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Care City

Process Evaluation

25 July 2018

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1 Executive summary

The Five Year Forward View (NHSE, 2015) highlighted innovative technology and new ways of working as having significant potential to change the delivery of health and social care. In particular, it recognised the possibility of combining technology with service change or other interventions to deliver improvements to patient experience and health outcomes, at the same or lower cost to the health and social care economy.

To gain a better understanding of the experience of using innovations for patients and service users within the context of the NHS and social care, seven 'Test Beds' were announced in 2016. Test Beds use digital technologies to support self-care, tele-healthcare, prevention, early intervention and improved monitoring. Care City were successfully selected as one of the seven Test Bed sites, as the only London-based collaborative. Care City Test Bed has targeted people aged 65+ and operated across three clusters: supporting people living with dementia; long-term health conditions; and their carers. Within these clusters, Care City have put in place a number of technologies to address risks in three core areas; falls, stroke and hospital discharge. The technologies used were: a 'Quantitative Timed Up and Go' assessment in pharmacies and GP practices; implementation of the KardiaMobile™ (Atrial Fibrillation assessment); and refinement of the Atrial Fibrillation Pathway; the integration of HealthUnlocked, a digital social prescribing tool embedded within GP surgery EMIS systems to help patients with unmet social and health needs; and the provision of Canary Care home monitoring system applied to support re-ablement after hospital discharge and to support the installation of telecare packages. This evaluation has been centred around the following research questions:

- Which processes were faced during the design of the programme/innovation?
- Did the delivery of the innovations adhere to the original plan and if not, what caused the changes and divergences in the plan?
- Were the governance arrangements for the innovation effective and what contributed to their success/failure?
- Did the partnership of the NHS and the innovators work as intended and what could explain the success/failure?
- Has the partnership lead to improved technology and better products or processes?
- What were the benefits to innovation partners?
- What were the barriers/enablers of effective delivery of the innovations and what processes were in place to facilitate successful delivery with these in mind?
- Were there any unintended consequences and how were they managed/addressed?

To answer these research questions, the study involved a set of qualitative telephone-based semi-structured interviews with Care City staff, partners, innovators and patients. The sample was deliberative and included a full range of stakeholders to capture the innovations Care City had developed and tested. In total, 28 interviews were conducted. The sample frame included:

- The Care City Test Bed (referred to as Care City staff in this report)
- Innovators (who developed the innovations and partnered with the Care City Test Bed); and
- Delivery partners (Healthcare professionals working on the frontline in the Care City Test Bed, North East London).

Qualitative data from the interviews were analysed using NatCen's Framework approach.

The key findings from the evaluation by topic can be summarised as follows:

Training

- Training provided to the delivery partners by Care City was swift and efficient.
- Delivery partners were offered additional support throughout their time in the project after the initial innovation setup-related training. We identified that some frontline sites also received extra support from the innovators when a particular technology used was technically more complex.
- Due to capacity and staff availability, broader training of GP practice staff and other delivery partners was shown to be challenging to coordinate. To address this issue, Care City has made extra efforts (including more flexibility in offering training on site and multiple attempts to arrange training sessions).
- The time lag between training and the start of the pilot had its impact on the speed and efficiency of recruitment.

Recruitment

- The analysis highlighted the differences in the experience of recruiting delivery partners as well as patients/service users. The data indicates that the more demanding the innovation for both the delivery partners and the patients/service users, the more difficult the recruitment process.
- Care City, thus, played the crucial role of mediator between the delivery partners and the innovators in negotiating access to collaborations.
- Willingness to use innovations at times inversely correlated with the age of the patients. It was more difficult to recruit older patients as innovations are viewed as more challenging and demanding by them and by the delivery staff.
- Recruiting patients face to face is better than over the phone. More personal involvement is emphasised as potentially very beneficial for developing rapport with the patients and for stimulating their interest.
- Pathway integration was oftentimes dependent on the local capacity of frontline staff. Where there was less frontline staff availability, it was more challenging to work with innovations in the way envisaged by the Care City team – a way that would include creating a whole pathway around innovations, as opposed to simply superimposing innovations onto an existing system of care provision.

Ongoing support

- Care City was seen to be helpful and responsive when assistance was needed with the set up and delivery of innovations.
- Care City were also open to feedback when delivery staff were facing problems and offered appropriate assistance, support and extra training.
- The emphasis on transparency, coproduction and learning together as one of the objectives of Test Bed led to the absence of hierarchically organised system of control and quality enforcement. Less hierarchical and more transparent system of co-production leads to improved sustainability and also increases the potential of the innovations by providing a mutual channel of feedback and communication.

Communication

- Maintaining efficient, mutual communication emerged from the interviews as being one of the key difficulties, which is natural and expected with such complex, multi-sited and multifaceted interventions.
- The Care City team emphasised the importance of listening to feedback and concerns from stakeholders about whether an innovation was appropriate and whether it was working in context.
- While Care City was acting as a mediator in communication between the innovators and the frontline staff, some respondents argued that more autonomy or a more direct pathway of feedback from innovators to frontline staff, circumventing mediators, can be beneficial as it can significantly increase the speed of information flow and the cohesion between the innovators and the delivery partners. However, it was emphasised that such direct channels for communication can only be established after the basic set up of the programme. Therefore, the presence of an efficient and diplomatic mediator (Care City) was emphasised as crucial especially at the early stages of creating innovation pathways.
- Our data emphasises that innovators sometimes found it challenging to receive sufficient feedback from the frontline staff regarding the challenges experienced during testing. However, in most cases concerns around implementing innovations were down to work load pressures. Once again, the presence of Care City in a mediating role was key in managing conflicting expectations of the innovators and the delivery partners.
- More flexibility, openness to feedback and dialogue and the ability to respond to local requirements of the delivery partners were emphasised as key to success of innovations and smooth communication.

Barriers and enablers

- Our data indicates a clear overlap between barriers and enablers. What some innovators and delivery partners found to be challenging was often emphasised as an important element of success by others. Capacity might have been one of the key reasons for such divergent perspectives.

Benefits for innovators

- For innovators the benefits of the programme were related to the opportunity to test innovations in a real world setting.
- Another benefit for innovators, as follows from the study, was that innovators' ability to recruit high numbers of patients was significantly facilitated by Care City.
- The programme enabled innovators to transition from delivering a consumer product to providing a service and that this helped them understand where their product might fit within the broader NHS structures.
- Most innovators who have participated in the programme felt key lessons were learned from this test bed. These lessons could inform and facilitate continued use of innovations.
- The programme managed to achieve scaling up of some of its combinatorial innovations through efficient recruitment and successful testing of the innovation in the real-life conditions.

Sustainability

- We found that local capacity of delivery partners seems to be an important determinant of sustainability of the use of innovations.
- Some suggestions for changes required to continue delivery were focused on the settings and pathways that would be more appropriate to specific delivery partners. As emphasised throughout the evaluation, more sensitivity and responsiveness to specific needs of local practices is key for successful and sustainable integration of new innovation pathways.
- The other element of sustainability is the increased openness and engagement of delivery partners, and their networks, to working with innovations beyond the life of the programme.

Based on the key findings, the report concludes with an emphasis on the importance of efficient communication between the innovators and the delivery partners and the necessity of the 'combinatorial innovation' approach used by Care City. This is particularly significant where innovations are not superimposed upon an existing system within test sites, but where an entire pathway is created around an innovation. Such an approach ensures conscious, smooth, sustainable and responsible use of the innovations. The capacity of staff on the frontline was emphasised as one of the key barriers to pathway integration and should be taken into account in the future planning of innovation use.

2 Introduction

2.1 Research context, rationale and aims

The Five Year Forward View (NHSE, 2015) recognised the significant potential that use of innovative technology and ways of working could offer, in the delivery of health and social care. In particular, it recognised the possibility of combining technology with service change or other interventions to deliver improvements to patient experience and health outcomes, at the same or lower cost to the health and social care.

To gain real-world experience and learning about the conditions under which such 'combinatorial innovations' are able to add value for patients and service users, and the NHS and social care, seven 'Test Beds' were announced in 2016. The Test Beds are intended to: "…serve as real world sites for 'combinatorial' innovations that integrate new technologies, bioinformatics, new staffing models and payment-for-outcomes" (NHSE, 2015).

The seven Test Bed sites consist of five 'health and care' and two Internet of Things sites. They use digital technologies to support self-care, tele-healthcare, prevention, early intervention and improved monitoring. They are addressing a range of clinical challenges, including: management of long-term conditions or multimorbidity; mental health crisis care; and, care for older people.

Care City were successfully selected as one of the seven Test Bed sites and the only London-based collaborative. Care City Test Bed was centred around the needs of people aged 65+ and has operated across three clusters: supporting people living with dementia, long-term health conditions and their carers. Within these clusters, Care City have put in place a number of technologies to manage and mitigate risks in three core areas; falls, stroke and hospital discharge. These include: a 'Quantitative Timed Up and Go' assessment in pharmacies and GP practices; implementation of the KardiaMobile™ (Atrial Fibrillation assessment); and refinement of the Atrial Fibrillation Pathway; the integration of HealthUnlocked, a digital social prescribing tool embedded within GP surgery EMIS systems to help patients with unmet social and health needs; and the provision of Canary Care home monitoring system applied to support re-ablement after hospital discharge and to support the installation of telecare packages.

NatCen have been commissioned by Care City, to carry out a process evaluation in the context of recent changes to how these systems are being used by employers. This evaluation forms part of a set of independent reports, including: a formative evaluation of impact, soft systems and a summative health economic evaluation, carried out by UCL and insights capturing the experience of staff and members of the public using the innovations conducted by Uscreates (both of which are reported separately).

2.2 Research questions

Care City operates in a fluid, rapidly changing context, which requires a range of different activities, foci and mutual communication with both national and local stakeholders. The aim of this evaluation as part of a broader national Test Beds evaluation was to answer the following questions:

- Which processes accompanied the design of the programme/innovation?
- Did the delivery of the innovations adhere to the original plan and if not, what caused the changes and divergences in the plan?
- Were the governance arrangements for the innovation effective and what contributed to their success/failure?
- Did the partnership of the NHS and the innovators work as intended and what could explain the success/failure?
- Has the partnership lead to improved technology and better products or processes?
- What were the benefits to innovation partners?
- What were the barriers/enablers of effective delivery of the innovations and what processes were in place to facilitate successful delivery with these in mind?
- Were there any unintended consequences and how were they managed/addressed?

2.3 Methods

To answer these research questions, the study involved a set of qualitative telephone-based semi-structured interviews with Care City staff, partners, innovators and patients. The topic guide for the interviews is presented in Appendix 1.

The sample was deliberative and included a full range of stakeholders to capture the innovations Care City had developed and implemented. In total, 28 interviews were conducted between 14th May and 5th June 2018.

