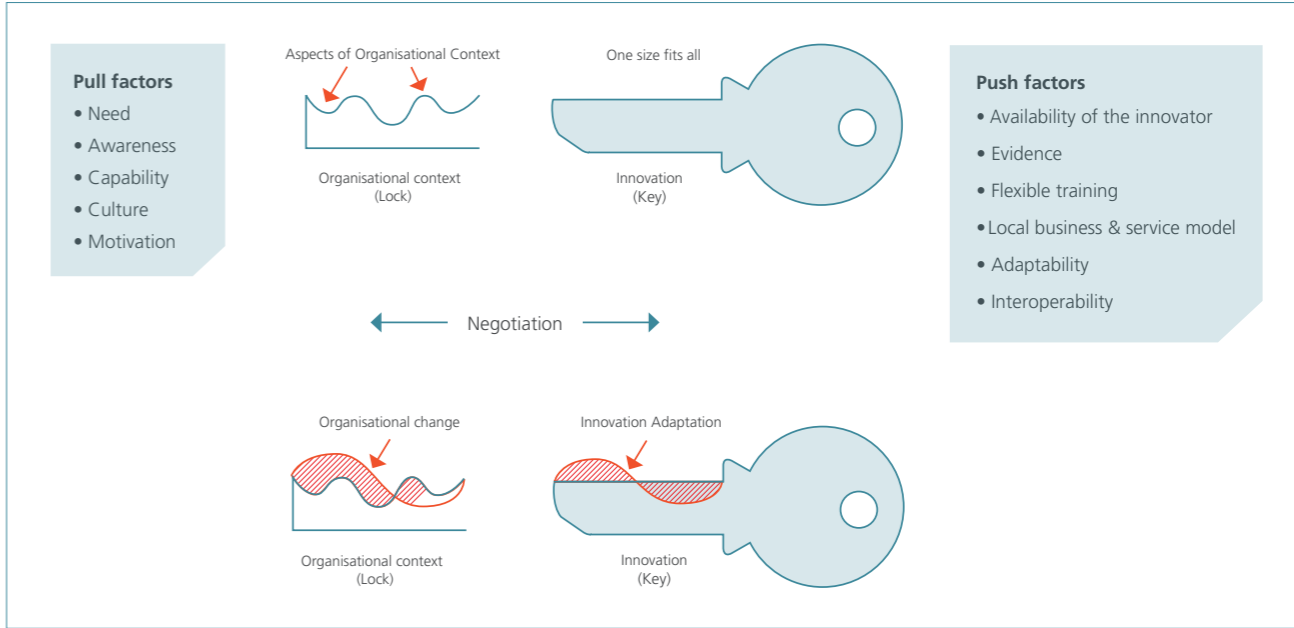

Figure 2: The negotiation space

Pull and push factors

In the interviews, a series of pull and push factors were identified as playing an important role at various points within the adoption journey.

The pull factors relate to the organisational capabilities that facilitate the adoption and routinisation of the innovation. The following factors were identified within the case studies:

- An existing need for which the innovation may provide a solution

- Awareness of the innovation and its supporting evidence

- Capabilities of the organisation to manage and coordinate the adoption process

- Opportunities to engage key decision makers and stakeholders that would be impacted by the innovation

- Motivation of the organisation to engage due to policy, guidance or local initiatives related to beneficial outcomes

The push factors come from the supply side and relate to communication of the benefits and establishing the profile and evidence of the innovation. They also rely heavily on support by the innovator and/or the innovator's wider team to facilitate negotiation of the adoption process. Examples of push factors identified in the case studies included:

- Availability of the innovator, being accessible to sites

- Evidence of the innovation's benefits

- Flexible training

- Development of the local business and service model

- Development of the innovation to suit the organisational context

- Interoperability with other systems

A wide range of push and pull factors were identified as critical in the case studies in the negotiation between the innovation and the organisational context (Figure 2). However, the relative importance of the individual factors tended to vary throughout the adoption journey and across the different case studies. Some examples of the clustering of factors within the case studies include:

- For Sleepio, there was alignment between the aspirations of the adopting organisation, the policy environment and the capabilities of the innovation (policy, need and innovation capabilities)

- For ORCHA, there existed the ability to modify and shape the innovation to accommodate the organisational needs of the adopter (innovator flexibility, listening and collaboration)

- For ESCAPE-pain, there existed organisational capabilities in the adopter sites to manage change and adopt new practices (capability, opportunity and motivation to change)

- For NIC, the availability of evidence, supporting material and communication existed between a network of enablers (role of AHSNs and other supportive networks including clinical and personal networks)

The adoption network

The case studies highlight the importance of a well-developed adoption network that works to mediate between innovation and the adopting organisation. The champions that make up this network represent a breadth of individuals, including those working within the adopter organisation; surrounding NHS organisations; and organisations from different sectors. The number of champions required often correlated with the degree of autonomy champions had to make purchasing decisions. For example, a senior physiotherapist was able to make the decision to adopt ESCAPE-pain, whilst Sleepio involved a far larger number of champions to bring together the 50 plus funders involved in London's Good Thinking service.

The champions seek to achieve alignment between the 'push' factors and the 'pull' factors in order to smooth the pathway for the innovation to be taken up successfully. Roles are needed on both the push and pull side and in most of the cases different professional roles from within the adopting organisation play their part at different stages of the adoption journey.

Champions within adopter organisations

In some of the case studies, specific local champions who had the clinical authority and budgetary control were able to take the decision to adopt the innovation. Examples include ESCAPE-pain and a lead physiotherapist, and the NIC and an intensive care nurse. In these cases, responsibility for the decisions - including resource implications - mainly resided within the remit of a 'pull' champion, or within the remit of a close and supportive management structure.

Where implementation impacted several different teams, multiple champions were required with different areas of expertise who could use their roles and influence to move the implementation forward in an iterative and collective way. For example, DrDoctor required the involvement of the chief medical officer, two service general managers, a finance lead, an information technology lead, and the recruitment of 'super users'. Involvement by these multiple champions varied considerably as implementation proceeded.

The cases demonstrated that there may need to be a more significant role in the early stages from senior strategic champions in order to influence high-level policy or management decisions, including securing initial funding - such as in the case of the chief medical officer at Guy's and St Thomas' (GSTT) for DrDoctor. Once engagement was achieved, the balance often moved towards more operational champions to drive forward implementation, who kept strategic champions involved through regular progress updates. Strategic champions would become involved again when there was a need to secure further resources.

Champions across-organisations and sectors

In those case studies where the innovation had implications for multiple individuals and organisations, the adoption network was more extensive, involving champions outside the adopting organisation. For

example, Sleepio, Kardia, SIM, ORCHA, and Scarred Liver Pathway all required considerable commitment from a range of champions and service developers working together over a period of time.

For the Scarred Liver Pathway, adoption by several CCGs in the Nottingham area required collaboration between key clinicians from primary and secondary care who also worked closely with commissioners in the CCGs and their local AHSN.

Sleepio's integration into the London-wide initiative Good Thinking, required considerable commitment from a range of individuals at various levels and from different organisations across London, all acting to drive forward delivery of a digital mental health strategy for the capital.

In several cases the adoption does not just involve multiple NHS agencies but also non-NHS bodies: SIM with the local police force, ESCAPE-pain with local leisure centres. Effective partnerships such as these have been essential in contributing to the successful move towards adoption.

As different avenues for the adoption of AliveCor's Kardia were explored, the adoption network extended to include pharmacies and commissioners, facilitated by the local Test Bed.

The traits of the adopter

The case studies highlight a set of traits shown by many of the individuals who played significant roles in the progress towards adoption of the selected NIA innovations examined. These traits include:

- **Being reflective of current practice** and outward looking to identify ways to further improve current practice; e.g. local clinical champions who identified ESCAPE-pain as a way to develop their teams' professional practice for better patient outcomes

- **Having the skills and the willingness to act** and communicate outside their immediate roles and responsibilities in order to interact with the push champion, or with other innovation intermediaries such as the AHSNs; e.g. Chelsea and Westminster NHS FT had known of the NIC and went ahead and adopted it aided by the Innovation and Technology Tariff (ITT)

- **Being well connected** within their profession, organisation, local health and care system and more widely to identify opportunities and make the most of support available for implementation; e.g. the multi-agency stakeholders across London - including the 32 CCGs -who came together to form the Good Thinking service which implemented Sleepio

Common tasks in the adoption journey

Four consistent groups of tasks with common features were identified from the case studies. The tasks were not necessarily sequential and in many cases there were iterations between them as progress was made towards embedding the innovation into business as usual. They reflect the theory of an adoption network helping to negotiate the space between the 'lock' and 'key'. The four groups are:

- Trials: getting to know the innovation

- Building the case for adoption

- Adaption

- Embedding and sustainability

Trials: getting to know the innovation
For all the innovations, there was a process of understanding the innovation. For example, in the cases of Lantum and ESCAPE-pain, professionals proactively looked for solutions to problems they were experiencing. For Lantum, this was the challenge of finding locum cover that led to the GP practice adoption. In the case of ESCAPE-pain, the physiotherapists were committed to improving patient outcomes and had heard or read about the innovation.

In many of the case studies, part of getting to know the innovation involved a trial. For some, this tested the feasibility of using the innovation at the site; for example, samples of the NIC were purchased to see how easy they were to use and to check there were no barriers to adoption. For Kardia, testing it in the new setting of the pharmacy then helped to build the local evidence base for the innovation.

For others, trials were used to better understand how an innovation could be successfully adapted to the local context. For SIM, it was unclear how to transfer the model of care from the relatively small-scale health and police context of the Isle of Wight to the more complex environment of the county of Surrey. For the Scarred Liver Pathway exploration via trials was extensive. Three trials were undertaken before the development of the pathway which involved 24 iterations. However, this enabled a breadth of partners across different organisations to shape and feel ownership of the pathway.
The trials that were undertaken varied in scale and formality although none involved a randomised controlled trial. Trials served to create confidence that the adoption was feasible and helped to build local evidence in a form appropriate to secure ongoing funding.

A common view amongst the adopters leading the trials was that it was only afterwards that they understood what benefits could be achieved and what evidence was needed to support a case for funding. The trials were opportunities to learn in several ways; for example, that a particular application of the innovation was possible, how it needed to be implemented, that there was evidence of benefits, and that systematic data collection may be more compelling for sustained adoption. This finding aligns with Roger's work on the characteristics of innovation, where 'trialability' was one of the five factors identified as predicting whether an innovation would be adopted.

Another benefit from some of the trials was that they provided an important opportunity for the patients' perspective to be understood. During the trials patients were able to experience and respond to the innovations, enabling adopters to understand the benefits and implications for patients. For example, high intensity users of emergency services responded well to SIM, and people were willing to have an ECG reading using Kardia in their local pharmacy.

