Kit4Care Evaluation Report

Kit4Care: Digitally transforming social care through remote monitoring technologies to deliver integrated care in community settings, supporting GP interactions and preventative care

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CARE

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1 Title

The title should provide a clear, concise description of what the project is about.

Kit4Care: Digitally transforming social care through remote monitoring technologies to deliver integrated care in community settings, supporting GP interactions and preventative care.

2 Introduction

Please introduce all the key aspects of the project, describe the problem the project is trying to address, include what is already known and what is not known about the problem. Explain what the project is hoping to achieve and show why this is important. Briefly outline essential elements such as the intervention, the characteristics of the people targeted, setting(s), when the project is/has taken place. Further specific details will be expanded on in later sub sections.

Following increasing need for, and evidence in favor of, remote monitoring technologies, the Kit4Care project piloted the use of a health monitoring tool called the Whzan Blue Box in domiciliary care settings. This project aimed to support homecare recipients to stay well at home, and to add to their existing care through the inclusion of preventative monitoring. The Kit4Care model also aimed to strengthen partnerships between adult social care and primary care and alleviate pressure on the health and care system through preventing deterioration, increasing timeliness of response, supporting triage and clinical decision making and optimising the escalation of concerns about the health of home care recipients. This matters because it avoids unnecessary harm to patients, reduces pressures on ambulance attendances, and reduces unnecessary admissions to hospital.

Context

The integration of digital technology into healthcare has revolutionised how we deliver and receive services. Not only are patients more empowered to engage in their own care when it involves a technology they can access, but remote monitoring, which uses technology to track patients' health data from a distance, has shown itself to be playing an increasingly pivotal role in this transformation.

The pandemic underscored the value of Remote Monitoring Technologies (RMTs) in social care, demonstrating its ability to support continuous monitoring and early intervention for individuals receiving care at home or in care facilities. It was swiftly adopted across the care sector to maintain service delivery amidst strict infection control measures. RMTs enable care recipients to collect and share health data, such as blood pressure and heart rate, using digital tools from the comfort of their own homes. This data is then transmitted to care professionals through automated digital dashboards, allowing for timely and informed decisions about care and support.

It is essential to distinguish between the use of RMTs within the community from the concept of virtual wards. Virtual wards provide a hospital-at-home service, where patients receive acute care and treatment remotely under the supervision of hospital staff, essentially replicating the level of care provided in a physical hospital ward. It is also a response to those with known and

presenting conditions. In contrast, RMTs within the community focus on those where deterioration is suspected or identified, many of whom will have chronic conditions. The Kit4Care approach is to support decision taking when deterioration or exacerbation is identified. This is often out of sight to clinicians, with the client/patient being in their own home. This empowers care providers to deliver timely and effective care, communicate concisely and accurately with clinicians and allow patients to maintain their independence.

Evidence to date

An Evaluation of the use of remote monitoring technology in care homes in London, in which the Whzan Blue Box was the RMT used, found that, generally, the technology was successfully embedded, with qualitative findings showcasing care home staff's opinion that it was beneficial. Whilst there were no notable differences in healthcare utilisation between homes who did and did not utilise RMT, this evaluation recommended its use should continue, and that further evaluations might explore its impact over a longer period of time.

The effectiveness of Whzan is drawn from small-scale studies using before-and-after designs:

- In care home settings, one study of 10 sets of records found reductions in GP visits (-25%), emergency ambulance use (-22%), Accident & Emergency (A&E) attendance (-71%) and emergency admissions (-33%).[1]
- Another small-scale evaluation, which compared data across eight care homes as part of the Well Connected Care Homes project, found a reduction in hospital bed days used by care home occupants after the introduction of digital health monitoring. Across the care homes this produced a saving of £179, 425 across admission and length of stay reduction.[2]
- An associated qualitative study highlighted the perceived potential of using Whzan among care home staff, when supported with context-specific training and implementation support.[3]

There is limited literature to date that evaluates the impact of Whzan in domiciliary care settings. However, an evaluation of the second wave of the NHS England test bed programme in North East London[4] does report on the use of the Whzan Blue Box by 4 domiciliary care providers with 72 clients. Of the 288 readings with a valid NEWS2 score across the programme,