Qualitative data from the interviews were analysed using NatCen's Framework approach, which facilitates robust qualitative data management and analysis by case and theme within an overall matrix. Matrices were developed through familiarisation with the data and identification of emerging issues. The team was then to establish the range of circumstances, views and experiences, identifying similarities and differences and interrogating the data to seek to explain emergent patterns and findings.

2.4 Report structure

This report will discuss the findings from the Care City process evaluation. The report begins with Chapter 3, which provides an overview of participants' profiles and organisational background. The chapter also discusses the participant knowledge. Chapter 4 provides an analysis of the set-up of the innovations with Care City covering the rationale, training of the delivery partners, consultation processes, patient and user recruitment and the logistics of the delivery process. Chapter 5 in turn analyses the delivery process in more detail, discussing the barriers and facilitators to successful use of the innovations. The chapter also elaborates on the relationship and communication between the delivery partners and Care City. Chapter 6 proceeds with discussing the partnerships and the benefits of being involved in the programme, while Chapter 7 concludes by overviewing the sustainability and provides recommendations for continuous use of the innovations.

3 Participant profiles

3.1 Participant and organisational background

As part of the Care City Test Bed a number of different technologies are being combined with service changes to deliver more effective patient pathways for patients who (i) are at risk of falling; (ii) at risk of a stroke as they have undiagnosed atrial fibrillation; (iii) have recently been discharged from hospital, or (iiii) have number of health conditions that may be treated or helped outside of the traditional clinical setting. More specifically, the interventions are:

- **For those at risk of falling**: Kinesis QTUG™ technology is being applied to assess mobility of patients. Kinesis QTUG™ assesses falls risk and mobility providing objective assessments of gait, mobility impairment and frailty using body worn sensors combined with a clinical risk questionnaire. Based on the outcome patients are then prescribed a set of exercises (Salaso digital exercise prescription) aimed to reduce their risk of falls. In addition, a pilot is underway for healthcare assistant led Gait Clinics at a GP practice in Barking and Dagenham using GaitSmart.
- **For those at risk of a stroke**: KardiaMobile™ technology is being used in general practice in Barking and Dagenham and Redbridge to screen patients for atrial fibrillation. In Waltham Forest, a new Atrial Fibrillation (AF) pathway has been piloted where patients with an abnormal screen result from KardiaMobile™ are referred from community pharmacy, are triaged and seen within two weeks for confirmed diagnosis and treatment initiation, where appropriate, at a One Stop AF Clinic at Whipps Cross University Hospital, Waltham Forest.
- **For those recently discharged from hospital**: a Canary Care home monitoring system is being applied to support re-ablement after hospital discharge and to support the installation of telecare packages. The technologies include a set of motion sensors and door sensors placed around the home to identify deviations in the activities of a client. For instance, alerts would be sent to a client's carers if the data suggested that an external door has been left open, the client is not using the kitchen, the client is not spending the night in their bedroom, or the client has fallen.
- **For those with unmet health and social needs**: such as low mood, weight loss and social isolation, a digital social prescribing tool has been developed by HealthUnlocked (HU). HU has been embedded into GP patient management system, EMIS. It enables rapid access to up to date information relevant to a patients needs within a consultation. Patients provide their GP or practice staff with an email address and are sent the local service and information recommendations direct via email.

3.2 Participant profiles

As part of this evaluation we spoke to three different partner types working with the technologies discussed above. We took this approach in order gain a triangulated perspective on:

- The Care City Test Bed (referred to as Care City staff in this report)
- Innovators/Innovation partners (who developed the innovations and partnered with the Care City Test Bed); and
- Delivery partners (Healthcare professionals working on the frontline in the Care City Test Bed, North East London).

The following table (Table 1) summarises the types of job roles of participants from each group. In order to protect the anonymity of participants we have, where possible, only specified role 'types' rather than each individual title within an organisation.

Table 1: Participant job roles

Partner types	Job roles
Care City Staff	Care City Test Bed Programme Director
	Care City Test Bed Programme Manager
	Care City Test Bed Implementation Leads
Innovation partners	HealthUnlocked Innovators
	Canary Care Innovators
	AliveCor Ltd Innovators (KardiaMobile™) and Sonar Informatics Ltd
	Kinesis Health Technologies Ltd & Salaso Health Solutions Ltd Innovators
	GaitSmart Innovators
Delivery partners	Social Care Assistant
	Consultant Pharmacist / Local Pharmaceutical Committee representative
	Equipment and Adaptations Manager
	Deputy Principal Cardiac Physiologist
	MacMillan Nurse
	GP
	Occupational Therapist

	Reception Supervisor
	Practice Manager
	Community Pharmacist
	Cardiac Arrhythmia Nurse
	Healthcare assistant
	First Contact Team Manager

A number of stakeholders were involved in the delivery of the innovation in primary care, secondary care and community settings. These include GPs, Practice Managers, Healthcare Assistants, Occupational Therapists, Physiotherapists, Nurses, Pharmacists and Social Care Workers. Other participants spoken to had more specific responsibilities relating to the support side of implementing an innovation. For example, for one innovation, a Consultant Pharmacist specialising in cardiovascular care was spoken to owing to his role in the oversight of developing a more integrated pharmacy service for the benefit of improving patient care. We also interviewed a Deputy Principal Cardiac Physiologist because he provided support in making sure staff were available for the one-stop clinics and that they were certified to perform the necessary clinical tests. On other innovations, technical staff, such as an Equipment and Adaptions Manager, were interviewed in order to gain an understanding of the practical side of fitting technology when implementing innovations. Combined with the frontline clinical staff experiences these participants were able to give a comprehensive perspective on the innovation delivery journey.

3.3 Participant knowledge

The three participant groups (Care City, Innovators and Delivery partners) had differing levels of engagement with the programme and therefore their interviews provided more detail in different areas:

- Care City staff were able to speak to the strategic oversight and agenda for the programme
- Innovators were more able to talk in detail about specific innovations and their experiences of the process of set up to delivery
- Delivery partners, in turn, offered greater detail on implementing the innovations in the pathways and the barriers and facilitators to delivery

Whilst these were perhaps the most greatly emphasised areas for each of the groups, the structure of the interviews ensured all participants had the opportunity to offer their perspective on all stages of the programme life cycle.

4 Set up of innovations with Care City

This chapter discusses the setup of the innovations at pilot sites, under the Care City programme. Participants from innovation companies were interviewed on their understanding of the setup process, and their involvement as a partner in ensuring its implementation. Delivery partners in clinical sites were interviewed on their experience of the setup process, including the timing, contextual aspects of consultation and design of the implementation process and recruitment of delivery partners and partners in pilot sites.

Findings are presented by innovation and where possible, by participant type to present perspectives on the differences between deliveries of individual innovations.

4.1 Rationale for choosing innovations

Innovation partners reflected on the selection process, structured as a series of interviews with innovation representatives to pitch the technology and provide answers to Care City's questions. Innovation partners were either invited for interview or responded to a call for submissions from Care City. A number of partners were unable to recall the criteria for selection or the subsequent steps in the selection process, but reflected that the panel sought innovations to improve outcome and experiences for patients while reducing costs in care.

GaitSmart, who joined the Test Bed later in the programme, reflected on existing partnerships with North East London Foundation Trust as a delivery partner as supportive of their application to Care City. Additionally, the context of this demography, with a larger population of elderly people with a higher falls risk, allowed GaitSmart to refine their innovation before application, presenting a more streamlined and personalised service which would seek to minimise falls risk.

A partner from KardiaMobile™ elicited that Care City were interested in previously used innovations which empowered the patient to diagnose and manage their long term low risk conditions.

> *I'd previously done some work with the North East London LPC, in pharmacies, so it seemed they'd already become familiar with the technology, so there was an open door now. And maybe it was just pragmatism on the part of Care City's new management to say, "Look, this works. We've got a willing and ready environment to test it in the pharmacy sector. Let's get on with it". I'm not sure exactly how that decision was made, but I'm grateful that it was.* (Innovator, KardiaMobile™)

Additionally the use of mobile technology was noted, since KardiaMobile™ and Kinesis QTUG™ could be used in tandem with very little change to the technology.

One innovation partner from KardiaMobile™ did relay that the higher than expected rate of dropout from some of the innovations following procurement may have been due to a light assessment conducted during the selection process, leading to issues

further into implementation. However, as the programme was based on the demand within the broader system of health and social care provision, rather than on the nature and extent of the supply of the technology, the innovators oftentimes do not have a holistic overview of the structure of the demand and the needs within the health and social care system. This might affect their perspective of the recruitment process and the testing.

4.2 Setup

Participants at both innovator and delivery level reported a number of steps in the setup process for respective innovations, notably regarding training and education, delivery of resources, recruitment of staff and patients and, consultation on the process of delivery. Discussion around the timelines for setup was also reported, providing a succinct overview of the differences in innovation delivery.

4.2.1 Training and education

The training and education for working with the innovations was delivered by Care City. Some partners received additional training by someone they perceived to be an 'innovation representative' (this was in fact a member of the Care City team) who also provided posters to promote the service. It was noted that one 'innovation representative' wanted practice staff including the manager and admin staff to be aware of how the social prescribing tool should be used and what it delivers for patients to improve care. They felt Care City continued to support delivery after training.

> *The team is lovely and they're very supportive as well with regular emails as well seeing how we're doing, how things are coming. So you're not forgetting about the project; you don't just start it. It's actually quite interactive which is greatly appreciated.* (Delivery partner, HealthUnlocked)

One delivery partner recalled innovation setup being swift, with training conducted at Care City headquarters for frontline staff. Training was fit for the task and Care City were perceived as accessible for further support should delivery partners have required it. In addition, the level of training was sufficient enough to allow this participant to get 'stuck in' quite soon after.

Another HU delivery partner commented on how soon they were able to get going after training at their Practice:

> *So they came round and showed us, and we decided - it's very simple to use. It doesn't take a lot of set up and we felt that it would benefit our patients. It was straightforward and easy. (*Delivery partner, HealthUnlocked)

The same participant, who had also supported delivery of two other Test Bed innovations in their Practice, reported a similar process for Kinesis QTUG™, where training was delivered swiftly and in situ. The training session also covered suitable candidates for the innovation, iterating the mobility thresholds of patients who would benefit most from the service.

A KardiaMobile™ delivery partner recalled the innovation setup being swift, with training conducted at Care City headquarters for frontline staff. Training was fit for the task and Care City were perceived as accessible for further support should delivery partners have required it.

Delivery partners were encouraged to return to their places of work and train other staff to increase the availability of the test in the pharmacy to manage staff fluctuations. The training and support included several components, including role plays, knowledge building and ongoing feedback for improvements.