Building the case for adoption
Negotiation of the innovation with the organisational context was often needed to ensure a fit between the 'key' and 'lock'. However, a requirement for sustainability is continued funding of the innovation. In several of the cases the route was reasonably

straightforward; e.g. in ESCAPE-pain the departments adopting the innovation were able to fund it from existing budgets.

In most other cases where there was an extended adoption network, the negotiation space between the 'key' and 'lock' involved multiple departments or even organisations. As the complexity of negotiation increased so did the search for sustainable funding. It was often a process re-visited multiple times in iterative loops.

In complex cases the adoption network had to seek funding initially to proceed with the adoption process, to, for example, fund trials and support people (sometimes including the innovator) to undertake the adoption tasks. This occurred in the development of ORCHA which needed to set up the platform and establish procedures for testing apps in advance of being able to offer a service to developers or care organisations. There was then the need to secure funding - which was often for a time-limited period - for embedding the new service. Securing funding for sustained use was then a further step. In many cases this process meant that adopters, often in partnership with the innovators, had to search for appropriate funding sources.

Different funding sources were involved at different stages and, ultimately for some, a combination of funding sources were involved in the delivery of the service. There was, for example, initially no obvious source of funding for an innovation like Sleepio, and SIM in Surrey involved funding both from the health service and the police force.

In practice this meant that the adoption process often proceeded with uncertainty as adopters gathered information during the process to develop the business case to secure the next wave of funding. Funders and purchasers required evidence of benefits and costs, while adopters reported the need to develop the evidence as they proceeded. This included a need to make evidence generation more site specific and to meet the needs of key stakeholders, for example, the Scarred Liver Pathway's building of evidence for commissioners. In the case of DrDoctor, the adoption occurred in stages with the business case for the first stage having to stand alone prior to engagement with the next stages of adoption.

The need to develop the business case as the adoption journey proceeded put an emphasis on ongoing evaluation. At each stage, evidence was collected of the progress made, the barriers encountered, and the benefits realised. In addition to collecting evidence of benefits and costs, the evaluation also tended to help adopters determine what to do next. Finding an emergent adoption route was therefore a process, whether formally recognised or not, of iterative steps where action was taken and evaluated before the next step was determined.

Adaption
In the majority of case studies, the adoption of the innovation involved some degree of change in the adopting organisation. For example, data cleansing at GSTT to be able to embrace DrDoctor, agreements with local leisure centres to enable delivery of ESCAPE-pain, new pathway design in the case of Kardia.

Staff at the NHS sites often needed to take on new roles to absorb the innovation. For example, pharmacy staff had a new role in administering Kardia, recruitment of 'super users' were needed to embed DrDoctor. The new service often also needed a much wider communications campaign to ensure everybody involved understood the changes made and the reasons for them.

The innovation - the 'key' - also needed to adapt to fit the mould of its new 'lock'. For example, a change in the training that accompanied Kardia in pharmacies, and flexibility in how SIM could be adapted in Surrey so that it became locally owned. When the innovations - the 'keys'- were flexible and could be moulded to the needs and context of the 'locks', accelerated progress could be made.

The form of flexibility varied from case to case. DrDoctor's approach to flexing which functions are adopted meant GSTT could start with the text messaging service which was more readily absorbed by the existing IT infrastructure. The adoption of its other and, locally more complex, functions like offering earlier clinic slots came later, once there was success with the initial roll out.

In some of the case studies, transformation of the wider health system led to opportunities for innovation to spread. The Good Thinking service was in development to tackle poor mental health in London, and Sleepio became a part of how it was developed.

For Lantum, the formation of the GP Federation enabled uptake over a local area, enabled Lantum to offer bespoke and competitive pricing to a GP Federation. For ORCHA, the emergence of Sustainability and Transformation Partnerships (STPs), opened up a series of opportunities both within the NHS but also in other public-sector services (e.g. schools) that contribute to overall health and wellbeing.

The adaption process is best characterised as a discovery and learning process. A change was required in the sociotechnical system delivering healthcare and there is relatively little evidence from the case studies that this was a pre-planned process. It is more likely to have been an exercise in exploring how to undertake some aspect of the innovation, for example, conducting a fibroscan to detect liver disease, and discovering that it has all kinds of implications in primary care, secondary care, commissioning, etc. This then led to exploration of these implications and through a series of iterative loops (often with considerable persistence of the adopters) a new operational system emerged. In the case of the Scarred Liver Pathway it took 24 iterations. As this process proceeded, the innovation was used and became embedded in the normal process of delivering care. In the cases studied, the process did not have a natural end. The systems into which the innovations are being introduced are likely to be continually evolving and there are likely to be further ideas about how the innovation could be developed to yield even greater benefits.

Embedding and sustainability

In the majority of the case studies, the innovation had been embedded to some degree into normal service delivery at the site. However, many of the participants in the interviews highlighted that the form and degree of embeddedness was often at this stage fairly tenuous.

One issue was the sustainability of the embedded practice. In five of the case studies the innovation was being supported in a sustainable way through funding from on-going sources, but in four, funding was from time-limited sources or was still to be confirmed.

Another issue was that the innovation was sometimes only partially embedded: either because it was only in use in part of the NHS site or because the innovation itself was only partially implemented. For DrDoctor, only the text messaging functionality is embedded across GSTT, with more of its functionality being embedded initially within the dental service.

It is apparent that in many of these cases, the journey from initial investigation of the innovation to sustainable and embedded use of the innovation has been long and complex. It can appear disordered but is better characterised as an emergent process based on iteration and learning. This description raises the question of how much of this process must be repeated when these innovations are introduced in other sites.

As learning about the adoption into additional sites develops, it might not be necessary for each new adopter network to repeat every iteration. This study, with one exception, has focused on the adoption of the innovation at one site and cannot therefore provide much evidence of what would happen in other applications of these innovations.

Every site involves a different organisational context and local teams involved with adoption necessarily need to explore how best to adopt the innovation. However, learning from the common adoption tasks undertaken at sites already using an innovation should highlight issues to be addressed locally. This study has confirmed that, for most of the innovations studied, the adoption process is iterative and emergent because of the uncertainties encountered as the innovation engages with NHS sites.

Discussion

The study also demonstrates that the people who engage with this uncertain process are primarily the existing staff within the NHS sites, and in the course of moving towards the embedding of the innovation a spread of professional roles may be involved (strategic, clinical, finance, etc). For the majority of these people, their engagement with the innovation process was in addition to their day jobs and it may have been a new experience for them. Whilst the innovator may become experienced in the processes necessary to achieve adoption of their particular innovation, it will be a novel experience for the staff of the adoption site. There are then two kinds of uncertainty: the first is identifying the negotiation space that has to be worked through between the innovation and the local context; and the second is determining how to work through it when the adoption journey is novel. A key task for the community concerned with the adoption of innovations is to identify effective methods of supporting the adopter networks to navigate and reduce the uncertainty within the adoption journey.

Many of the interviewees commented on the issue of the negotiation between innovation and adopter context. They pointed out that where the innovation is engaging with a complex organisational context, there will be a different negotiation space and the adoption journey may be different. The adopters who developed SIM into SHIPP in Surrey for example, do not think it will be appropriate for every other county to roll out their particular version of the innovation. It will be necessary for the adopters to take their own journey and find their own solution. Nevertheless, the respondents have learned a great deal on their journey that could help others by alerting them to the challenges, sharing their learning, and ensuring there is a clear focus for their work. They felt that the adoption journey may need to be repeated but the process could perhaps be much more effective if generalisable learning is identified that can be transferred from one adoption of an innovation to another.

Policy and practice implications

The NIA focusses, in the main, on support for innovators and intermediaries. This research deliberately sought an adopter perspective and it has illuminated who the adopters are, the challenges they face, and the work they have to do. The question now is what policies and practices can be formulated and deployed that can assist adopters? They are unfortunately not an easily identifiable population and for the most part people proactively take up their roles as agents in the adoption process in particular contexts for limited periods of time.

It is apparent that there are many external agencies that played a significant role in supporting the internal adoption networks, including the innovators, the AHSNs, agencies that support specific clinical conditions, and funding agencies. A review of how this support is provided throughout the adoption process and is perceived by the adopter networks might reveal opportunities to strengthen the support.

There were two kinds of support identified in this research that are likely to be of significance:

First, establishing how people who have already adopted an innovation can help those about to embark on a similar journey. The new adopter network may not be able to utilise exactly the same solution as their predecessors; however they may be able to learn from the processes that were followed and tasks undertaken to create and embed the solution. Networks are forming around particular innovations where learning can be shared; for example, through the AHSN National Programmes. Further developing this approach may be of great assistance to new adopters.

The second kind of support concerns the use of theory and method in the adoption process. Although there are many theoretical formulations and methods that exist to support iterative and emergent design approaches, it is not always clear how much influence they have. Where external bodies, such as an AHSN or Test Bed, were involved in the adoption process, there were indications that well recognised methods were being employed.

It is striking that in many instances, what was developed is similar to methods available in the literature. For example, the way iterative loops were undertaken by gathering data about progress so far, identifying barriers and challenges and then plotting the next step is very similar to action research, formative evaluation and developmental evaluation. It may be that at important stages of the adoption journey, adopter networks could usefully be introduced to some of these methods to aid successful uptake of innovation.

Assisting translation through learning from the adoption process

Within the development of the sociotechnical system there is learning about the organisational context and the innovation. Accumulating this learning across a range of adoptions would provide understanding about translating innovations between contexts. Of the factors identified, some will be unique, and others will represent learning that is more generalisable.

From the case studies, some key areas of learning across adoptions and innovations relate to:

- The importance of understanding how innovations interact with other systems in the adopting organisation

- The requirements for changes in practice by a range of stakeholders in the adopting organisation

- The required evidence base to support adoption within specific organisational contexts

- The need to understand that different stakeholders have different needs for evidence to support their roles and engagement with the innovation

- How the innovation might evolve to increase its value and reduce its implementation costs as it spreads

Through repeated adoptions of the innovation in differing organisational contexts it should be possible to discern what aspects of learning are unique and what are generalisable. This understanding would provide deeper insight into the translation of innovations into other settings and provide the opportunity to develop more comprehensive push factors supporting adoption.

Conclusion

Having studied the nine innovations in adopter sites in some detail, the negotiation model of adoption has demonstrated recurring relevance. All nine innovations demonstrated complexity, non-linearity, iteration and longer time scales than expected in negotiating their ways to some level of embeddedness and sustainability. Two key points arise from the understanding generated through the NHS Innovation Accelerator.

The first is that the adopter sites should be applauded for their resilience, commitment and tenacity in adopting the innovations. It is not just that the amount of effort required to negotiate the process is difficult to see externally. It is the fact that within organisations, different stakeholders do not realise how hard people are working to make their element of the adoption process work. The findings from the case studies expose just how difficult and challenging adoption is in a complex organisation and/or system.