[1] Unsworth S and Bell T (2017) Interim Evaluation Report: Digital Care Home Tablet. South Tyneside NHS Foundation Trust.
[2] https://healthinnovationnenc.org.uk/wp-content/uploads/2019/06/WCCH_report_web_version.pdf
[3] Russell S, Barker R, Stocker R, Liddle J, Adamson J and Hanratty B (2018) Evaluation of the Sunderland Connected Care Homes Programme: Stakeholder views of the Telehealth Care Home Digital Tablet. Academic Health Science Network.
[4] https://www.nuffieldtrust.org.uk/sites/default/files/2021-05/care-city-full-evaluation-report-web.pdf

28 readings resulted in scores of 5 or above (9.7% of readings). The evaluators noted that whilst:

"An increase in GP contacts may be expected, this additional workload is unlikely to be too burdensome, particularly as NEWS2 scores of 5 and above are uncommon. Previous literature has also found that the use of NEWS2 does not necessarily increase health care referrals, where supported by clinical expertise and individual judgement around referrals. In addition, NEWS2 scores are intended to spot early deterioration, which, in the longer term, should avoid the need for more serious interventions later on (for example, for attendances at A&E)."

Moreover, evidence suggests that the potential economic benefits and cost savings generated by RMTs are substantial. An economic impact case study by the York Health Economics Consortium highlighted the use of Feebris (a similar remote monitoring technology), which resulted in a potential benefits value of £518,447 over one year by reducing the use of NHS 111, ambulance, and hospital services in 30 care homes. The study reported an impressive return on investment (ROI) of 5.07, with a total cost of £85,448 for the care homes cohort. This significant ROI underscores the economic viability of implementing RMTs like Feebris and suggests that Feebris can reduce GP visits and other healthcare utilisation, indicating even greater economic benefits beyond the study's immediate scope.

Test of Merit

Prior to the Kit4Care project, a small group of care home providers in one locality in Devon were equipped with a set of Blue Boxes to trial the technology in a 'Test of Merit' (ToM), taking place between April to December 2022. The test of merit demonstrated promising outcomes, so that the decision was made to scale the model and offer it to care providers across Devon as the Kit4Care Project.

The ToM involved three domiciliary care companies in Torbay, each given four Blue Boxes. Up to six staff members from each company were trained on the use of the Blue Box, and a selected number of their clients were routinely monitored and results reported to a Clinical Hub organised by the PCN throughout the trial period. The facilitation and feedback loops between the care agencies and primary care networks were crucial in ensuring the smooth running of the pilot and addressing any issues that arose. The training provided to frontline staff, including RESTORE2 training and training on using the Blue Box, increased their skills and knowledge in remote monitoring and offered valuable skills that could support their role and career development.

One of the providers, who had participated in the ToM, has found the Blue Boxes sufficiently beneficial to have continued using the technology consistently since the trial in 2022. This provider has shared insights into their experience with the Blue Boxes, which is included in this

report to offer a perspective from a care provider who was able to trial the technology for a longer time period than the providers participating in the Kit4Care project.

The most recent few months show that the team has been taking an average of 49 blood pressure readings, 89 pulse readings, 42 oxygen readings and 39 temperature readings per month. Feedback from 5 members of this team was captured in a Google survey, chosen for ease of distribution. This survey asked respondents whether they felt the Blue Boxes had made them more comfortable when escalating concerns to a GP, which received a very positive response with 4 respondents (80%) selecting 5 as the highest rating on a 1-5 scale. The remaining participant selected 4. In the free-text section following this question, 3 respondents elaborated on their rating, indicating that the technology 'helped me greatly', and that its accuracy of readings provides a strong evidence base, "making it easier to communicate with GPs.".