> *I think one of the lessons learnt was the importance of practical use of the AliveCor (known as KardiaMobile™) and from role playing to demonstrate the benefit. So whilst, in theory, you can watch a YouTube to show you how to use it, that's helpful, but actually there are some fine-tuning that could optimise the traces to give us the greatest benefit. (*Delivery partner, KardiaMobile™)

This experience was invaluable in ensuring pharmacists were fully compliant in delivering the service using this innovation, as reflected in the ease of recalling a typical consultation.

> *[We would] bring them into their private consultation room, get them to sit down and get them to relax and then undertake the AliveCor (KardiaMobile™) and then how you deal with the consultation depending on the potential outcomes as well as the relevant data that we wanted collected. So it's very much a step-by-step process and following the standard operating procedure, the step-by-step guide. (*Delivery partner, KardiaMobile™)

Another KardiaMobile™ delivery partner found the training provided an opportunity for hands on time with the innovation, to understand how it worked and what aspects of its implementation could drive patient engagement. As reported in other setup processes, Care City were perceived as accessible and responsive to support and pilot site requirements.

In the case of GaitSmart, one delivery partner referenced an afternoon's training to build familiarity with the innovation. This partner also organised a roleplay with a colleague at the pilot site before seeing their first patient, to test the equipment and identify any potential practical problems. Another delivery partner cited some training given, and noted that clinics were additionally supported by a present GaitSmart representative to facilitate the effective use of the innovation. One such representative from GaitSmart had previously been involved in testing the innovation, and although their role was less involved with training and education, their presence facilitated learning for delivery partners at the pilot site to support more complex consultations.

> *I'm there to assist that they're running the processes correctly and then I'm there for the prescription and discussion of the exercise suggestion at the end of the process that the patient goes through. (*Innovator, GaitSmart)

For one Canary Care delivery partner, formal training was not given other than that laid out in initial discussions to implement the innovation. In another interview with a Canary Care delivery partner, a lag was noted between delivery of training received and receipt

of the equipment to provide the service to patients, initially making it more difficult to recruit appropriate patients for the service.

4.2.2 Consultation process and design

When discussing the process by which setup and delivery was planned, innovation partners reflected on the input of advisors and frontline staff in determining the effective methods used to provide the service to patients and service users. For previously piloted innovations, this process was streamlined and reflected in the selection process with Care City. However, as part of the service provision, more specific requirements emerged from consultation with parties of interest.

HealthUnlocked recalled considering discussion with clinicians in practice in order to understand the requirements for setup and delivery, noting later that a forming an experienced team which could deliver the innovation was prioritised. However, broader training and education of practice staff was difficult to coordinate due to tight schedules, so the Care City team used some additional efforts to ensure smooth progress.

> *We weren't able to go to GPs to speak with them and help with that process, and it was clear at that time that that's what the tool needed. It needed a team of people to help roll it out and engage GPs and get people using it. We spoke to Care City and they were, obviously, super keen for the tool to be successful. So for a couple of people from Care City, it became part of their role to help with the [testing] of the tool. (*Innovator, HealthUnlocked)

4.2.3 Recruitment

Due to the nature of the innovations, Care City was predominantly recruiting patients aged 65+. A number of respondents discussed the recruitment process for patients eligible to use the innovations in the Care City programme. For innovators themselves, priorities were applied regarding which patients or service users were most suitable in each of the testing locations.

A Kinesis QTUG™ representative commented on the need to screen patients in the community for their falls risk, coordinating between GPs, healthcare assistants, physiotherapists and community pharmacists in primary care sites and across the community in order to effectively deliver the programme.

KardiaMobile™ reported more specific inclusion criteria for patient recruitment, understandably requiring further thought around clinical markers to ascertain which patients were eligible. Although the service was advertised at the pilot sites for patients to sign up to, there was more than one stage to seek support from the service. The service itself was established prior to the pilot as a part of the delivery of a wider comprehensive health check meaning staff were able to integrate the innovation into their usual practice and patients were familiar with routes to entry.

> *It was pretty much informing them of the service that was available; asking them if they've had a recent blood pressure check; informing them that we could offer a blood pressure check. And, alongside it, an ECG check, which used our portable machinery… so then we would tell them that, 'This is what we're willing to offer.' If they were available to do it, if you were free, you could have done that with them. If not, later book a date to come in and get that done.* (Delivery Partner, KardiaMobile™)

> *…mainly people were quite happy actually with it. They were very interested in the fact that they could get an ECG done in the pharmacy setting, and it would help realise if they had any other underlying issues that they weren't aware of really. (*Delivery partner, KardiaMobile™)

The GaitSmart representative tentatively described the perception of the delivery process carried out by delivery partners in clinics.

> *The HCAs have a clinic set up weekly and the patients come and they have a half-an-hour slot. On their first assessment, there's a couple of questionnaires and then the actual Gait analysis and then we talk through the actual analysis and then talk through the exercises that we'd suggest following what we see on the report. (*Innovator, GaitSmart)

Delivery partners reflected on several aspects of the patient journey to recruitment and service provision. As with innovation partners, the analysis highlighted the differences in recruitment and delivery with respect to the complexity of the condition for which the innovation is used for.

A HealthUnlocked delivery partner recalled the use of posters to recruit patients at the pilot site, making people aware of the service and the types of conditions this innovation could be used for. Additionally, providing training to staff at the surgery was useful since administrative staff could also provide information on the innovation, and perceived benefits for the patient.

For AliveCor (KardiaMobile™), the delivery partner reflected on the recruitment process since it formed part of a community based consultation with a trained pharmacist or counter assistant. The service is offered in the pilot site, and readings which are abnormal then result in referral for further assessment and potential treatment.

> *Patients would go to their pharmacy as normal, and then they would use this technology, and if it picked up an irregular heart rhythm, which patients might not know that they have, then they would be referred to this one-stop clinic, and this one-stop clinic had a nurse, a pharmacist, a physiologist to do a heart scan. And then they would diagnose the rhythm and give the medication that makes them safe to have the rhythm, and then manage their treatment from that. (*Innovator, KardiaMobile™)

A GaitSmart delivery partner discussed the techniques used to recruit, employing active calling of eligible patients as well as providing leaflets in the pilot site reception area for patients to take away. Since the innovation was provided to patients over 65 with mobility conditions, issues arose regarding which patients would be eligible for

recruitment in the planning process. Care City were helpful in supporting frontline staff with approaching patients as this was a time consuming process for delivery staff. This also meant Care City were able to manage the expectations of delivery partners for real world recruitment beyond the life of the pilot.

Another delivery partner reported that initially Canary Care aimed to recruit patients with early onset dementia or sensory issues, provided they have no access to Telecare. Decided at a senior management level at the pilot site, the reasoning was purposive, ensuring the patient was a high risk candidate and had no current mechanisms in place to alleviate this risk. It was also mentioned that the lack of Telecare implementation for patients in this service meant Canary Care was initially intended as a provisional service to fill this gap.

4.3 Delivery

Delivering innovations at pilot sites was generally perceived as well executed by delivery partners, with many championing a sustained service when the programme comes to an end. The main outcome of such testing was that each innovation tested by delivery partners provided a service which benefitted the care of recruited patients. Innovation partners were able to provide further insight into the outcomes of the discussions with Care City and subsequent feedback from the piloting process, which has informed changes to the innovations and provided solutions to challenges faced when used in practice.

4.3.1 Innovations in care pathways

A delivery partner for HealthUnlocked referenced the ease of use and implementation for this innovation but acknowledged the short implementation period limited understanding of its long term benefits.

> *HealthUnlocked is very simple and we've only had that a couple of months but it's a very, very simple programme. Needs very little training. Very easy to use*. (Delivery partner, HealthUnlocked)

This same partner with delivery experience in Kinesis QTUG™ and AliveCor (KardiaMobile™) reflected on the use of both innovations as part of the overall care pathway, noting their best fit in current practice and the improved outcomes for the patient when given support using technology.

> *I think the Kinesis and the Kardia went really well together because it was targeted at a specific age group. So we would have had to review the patients again, so it was the ideal time. So they came in for an over-75, they were high-risk 65. The two projects needed to run side-to-side because we would be seeing the same patient. (*Delivery partner, Kinesis QTUG™ and KardiaMobile™)

A Kinesis QTUG™ delivery partner discussed the provision of a new care pathway to integrate this innovation, due to limited capacity and resources in existing clinics.

> *We had to have just a falls clinic because [it] was too difficult to fit in-between patients due to the fact that you had to have a room with a sufficient amount of space. Some of our consultation rooms are quite small and there's only two rooms in the building we can use. And obviously with a lot of staff that we have, we can't always have those rooms. So, we had to rota in the falls clinic. So, we had to jig things around a lot. And, yeah, we was booking an hour slot per person because with the admin part and the monitoring and the chat, it was taking sometimes up to an hour. And sometimes even over an hour. (*Delivery partner, Kinesis QTUG™)

For another KardiaMobile™ delivery partner, the simplicity of delivering the service using this innovation was quick, delivered alongside existing services delivered through technology in the community pharmacy setting; it was found to fit well within current care pathways for diagnosing potential patients with atrial fibrillation. However, another partner reflected that in order to deliver the pilot on time, extra work over a weekend was required, reflecting that time was not protected for frontline staff charged with rolling out the innovation and service.

The GaitSmart innovation partner highlighted that this innovation worked well for patients with mobility conditions, highlighted that this innovation could offer a new care pathway for patients with mobility conditions However, development of a new pathway takes time and generates more work to maintain uptake. At the same time, the partner also emphasised the benefit of having more information on how the innovation fits within current practice at the beginning of the setup.

A Canary Care delivery partner believed the innovation had cost and time benefits with regards to high risk patients using the innovation at home, mainly because setup in situ was simpler than that seen for similar systems. The implementation of the service and having it fully functional from the first installation supported progress in this care pathway. Additionally, this partner reflected that the day to day impact of the innovation was extensive as it provided the data required in real time to inform clinical and social are decisions. It was noted that this innovation was only used by two patients under this partners' care.

Another delivery partner to this innovation redirected decisions on whether it fit in the care pathway to their senior facilitators, since they were sceptical of the benefits alongside time consumption for team members.

4.3.2 Delivery challenges and solutions

Innovation partners were able to provide some insight into challenges arising during testing. With innovations being used in community and care sites as well, potential barriers had scope to arise in a number of scenarios.

The Kinesis QTUG™ partner highlighted time being a large issue in setup and delivery, since primary care settings are limited by consultation length in order to recruit patients and provide the innovation service. This time limit also impacts frontline staff's capacity to innovate.