The second is that because the iterative and non-linear nature of the adoption process is not generally recognised as a critical journey for all adopter sites across Roger's S curve, relatively little of this learning is captured for others' benefit. Rather the learning extracted from adopter sites has tended to be used to try to simplify the adoption process, creating logical 'how to' guides and materials (e.g. training manuals, standard operating procedures). This approach fails to acknowledge that each organisation faces a negotiation between the innovation and their local context as a critical part of innovation being adopted, embedded and sustained. There is an opportunity to capture learning that incorporates this critical, emergent process and provide that as part of the push factors to assist adopting organisations in their negotiation process.

The study has offered the opportunity to reflect on the role of theory in exploring innovation adoption in healthcare. Theory has an important role in both guiding and learning from the adoption process. However, multiple discipline-based perspectives were required to inform and analyse the complexity of adoption of different types of innovation in different NHS contexts. As such, there may be an opportunity to further synthesise the theoretical work to better understand the organisational pull factors as well as capturing the unique and generalisable learning around the organisational contexts impacted by the innovations. A more in-depth understanding of the negotiation process could underpin improved translation of adoption between contexts and accumulate the valuable learning generated by each adoption journey.

Top Ten Tips
for Innovators

1. Map the adopter network early and comprehensively for each new NHS organisation you are working with.

2. Differentiate the unique and generalisable features of the negotiation between the innovation and the organisational context (negotiation space) and communicate common adoption tasks to the impacted stakeholders as early as possible.

3. Understand the pull factors for the adopter organisation and how these can be matched to available push factors.

4. Capture the learning from the negotiation between the organisational context and the innovation to support other adoption journeys.

5. Accept that the adoption process will be iterative, non-linear and uneven in progress.

6. Tailor training and support for adopting organisations, appreciating different organisational contexts.

7. Work with the adopting organisation to help with business case development and plan for sustainability from the outset.

8. Base an initial roadmap on the experience of the unique and generalisable learning obtained from previous adoptions linking this to a potential sustainability plan.

9. Communicate often, clearly and openly.

10. Be realistic about timescales and availability of resources to iterate and embed the innovation.

Top Ten Tips
for Adopters

1. Dedicate resources to engage the wide range of staff who will be involved in implementing the innovation and supporting the innovator.

2. Engage with the push factors to clearly understand the available data and materials available to support adoption.

3. Review and free up the necessary organisational capabilities to engage with and implement the innovation.

4. Explore the experiences of other organisations in adopting the innovation.

5. Accept that the adoption process will be iterative, non-linear and uneven in progress.

6. Plan for widespread engagement and training within the adoption network.

7. Develop the local business case and plan for sustainability from the outset.

8. Work with the innovator in evolving the specific roadmap for the organisational context of the adopter network linking this to a potential sustainability plan.

9. Communicate often, clearly and openly.

10. Be realistic about timescales and availability of resources to shape and implement the innovation.

Case studies

Care City Test Bed:
AliveCor's Kardia

Care City Test Bed: AliveCor's Kardia

Chelsea and Westminster Hospital NHS FT: Non-Injectable Arterial Connector

Good Thinking - London-wide Digital Mental Health Service: Sleepio

Guy's and St Thomas' NHS FT: DrDoctor

Healthier Lancashire and South Cumbria, shadow Integrated Care System (ICS): ORCHA

Nottinghamshire: Scarred Liver Pathway

St George's Hospital, Cheltenham General Hospital and Barnsley: ESCAPE-pain

Surrey High Intensity Partnership Programme: Serenity Integrated Mentoring

Sutton GP Federation: Lantum

Description

AliveCor's Kardia Mobile Electrocardiogram (ECG) device is a mobile heart monitor that can detect, monitor, and manage heart arrhythmias with automatic analysis. The Kardia captures ECG recordings of the heart within 30 seconds and can be used anytime, anywhere, providing instant feedback. It can also detect atrial fibrillation (AF) - a major cause of stroke.

425,000 people aged 64 and over are estimated to have undiagnosed AF[1]. Early detection and monitoring can pave the way for better treatment for people with AF and avoidance of AF-related strokes. Conservatively, an AF-related stroke costs the NHS £12,228[2] in the first year alone.

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1 National Cardiovascular Health Intelligence Network (NCIN, 2016), figures in England; https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/644869/atrial_fibrillation_AF_briefing.pdf

2 NICE CG 180

Adoption journey

Engagement
The Atrial Fibrillation Association (AFA) recognised the opportunity to offer ECGs in local settings. Through work with a Local Pharmacy Committee (LPC), the AFA undertook a six-week trial of Kardia in community pharmacies in 2013. The trial demonstrated that Kardia could be used in pharmacies to detect AF.
For Care City - an NHS Test Bed - reducing the high incidence of stroke was a priority area and therefore there was an ambition to increase prevention of strokes.

Care City was familiar with AliveCor's Kardia because it was on the NHS Innovation Accelerator (NIA). Additionally, the lead pharmacist at Care City was also secretary to the LPC and therefore had prior knowledge of the AFA Kardia trial. To select the innovations to be part of the bid to be a test bed, Care City had robust selection criteria involving a stakeholder panel presentation. Alivecor was successful in meeting the criteria, and the Kardia device became one of several innovations tested within the test bed.

Kardia was tested within community pharmacies and GP practices. Through the trial, Care City wanted to assess whether Kardia could reduce the incidence of stroke through earlier detection and treatment of AF.

Trial - phase one

Phase one tested whether AF could be detected by the following staff groups using Kardia in two care settings:

- Health Care Assistants in GP practices

- Pharmacists and pharmacist assistants in community pharmacies

Care City trained both staff groups in how to use Kardia, and - in consultation with AliveCor - developed a standard operating procedure and flowchart for staff to follow. Patients over the age of 65 were invited to be screened, and any patients with abnormal ECGs detected in pharmacies were referred to their GPs.

The need for iteration and adaption to the training and pathway were soon identified:

The noise and bustle of some pharmacies led to misleading results from the test. The training was therefore adapted to include where and more clearly explain how the ECG should be undertaken.

GPs felt the pathway created unnecessary steps as patients were referred by the pharmacist to them, when all they could do was to refer patients to the hospital-based cardiology team.

An iteration on the pathway was therefore made. A 'one-stop' clinic was set up in the local hospital and a triage process was established in which the traces captured in the pharmacies were sent via a new IT platform to the clinic. Those with clear indications of AF were invited to the clinic.

Trial - phase two

The aim of phase two was to identify the optimal care pathway post-diagnosis of AF using the Kardia device. This included reducing access to treatment from 12 weeks to two weeks to protect people from the possibility of AF-related strokes.

The Test Bed convened a working party with representatives of all relevant stakeholders: pharmacists, GPs, community nurses, cardiologists and cardiology nurses, and commissioners to design the new pathway. The local CCG also joined the working party; partly because early detection may increase workload flowing through the pathway, and partly to ensure the safety and quality of the pathway.

21 pharmacies took part in phase two, although most of the pathway developments were associated with the pharmacies. In the trial, 672 traces were captured in the pharmacies of which 110 were referred to the clinic. The clinic triaged out 74 which meant that 36 patients were invited for further tests.

Enablers

Key champions: In the Test Bed trial a lead pharmacist championed the use of Kardia in community pharmacies.

Trialling within different contexts: Two major barriers to the adoption of Kardia were identified in the examples. First, it had to be shown that the device could be used by GP practice and pharmacy staff to capture ECGs. Second, once AF had been detected, a pathway was needed to confirm diagnosis and provide timely, effective treatment.

With the lead pharmacist's role in the AFA trial, Care City was able to support trialling of Kardia in different settings, and also trial a new care pathway within which the device could be embedded.

Funding and infrastructure: As an NHS Test Bed, Care City was able to provide the resources to systematically test the use of Kardia in GP practices and in community pharmacies, and facilitate the development of the optimal pathway for the early detection and subsequent treatment of AF.

Impact

In North East London, the Barking, Havering and Redbridge Provider Alliance have obtained funds to distribute more Kardia devices, and have committed to developing the AF pathway across their region.

Implications

AliveCor's Kardia is a digital application with convincing evidence of its ability to yield valuable diagnostic information when used in a primary care setting. However, there are many ways it can be used within existing care settings. The examples here demonstrate the adaptions required for it to be successfully embedded within GP practice and pharmacy settings. Furthermore, when an intervention is found to accelerate detection, redesign of the care pathway may also be needed to ensure newly diagnosed patients can rapidly access appropriate treatment.

Interviewees

1. Lily Barnett, Programme Manager, Care City Test Bed [at time of writing]
2. Mark Hashemi, AliveCor Distributor, Technomed
3. Jenny Shand, Executive Lead for Care City Test Bed, Programme Director, UCLPartners
4. Francis White, NIA Fellow, AliveCor's Kardia [at time of writing]
5. Name withheld, Local Pharmaceutical Committee
6. Name withheld, Consultant Pharmacist

Chelsea and Westminster Hospital NHS Foundation Trust:
Non-Injectable Arterial Connector

Description

The Non-Injectable Arterial Connector (NIC) is a low-cost, simple device that stops wrong-route drug administration, reduces arterial line-related infections, and prevents blood loss during sampling.

The NIC is a needle free arterial connector. Unlike standard connectors, it has a one-way valve safety feature built into it. This safety feature allows clinical staff to use the NIC as per normal clinical practice but if they attempt to wrongly give medication via the arterial line, the clinician is prevented from doing so by the safety feature. Adoption of the NIC requires minimal staff training and is a direct replacement for Standard Arterial Connectors (SACs.)

Adoption journey

Engagement
Chelsea and Westminster NHS FT (CWNHS FT) Clinical Nurse Specialists had become aware of the NIC both through journal articles whilst researching how to improve intensive care units (ICU) and from conference attendance. They had also heard about it at the North West London Critical Care Network's (NWLCCN) annual education event where exhibitors (including the NIC team) support the day.

The NIC was then accepted onto the Innovation and Technology Tariff (ITT) and it was at this point that CWNHS FT decided to trial the innovation.

Decision to adopt
Seeing the patient safety benefits of the NIC and the fact that the ITT meant it was free, the lead nurses at CWNHS FT made the decision to adopt it. Once the decision was made, the order for the NIC was made directly by the department. As this fell within the ICU's budget control, a procurement process was not required.

Initial pilot
There was then a simple trial where the NIC was used within the ICU as a direct replacement of the regularly-used SAC. To begin with, the ICU ordered a few weeks supply of the NIC to understand how staff reacted to it and to identify any major barriers to usage.

Training on how to use the NIC was delivered by the Marketing Director from the NIC's distribution company. Recognising how busy the unit is and the pattern of shifts, he knew it would not be possible to train every nurse in one session. The Marketing Director therefore visited the unit several times and trained nursing staff individually, whenever they had time to spare to be trained.