The team's manager saw this change in his staff, sharing that the carers had been enjoying learning this new skill, and that the additional investment in their training "left them feeling valued and certainly important.". The same, very positive response pattern, wherein all respondents selected either a rating of '4' or '5', (4;80% rating of 5, and 1; 20% rating of 4) was seen throughout the survey. Specifically, in response to questions asking whether the Blue Boxes helped to provide guidance around escalating concerns, whether staff perceived their clients to be open to the idea of new technology, whether they felt using Whzan enhanced their skills as a care worker, and whether it improved pride and excitement in their day to day work. The manager of the team expressed that it would be ideal to get further Blue Boxes for their team so that "these vital readings could be taken for all clients." in free text sections correlating to the above questions, respondents shared that they felt having medical readings (i.e. high resting heart rate, or increasing temperature) effectively supported them to recognise not only when a patient was ill, but when they might be headed towards illness, as well as evidence when looking to get their client on new medication.

Some staff expressed interest in learning more about how they could support the ongoing maintenance of the tools within the Blue Boxes, and one even shared that the skills they developed using Whzan has translated to them having greater confidence in their ability to use digital tools and make 'data-driven decisions.'

While all respondents (5; 100%) indicated that their clients felt more reassured about their health, responses around whether the Blue Boxes has meant that the respondent's clients required less medical input were a bit more mixed though still neutral to positive, with 1 (20%) respondent rating their agreement as a 3 and 2 each (40%) selecting a rating of '4' and '5'.

No respondents felt that Whzan was adding pressure to the medical system. Sharing this largely positive view, the team manager expressed that he felt the boxes “assist with the relief of pressure on GPs, and district nurses, and more kits can only aid that process”.

The Kit4Care project

Following the successful ToM, additional homecare providers were engaged from across Devon and a co-design approach taken with the providers, and relevant primary care personnel, to identify local needs and develop local processes in response to these. Through co-design workshops with social care and primary care representatives, the main challenges identified included:

- Communication barrier between health and social care - there are currently no objective measurements for care staff to confidently communicate concerns to clinicians
- Lack of preventative care: there are currently a high number of hospitalisations due to patients often being referred when health has significantly deteriorated

To address these challenges, the Kit4Care project introduced:

- Training to strengthen homecare staff’s knowledge on spotting their client’s deterioration at an earlier stage - domiciliary care workers have received RESTORE2 training - a physical deterioration and escalation tool, based on nationally recognised methodologies, used to spot early signs of ill health.
- The use of Whzan[5] as an example of remote monitoring technology, allowing care workers to take vital signs (respiratory rate, oxygen saturations, temperature, blood pressure, pulse rate and level of consciousness) and pictures and produce a National Early Warning Score (NEWS2). This is to promote a shared language between health and social care and support care workers in confidently communicating concerns to their counterparts in health care.
- A suggested escalation process based on NEWS-2 scores which was refined locally.

Kit4Care was trialled with five providers in four localities across Devon. Participation of homecare recipients was agreed on the basis of written consent. Given the uniqueness of local challenges and dynamics, each locality was given the autonomy to develop their own escalation process with the relevant s or PCNs.

Through a series of collaborative workshops conducted with both primary and social care stakeholders, the following potential benefits for patients, care professionals, and the wider health and social care system were identified:

[5] Whzan is one of a number of Remote Monitoring Technologies available. It was on the framework for technology suppliers to the Transforming Adult Social Care programme and is being extensively used in Care Home settings.

- Reduced hospital admissions, readmissions to hospital, ambulance calls and presentation to A&E
- Increased confidence for care workers to communicate with colleagues in healthcare
- Opportunities for upskilling care workers
- Reassurance and increased sense of safety for homecare recipients and their care workers
- Strengthening relationship between primary and social care
- Local Standard Operating Protocol developed addressing local issues

An overview of engagement with Kit4Care in numbers:

- **5 providers actively participated in the project**
    - 9 providers were engaged with the project at different points in time. Out of the 9 providers:
        - 5 actively participated
        - 2 providers disengaged
        - 2 providers onboarded at a later stage and then disengaged
- **51 staff members were trained across all providers**
    - Provider A: 14
    - Provider B: 9
    - Provider C: 5
    - Provider D: 15
    - Provider E: 8
- **84 consented clients across all providers**
    - Provider A: 37
    - Provider B: 9
    - Provider C: 20
    - Provider D: 6
    - Provider E: 12

In order to provide project management and evaluation support to the project, Care City Innovation CIC were procured through a framework contract, having been identified as having extensive experience in the implementation and evaluation of technologies (including remote monitoring technologies) across health and social care.