> *It's not that the NHS can't innovate, but there isn't a standard space or process for doing so. (*Innovator, Kinesis QTUG™)

When it comes to issues arising with the innovation itself, technical problems regarding interface arose but were swiftly dealt with by Care City, ensuring delivery could continue smoothly. A significant challenge resulting in improvements was the need for an email address to forward outcomes and recommendations from Kinesis QTUG™ and HealthUnlocked consultations. Within the early stages, it was noted that for these patient cohorts, email addresses were not commonplace, therefore updating the system to allow printing in the consultation was necessary in order to fully deliver the service.

For KardiaMobile™, challenges regarding the infrastructure to provide the innovation were a key consideration, particularly the provision of the service by adequately trained staff with skills and experience in dealing with complex diagnoses.

> *We need to think about the infrastructure around the innovation to ensure it's safe and efficient. What you don't want is not a trained healthcare professional to talk about potential diagnosis. We need to support that and think about what's the likely questions and how do we overcome any potential anxiety, the fact that you've just told somebody may have a potentially atrial fibrillation. (*Delivery partner, KardiaMobile™)

5 Barriers and facilitators

In interviewing the stakeholders involved in the Care City Test Bed we were able to build a picture of some of the key barriers and facilitators to the implementation of the five innovations. This chapter will discuss the experiences of Care City staff, innovators and frontline delivery partners collectively.

The structure of this chapter is as follows: first, we discuss influencing factors to the successful delivery of innovations in relation to Care City's involvement and their management of the programme. Next, we provide an overview of the factors relating to the various delivery contexts of the innovations. Finally, we discuss the innovation-specific challenges. The logic of this structure is born out of a focus on what barriers and facilitators are likely to be experienced in future waves of the Test Bed, with less emphasis on the specific innovations being tested in this wave.

Where there are unique challenges to a pathway or a technology, the specific innovation that experienced these barriers and facilitators will be stated. In general, the barriers and facilitators will be discussed in the context of the wider process of the programme's delivery. In this instance individual innovations will be used as examples of a wider experience.

We found that there was a significant overlap between the barriers and the enablers. What many respondents listed as barriers was perceived to be facilitators by those who found delivery to go well. Therefore, barriers and facilitators will be discussed side by side to demonstrate the converse experiences and emphasise the importance of a particular factor, for example 'staff buy in' to the overall success of the programme.

5.1 Barriers and facilitators related to programme management

5.1.1 Support from Care City

Delivery partners shared a broad range of experiences with the support received from Care City. Care City was seen to be helpful and responsive when assistance was needed with the set up and delivery of innovations. They were also open to feedback when delivery partners were facing problems and offered appropriate assistance.

> *The most successful thing was the enthusiasm from everybody (everybody was keen to get it up and running) and from my perspective, the support from Care City.* (Delivery partner, KardiaMobile™)

Support was provided on request via calls, emails and meetings. Delivery partners across the innovations reported having this communication weekly or bi-weekly or were made aware of a willingness to communicate this frequently as required.

There was also a sense that the Care City team were receptive to feedback when the delivery partners were facing problems and were happy to implement changes as suggested by frontline staff. One example of this was in the delivery of KardiaMobile™. It was determined that there were ways of working to make staff time more efficient and

get more patients seen. These experiences lead delivery partners across the innovations to refer to Care City as responsive, supportive, reactive and proactive.

> *As I say, they always check in on us; how are things going and whatnot so it's fully supported. We're not given something and then just left on our own or we'll see you in three months' time. It's an ongoing support, which means a lot because sometimes you just wonder, are these really gonna work* (Delivery partner, HealthUnlocked and Kinesis)

> *I think in general, our relationship with Care City has been a positive relationship. I think that the people there are proactive and they're as helpful as they can be*. (Delivery partner, GaitSmart,)

However, where communication was not driven by delivery partner, but instead by the Care City team, delivery partners sometimes felt more pressure to use the tool or to gain feedback. This was something also perceived by innovators as challenging.

> *One of the HCAs, I think she almost feels that Care City only contact when they're sort of wanting to give her a kick up the bum, as such [laughs], rather than, rather than to sort of like to check up on her rather than to support her, if that makes sense.* (Innovator/Delivery, GaitSmart)

Conversely, there were some cases where it was viewed that Care City could have provided more on the ground support. One suggestion from a frontline staff member using KardiaMobile™ was for a 'mystery shopper' from the team to come in to check they were delivering the innovation as planned and to provide feedback to the delivery partners. In response to this the Care City team sent a member of staff to be an assessment subject. This was not a 'mystery shopper' as the delivery partners were aware of Care City's presence and the purpose of the visit. For Care City the maintenance of transparency is an important factor in the way they work with delivery partners. This will be discussed in more detail later in this report. Another staff member responsible for the delivery of Kinesis QTUG™ suggested they would prefer Care City to come to the clinics to relieve the pressure on the surgeries.

These converse experiences and opinions of the support provided by Care City demonstrate the need for a tailored approach to support based on the needs and requirements of the delivery partners in each context. Navigating the appropriate level of support appeared to be heavily influenced by the communication and information provided by the leadership role of the Care City team.

5.1.2 Relationships and communication

The format and organisation of the relationships and partnerships between Care City and Innovators and Delivery partners will be discussed in further detail in Chapter 5 but a discussion of how those relationships worked as barriers or facilitators to the programme is fundamental. Building on the feedback from stakeholders around the support provided by Care City, there was some discussion around the way communication and feedback acted as a key facilitator.

The Care City team emphasised the importance of listening to feedback and concerns from stakeholders about whether an innovation was appropriate and whether it was working in context.

> *That's a testament to our testing process in that we're not pushing these innovations on any of our stakeholders or partners. And if it turns out that they're not as useful or they can't make them work then, we're not going to force them. So I think that's a good character to have*. (Care City)

This view of the need to listen to feedback was shared by innovators as being important to the success of the programme. One innovator highlighted the importance of engaging delivery and frontline *from the start* to listen to their concerns, respond to uncertainty and clarify expectations. This was something that delivery partners appreciated and saw as necessary to build a working relationship.

The Care City team also felt this approach to communication was seated in a need to ensure all parties were aware of expectations of performance but that these were not rigid. A perceived core success factor was necessarily an open dialogue on how innovation use was progressing. In some cases where these relationships were not established there was a sense that decisions were being made at a higher level, with managers rather than by frontline delivery partners. This will be discussed later in this chapter in relation to staff buy in.

For innovators, more than any other group, communication was experienced more as a barrier. Sonar Informatics (the provider of the web based platform used in the AF pathway to connect community pharmacy to the clinic) emphasised the complexity of communication when feedback was provided indirectly: changes required to the platform connecting pharmacy to the One Stop AF clinic, as a result of delivery partner feedback, were passed through Care City. However, where innovators did work with frontline staff directly this was perceived as positive and helpful to them gaining an understanding of the innovation and how it should be delivered.

This facilitator was reflected in the views of delivery partners when discussing the role of the innovator and their expectations and experiences of the relationship. In one sense Care City's involvement was perceived as being 'above and beyond' what was required. This point has key implications for the sustainability of innovation delivery as it suggests that once Care City had connected innovators with delivery partners there was an opportunity for them to take a step back in some settings and allow partnerships to work organically. While more direct communication between innovators and delivery partners is important, it was shown to work best at later stages of the process, once all the management-related details were under control thanks to Care City's efforts. In other settings Care City's 'hands-on' role worked well.

> *Care City were the hands-on delivery arm in terms of the project management of the process and making it happen. So my remit was more clinical support, clinical advice and, where possible, act as an enabler amongst the profession. (*Delivery partner, KardiaMobile™)

5.1.3 Time delay to delivery

Following on from the discussion of the importance of communication and information sharing with stakeholders from the outset of the programme, there was also a reference to the need for such communication to be embedded in an appropriate timeline.

Delivery partners reported that the existence of a time delay between the initial meetings and the testing of the innovation was a barrier. Even in cases where delivery partners received training directly from innovators, the time lag meant staff struggled when they came to use the technology in practice. This also presented issues around

keeping interest alive amongst staff in the delivery setting, whether that be GP practice or pharmacy. It was suggested that this delay was perhaps a result of excessive NHS bureaucracy in order to get sign off and was as much a frustration and barrier to Care City as to those delivering innovations.

5.2 Barriers and facilitators to delivery of the programme

Building on the barriers and facilitators related to Care City's management of the programme, there were also a number of factors that were related to the delivery context.

5.2.1 Staff buy in

Staff engagement was regularly cited by participants as a factor in the successful delivery of the programme. There were both positive and negative experiences of staff attitudes particularly where individuals played a gateway role within innovation pathways where onward referrals were a necessary part.

A particular challenge cited by staff working with the Kinesis QTUG™ innovation was the lack of buy in from staff further down the pathway. In some cases (dependent on local services) they were not willing to take onward referrals.

> *We did the first pilot of the falls risk assessment and from that, we identified that if the patient was high-risk, they could be referred into fall clinic but that took a lot of fighting because falls clinic don't actually want to see them unless they've had a fall. Now, the idea of that is we're trying to prevent a fall. I did have a bit of a run-in with a secretary and a consultant and said, 'Look, we're part of this pilot, which you know about', and they agreed.* (Delivery partner, Kinesis QTUG™)

Kinesis QTUG™ was not the only innovation to experience the pathway challenges that come with this kind of engagement with new innovations; KardiaMobile™ innovators also had to 'grease the wheels' within a pathway to bring senior staff members onside.

> *I remember one guy, I think he might have been a cardiologist, who was particularly antagonistic in that meeting, but following that meeting and a few others he became quite a supporter. I think that kind of winning people over one at a time is actually how change happens in the NHS, it's not some grand-scale thing; it's often the one-by-one winning people over. (*Innovator, KardiaMobile™)

Where senior staff such as consultants were not engaging with an innovation, participants felt that when this was raised at multi stakeholder meetings it could have a knock on effect on uptake of the innovation by delivery partners elsewhere due to the influence held by these more senior figures. These situations required 'more pushing' by innovators to find out what the delivery challenges were. In most cases concerns around implementing innovations were down to work load pressures. The reluctance was often attributed the high work load and time constraints experienced by those

working in social care. It was also suggested that staff do not necessarily have time to invest in learning a new piece of equipment or having to make the required adjustments to their working.

> *People's normal reaction is, do me a favour, I've got enough on my plate thank you very much.* (Innovator, Canary Care)

There was an observation that these concerns were existent irrespective of improvements to care or quality and that people are often more comfortable with familiar risks than taking on new risks from new ways of working. Innovators for KardiaMobile™ found that though the excellent communication and enthusiasm of the Care City team was an essential facilitator to delivery there were still challenges in bringing delivery partners onside to alleviate concerns. Such challenges might be viewed as part of the contextual barriers that exist when bringing in novel innovations into existing services.