Roll out in the ICU
As feedback from staff was positive and there were no identified barriers for use, the ICU committed to ordering the NIC over the long term. The team has indicated that it will continue to use the NIC once the ITT funding ceases because of the safety benefits it delivers, despite the slightly higher cost of the device compared to the SAC.

Enablers

Nursing-led decision making: Senior nurse leadership made the decision to adopt the NIC - an innovation that they primarily use in ICU. They did not need to be convinced to use it by another staff group and provided the leadership for junior nursing staff to adopt the NIC into routine practice.

Flexible, accommodating training: Training was implemented in a highly flexible way to ensure every member of staff was shown how to use the NIC at a time that suited them. This involved on-the-ward rapid training sessions and all-day 'drop in' training. As training can be delivered in 5-10 minutes, it was not a significant challenge to adoption.

Ease of purchase: The ITT raised the profile of the NIC and removed the issue of finance, meaning the ICU could adopt the NIC with ease and within the budget controls of the department. The innovation could also be purchased from within the department budgets without the need to undergo a procurement process and this helped with ease of adoption.

Ease of use: The simplicity of the NIC and that the fact that it is a direct replacement for the SAC meant it did not require a change in practice, and was therefore relatively easy to implement.

Impact

An analysis of the NIC by the York Health Economic Consortium provided evidence of the following benefits: comparative cost to the standard device, elimination of bacterial contamination in the NIC, elimination of introduction of medication into the arterial line, reduction in time to take blood samples, and reduction in the need to replace the connector. The estimated costs of wrong route drug administration ranged from £57 to £10,174 and were reported as happening twice per month across the whole NHS. The value of preventing 'never events' is likely to exceed these estimates in both financial and reputational damage.
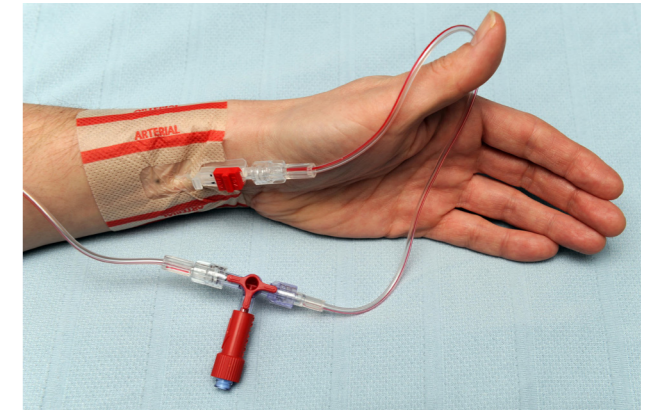
Implications

The case for preventing clinical incidents, even if many of the barriers to adoption are removed or lowered, can be difficult to pursue if the incident is considered rare or not recognised as an issue by an organisation. Providing a convincing evidence-base in relation to effectiveness, cost-effectiveness, and ease of implementation is important - but even then, it may not be enough.

Clinical networks with their in-depth understanding of high pressure work environments, like ICUs, can play an important role in bringing innovations to the attention of staff and organisations. The NIC did not enter CWNHS FT through the procurement chain or through a single channel; it required concerted effort across multiple organisations to raise the profile and engage with the right parties.

Interviewees

1. Chris Chaney, Chief Executive, CW Plus
2. Elaine Manderson, Clinical Nurse Specialist, CWNHS FT
3. Maryanne Mariyaselvam, Innovator, NIA Fellow
4. Gedd McGonell, Marketing Director, Amdel Medical
5. Gezz Zwanberg, Nurse and Project Lead, NWLCCN

Good Thinking - London-wide Digital Mental Health Service:
Sleepio

Description

Sleepio uses the latest digital technology to deliver the ingredients of Cognitive Behavioural Therapy for insomnia (CBT-I) - the gold standard approach to treating insomnia. CBT-I is a talking therapy involving learning cognitive techniques to address the 'racing mind', and behavioural strategies to help re-set sleep patterns naturally. CBT is traditionally delivered face-to-face but there is a shortage of in-person CBT within the NHS.

Sleepio users are guided through a series of weekly interactive sessions by 'The Prof', a virtual sleep expert, and his narcoleptic dog, Pavlov. Sleepio is clinically proven to help overcome the worry and negative emotions that accompany the experience of being unable to sleep. Sleepio can be accessed via both web and mobile applications. It also offers access to electronic research articles, online tools and an online peer-support community. Sleepio has also been used to treat common mental health disorders and has exceeded national recovery rates for anxiety and depression[1].

1 The latest published research on Sleepio is listed at www.bighealth.com/outcomes, and key papers are summarised in the NICE Health Application Briefing, https://www.nice.org.uk/advice/mib129

Adoption journey

Background to the Good Thinking Service
For some time, London CCGs and local authorities had been aware of the scale of mental health problems across the capital and that there were long waiting lists for accessing psychological services (IAPTs).
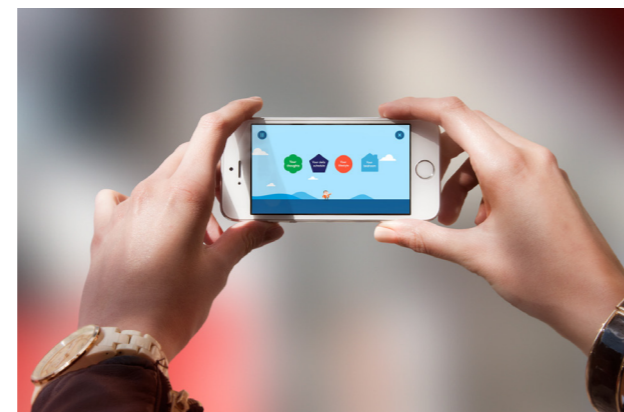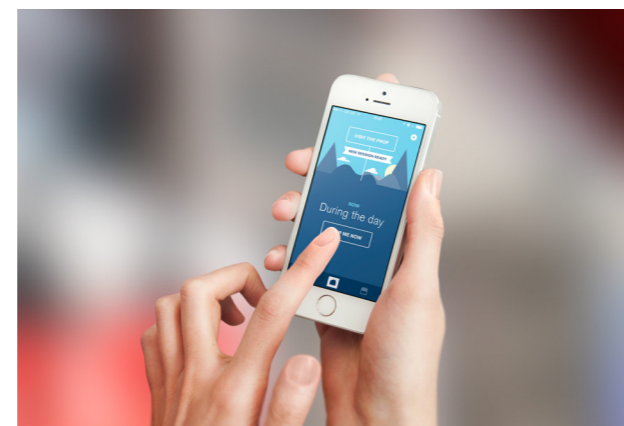
The then London Health Board - a grouping chaired by the Mayor of London, with representation from local government, NHS and Public Health England (London) - were keen to identify digital solutions to address the high rates of unmet mental health issues in London. Under the Board's auspices, a working group developed a business case for a digital mental health solution. This aimed to develop a preventive approach where people could get 24/7 access online to peer support and digital evidence-based interventions. Funding was obtained from London's CCGs and over half of its local authorities, with in-kind support from Public Health England and NHS England. Originally known as the London Digital Mental Wellbeing Programme, it was later branded (following work with users) as 'Good Thinking'.

The aim of Good Thinking was specifically to target people with common mental health problems who do not necessarily want or need to see their GP, but who could benefit from peer-to-peer and self-help online support. Recognising the stigma of accessing services for 'mental health', the programme decided to begin with a generic issue common to a number of mental health issues, and one which carried no stigma: sleep.

Looking at the demographic least likely to engage with offline services, Good Thinking aimed to target young men, aged 18-44, who were online, in medical distress and who could be directed to online support. The services wanted to incorporate a range of apps that Londoners could then select from.

Selecting Sleepio
Having made the decision to focus on sleep, Good Thinking looked to the market place for available sleep/insomnia apps.

Tower Hamlets CCG was appointed as the lead commissioning organisation. A mental health commissioner at the CCG who had experience of working on several digital projects, was recruited to develop and implement this new digital mental health program. The mental health commissioner sought to manage risks by engaging in conversations with different digital service providers with credibility, and with well-developed products that had already been through various types of NHS assurance processes.

They were looking to include interventions where there was evidence that people wanted to use them, with good user experience and clinical validity. One of those interventions was Sleepio. Initially, discussions were informal to identify teams, companies and organisations that would be interested in working together to test online journeys and public demand. Sleepio responded positively and worked collaboratively towards developing and testing a solution that would meet the aims of the project.

Enablers

Individual champions: A number of individual champions (such as personal interest, previous experience of digital projects, working in the field of mental health) from a range of disciplines, from different parts of one organisation, and from different organisations, working collectively to a shared agenda.

Focussed senior level steering group: The establishment of a high-level steering group with clear drive and vision, and the continuity of the same senior people from across the partner organisations within this group to maintain focus, secure funding and oversee implementation.

Credibility of the innovation: A well-developed product, with high-quality evidence, had an established network within the NHS, and had endorsement from bodies such as the National Institute for Health and Care Excellence (NICE) and the NHS Innovation Accelerator (NIA).

User-driven development, utilising iterative methodology and having a strong collaborative relationship between the innovator and the adopting organisation(s). Both Sleepio and the Good Thinking team working iteratively to develop an optimal approach.

Impact

Following detailed negotiations and partnership activity throughout 2017, a contract was signed towards the end of 2017. Unlimited access to Sleepio is now available to NHS patients living and working in London via the Good Thinking portal. This portal is aimed at both preventing mental ill health and enabling Londoners to access evidence-based online self-help treatment. Sleepio has a significant presence on this portal. The impact with regards longer-term beneficial population outcomes will require more time and further investment to support detailed evaluations.

Implications

The adoption of Sleepio as part of the wider Good Thinking service proved to be a highly dynamic and iterative process. It has required extensive stakeholder management and considerable resource to maintain the commitment of the partners throughout a long development phase. A pooling of funding contributions from CCGs, Local Authorities along with in kind support from Public Health England and substantial resource allocation from Sleepio, has played a significant part in facilitating the various stages of development and in maintaining momentum towards adoption.

Interviewees

1. Sophie Bostock, UK Innovation Lead, Sleepio, and NIA Fellow
2. Dr Richard Graham, Clinical Director, Good Thinking
3. Paul Plant, Deputy Director, Public Health England, co-initiator of business case for Good Thinking, and Lead of Public Health England's evaluation of Good Thinking
4. Name withheld, East London Health and Care Partnership, Good Thinking (previously)
5. Name withheld, Harrow CCG, Good Thinking
6. Name withheld, Kings College London
7. Name withheld, Office of London CCGs, Good Thinking
8. Name withheld, Public Health England, Good Thinking

Guy's and St Thomas' NHS Foundation Trust: DrDoctor

Description

DrDoctor is an online and text-based service that allows patients to confirm, cancel, and change bookings digitally. For hospitals, this means they can maximise and manage the volume of appointments to best fit their capacity.