3 Aims and Objectives

A research aim is a broad statement indicating the general purpose of your research project, while research objectives describe what you intend your research project to accomplish. The objectives should be clearly stated as SMART objectives (specific, measurable, achievable, realistic, and timely).

Our aim was to evaluate the effectiveness, feasibility and sustainability of the Kit4Care model, which uses Whzan's Blue Box health and activity monitoring tool, to improve preventative care for recipients of domiciliary care.
The evaluation objectives were as follows:

- **Evaluating the impact of remote monitoring technology on preventative care**
    - assessing the extent to which the use of the Whzan Blue Box as an example of remote monitoring technology in combination with RESTORE2 training enables earlier detection of health deterioration in homecare recipients, thereby reducing hospital admissions, readmissions, and emergency interventions
- **Evaluating the impact on communication between health and social care**
    - investigating whether the introduction of objective health monitoring tools (e.g. NEWS2 risk score) and training promotes improved communication and a shared language between domiciliary care workers and healthcare professionals.
- **Measuring confidence and skill development of care workers**
    - Determining the impact of RESTORE2 training and the use of the Whzan Blue Box on care workers' confidence and ability to communicate health concerns effectively and identify early signs of deterioration
    - Evaluating the willingness and capacity of staff to adopt and learn new technology and assess how organizational support contributes to successful training and staff empowerment
- **Evaluating patient and care worker experiences**
    - Exploring the sense of reassurance, safety, and overall satisfaction of homecare recipients and care workers resulting from the Kit4Care model.
- **Examining system-level outcomes**
    - Analysing how the Kit4Care model influences local escalation protocols, strengthens primary and social care relationships, and alleviates system

pressures by reducing reliance on emergency and acute care.

- **Providing actionable recommendations**
    - Identifying best practices and developing recommendations for scaling the Kit4Care model to other localities or care systems, ensuring the approach is sustainable and adaptable to diverse care environments.

Due to delays with some project activities, such as agreeing the information and governance (IG) contract, the testing phase had to be shortened considerably which limited both the project's scope and the data that could be collected.

4 Methods

Please ensure the design of the evaluation is described and why it is appropriate for the evaluation project and meeting the aims and objectives. Please include the implementation start and end time points and the key points for data are described. There are four key evaluation design types

- *Process: Focused on assessing if the defined processes were implemented as planned.*
- *Summative: Focused on assessing if the anticipated outputs and outcomes were realised.*
- *Impact: Focused on assessing if the project has made a difference.*
- *Economic: Focused on assessing the costs and benefits of the project.*

Additionally, please outline the context of the evaluation

- *Is the technology being used where there is no current baseline available*
- *A baseline has been collected and you are evaluating the impact*

To evaluate the Kit4Care project, we undertook both a process and impact evaluation, which allowed us to examine the outcomes measured, as well as the dynamics and process changes that shaped them. Our evaluation approach employs a realist methodology which understands that context determines an intervention or project's ability to deliver on its aims, impacted by organisational, geographic, and economic factors. The overarching question guiding this evaluation is "What works, for whom, in what contexts, and how?"

Also included in the evaluation is an economic analysis summarising the anticipated cost-benefit of the Kit4Care model.

We co-developed a project theory (with the Kit4Care steering group, providers and primary care representatives) which sets out how, why and under what conditions we expected the intervention to work. The following Context, Mechanism, Outcome configurations (CMOc) statements guided our perspective and were tested during the project.

- **Statement 1:** Where there is trust and communication between organisations (and an understanding of a common goal and mutual benefit of project) there will be collaborative working which will lead to successful project set up and delivery of quantitative outcomes.

- **Statement 2**: Where staff demonstrate a willingness and capacity to learn new technology skills and are supported by their organisation the training will be successful,

building their confidence and inspiring them. Through the delivery of successful training remote monitoring will take place with their clients and outputs achieved.

- **Statement 3:** Where care recipients have a good relationship with staff and have had potential benefits clearly communicated, they will engage with the project, receive remote monitoring and experience the benefits and value of this.