> *I think it's more of a, a learning curve that, if you want front-end teams to be engaged, you don't just say, 'Great, here's a new brand called NHS Test Beds, off we go.' I think there's probably more to it than that, and I'm sure going forward into the wave two of Test Beds will find it a lot easier to make progress.* (Innovator KardiaMobile™)

As this quote suggests, part of the experience of this Test Bed has been identifying these contextual challenges which will in turn facilitate future innovation delivery.

There were positive views of how Care City and delivery partners worked in this challenging environment to give patients and service users access to novel solutions. Having 'champions' who pushed forward innovations were considered a key positive factor to successful delivery. As one Kinesis QTUG™ innovator observed it was having these champions in some settings over others that determined success.

> *I think the healthcare assistants were quite crucial in the sense that once the technology was there it was really the healthcare assistants who were identifying and prescribing the exercise programmes following assessment with the QTUG device. Whilst they facilitated that, because it was dependent on individuals, there was a degree of variance between uptake if you like and the recruitment of patients dependent on the healthcare assistant and the criteria used in the GP practices* (Innovator, Kinesis QTUG™)

> *We have young doctors that are quite forward-thinking. We're also a teaching practice, so we have students here quite a lot, so students will be using this in everyday life once they've qualified. We have year one and year two students. So we, you know, we always encourage our students to sit with the HCA. I'm very lucky with [the HCA] because just who you give her, and she just flies with it and she goes off and does it. I'm also lucky that actually speaks most of the local languages, so that helps a great deal.* (Delivery partner, HealthUnlocked)

In other cases, these champions in practice worked alongside innovators and Care City staff to encourage participation within the practices. This again reinforces the points made around a need for Care City support and a participatory approach to delivery.

> *So, it takes time for that [using the HealthUnlocked tab] to get embedded in the clinical sort of head that this is another way we could help patients. So, it was a reinforcement of that message again and again. Either through clinical meeting or through screen messages. Initially there was a good response which dies down as time progresses. So, the practice and the staff engagement is very important. So, you need to go and meet these practices and the staff and tell*

*them how good they are doing and show them the dashboards and things like that.' So, they, they built us these dashboards. A few of the Care City staff then went to the different sites. (*Delivery partner, HealthUnlocked)

In response to the lack of interest in from GPs, one innovator described how external support was provided in practice meetings to bring GPs 'onside'; they are now looking for ways to help refer patients to the Healthcare Assistant.

So it just seems to me it needed something more to tie everybody together rather than identifying a practice, finding the HCA and saying, 'Okay, run with it.' (Innovator, GaitSmart)

In other settings Care City were perceived to be actively engaging these delivery champions and encouraging their involvement in facilitating innovation delivery.

He [Care City Staff Member] thought that because I'm quite motivated person in terms of innovation and trying different things in the area, he said, 'Why don't they actually work with you, and, and local authority and public health to innovate a bit more with maybe this product, but with other, other products as well?'. (Delivery partner, HealthUnlocked)

5.2.2 Pathway integration

Additional to workload concerns there were a number of perceived barriers in relation to how well the innovation fitted within the intended delivery context.

For the KardiaMobile™ innovation, pharmacists and the innovators who worked alongside them expressed concerns around the integration of the process into their usual ways of working.

I was just concerned how it would fit in with my already busy role and how I was going to find the time to fit it in and how it would work with the pharmacies outside doing the screening. There was just all different questions that I just needed to have a few more answers to. (Delivery partner, KardiaMobile™)

A KardiaMobile™ representative suggested that because pharmacists were not used to delivering this kind of innovation within normal working hours they weren't as confident and were not sure of how to make patients comfortable enough to get a good quality ECG trace.

Conversely an issue for those involved in the delivery of Kinesis QTUG™ was the physical space required in the GP practice to deliver the assessment element of the innovation. Staff had to run clinics on specific days in order to accommodate patients in the available rooms however this meant if a clinic could not go ahead on a particular day there was a significant backlog.

We can't always get those rooms because they're treatment rooms for nurses and wound care and things like that. So, we, we had a struggle with the room space. We also had a struggle because we was having to dedicate our time on those days. And if one of us was away on annual leave or illness it sort of backed our weeks' worth of clinics up because we was losing that session. Because they're not something you can just slot in-between… It's too much

*setting up to just stop and do that in-between a clinic when you're seeing other people. (*Delivery partner, Kinesis QTUG™)

For the HealthUnlocked innovation, barriers were around the initial embedding of the technology into the established online system used by GPs.

*I think the process for having the tool activated in the GP practice is quite convoluted. It involves we had to speak to EMIS. They had to activate it in the GP practices' EMIS system. Then the manager for EMIS in the practice has to activate it. It's quite a convoluted process (*Innovator, HealthUnlocked)

This demonstrates a way in which the implementation and delivery of the innovation on the ground can be faced with unforeseen challenges. In this case the challenge was experienced by the innovator rather than the practice staff themselves however the challenge caused a delay to the go live in the delivery setting. These challenges, though specific to the innovations in this Test Bed, give examples as to the type of barriers future innovations might come up against when embedding within similar delivery contexts and existing pathways.

In some cases, delivery partners found novel ways to adapt their practice to increase use of innovations in some settings the chosen pathway was already well equipped to receive the innovation. For example in order to assist reception staff in helping patients sign up to receive the HealthUnlocked signposting to services, the practice manager at one GP surgery created slips for patients to fill in by hand with their details to be added to the system by admin staff later. In another setting, the Kinesis QTUG™ innovation was delivered in an area where many target patients did not have English as a first language and may not have had email access, the Healthcare Assistant created a PDF print out of exercises rather than patients having to access the videos on the English web based app.

One example of where an innovation stimulated the development of a pathway that suited the delivery partner was the one stop shop model for the delivery of the new AF pathway.

*Whereas normally everyone will see people in staggered relationships, and you never see the end result. And as physiologists we know what needs to be done, we just never see the patient leave with that treatment. We don't see that end result. So for us to see that in the one-stop, it's nice. (*Delivery partner, KardiaMobile™)

5.2.3 Recruitment issues and promotion

As well as managing unforeseen challenges around staff engagement and pathway integration, delivery partners were faced with difficulty when trying to recruit patients to use the innovations. A lot of patients were reluctant to take part. For the GaitSmart assessment they found a lot of people *'over a certain age'* were not interested, even when it had been explained. It was suggested by one delivery partner that some patients are not keen on new technology or were 'stuck in their own ways'. In order to address these challenges the delivery partner met with Care City in order for them to come up with a plan to provide assistance. One delivery partner described how Care City came up with a solution in order to address this type of challenge.

*They have recently offered some support: they're going to sort of try and maybe send someone down so that we can have a session of where we can see if we can advertise it a little bit more, they're going to help us do that. (*Delivery partner, GaitSmart)

This theme of promotion and recruitment assistance was further discussed by innovators and delivery partners across the innovations. For the GaitSmart innovation, the trainer or support person went into the GP surgery where the innovation was being delivered and had a small stand to raise awareness and provide support to surgery staff.

> *So we're trying to open some different avenues to try and take the responsibility not completely off the HCA shoulders, but to try and reduce the stress she feels she's being put under to try and achieve the numbers*. (Innovator, GaitSmart)

The necessity for this kind of support was reported as being born out of a need to educate or engage patients about the new innovations and different pathways available for their healthcare. Innovators from KardiaMobile™ observed that patients have been growing in their understanding and openness to changing pharmacy pathways over the last 10 years. This laid a foundation for them to introduce the new clinical measures as part of the innovation.

> *You know, I think patients are getting more used to having those services in different settings. I mean, they're aware that the NHS is evolving and so these types of services may be relevant in different ways, you know. (*Innovator, KardiaMobile™)

This suggests there is perhaps a role for promotion of these changes to health and social care pathways to help patients to become more receptive to innovations. Similarly delivery partners felt that promotional materials would have been useful for advertising to both clinicians and patients about new ways of working. Another suggestion was around recruiting patients face to face as this gives delivery partners a chance to convince patients by showing them what the test involves rather than persuading them over the phone.

5.3 Barriers and facilitators to specific innovation delivery

In addition to the barriers and facilitators of relevance to the wider programme, delivery partners also discussed issues specific to the innovations tested in this Test Bed. For innovations such as HealthUnlocked and Kinesis QTUG™ (combined with Salaso digital exercise prescription) where patients are sent online materials to help manage their condition, a major barrier was perceived as being the inconsistency of internet usage by the target patients. Many of these patients were older and seen to be not as comfortable with new technology. Similarly, another demographic barrier to the delivery of the innovation was the language barrier that existed in the local delivery area. Patients were being sent a set of exercises to be accessed by an English language based app when English was not their first language. This had a significant impact on uptake. It should be noted, however, that one of the key objectives of Care City was battling digital exclusion and making sure that people who usually have difficulty accessing or working with technology can benefit from the innovations.

Further, the innovation technology presented issues when actually given to patients. For example the Kinesis QTUG™ equipment required leg straps to put on patients legs to do the assessment, these straps were inappropriate for some of the women in the

community who wore a particular kind of leg covering. As a result Kinesis QTUG™ provided an alternative.

In other settings the innovation software presented challenges to delivery, Salaso was reported as not being easy to use, staff found it confusing trying to monitor patient progress and patients were unable to log in or understanding the system.

6 Partnerships and benefits of being involved in the programme

The relationships between the different stakeholders involved in the Care City Test Bed had significant effects on successful implementation of the innovations. Whilst the previous chapter predominantly discussed the support role of Care City from the perspective of innovators and delivery partners, the current chapter seeks to provide an overview of participant understandings of how the all various partnerships within the programme fit together.

In general, delivery partners had little to comment on the structure and workings of the partnerships involved in delivering the Test Bed. It would appear that the higher level contractual relationships between innovation partners and Care City were out of the view of those working at ground level.

There seems to be a disjuncture between expectation and reality at an innovator level around delivery partner's engagement and buy in to the programme. This was put forward by other innovators as a significant factor in navigating the relationships with delivery partners throughout the programme.

> *We thought that Care City had more of a stick than a carrot. But it turned out that it was a carrot and we had to keep putting honey on it as well to try and attract people in and then be hopeful that they would play ball with us. Following our initial discussions, which were good and in depth, I think more knowledge around the implementation of the process and some more dedicated time from Care City would have been beneficial to us* (Innovator, GaitSmart)

This suggests confusion about the level of authority the programme and by proxy, the innovators, had in managing and directing delivery partners to implement innovations in the designated pathways. There was also a re-evaluation of the relationship by some innovation partners when they gained a better understanding of the dynamic and the contractual obligations of delivery partners. For the Kinesis QTUG^{TM} innovator the initial preconception was of an organic level of enthusiasm from delivery partners. The innovator in this case lacked a full appreciation of the roll of Care City in facilitating and encouraging participation and engagement. Once they realised Care City's role in providing facilitation and back-fill in delivery settings, their expectation of the commitment from delivery staff increased:

> *We thought they were very willing volunteers [chuckling] who were coming in and delivering and participating and - and if we knew that they were paid volunteers we may have been a little bit more demanding of them with regard to numbers, with regard to access. So we wouldn't have changed our approach completely, but it would have been useful to know the - the context at the outset*. (Innovator, Kinesis QTUG^{TM})

For some innovation partners, there was also a greater expectation for both Care City and delivery partners to provide feedback.