The technology can target long waiting lists and automatically highlight available appointments so that patients can be booked in. In addition, it provides digital assessments before and after appointments, saving time for both patients and caregivers.

DrDoctor needs to integrate with existing hospital systems for managing patients - the Patient Administration System (PAS) - to be able to deliver its service. The PAS manages scheduling and appointments for all outpatient clinics.

DrDoctor's scheduling platform offers a range of functionality that can be adopted in stages. These are:

- Improving communication with patients regarding appointments via a patient portal that can send notifications and text messaging

- Using text messaging to offer alternative appointments if slots become available

- Moving the whole patient booking approach to an automated system that accesses and manages waiting lists directly

Adoption journey

Engagement and initial pilot
Contact between GSTT and DrDoctor began in 2013 when the General Manager for Women's Services in gynaecology identified the high number of missed outpatient appointments - 'Do Not Attends' (DNAs). DrDoctor was identified as a potential solution. However, the Trust was already underway with a procurement process for a text-only appointment booking solution, and DrDoctor's functionality was broader than the procurement specification.

In 2014 the General Manager for Women's Services developed a short business case that focussed on the reduction of DNAs and led to GSTT piloting DrDoctor in gynaecology in 2015. A small amount of funding covered the cost of the DrDoctor service as well as paying for IT integration.

Roll out across specialties
The pilot provided sufficient evidence that DrDoctor reduced DNAs to justify a broader roll-out across GSTT. At the same time the Chief Medical Officer at GSTT saw the additional potential of DrDoctor to reduce the cost of postage by replacing letters with electronic communication. The Chief Medical Officer took a Senior Responsible Officer role (SRO) for the wider deployment of DrDoctor to all outpatient departments in 2016. A project board was assembled including the SRO, an operations lead and a finance lead. The data from the pilot was shared with the hospital general managers who then joined the project board as the rollout occurred in their departments. Each department and IT made funds available to deploy DrDoctor.

Integration with the PAS, recruitment of clinical and administration staff and training was overseen by the general managers.

DrDoctor created a bespoke training package for the setting up of clinics, allocation of clinical codes as well as for the booking administration staff. Each role was trained in a series of practical, on-site sessions delivered by the DrDoctor team. Training covered, not only how to use the software, but how to align appointment booking processes with the new system. During the go-live process, 142 'Super-Users' received 1:1 training sessions and 224 booking clerks attended classroom training sessions delivered by the DrDoctor team to manage the transition to the new system. Weekly team meetings were held to feed back on progress and early benefits.

Extending the use of DrDoctor at GSTT
The successful deployment across the hospital of the text messaging functionality has helped highlight opportunities to use DrDoctor to deliver further benefits beyond reducing DNAs and reducing spend on postage. The General Manager for Women's Services shared the results of DrDoctor's impact with other General Managers and Clinical Directors across the Trust acting as an internal champion. In March 2017, the GSTT dental service then began to implement the further stages of DrDoctor which offers patients the option to book alternative appointments. Since April 2018, DrDoctor has implemented patient-led booking. The rationale for piloting these further uses in dental is because the service is not connected to other booking systems which can cause conflict in allocating appointments.

An additional impact of using DrDoctor at GSTT was the effect it had on data coding. For DrDoctor to work effectively, clinic and consultant coding needed to be uniform and standardised. GSTT became proficient at data cleansing and accurate management of coding, which was no small task given this was a manual process.

Next steps
Interviewees anticipate that GSTT will continue to extend the usage of DrDoctor so that all stages of its functionality are adopted across the hospital.

Enablers

Collaboration between DrDoctor's team and multiple senior level champions at GSTT representing different functions: clinical, operational, finance and IT. To enable this close working, DrDoctor co-located with GSTT's site, enabling DrDoctor staff to rapidly assist with problems at the hospital site.

Staged deployment: DrDoctor offers a number of different functionalities that can be adopted in stages depending on both the readiness of the organisation and the particular challenge one ward/speciality is looking to address. The fact that DrDoctor is an innovation that can be deployed in stages meant GSTT was able to develop the business case and justification to trial, roll-out the service, and also extend its usage to a second level, more-automated functionality.

Tailoring according to need: DrDoctor adapted progress reports according to the priorities and concerns of different staff groups, meaning information produced has been used to improve both resource management and allocation of clinics.

Impact

- 30% DNA reduction equivalent to seeing an extra 2,440 patients per year, resulting in £317,000 savings in the Women's Service

- Together, GSTT and DrDoctor realised a £2.6M financial benefit from the first year of rollout

- Since trialling patient-led booking, GSTT Dental Services have booked 6,000 new outpatient appointments through DrDoctor

- GSTT saw DNAs reduced by 34% within the pilot phase, equalling £317,000 in increased revenue

Implications

Platform solutions, like DrDoctor, tend to have wide-reaching impacts across a whole organisation. As such, successful adoption is likely to be a collaborative effort, involving multiple champions (from different departments and levels of seniority) advocating for change.

Platform solutions also offer unique insights for adoption. Firstly, a platform that offers immediate financial benefits (in this case DNA reduction) can be used to create the initial business case for the intervention, allowing longer term benefits to be realised at a later date. Secondly, the ability of platform solutions to address a broad range of needs/benefits means early engagement discussions can be tailored to the specific priorities of different adopter sites (in this case either reducing DNAs, managing demand/waiting times, or increasing clinic efficiency or automating bookings). Finally, the ability of sites to adopt platform solutions in stages can facilitate sustainability as the innovation continues to deliver increasing value over time as more functions are deployed.

Interviewees

1. Dr Ian Abbs, Chief Medical Officer, GSTT
2. Simon Blazer, Finance Lead, GSTT
3. Donna Holder, Deputy General Manager- Dental Directorate, GSTT
4. Piotr Karczewski, Business Support Manager - Dental Directorate, GSTT
5. Emma McLachlan, Programme Director - Digital Patient Journey, GSTT
6. Jenny Thomas, General Manager for Women's Services, GSTT (at that time)
7. Tom Whicher, Founder of DrDoctor, NIA Fellow
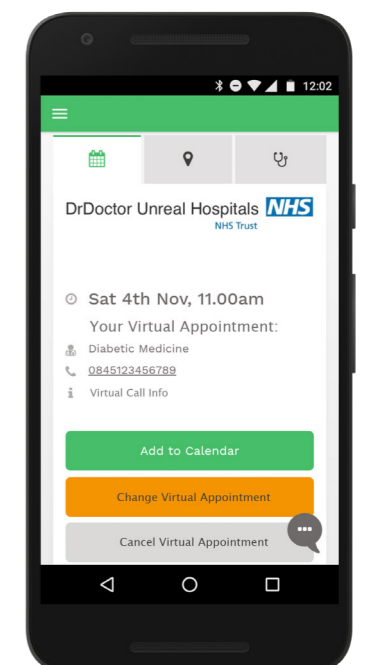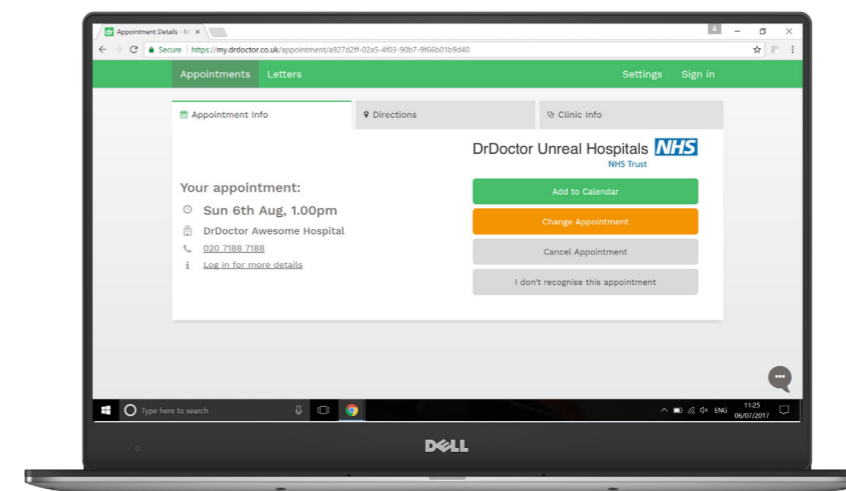
Healthier Lancashire and South Cumbria, shadow Integrated Care System:

ORCHA

Description

ORCHA works with Clinical Commissioning Groups (CCGs) and providers to develop health app libraries which integrate with local systems and strategies. This allows professionals easy and clear access to a verified resource, allowing them to enhance services and outcomes by finding and prescribing the best apps to patients. ORCHA is currently working with a growing number of health and care economies which enable local populations to gain access to a trusted health app platform, so they can choose apps to keep them well.

ORCHA provides a live resource of reviewed health and care apps which can be easily searched, compared, recommended, and downloaded through its easy-to-use platform. Thorough reviews and a simple scoring system highlight functional capabilities of the apps, making it easier for users to confidently and quickly compare and choose the best apps.

Adoption journey

ORCHA had previously engaged with the Digital Health Leaders for the ICS. Initially this was to test the product concepts, understand the need for such a solution, and then to identify market applications for ORCHA.

The digital lead for the ICS, local GPs, and other clinical leads recognised the immediate need that ORCHA addresses in aiding frontline staff and patients to more efficiently find and prescribe or access quality apps. As such, they have worked collaboratively with ORCHA to identify a range of opportunities to trial ORCHA with different communities including:

- Schools: Engaging with schools to adopt ORCHA as a platform through which to better understand how children and young people might engage with health apps. Through the school curricula (full lesson plans have been devised and shared), assemblies and hands-on workshops, young people are encouraged to learn more about health conditions whilst exploring the topic of app development and app reviews during lessons

- GP practices: Local GPs have recognised the benefits of ORCHA - faced with a rise in long-term conditions and limited resources, they have identified health apps as a branch of 'treatment' that could deliver improved care. They have taken the lead in introducing ORCHA to their surgeries, patients and clinical colleagues

- Sustainability and Transformation Planning (STP) Primary Care Digital Exemplar Programme: A channel to promote innovations including ORCHA to practices across the STP, and to support and recognise early adopter sites. For example, apps are now used by the eating disorder team to support, supplement and back up sessions

The local digital leaders also see the potential for ORCHA to be part of the STP's much broader vision around digital transformation, and better understanding the interaction between patients, the public, healthcare and technology.

It offers a tangible platform that digital leaders can show to people, who can then interact with it. The ability to demonstrate both the platform and the apps has facilitated engagement with frontline staff about the concept of how apps can support self-care.

In addition to responding flexibly to the local priorities of these digital leaders, the ORCHA team has personally engaged with sites; providing support, training and helping with promotion to both patients and staff. As digital transformation is still in its early phase within the NHS, work within the STP is focusing initially on the enthusiasts and early adopters.