- **Statement 4:** Where the central project team is trusted and financial issues are resolved/clear, there can be decentralisation of power to local delivery which delivers against local needs

Our first evaluation activities began in December 2023 with the first co-design workshops and were concluded in November 2024. Through these and other data collection activities, we were able to establish a baseline of client, staff and stakeholder experiences prior to using the Blue Boxes, which we were able to compare to their views and experiences after having used them for 3-4 months.

Our evaluation also drew on similar work that Care City has delivered in the past, which includes experiences from providers, who have been using the Blue Boxes, to support and validate our findings.

4.1 Methods: Population and setting

Please include the population eligible for inclusion in the research and whether the setting(s) eligible for inclusion are described. Broadly covering

- *The population(s) of interest e.g. service users, carers, staff etc.*
- *Whether inclusion and exclusion criteria were applied and why e.g. people aged 75+ only, people who are independent with activities of daily living, etc.*
- *What was the inclusion and exclusion criteria, and why e.g. restrictions by number of beds, Wi-Fi accessibility, location, distance from primary/secondary care etc.*
- *A description of the settings you have been working in e.g. nursing home, residential home, service users own home.*

The evaluation took place within five homecare providers in four localities across Devon (Newton Abbot, Plymouth, Beaworthy, South Molton). One of the providers delivers both domiciliary care and care home services, and included one of their care home residents in the project.

We included the following population in our evaluation:

- **Homecare recipients:** Any individuals in receipt of homecare from any of the participating providers, who consented to be part of this project. Providers have selected a smaller sample out of all of their clients with whom they have shared the information about the pilot. This was due to individuals having to be registered with a particular GP practice, who were supporting the project, or due to the logistics of scheduling health checks with a limited number of Blue Boxes. There were no exclusion criteria applied, except those that were chosen by providers as above.

- **Domiciliary care staff**: Any staff member, who received training and has delivered regular health checks with the Blue Boxes. Reasons for selecting staff members to participate in this project differed by provider. Selection criteria included any of the following reasons:
    - staff members delivering care to clients who were registered with participating practices and have consented to participate in the pilot
    - staff members who have had previous experience with taking observations
    - staff members working full time
    - senior and experienced staff members

- **Domiciliary care managers / directors:** One or two key senior staff, such as directors or branch managers, were our main point of contact. They joined regular project meetings and were instrumental in rolling out the project within their organisations.

- **Primary care staff:** GPs, paramedics, PCN or practice managers and other practice staff members who were involved in setting up the Blue Boxes at their practices and implementing an agreed escalation process.

4.2 Methods: Technology

Provide details of the technology

- *Intervention technology named, with links to relevant documentation.*
- *Functionality of the technology, relevant to the project, described fully.*
- *Are any additional features of the technology not relevant for the project, mentioned.*
- *Licence and costs requirements reported.*
- *Standards relevant to the technology reported.*
- *Are all aspects of data governance, relevant to the technology, described.*
- *Add in any other key information related to the technology and research.*

Whzan Blue Boxes

The technology we used for this project is the health and activity monitoring tool “Blue Box” , developed by Whzan Digital Health. The Blue Box contains a mobile device, blood pressure device, thermometer, and a pulse oximeter. The tools in the Blue Box allow care professionals to monitor their clients’ health by recording their respiratory rate, oxygen saturations, temperature, blood pressure, pulse rate and level of consciousness. It is also able to record pictures.

All devices are connected via bluetooth to a tablet included in the Blue Box, which guides the care worker through taking the readings, caches the readings on the tablet and transfers them to cloud based storage when a signal is available. Based on the readings taken, the tablet also generates a National Early Warning Score (NEWS-2) score, which informs care staff of which escalation procedure to follow, if any.

Besides the monitoring tool itself, the Blue Box offers an online dashboard, which records all readings taken on any client. Both domiciliary care providers as well as GP practices can have access to this dashboard to see the history of their clients’ readings and to identify any signs of deterioration. There is a function that allows them to directly import data into the patient record in EMIS in agreement with the GP practice.