> *I'm disappointed not to have at least got some sense of feedback from either Care City or the boroughs and users directly. I think we got some, but I feel like I'm missing quite a lot. (*Innovator, Canary Care)

These expectations suggest both a desire for better channels of communication between the stakeholders but also for a greater degree of participation from users in order to develop an iterative approach to innovation delivery and testing. As suggested in the earlier discussions of barriers, in some cases the role of Care City as a 'mediator' was seen as adding an extra step to the communication between delivery partners and innovators. Others perceived this 'mediating role' within these relationships as a positive. Care City was seen as facilitating interactions in ways they had not experienced with other commissioners and that this allowed for the necessary changes and improvements to delivery to be managed more smoothly.

> *Usually it takes a lot, a lot longer to, to make those changes because there's inflexibility from the so-called commissioner or the payer of the service or whatever. [Stumbles over word] Whereas, in this scenario, you know, it was very easy. You know, I found that everybody was responsive; we got feedback. And, and everybody in the group that had, that was negative feedback, fed it back in and we pretty much quickly came up with solutions and those changes could be made more or less, you know, far more in an immediate fashion, you know. (*Delivery partner, Sonar)

Furthermore, when asked about NHS England's role in relation to the Test Bed programme innovators expressed some confusion about how the Care City works with NHS England.

> *I think because Care City is an independent organisation, it sort of sits slightly outside of the borough and the foundation trust. And I also I think there's probably a little bit of a question mark about NHS England's role in this. (*Innovator, Canary Care)

Where an understanding did exist, innovators were positive about NHS England's involvement in the programme and the opportunities it brings for innovation companies. Previously innovators have struggled to build partnerships with the NHS because of an agenda to commercialise that does not feel compatible with NHS as it currently stands. The focus of innovations selected in this Test Bed on self-management has helped to open a space for innovators to engage with the NHS services. As such, the partnership with the NHS allows for commercial products to be tested in a way that would not ordinarily happen.

> *They have been taking innovation that is market ready and then the clinicians and delivery partners have been innovating to translate the products into the real world for better outcomes. I think more than the time you spend on the supply side with innovators, working to further develop their products, we have been on the demand side working with clinicians innovating in response to their products, trying to figure out how to maximise their potential*. (Care City)

This demonstrates the way in which it was seen by Care City that innovators are already aware their system works for the intended patients, but are keen to operate from within GP practices or other health and social care settings, and they would not have had this opportunity without the Test Bed. It was understood by the Care City team that their role was to facilitate the use of the piece of technology or service in the context of the local health and social care system. It was seen that this partnership enables Care City to establish what support an innovation requires; how it works within the current care pathways; how it fits within clinical understanding and also how it allows Care City to understand what NHS staff and the frontline need in order to provide appropriate care.

When discussing partnerships with NHS England there were a number of suggestions from innovation partners around how they thought this relationship could be managed or developed further. One innovator suggested a greater need for other bodies within the health and social care system to provide support. They understood that the Test Bed is still in it is early stages but thinks that including other organisations would help to embed the programme and ensure it is future progress.

> *I know that there are challenges because the Test Beds process is new in itself, so I do understand that we won't necessarily have all the ducks in a row. But a NICE involvement so they're aware of what innovations are going on, I think would be beneficial to the later process. (*Innovator, GaitSmart*)*

It was the view of other innovators that the NHS should be doing more with regards to the planning and governance of the programme.

> *You've got Care City as a task force trying to get these technologies deployed, but the engagement with the lead clinicians or the commissioners was I think for a long time missing*. (Innovator, Canary Care)

There was also a suggestion that there should be more involvement from NHS England in the construction of the Care City team which would have meant they as innovators had more connections and communication to the commissioners for adult and social care, facilitated by care city.

This understanding of NHS England as commissioners for this programme falls most in line with the way Care City experience the partnership. For the Care City team, the primary basis of the relationship is with NHS England as funder and focuses on

assuring the funder that progress is being made and being kept up to date. In this sense, Care City has to reassure NHS England to keep them on side and continue funding.

> *They're our funder and our client, and they want to assure themselves that we're making progress as quickly as we should be*. (Care City)

> *We're testing different innovations with a large number of different partners. And we're trying to work through and with the system as a whole. We can't just press go on day one. So, I think there was a bit of getting up to speed following the award of the contract in Care City. And a bit of reassuring NHS England that, all of this talk about being system led and having many, many partners would still add up to kind of something that was operationally effective and could delivery kind of meaningful numbers. (Care City)*

This section has aimed to answer whether the partnerships have worked as intended, which leads onto a further discussion of whether the partnerships have benefited the stakeholders and in what ways.

6.1 Views on involvement in the Care City programme as a whole

Participant's views on the benefits of being involved in the programme tended to be commonly held within each of the groups. For delivery partners the benefit to the patients was central, reflecting their proximity to end users and their working agenda to improve patient care.

> *I enjoyed doing it. I just wish we'd got more patients through, but I actually did enjoy doing it. It was nice working with an outside body rather than somebody in the NHS. It was nice to see the way they worked. It was very supportive I have to say, far more support than we normally get in the working week. Prior to this project I was thinking about trying to set-up a one-stop AF clinic, but then it just went by and that was under the NHS. I now want to re-launch that idea again and with looking at what happened with Care City and how we could actually integrate it slightly differently, not using AliveCor, just using patients that have been referred in by the GP or A&E, but that has influenced my work, that now I'm thinking yes, we could get this to work. (*Delivery partner, KardiaMobile™*)*

For innovators the benefits of the programme were related to the opportunity to test innovations in a real world setting. This was both related to uncovering the day-to-day challenges involved for frontline staff, as well as gaining an understanding of the different pathways and routes for innovations to be introduced within the NHS.

> *This is the thing where a lot of commissioners, they come up with a patient service and they presume that that's how it's gonna work. But actually when you're in the real world, patients and services interact and change and providers need to be able to respond to those changes.* (Innovator, Sonar)

> *I think that's been the biggest eye-opener and learning curve for us and I think that it's helped to see that our innovation would work within that setting and the role it can play in, like I said, with the frailty assessments and then it can be basically carried out by the health care assistant. It wouldn't require the doctor to do it, so it wouldn't take time away from the GPs, and the GPs could actually refer them to the HCA, so I think that's been very useful and very beneficial for us to understand how it works in that setting.* (Delivery partner, GaitSmart)

This was something that was also acknowledged by the Care City team. There was a view that the programme enabled innovators to transition from delivering a consumer product to providing a service and that this helped them understand where their product might sit within the NHS. It meant innovators had to think about what healthcare professionals would want or use and provided them with the feedback needed to guide the development of the innovations.

> *Tests really only drive forward if our provider partners think it's solving challenges that they face day-to-day. That is what real world testing is about. It's not an artificial testing environment. We are working to make the case for testing within the Test Bed, and as a result I think we kind of learnt quicker, because the feedback we got was very real as to what did excite people about the innovations we were testing, and what they felt was working less well*. (Delivery partner, KardiaMobile™)

The programme was also seen as helping build partnerships within the NHS. This had benefits for both innovators and the wider NHS. One innovator suggested that involvement in the Test Bed raised the profile of the innovation and as a result the company had greater reach toward the relevant NHS departments that they hoped to work within.

7 Sustainability

Sustainability was discussed both in the context of whether innovations could be continued and how this continuation might be put into practice.

7.1 Determinants of continued use of innovations

When considering whether or not innovations could be continued, participants shared their views on the importance of 'impacts' as an indicator for the feasibility of continued use. This discussion of impacts ranged from those that are measurable to softer outcomes such a patient and staff views.

There was an understanding that the innovations had to be proved to work in order for use to continue.

> *You know I'd like Canary to succeed. But equally if there are other technologies that have made a really big impact then terrific and it would be good to hear about that one way or another. So whilst I'm selfishly hoping that Canary has got sort of a future with Care City. Given that we're a small company and we've invested quite a lot of time and energy in it, it would be good to hear what went well and what didn't.* (Innovator, Canary Care)

This demonstrates that the innovator understood the purpose of the Test Bed programme, as not merely promoting innovations but actually ascertaining if they are useful in a real world setting. However, it was suggested that not all innovations are able to demonstrate success and gather the evidence, even if they are working as intended, due to the nature of the impacts being difficult to measure.

> *Social prescribing is not as simple as doing the pulse check and demonstrating identification of atrial fibrillation and preventing stroke. That's much more straightforward than social prescribing. So, I'm not sure, but even if these show that there was activity and the patients have started using this resource.* (Innovator, HealthUnlocked)

With other innovations there was a sense that there had not been enough time or opportunity to test the innovation to provide legitimate evidence to encourage continued use.

> *I would say, so this is the one that we've tried everywhere and we've not quite tested it with enough people to be able to say what its impact has been. But each of the councils really do like the kit, see its benefit even if they've not realised it yet as in even if we've not got the evidence yet.* (Care City)

The view of evidence as essential to continued use of innovations was also shared by the Care City team. For them it is important that there is the 'story' around success, as part of this there has been the development with new relationships beyond the life of the programme, demonstrating the sustainability and spread of the benefits of Care City's work with innovations but also in developing new pathways for the future;.

> *Across the innovations that have been most successful with our Test Bed, for each of them they make a story about their continued life, not just within our Test Bed, but across BHR. And in some cases, across East London more widely. We're also working with Barts Health and Bayer, the drug company, to extend the work on the AF pathway and one stop shop, to a second site of Barts Health. Not totally finalised yet. That's to do more screening with community pharmacies in that western half of East London. Again, that's funded by a new partner beyond NHS England, and adding to the data set and growing a significant one stop approach within Barts, which is obviously a very significant enhancement.* (Care City)

In general, success stories featured patients; it was the view of some delivery partners that it was patient experiences that were a measure of whether or not there was a wider enthusiasm to continue to use an innovation.

> *Even though we've near enough completed the pilot, we're still actually using it for our over-75s because we think it's a tool worth using. Also, with the Kardia, the AF bit, stuff, we're still doing that because we're just rolling it on because we think it's, it's good patient care.* (Delivery partner, KardiaMobile™)

Evidence and measureable impacts were also seen as important to continued use of innovations because they had a direct relationship with securing future funding.