Enablers

Local digital leaders have been critical in identifying applications for ORCHA and finding routes to engage adopter sites (e.g. the Digital Exemplar Programme). Furthermore, these leaders have spent time helping ORCHA refine and identify market entry opportunities. In addition to recognising the immediate needs for digital, the focus of these leaders on a broader digital transformation vision has helped to explore a range of partnership opportunities for ORCHA. The leaders understand the barriers to using ORCHA, for example, clinicians being concerned about promoting an app which they have not personally assessed. Furthermore, they see pragmatic solutions to these, such as being open with patients about the recommendations and highlighting the opportunity through ORCHA - akin to TripAdvisor - to review others' comments.

Partnership approach: The NIA Fellow and company CEO comes from the healthcare system and worked as a clinician within the NHS. She therefore had real credibility to draw upon when engaging with potential adopters. She has also been very open-minded and flexible about the approach taken, continually seeking input from a wide range of stakeholders in development and delivery of the platform. Given that the ORCHA platform may be a stepping stone to the wider adoption of apps, this flexibility and ability to collaborate with stakeholders is key.

Multiple applications of the innovation: The platform offers many advantages over less systemic interventions. One aspect is in data collection and reporting. ORCHA has provided data collation and reporting of app usage by population, patient and professional group, to help assess and prove digital strategies, investment and outcomes.

Impact

An increasing number of GPs are now recommending an app to patients, which bolsters the care advice or prescription given. They are also recommending apps to patients who visit with routine matters.

Since the start of the programme in February 2018, school pupils have discovered and downloaded more than 88 different apps onto their phones and 50% of pupils who participated now use a health app. Pupils have reported changing a range of behaviours, from swapping car journeys to walking, drinking more water and going to bed earlier.

Thanks to the work conducted in Lancashire and Cumbria, ORCHA has been adopted by other NHS organisations. More than 20 CCGs and NHS Trusts are using ORCHA app assessments to help professionals and the public to make better, informed app choices.

Implications

ORCHA is an example of an approach that evolves as further insight is acquired. Having a supportive environment in terms of pull for the innovation, and a flexible and collaborative innovator in terms of push has allowed continual negotiation of the intervention.

This flexibility and collaboration is particularly important in the fast-paced area of apps. Apps as interventions are not like drugs that remain stable for years. Technology is constantly evolving as are people's interaction with it. ORCHA recognises that the interface between this fast-paced world and that of the clinical intervention needs a collaborative model to mesh the clinical push with the citizen pull.

ORCHA demonstrates what can be done with apps if they are developed in sympathy with practice. This is an important model for introducing apps both to clinicians and the public.
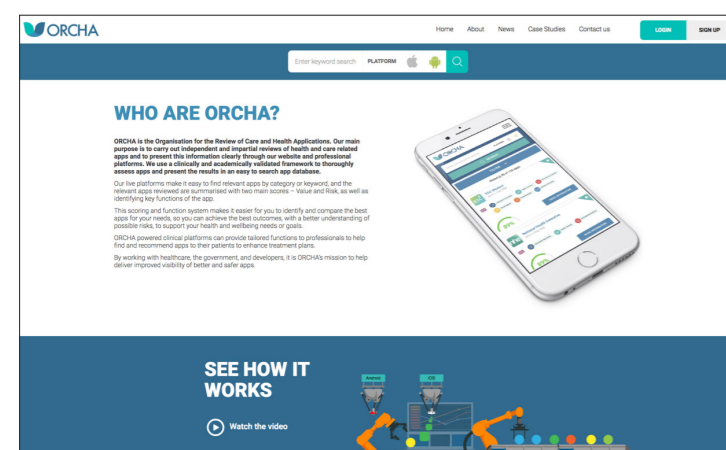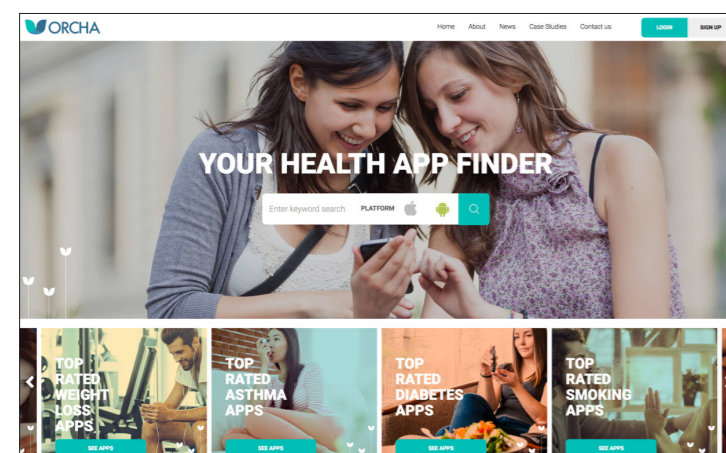
Interviewees

1. Liz Ashall-Payne, Founder and CEO of ORCHA, NIA Fellow
2. George Dingle, General Practitioner
3. Declan Hadley, Digital Lead for Lancashire and South Cumbria Change Programme (Integrated Care System)
4. Mike McGuire, Chief Officer, West Lancashire CCG
5. Cath Thompson, Service Redesign Manager, West Lancashire CCG
6. Amanda Thornton, Digital Health Clinical Lead for Lancashire and South Cumbria Change Programme (Integrated Care System)

Nottinghamshire:
Scarred Liver Pathway

Description

Liver disease is now the fifth largest killer in the UK. Currently, 50% of new diagnoses of liver cirrhosis occur only after emergency admission to hospital (Ratib et al, J Hep 2014[1]). The Scarred Liver Pathway was developed to detect asymptomatic liver disease at an earlier stage when the disease could be reversed.

The fibroscan (transient elastography) is an imaging-based tool that assesses the stiffness of the liver and can detect early stages of liver disease. In Nottinghamshire, NHS Innovation Accelerator (NIA) Fellow, Neil Guha, took a pathway that uses the fibroscan from secondary care and tested it in primary care with GP patients. The novelty of the pathway is based on targeting risk factors for liver disease and not simply implementing a technology in a different health care setting.

The early findings were very promising, but to move the development from a research project to a diagnostic tool integrated into primary and secondary care of liver disease, required the development and adoption of a complete scarred liver pathway. Between 2014 and 2018, stakeholders from across the local health service worked together to iteratively develop the pathway that is now fully embedded in the liver disease treatment process in Nottinghamshire.

The Scarred Liver Pathway is an example of an innovation developed, tested, refined, spread and embedded within a local research and healthcare system.

Adoption journey

In 2012, the NIA Fellow won a £30,000 research grant to conduct a pilot study in which a research fellow took a portable fibroscanner to GP clinics to diagnose early stage liver disease. The results were impressive but made clear that the diagnostic tool needed to be part of a complete pathway if it was to be widely adopted. In 2013 the development won a £100,000 NHS Innovation Challenge Prize that enabled two further pilot studies to be conducted, helping to build the evidence base for the effectiveness of the technique.

Research and development
This research work in Nottingham, co-led by the NIA Fellow, involved hepatology specialists at the hospital as well as GPs across the city, and triggered discussions about the importance of tackling the increasing mortality from liver disease and the promise of early diagnosis in primary care using fibroscan. Nottingham City CCG's Clinical Chair became involved - prompted in part by the high costs investigating liver disease in the hospital - providing more focus on the work. A scarred liver project group was formed to explore the possibility of developing a pathway that the CCGs could fund.

1. J Hepatol. 2014 Feb;60(2):282-9. doi: 10.1016/j. jhep.2013.09.027. Epub 2013 Oct 12.
1 and 5 year survival estimates for people with cirrhosis of the liver in England, 1998-2009: a large population study. Ratib S, Fleming KM, Crooks CJ, Aithal GP, West J

During this process, the local Academic Health Science Network (AHSN) worked with the NIA Fellow to help create the conditions for the pathway to be developed. It provided funding, developed a robust analysis of the cost-benefits of the fibroscan, and created the necessary links with CCGs, secondary care, GP practices and other stakeholders for work to begin on pathway development.

The initial pathway went through 24 iterations until it reached its current form, where it is the established route for patients, and provided across four CCGs in Nottinghamshire. The work to construct and test the pathway involved many activities including:

- A programme of educational events to introduce GPs to the benefits and practices of fibroscan diagnosis

- Establishing a fibroscan day clinic in a Nottinghamshire hospital and staffing it with nurses who could conduct the scan and also offer lifestyle advice and signposting to patients at risk of developing liver disease

- Specifying a referral process for GPs that targeted patients at risk of developing liver disease who would most benefit from fibroscan diagnosis

- Embedding the referral and reporting process into the information systems used in GP practices and secondary care

- Establishing a tariff for the pathway so that its operation could become a sustainable way of delivering care

- Defining the pathways following fibroscan diagnosis: for patients with confirmed liver disease into secondary care treatment, and into lifestyle services when the disease had not yet developed

- Building and refining the evidence base as more patients progressed through the pathway

Enablers

Working in partnership across organisational boundaries: The Scarred Liver Pathway changed where and when people were diagnosed and their subsequent treatment. It therefore needed GPs to embrace it as a different form of diagnosis; hospital services to be adjusted to absorb earlier referrals; and new tariffs agreed for it to be sustainable. Addressing these challenges involved the engagement of many people across primary and secondary care. An enabling team was created and sustained a development process capable of identifying and overcoming many impediments, such as system infrastructure.

System infrastructure: Via the AHSN's support and nurturing of the pathway from a research project to a mature pathway, fully embedded across the geography.

Iteration of the pathway: The development mechanism adopted was an inclusive and iterative process in which successive versions of the pathway were tested. All stakeholders were able to give feedback and work through issues to produce the next iteration. Initially, for complex reasons, the investigation of liver disease in the hospital cost £900 per patient, and commissioners worked with the pathway designers until, in present arrangements, the agreed tariff is £40 per scan. This extensive stakeholder involvement presumably helped to build the next key enabler: champions.

Champions: There was sustained support and work by champions and enablers of many kinds. GPs who spread the word to others, liver specialists and nurses in secondary care who developed both the pathway and new parts of the service, and CCG commissioners who found ways to fund the pathway. One interviewee described the: "institutional pride" of having developed the Scarred Liver Pathway.

Tailoring the evidence base for the purchaser's needs: Initially the evidence demonstrated long-term benefits of the pathway as fewer patients developed serious liver disease, whereas commissioners generally need to show return on investment over a shorter time frame. There was also a need to reduce the initial high costs of using fibroscan to allow widespread use so that the long-term benefits could be realised. The commissioners were closely involved in the design of the pathway meaning that the evidence they needed could be developed.