The Blue Boxes have a wide range of features available on their dashboard, including but not limited to blood glucose testing, falls recording, hydration monitoring, and a sepsis screening. These can be selected by the user of the dashboard and can be tailored to their client. Because of the nature of this pilot project, we focused on testing the Blue Boxes’ basic functionalities, with the idea that a later project that might scale the use of this technology could trial the additional use cases and features it has to offer. The functionalities we tested included the recording of individual vital signs and the NEWS2 calculator.

Whzan's Blue Box costs £650 per box, and a yearly subscription fee of £450 per box.

Whzan was selected as the technology provider due to its existing extensive use in Care Homes throughout Devon and therefore it presents the opportunity to standardise and create interoperability across the system.

Standards

Whzan's DCB-0129 includes the PAQ documentation for the Whzan devices alongside the manufacturers manuals and Whzan's own clinical safety documentation, as well as the latest version of Whzan's Clinical Safety Case report and hazard log. The complete documentation can be found in the appendix.

Relevant standards are listed in the table below:

Referenced Revision	**Regulation title**
EU MDR 2017/745	Regulations (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices
UK MDR 2002 (MDD 93/42/EEC)	The Medical Device Directive—Council Directive 93/42/EEC of 14 June 1993 concerning medical devices
EN ISO 13485:2016+A11:2021	Medical Device – Quality Management System (Published: 30 Sep 2021)
EN ISO 14971:2019	Medical devices - Application of risk management to medical devices (Published: 31 Dec 2021)
IEC 62304:2006	Medical device software — Software life cycle processes (Edition 1, 2006)
The Data Protection Act 2018 (UK GDPR)	The Data Protection Act 2018 is the UK's implementation of the General Data Protection Regulation (GDPR).
(EU) 2016/679	General Data Protection Regulation (EU) 2016/679
DCB-0129	Clinical Risk Management: its Application in the Manufacture of Health IT Systems
ISO/IEC 27001:2022	Information security, cybersecurity and privacy protection — Information security management systems — Requirements. (Edition 3, 2022)

Data Governance

To comply with all data governance standards, the following activities were completed:

- The data policies of each provider were reviewed
- A Data Protection Impact Assessment (DPIA) was agreed between parties
- Data Sharing Agreements (DSA) were signed in locations where providers were working together with a local GP practice
- A Data Processing Agreement (DPA) was signed between providers and Whzan

All information governance templates can be found in the appendix.

4.3 Methods: Participants

Please outline how people receiving care and support, or the providers supporting them, were communicated, and engaged to be part of the research, and why. Consider if the method used to select participants included in the evaluation was appropriate or whether there are any limitations with the method(s) addressed here or can summarise limitations later in the discussion section.

Identifying providers for participation

Care providers were identified by:

- sharing the opportunity for involvement through the county wide provider platform
- reaching out to contacts directly through knowledge of the local market
- receiving referrals through organisations who had been involved in the Test of Merit
- receiving referrals via GP practices

At each provider, we appointed between one and two main contacts, who we communicated with regularly (i.e. as part of our weekly Huddle). This individual would then share relevant information with their own teams via internal meetings or email chains.

To share all relevant information with care staff, we designed an information leaflet about the project, and on a handful of occasions also joined team meetings to answer any questions.

Face to face and verbal communication were identified as a key success factor in onboarding participants.

Identifying clients for participation

To inform homecare recipients about the Kit4Care project, we designed an information leaflet and a consent form, which was distributed to clients by care staff. Homecare staff offered to talk through the information on the leaflet and answer any questions. The information leaflet is included in the appendix.

Where appropriate, managers followed up with a phone call to clients to answer any questions and respond to concerns.

There were no selection criteria communicated on a project level, however, in some localities, clients could only participate if they were registered with a practice who was also participating in the project which represents a limitation.

Written consent was mandatory for client's participation in evaluation activities such as phone calls and interviews.

4.4 Methods: Sampling

Please outline

- *Whether a sample size calculation was undertaken before starting the project and is this reported here.*
- *Is the sample size calculation appropriate.*
- *Where appropriate, was the method used to assign participants into groups described and was this method appropriate.*

The sample size was impacted upon by the change in timeframes for the project. At a point where there was due to be an expansion of both providers and clients, which would have increased the sample size, the project had to come to a close.