7.2 How continued use of innovations would work

Participants were asked how they envisaged the continued delivery of the innovations in the long term, beyond the life span of wave one of the Test Bed. Participants felt key lessons were learned from wave one that could inform and facilitate continued use of innovations. Through the testing experience partners were able to suggest different approaches, changes, and improvements in order to ensure the innovations were being used most effectively.

In some cases improvements suggested were minor and related to the way the tool was introduced to delivery partners. It was suggested for the HealthUnlocked tool that more training was needed to provide staff with a step by step guide. Other frontline staff using this tool, however, felt that the way the technology was embedded into the

GP practice computer system needed reviewing in order to change 'who' was able to use the innovation within the practice going forward.

> *If we did proceed, then the next iteration of the tool would need to live outside of, EMIS. So exist in a web browser and it would need to be usable by every professional within the primary care practice.* (Innovator, HealthUnlocked)

Similarly, delivery partners using Canary Care suggested that the pathway into which the innovation was introduced was, perhaps, not appropriate based on the time demands on the team who were making the key decisions around selecting patients to use the innovation.

> *Maybe that's something that needed to be done by our hospital team. And obviously I'm not saying it's their fault that they didn't. It's just that with that type of team they are quite busy. So, maybe, going forward, it might have been that it wasn't the correct type of environment for them to be assessing for that type of equipment and then installing it, because it's so fast-paced, they're trying to get people out of a hospital discharge. Sometimes, it may have been just the time factor that played a part.* (Delivery partner, Canary Care)

For other innovations the suggestions for changes required to continue delivery were focused on the settings and pathways that would be more appropriate.

> *I think if it's made part of an NHS like normal procedure then you would bypass all of the part about being a pilot. That would take a good ten to 15 minutes off of the consultation time. So, that may make it a bit easier, if it's offered widely. I can see it being part of a practice thing. I think it would be more of a clinic daily thing than a GP surgery. I would say it's more of a day clinic assessment than it would be because it takes so much time. (*Delivery partner, Kinesis QTUG™*)*

This comment perhaps highlights the way that, despite the 'real world' focus of testing as part of the Test Bed, for some delivery partners it would only be when the pilot was finished and they got into the day to day use of innovations that innovations were really tested. It was at this point the technology or assessments could be delivered in the ways frontline staff thought would work best. This perhaps points again to the key role of including frontline staff in the conversation around how innovations were delivered from the outset.

Kinesis QTUG™ was not the only innovation where delivery partners had suggestions for how a change in pathway would be more appropriate. A member of the delivery partners working with AliveCor (KardiaMobile™) had an alternative view of who was best placed to deliver the innovation and what would be a more appropriate setting.

> *I think that it should come from GPs. I think they should be giving them to the patients, so they can monitor their own heart and using them in the actual GP practice. They would I suppose still need to be analysed or looked at by*

somebody under arrhythmia or cardiology, but I suppose that actually could be set-up as part of the clinic referral. (Delivery partner, KardiaMobile™)

It was suggested by one delivery partner member that being able to run the clinic herself as a nurse prescriber would cut out the pharmacist which would be a more efficient use of time and skills. Another suggestion was that delivery could be moved away from healthcare into more commercial settings.

Well I think places like Boots, where you have your opticians and you have your diabetic screens and things, where people go and pick up their prescriptions, you're kind of used to having that place being a multi-site for all sorts of things. (Delivery partner, KardiaMobile™)

Despite these suggestions for changes, it is also key to note the learning as a result of participating in the programme allowed delivery partners to better identify the settings in which innovations would be most successful. It was also stated that taking part in the programme meant that going forward there were number of elements that could be shared and used within other healthcare networks.

Things like the standard operating procedures, the information governance considerations; we shared those out across all of the AHSNs to be freely used based on the learning of Care City (Delivery partner, KardiaMobile™)

This example demonstrates that it was not solely the innovations being tested for their suitability and usefulness by delivery partners but also the procedures for their implementation. Whether or not the innovations are part of a technology pull through as a result of the Test Bed relies on the success of the innovators in developing workable technology that has impacts. The other element of sustainability is the increased openness and engagement of delivery partners, and their networks, to working with innovations beyond the life of the programme.

8 Conclusions

8.1 Key findings and lessons learnt

The report has presented a process evaluation of Care City's approach as one of the National Test Bed sites. The evaluation was one of the two evaluations commissioned by Care City. The key findings from the evaluation by topic can be summarised as follows:

Training

- Training provided to the delivery partners was excellent, swift and efficient.
- Delivery partners were offered additional support throughout their time in the project after the initial setup related training. Some sites also received extra training from the innovators.
- While broader training of GP practices and delivery partners is difficult to coordinate for structural reasons, Care City has made extra efforts to ensure smooth running of training.

Recruitment

- The analysis highlighted the differences in recruitment and delivery with respect to the complexity of the condition for which the innovation is used for.
- Care City was crucial negotiating access to patients and GP practices.
- Pathway integration, as we found, was oftentimes dependent on the local capacity of the GP practices.
- Willingness to use innovations at times inversely correlated with the age of the patients.
- Recruiting patients face to face is better than over the phone. More personal involvement is emphasised as potentially very beneficial for trust and interest.

Ongoing support

- Care City was seen to be helpful and responsive when assistance was needed with the set up and delivery of innovations. They were also open to feedback when delivery staff were facing problems and offered appropriate assistance.
- The emphasis on transparency, coproduction and learning together as one of the objectives of Test Bed led to the absence of hierarchically organised system of control and enforcement. This leads to improved sustainability and also increases the potential of the innovations by providing a mutual channel of feedback and communication.

Communication

- The Care City team emphasised the importance of listening to feedback and concerns from stakeholders about whether an innovation was appropriate and whether it was working in context.
- More autonomy or a more direct pathway of feedback from innovators to front line staff can be beneficial as it can significantly increase the speed of information flow and the cohesion between the innovators and the delivery partners. However, it was emphasised that such direct channels for communication can only be established after the basic set up of the programme.
- 'More pushing' by innovators was sometimes required to find out what the delivery challenges were. However, in most cases concerns around implementing innovations were down to work load pressures.
- More flexibility for dialogue, openness to feedback and ability to respond to local requirements of the delivery partners were emphasised as key to successful communication.
- We found that there was a significant overlap between the barriers and the enablers: what many respondents listed as barriers was perceived to be facilitators by those who found delivery to go well.

Barriers and enablers

- Our data indicate a clear overlap between barriers and enablers. What some innovators and delivery partners found to be challenging was often emphasised as an important element of success by others.

Benefits for innovators

- For innovators the benefits of the programme were related to the opportunity to test innovations in a real world setting.
- The programme enabled innovators to transition from delivering a consumer product to providing a service and that this helped them understand where their product might sit within the NHS.
- Participants felt key lessons were learned from wave one that could inform and facilitate continued use of innovations.

Sustainability

- Local capacity of delivery partners seems to be an important determinant of sustainability of the use of innovations.
- Some suggestions for changes required to continue delivery were focused on the settings and pathways that would be more appropriate to specific delivery partners.
- The other element of sustainability is the increased openness and engagement of delivery partners, and their networks, to working with innovations beyond the life of the programme.

Among other findings, the report has emphasised the importance of effective communication between the innovators and the delivery partners. The report discussed the importance of the continuous support that needs to be provided to both the frontline staff ensuring smooth delivery of the innovations to patients and the innovators themselves, who are implementing adjustments and corrections to their products and services as those are delivered in the real life situations.

The report discussed that maintaining successful communication often proves difficult in complex interventions, where conflicting interests of the private consumer market represented by the innovators and the public service sphere represented by various GP practices and frontline staff, meet. Moreover, the report elucidates how staff capacity in local practices acts as a barrier for using innovations and is an issue that needs to be addressed in an appropriate way for the delivery staff to be interested in using innovations and able to undergo training necessary to work with the innovations.

The report has demonstrated how Care City has successfully adopted the role of a mediating communicator between the delivery partners and the innovators. Moreover, the report demonstrates that Care City was a leading factor facilitating recruitment of sufficient numbers of patients who were testing the innovations.

8.2 Spill-overs and benefits

The evaluation has established that the ability to recruit high numbers of patients resulted in an opportunity for the innovators to test in real world settings. In addition, the innovators could better navigate their way of belonging within the broader system of the NHS. This will allow them to explore the market in a more effective way, identifying the market niches and requirements necessary to create higher demand for their services and products. For the healthcare system, in turn, it will mean more targeted, need-oriented supply of market innovations.

Moreover, Care City has managed to scale up several innovations significantly by improving recruitment and by enabling the innovations to be tested within the real-life conditions, but most importantly, thanks to establishing new pathways around the innovations within the framework of combinatorial innovations. For example, building on their work with KardiaMobile™, the BHR Provider Alliance has committed to work with Care City to transform the AF pathway across Barking & Dagenham, Havering and Redbridge. Furthermore, based on additional support from London Borough of Barking & Dagenham, the HealthUnlocked social prescribing tool is being scaled to GPs across the Borough, with conversations continuing with other East London boroughs. Care City also continue to talk to commissioners about the potential of Kinesis QTUG™.

Last, but not least, Care City is embarking on a programme with the local council, directly targeting digital exclusion among the elderly and socio-economically underprivileged populations, which can significantly benefit from the use of social care-related innovations, but who would not normally be included in the target group due to their limited access to and knowledge about technology. The important of such innovations will be increasing in the future, so targeting digital exclusion is becoming ever more important.

8.3 Recommendations

For health and social care to make use of this market, successful communication between, in essence, conflicting market forces is key. While innovators represent the interests of profit-oriented private business, social care delivery happens as a public service and hence is driven by a set of completely different motivations and stimuli. Communication between such conflicting forces within the conditions of limited time and resources presents itself as challenging and should be mediated by third parties, whose primary interest is not vested within either the private or the public spheres and is in ensuring smooth collaboration. Care City, thus, acted as key mediator in the process of negotiating market access for the innovators, while also ensuring seamless and convenient implementation of the innovators for the delivery partners, for the sake of the benefit of the patients.

Overall, the report has highlighted the benefits of Care City's approach to 'combinatorial innovation'. The approach is based on the idea that innovations should not be forced onto an existing and established system in hope that the system will create capacity and space for the innovations to work. Rather, the innovations should be used in combination with new pathway development and initiating as well as supporting new ways of working for the workforce to bring about sustainable improvements in patient outcomes and service delivery.

9 Appendix1

Topic guide for stakeholder participants: Frontline

Key aims and objectives:

- **To gauge key operational and directional understanding of the Care City Programme**
  - Review of understanding within programme and partnering organisations
- **To explore the innovations and their use as technological products in delivering improvements to patient experience, quality and safety**
- **To mine the process of design, delivery and monitoring of innovations use, within the programme and through associated organisations**
  - What went well, what went wrong and how challenges in the process were overcome
- **To ascertain the extent of benefit for NHS with regards to**
  - Partnerships
  - Technology
  - Demographic

The following guide contains example questions - these are not meant to be prescriptive and interviewers will tailor these during the interview. The order in which issues are addressed and the amount of time spent on different themes will vary between interviews and according to individual experiences.