Impact

The pathway has been commissioned across four East Midlands CCGs because it has the potential to reduce a worrying trend towards higher levels of mortality from liver disease in Nottinghamshire. More GP practices are joining and referring patients:

- The numbers of patients referred for a scan are now 338 per month (July 2018) compared to 58 in July 2016

- A total of 4,612 referrals over the two-year period

- Many patients have made significant lifestyle changes after visiting the day clinic for fibroscanning, and have thereby reduced their risk of developing liver disease

Implications

The development of the Scarred Liver Pathway is an example of the multi-partner, cross-NHS organisation engagement needed to transform a promising research project into an embedded, sustainable process delivering better patient outcomes. The change in diagnostic procedures in this case, had wide ramifications for the existing system for treating liver disease and all these implications had to be worked through before the benefits of the new procedure could be systematically realised. The adoption journey is not over: the people who have championed this development have plans to disseminate it further and to develop its links to related pathways and services. For example, to the many lifestyle services that can support people at risk of developing liver disease.

Interviewees

1. Guru Aithal, Professor of Hepatology, University of Nottingham
2. Isobel Esberger, Specialty General Manager, Nottingham University Hospitals NHS Trust
3. Neil Guha, NIA Fellow, Clinical Associate Professor of Hepatology, University of Nottingham
4. Nick Hamilton, Operations Manager, East Midlands Academic Health Science Network
5. Rebecca Harris, Registrar in Gastroenterology, University of Nottingham
6. Jeanette Johnson, Matron in Ambulatory Care Pathway, Queens Medical Centre, Nottingham
7. Sonali Kinra, GP Advisor, Greater Nottingham Joint Commissioning Committee
8. Hugh Porter, GP and Clinical Chair, Nottingham City CCG
9. Emilie Wilkes, Consultant Hepatologist, Nottingham University Hospitals NHS Trust

St George's Hospital, Cheltenham General Hospital and Barnsley: ESCAPE-pain

Description

ESCAPE-pain is a rehabilitation programme for people with chronic joint pain, that integrates educational self-management and coping strategies with an exercise regimen individualised for each participant. It helps people understand their condition, teaches them simple things they can help themselves with, and takes them through a progressive exercise programme so they learn how to cope with pain better.

ESCAPE-pain originated from clinical research and development undertaken by NHS Innovation Accelerator (NIA) Fellow, Professor Michael Hurley, at St George's University of London and Kingston University. The local Academic Health Science Network (AHSN), along with the charity Versus Arthritis, has played an important role since 2013 by supporting a core team, including Professor Hurley, seeking to improve chronic joint pain management in the community, including supporting more widespread adoption of ESCAPE-pain.

Adoption journey

Engagement

Three successful adopting organisations were interviewed as part of this study. For each, awareness of ESCAPE-pain was via local clinical champions motivated to develop their own and their teams' professional practice for better patient outcomes. They initially became aware of the research led by the NIA Fellow through their normal professional activities, e.g. reading published papers and attending conferences. Each became increasingly convinced of the potential benefits ESCAPE-pain could bring to the services they provided.

At one of the adopting NHS organisations, the lead clinician was in a sufficiently senior position to be able to adopt ESCAPE-pain within his own clinical and budgetary responsibilities. This contrasted with his attempts to adopt ESCAPE-pain at his previous Trust, where concerns had been raised about the impact of the service on the Trust's income. In his new Trust, he had the autonomy to proceed, and no business case was required to adopt ESCAPE-pain.

In other organisations, forward-looking physiotherapy teams worked within a supportive, professional management structure which encouraged service improvement.

Implementation

Once the decision to adopt ESCAPE-pain had been made, staff were trained in how to deliver the model. The core ESCAPE-pain team based at the local AHSN provided training and educational materials in how to deliver the service. Junior colleagues were also able to attend annual training courses run by the AHSN.

Attendance at an annual training event run by the NIA Fellow and the core ESCAPE-pain team led to further interest in the model. The training allowed local clinical teams to draw effectively on the evidence-base and tailor it towards preparing their own local business case and implementation plans. However, final decisions were made within the physiotherapy services without need for further approvals.

Adaption of location

Early learning whilst developing ESCAPE-pain highlighted that one of the possible constraints for some potential adopters was a lack of appropriate space in which to deliver group programmes. To help address this, further research was undertaken by the core team in order to build the evidence-base around delivering this model of care in partnership with leisure centres. This has helped to enable alternative delivery, including supporting the adoption of ESCAPE-pain by one of the NHS services where it is run in the local leisure centre and delivered jointly by a physiotherapist and a health trainer. The leisure centre allows usage of their gym facilities at no cost to the NHS.

Enablers

Clinical champion with autonomy to adopt: At one Trust, the major enabler was the decision to implement being within the responsibilities of the adopting clinician. There were no wider financial or other organisational barriers.

Enabling culture: In one Trust, the supportive professional and managerial culture across the whole physiotherapy team encouraged and generated an enthusiasm for new ideas to improve the service, e.g. through monitoring relevant professional literature and attending conferences. This resulted in an early awareness of the opportunities ESCAPE-pain offered and supported their adoption activities.

Modification of an existing service: A common factor facilitating adoption in all three sites was that implementation of this new service did not require any major modifications to a service that was already in place. Rather, it represented a process of substituting one kind of training course with another, and - in the case of one of the adopting NHS organisations - a relatively easy modification to an existing partnership with the local leisure centre.

Impact

Local clinical champions at all three case study sites, supported by the innovator and core team, have now successfully implemented ESCAPE-pain into their routine service provision. Each are providing ongoing feedback on clinical outcomes to the core team so that the evidence base can continue to grow. Each site regards ESCAPE-pain as well embedded in routine service delivery, providing clear benefits to their patients.Each site has successfully delivered a full course of ESCAPE-pain to a number of cohorts, and patient feedback is very positive.

Implications

Wide-scale spread of ESCAPE-pain has been led by the NIA Fellow's team, with the support of the local AHSN and Versus Arthritis. The promotional messages about the programme and the benefits to patients are evidence-based, have professional endorsements, and are supported by a wide range of organisations including national and third sector bodies. The core team provides a broad range of supporting activities which have been important in facilitating the spread of ESCAPE-pain across each of the case study sites.

Enabling adoption of complex healthcare interventions like ESCAPE-pain requires resourcing. The core team delivers a range of functions to those wishing to adopt ESCAPE-pain, however these activities cannot be readily commercialised. Routes to make these functions more sustainable need to be explored, which take into account the benefits associated with, for example, reducing reinvention and duplication of effort, and economies associated with centralised training, data collection and analysis.

Interviewees

1. Martha Cooke, Senior Physiotherapist, South West Yorkshire Foundation Trust, Barnsley District
2. Chris Davis, Leisure Centre Health and Wellbeing Co-ordinator, Cheltenham Trust
3. Dave Evans, Programme Manager, West of England AHSN
4. Professor Mike Hurley, Founder of ESCAPE-pain, NIA Fellow
5. Megan Kirbyshire, Senior Physiotherapist, Cheltenham General Hospital
6. Julie Knight, Lead Physiotherapist for Musculoskeletal Services, Gloucestershire Hospitals NHS Foundation Trust
7. Chris Moule, Advanced Practitioner Physiotherapist, Cheltenham General Hospital
8. Sharon Sweeting, Musculoskeletal Service Manager and Physiotherapy Professional Therapy Lead, South West Yorkshire Foundation Trust, Barnsley District
9. Darren Thorpe, Senior Physiotherapist, South West Yorkshire Foundation Trust, Barnsley District
10. Ben Wanless, Consultant Physiotherapist, St George's Hospital

The Surrey High Intensity Partnership Programme: Serenity Integrated Mentoring

Description

Serenity Integrated Mentoring (SIM) is a model of care using specialist police officers within community mental health services. It works to support people who access mental health services who are struggling with complex behavioural disorders and often request emergency services whilst making limited clinical progress. Together, they co-produce crisis response plans to help the person find alternative ways of dealing with their crises that reduces risk, impact, harm and intensity.

It is common for police to use Section 136 of the Mental Health Act to take people to a safe place and where Approved Mental Health Professionals will assess whether the person can be discharged or requires further detention under the Mental Health Act. The result is often a 'revolving door' with patients moving in and out of police custody and mental health wards. SIM was developed by NHS Innovation Accelerator (NIA) Fellow, Paul Jennings. In October 2012 Paul co-led 'Operation Serenity', one of the UK's first Street Triage response teams, where a police officer and mental health nurse co-respond to crisis calls in the same vehicle. Paul quickly learnt that whilst Street Triage was enabling more accurate clinical decisions

to be made at the scene of the crisis, the project was not stopping a small number of service users from requesting emergency care. He realised that these more emotionally intensive patients needed a different model of care because mental health clinicians did not have all the skills or tools required to reduce these high-risk behaviours alone.

SIM combines the best clinical care with compassionate but consistent behavioural boundary setting to reduce harm, promote healthier futures and reduce repetitive patterns of crisis from impact on 999 and other emergency care teams and avoid Section 136 detention.

Adoption journey

Engagement
In 2017 following discussions between the Lead for Complex Cases in Surrey and Borders Partnership NHS Foundation Trust and the Surrey Police Lead for Mental Health on how to deal with high intensity users in the county, the Surrey Police Lead visited the Isle of Wight to look at the SIM approach.

Both the Trust and Surrey Police were impressed by the results achieved on the Isle of Wight. Each secured a small amount of funding from their respective organisations and, with the help of the NIA Fellow, set up a limited trial in one area of Surrey.

Initial trial

The initial trial funded a police officer to liaise with the community mental health teams who were responsible for specific high intensity users. An overseeing committee was formed, chaired by the Lead from Surrey and Borders Partnership, with representatives from across the mental health trust, the police force and other emergency services, which meets monthly.

In order to recruit high intensity users and to develop and use the care plans, a considerable programme of joint work between the police and mental health trust had to be undertaken. This included:

- Specification of criteria for joining the programme, including the design of a referral form

- The design of the care and response plans (to be easy to use under crisis conditions)

- Inclusion of care and response plans in all relevant information systems and an agreement to share information

- An educational programme to reach all operational police officers and members of emergency services to explain how they should use the care plans

- Management procedures for the monthly meeting of the multi-agency stakeholders

The trial demonstrated a decrease in the use of Section 136s and therefore a reduction in the use of mental health and police resources.

Roll out across Surrey

The trial evidence of resource savings meant that Surrey and Borders Partnership NHS Foundation Trust and the Surrey Police were able to make the case to secure additional funding for a further year (April 2018 to March 2019). The police team was increased to one full-time and two part-time police officers and Mental Health Trust funding enabled coverage to extend to all 13 Community Mental Health Recovery Service teams across Surrey and North East Hampshire.

Rather than replicate SIM in its entirety and insist that every team adopt the SIM name, the NIA Fellow works to ensure that the eight core components of SIM are replicated, enabling local teams to develop both their

own project identity and wider project design. SIM in Surrey therefore became SHIPP - Surrey High Intensity Partnership Programme - reflecting the contrasting context of Surrey with the Isle of Wight.