Introduction

Explain who we are

NatCen is an independent social research organisation and has been commissioned to evaluate the process of implementing innovations under the Care City Health Aging Innovation Centre. The Care City Programme established under a wider NHS Test Bed Programme aims to combine technology with service change to deliver improvements to patient experience and health outcomes. This process evaluation seeks to explore the process of designing, delivering and implementing such technology, and the wider implications for a NHS England in utilising technological innovation in care.

Explain voluntary nature of participation

- Taking part is completely voluntary

Explain interview format

- Mostly open questions
- There are no right or wrong answers – we're just interested in your perspective, if there are questions you prefer not to answer, that's fine.
- Timing of interview (60 minutes)

Recording of Interview

- Digital **recording** of interviews – check participant is happy with this. Just to save taking notes and make sure we have an accurate record of what you've told us.
- Report, use of quotations, **anonymisation** – we won't use names in any reports.
- What you say in the interview is **confidential**. However, due to the relatively small number of participants, we cannot guarantee that you won't be identifiable by someone who knows you and your organisation well.
- *If there is anything you don't want included or quoted that's fine – you can just let us know. I will check with you again at the end of the interview whether there is anything you'd prefer was not quoted in reports.*

Consent

- Check that the participant has read the information sheet
- Make sure to record verbal consent on the digital recorder
- Check if respondent has any questions?
- Check if happy to proceed?

DIGITAL RECORDER ON

- Record your introduction
- Confirm that we've explained to them:
    - What the interview is for
    - That taking part is voluntary
    - That we are record the interview and
    - That we won't use any names in reports
- Ask participant to confirm they're happy to proceed.

1. **Key background info**

AIM: (BRIEF) *to gain an overview of participants' job role and their involvement in Care City*

To start off with, could you tell me a little about your current role at [Name of organisation]?

- Job role and purpose
- Purpose of organisation

Would you be able to talk me through the innovation?
(Prompt)

- What is it?
- Who is it for?

2. **Experience of delivering/embedding the technology/innovation**

AIM: (BRIEF) *to gain an understanding of how frontline staff have adopted the innovation and how it has worked for them*

Can you tell me about what training you have received in order to use the technology/innovation…

- When?
- How many hours/days?
- Who delivered?

How useful was the training you received...

- Did it meet expectations?
- Was it sufficient?
- What further training is needed?

Details of any peer to peer training involved in equipping frontline staff with the skills to deliver the innovation/use the technology

- Has participant been trained by colleagues?
- Has participant trained others?

Can you tell me a little about your experience of launching the innovation

- Early expectations
- 'Teething problems'
- Challenges to launch

- Who involved in launch

Can you describe the day to day use of the innovation/technology in practice

- How it works?
- Changes to delivery from pilot stage
- Day to day challenges
- Ease of use
- If they have adapted it to fit their work
- Any changes to ways of working to accommodate innovation/technology

3. Understanding of the Care City Programme

AIM: *to explore participants' knowledge of the programme and wider contribution to Test Bed programme*

You may or may not be able to answer these questions so please feel free to say if you can't

Thinking about your role with regards to [Innovation name] and the wider Test Bed programme, could you talk me through

(Prompt)

- The stages of adopting the innovation as part of the Test Bed programme
- How you were involved
- Your understanding of the programme's aims or objectives

Thinking back on the way the programme was set up, if you are aware
(Prompt)

- Rationale of selection of the interventions i.e. why it was selected
- How was the process governed/ organised?
- Involvement of users/ patients in selection
- How effective was it?

To think a little about the initial provision of the innovation

- How were innovations provided to you?
- Where you consulted about how they would be delivered?

- How long did this take?
- How were innovations/target patients/programme processes finalised?
- Were all planned and implemented innovations taken forward?
- Which innovations were not taken forward and why?
- Anything unexpected during set-up, what worked well/less well

4. Involvement in the wider Care City programme

AIM: *to explore participants' views as to what elements of the programme worked well, worked less well, and any suggestions for how they feel the programme might be improved.*

Thinking back over your involvement in the Care City Programme
(Prompt)

- What have been the benefits of the programme to your organisation?
- What were the unintended consequences of the programme and delivery?
- How were they managed?

What were the key barriers in your view?
(Prompt)

- In the effective delivery of innovations?
- In the partnership
- In governance of the programme

What were the key facilitators in your view?
(Prompt)

- In the effective delivery of innovations?
- In the partnership
- In governance of the programme

5. Exploring the collaboration between innovation and NHS England

Aim: *to explore the relationships developed between two entities in the context of Care City*

How do you perceive the NHS and innovator partnerships?
(Prompt)

- How did these work?
- Why did it go the described way?
- How has it impacted and stimulated improved technology?

How was the partnership beneficial for the NHS? (CC stakeholders only)

- How did it impact access to products?
- Describe the types of products or processes accessible by NHS now

6. Sustainability

AIM: *To understand if the innovations will be sustained post-funding*

How many of the innovations have been sustained?

- Are the innovations to be sustained in the long-term?
- How will the innovations be funded?
- What funding streams will be used (if any)?
- What was the rationale to sustain some innovations but not others?
- Will the innovations still be delivered in the same way?
    - Change in delivery?
    - Change in focus of delivery?
    - Change in pathway?
    - Extension of innovation to different health providers/ areas

Closing the interview

- Ask the participant if there is anything they would like to add
- Reassure the participant about anonymity in reports
- **Check if there was anything in the interview that they would prefer wasn't quoted.**
- Thank participant for their time

Topic guide for stakeholder participants: Innovators

Key aims and objectives:

- **To gauge key operational and directional understanding of the Care City Programme**
  - Review of understanding within programme and partnering organisations
- **To explore the innovations and their use as technological products in delivering improvements to patient experience, quality and safety**
- **To mine the process of design, delivery and monitoring of innovations use, within the programme and through associated organisations**
  - What went well, what went wrong and how challenges in the process were overcome
- **To ascertain the extent of benefit for NHS with regards to**
  - Partnerships
  - Technology
  - Demographic

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Explain interview format

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- Timing of interview (60 minutes)

Recording of Interview

- Digital **recording** of interviews – check participant is happy with this. Just to save taking notes and make sure we have an accurate record of what you've told us.
- Report, use of quotations, **anonymisation** – we won't use names in any reports.
- What you say in the interview is **confidential**. However, due to the relatively small number of participants, we cannot guarantee that you won't be identifiable by someone who knows you and your organisation well.
- *If there is anything you don't want included or quoted that's fine – you can just let us know. I will check with you again at the end of the interview whether there is anything you'd prefer was not quoted in reports.*

Consent

- Check that the participant has read the information sheet
- Make sure to record verbal consent on the digital recorder
- Check if respondent has any questions?
- Check if happy to proceed?

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- Confirm that we've explained to them:
    - What the interview is for
    - That taking part is voluntary
    - That we are record the interview and
    - That we won't use any names in reports
- Ask participant to confirm they're happy to proceed.

7. **Key background info**

AIM: (BRIEF) *to gain an overview of participants' job role and their involvement in Care City*

To start off with, could you tell me a little about your current role at [Name of organisation]?

- Job role and purpose
- Purpose of organisation
- Brief Innovation description

8. **Understanding and set up of the Care City Programme**

AIM: *to explore participants' knowledge of the programme and wider contribution to Test Bed programme*

Thinking about Care City, could you talk me through

(Prompt)

- The stages of the wider programme
- The other innovations you are aware of
- Your understanding of a Test Bed
- Your understanding of the programme's aims or objective

Thinking back on the way the programme was set up

(Prompt)

- How were you first involved?
- What were you asked to produce by Care City?
- Who (which individuals) supported the selection/ design of the initial innovation?
- Rationale of selection of the interventions
- How was the process governed/ organised?
- Involvement of users/ patients in selection
- How effective was it?
- How were innovations delivered?
- How long did delivery take?

9. **Understanding of programme and delivery of the innovations**

AIM: *to explore stakeholder perspectives on individual combinatorial innovations, their purpose, design, development and implementation*

Would you be able to talk me through the delivery of (innovation name)? (PROMPT)

- Changes made to the innovation (if any) over period of the programme?
- Rationale for changes? (e.g., feasibility/ acceptability to users)
- How do you perceive your innovation fits into the wider Care City Programme and its demographic?
- What would you do differently if you had to design/ produce/ implement the innovation in this context again?
- Were all planned and implemented innovations taken forward ?
- Which innovations were not taken forward and why?
- How did the innovations fit within the existing overarching health and social care pathways?
- Were new care pathways designed?
- What was your understanding of the issues arising from delivery
- Anything unexpected during set-up, what worked well/less well

How did the partnership with Care City work?
(Prompt)

- Who were the key partners)
- What was the level of commitment of the partners?
- What were the benefits of the collaboration?
- Facilitators/ barriers to the collaboration?
- What was unexpected in the collaboration process?

10. Exploring the collaboration between innovation and NHS England

Aim: *to explore the relationships developed between two entities in the context of Care City*

How do you perceive the NHS and innovator partnerships?
(Prompt)

- How did these work?
- Why did it go the described way?
- How has it impacted and stimulated improved technology?

How was the partnership beneficial for the NHS? (CC stakeholders only)

- How did it impact access to products?

- Describe the types of products or processes accessible by NHS now

11. Delivery of innovations in the programme

AIM: *to explore participants' views as to what elements of the programme worked well, worked less well, and any suggestions for how they feel the programme might be improved.*

Thinking back over your involvement in the Care City Programme
(Prompt)

- What have been the benefits of the programme to your organisation?
- What were the unintended consequences of the programme and delivery?
- How were they managed?

What were the key barriers in your view?
(Prompt)

- In the effective delivery of innovations?
- In the partnership
- In governance of the programme

What were the key facilitators in your view?
(Prompt)

- In the effective delivery of innovations?
- In the partnership
- In governance of the programme

7: Sustainability
AIM: *To understand if the innovations will be sustained post-funding*

How many of the innovations have been sustained?

- Are the innovations to be sustained in the long-term?
- How will the innovations be funded?
- What funding streams will be used (if any)?
- What was the rationale to sustain some innovations but not others?
- Will the innovations still be delivered in the same way?
    - Change in delivery?
    - Change in focus of delivery?
    - Change in pathway?
    - Extension of innovation to different health providers/ areas

Closing the interview

- Ask the participant if there is anything they would like to add
- Reassure the participant about anonymity in reports
- **Check if there was anything in the interview that they would prefer wasn't quoted.**
- Thank participant for their time