Currently, funding for the intervention is still time-limited in both partners. The Leads in both partners are now creating cases, for the third time, to get future funding for SHIPP.

There is wide support for the programme but in both organisations the request is for hard evidence of benefits and in particular cost savings. Staff are now systematically gathering data about each crisis and have sought help to use the data to make a strong economic case for the resource savings that are being achieved.

Enablers

Multiple champions: Interviewees were agreed that the reason SHIPP has become embedded so quickly is that it has had a strong, passionate and stable team with members from both organisations driving it from the beginning. The two Leads had the vision and the contacts, and the Isle of Wight trial provided the evidence to get backing for the initial pilot. The first dedicated police officer and the mental health staff had the energy and drive to push for operational action, to spread the word in the police force, and a neighbourhood sergeant became the uniformed 'ambassador' for the programme.

Evidence of impact: In addition to the reduction in Section 136s, there have also been emergent outcomes and case studies of people becoming more stable. This has given the approach credibility and helped to cement the reputation of the programme.

Effective engagement: Adopting the model was expected to be challenging in a county like Surrey with a wide geography and complex organisational landscape. The answer according to the Mental Health Lead has been a relentless and continuing focus on communication: reaching everybody involved with the message of SHIPP and the part they needed to play if it was to be successful.

Supporting cultural change: For the police, following a care plan is unknown, and can be perceived as high risk. A fundamental aim in the police force is to reduce risk to the public, whilst mental health professionals know risks in treatment may be needed if people are to find a route to recovery. In addition, there can be concern regarding professional responsibility if a user were to die following a care plan rather than the usual police protocol of taking them to a safe place. The SHIPP team spent a lot of time touring the county to work with operational police officers and other emergency staff to explain how to use the care plans.

Impact

In August 2018 there were 16 people on the SHIPP programme who had signed up to a set of behaviours that would avoid emergency service call out. By this date there had been significant achievements:

- Several people had left the programme because they were no longer high intensity service users

- Interviewees were agreed that the programme was succeeding by helping users manage their lives more effectively

- Significant reduction in the number of Section 136s and the savings of resources more than outweighed the cost of the service for both the mental health trust and the police force

- Over and above the specific gains there has been a steady build up of trust and understanding between the partners and reportedly, more understanding of mental health issues in the police force

Implications

SHIPP is not only making better use of mental health and police resources but is changing the lives of some highly vulnerable people. Demand for the service is growing: there is a backlog of referrals and the mental health trust staff in particular would like the programme to accept referrals for people at risk of becoming high intensity users.

There is now a national plan to roll out SIM as well as a clinical network to connect all the SIM based teams across the UK (www.highintensitynetwork.org). The AHSNs are supporting this process as part a two-year national programme. By the end of 2018, ten mental health trusts will have live SIM based teams, and by the end of 2019 it is predicted that over 50% of all trusts nationally will also have teams based on SIM core principles. Many sites considering the adoption of SIM are seeking the advice of Surrey about the practical implications. The staff of both Surrey and Borders Partnership and the Surrey Police emphasise that every area has to adapt SIM to fit within the local context.

In addition to the national drive to introduce SIM, there is also a ground-level driving force spreading it. High intensity users quite often require the attention of emergency services beyond the geographical boundaries of their local police and NHS Trust. The services supporting people from Surrey are requesting the care plans of these individuals, and gradually people are finding that wherever they go they receive the same treatment. The High Intensity Network is now working to develop a single, digital platform across the police, ambulance and mental health networks so that high intensity response plans can be found quickly.

Example of cultural change in action

In 2017, Surrey response officers responded to someone who had just started to engage with SHIPP. These officers had begun to trust response plans for the first time as well as the SHIPP team who had briefed them to do so. They had started to understand that over-reactive decisions, made in fear, did not help the patient but actually gave the message that high-risk behaviours would be 'positively reinforced' by 999 teams (meaning that it would encourage the patient to repeat the high-risk behaviour). The officers followed her SHIPP response plan and did not detain the person under the Mental Health Act. A short time later she intentionally overdosed after the police had left the scene and was admitted to A&E. The case was automatically referred to the Independent Office for Police Conduct (IOPC) as required in law. Having reviewed the case, the IOPC advised that the officers in question had no case to answer because they followed due procedure according to the clinically endorsed care plan. This conclusion has helped allay officers' concerns about following care plans. Surrey as a force are now moving quickly to be institutionally confident that response plans co-written with a mental health clinician and the patient are the safest processes to follow and that they promote risk reduction and recovery more effectively than previous types of crisis care protocols.

Interviewees

1. Julia Davis, Police Sergeant, SHIPP Team, Surrey Police
2. Paul Jennings, National Programme Manager - High Intensity Network, NHS England, NIA Fellow
3. Gemma Jones, Approved Mental Health Professional Surrey County Council, Surrey and Borders Partnership NHS Foundation Trust
4. Ian Manners, Neighbourhood Police Sergeant, Surrey Police
5. Amy McLeod, Former Mental Health Lead, Surrey Police (now with Surrey County Council)
6. Lee Sawkins, Current Mental Health Lead, Surrey Police
7. Sarah Swan, Consultant Clinical Psychologist, Surrey and Borders Partnership NHS Foundation Trust
8. Mel Tomlinson, Consultant Nurse for Complex Cases, Surrey and Borders Partnership NHS Foundation Trust

Sutton GP Federation:
Lantum

Description

Lantum is a cloud-based tool built to help NHS providers fill empty shifts in their clinical rotas. Lantum has a secure online environment where users can advertise shifts which their own clinical staff can book at any time via any device, including smartphone app.

The tool integrates with clinical staff calendars to efficiently match available clinicians with open shifts. By implementing Lantum, significantly more shifts can be filled by providers' own clinical staff banks. Additionally, Lantum gives staffing managers access to a wider pool of fully vetted clinicians outside of their own staff banks. This enables staffing managers to bypass agencies, to reduce costs and boost fill rates. Lantum also incorporates additional features including automatic payment capability (which allows a provider to agree timesheets and pay clinicians online) and administrative tools such as automatic pension forms, invoicing and compliance document storage.

Adoption journey

Engagement
A GP Practice Manager joined a local NHS practice from a commercial background in early 2014. He faced the continual time-consuming challenge of needing to find locum GPs to fill shifts. He had found Lantum (or Network Locum, as it was previously called) online, and then met them in person on their stand at a practice managers conference. He quickly saw the benefits Lantum offered:

- Improved practice efficiency
- Cost-effectiveness
- Speed and ease with which jobs could be posted
- More direct control in matching applicants to available shifts

Adoption
As a small practice with relatively few decision makers, the Practice Manager had the autonomy and freedom to be able to quickly adopt and utilise Lantum.

Roll out across a GP Federation
During 2014/15, GP practices increasingly began to group together to form Federations, partly in response to the Five Year Forward View. In Sutton, the Medical Director for the GP Federation had previously been a Medical Director for an out-of-hours GP service, where he had personally experienced long-standing recruitment and retention issues, alongside the constant challenge of trying to staff shifts.

When planning to set up the Sutton GP Federation, the Medical Director, along with the Chief Operating Officer, were concerned that staff planning would continue to be a challenge. The idea of having an 'Uber-like' system to deal with staffing rotas was a very attractive proposition, and they both saw the opportunity to incorporate a Lantum-style offer into their early plans for setting up the Federation of 25 GP Practices.

The aforementioned Practice Manager sat on the GP Federation Board, and was able to both share his experience of implementing Lantum and highlight its benefits. Lantum was then adopted across the GP Federation.

Enablers

Key role of the adopting individual: The role of the Practice Manager within the original single GP practice and the role of the Medical Director in the GP Federation was arguably the most important enabler in this case study.

User-centric design solving a pressing problem: Initially, adoption occurred primarily through individual GP practices. A major feature enabling this process was that the system has been designed with a clear understanding of the end-users needs. Doctors and rota managers were closely involved in the development of the system from its beginning, and it has been developed, tested and modified in the light of feedback from users in a flexible way so as to provide greater functionality that offers a range of added benefits to users.

Costing structure: The costing structure established by Lantum has facilitated its uptake within GP Federations. GP Federations pay a reduced fee for GPs that are supplied from within the Federation's geography. This allows the Federation to keep costs as low as possible by, in the first instance, seeking to preferentially select GPs who are in their group of practices.

Structural NHS change - from GP practice to GP Federation: The uptake of Lantum across the GP Federation was facilitated by the national policy drive to encourage groups of GP practices to work together in federations to optimise efficiency. Workforce was one such area where there was a pressing need to explore ways of using people's time more efficiently. Lantum's entry into the market was timely in aligning with this need. In this example, implementation within a local practice meant that the original adopter could then become a champion for it across the Federation.

Impact

- In the first 12 months of using the system, the Federation was able to make an additional 18,000 appointments and see 14,500 additional patients. Whilst also attributable to other factors, the GP Federation Medical Director was clear that their use of Lantum played a key role in this

- After approximately 18 months usage of Lantum, the GP Federation Medical Director reported 98-99% GP shifts were regularly filled. This was not something he had witnessed previously in the out-of-hours service, and was attributed to Lantum.

Implications

In Sutton GP Federation, the Medical Director quickly saw that there were many benefits, and little or no downside, to implementing Lantum for GP rotas. He is also convinced that widening usage to include receptionists and practice nurses will bring even greater benefits, and has fed this back to the company. The company has now expanded Lantum to include rotas for practice nurses, practice receptionists and administrative staff.

Interviewees

1. Cynthia Abankwa, GP Federation Chief Operating Officer
2. Melissa Morris, CEO and Founder of Lantum, NIA Fellow
3. Julia Prudhoe, Project Manager, Health Innovation Network, South London AHSN
4. Dr Farhan Rabbani, GP Federation Medical Director
5. Practice Manager, GP Practice, Sutton GP Federation
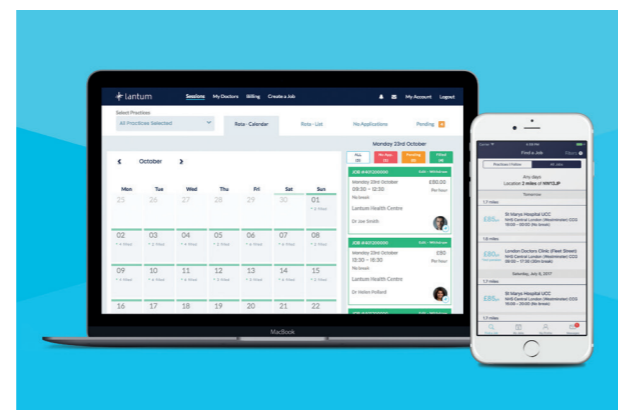
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