Because of time limitations, both implementation and evaluation activities were carried out simultaneously. No sample size calculation was undertaken, thus the number of respondents to each survey, and number of interview participants will be noted clearly throughout this report as context to our findings. All staff members and clients, who gave consent, were invited to participate in evaluation activities.

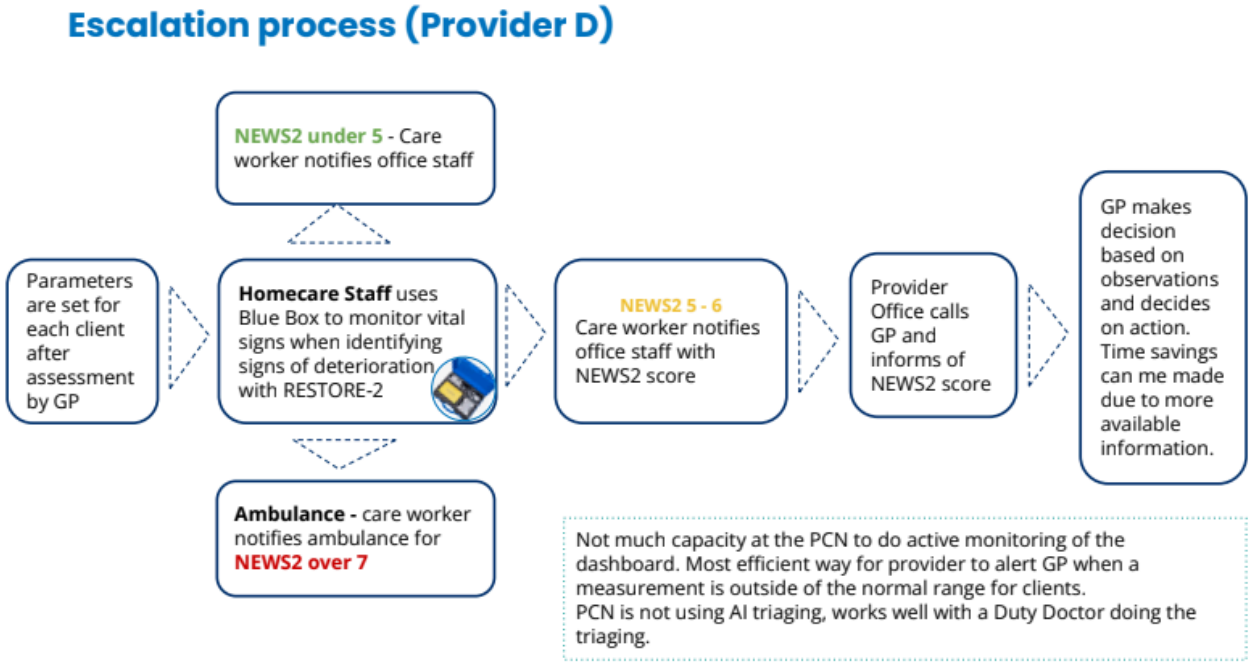
4.5 Methods: Procedure

Please describe any pathways and or procedures designed for the use of the technology

- *Any new pathways and procedures required or developed to support the use of the technology.*
- *Implementation of the technology.*
- *Installation of the technology and training provided, and to whom.*
- *Are procedures developed for the participants and feedback from this reported on.*

The pathways and procedures that were developed to support the use of Whzan in domiciliary care settings included:

- Development of a Memorandum of Understanding (MOU) and a Standard Operating Procedure (SOP) detailing the processes that providers and practices would follow. Both documents are included in the appendices.
- Providers and practices co-designing escalation pathways which they agreed to trial as part of this pilot. Some localities set up a dedicated inbox for referrals, or shared a direct bypass number with care staff for faster escalation. An example of an escalation pathway is included below, all remaining pathways are included in the appendices.



- Processes to build the health checks into the regular care routines were explored by each provider individually. Examples include:
  - Care staff organising dedicated rounds to take clients' observations

    - Care staff including the health check into the regular routine within the allotted time
    - Care staff including the health check into the regular routine but extending the visit by 10-15 minutes
- Clients received communication about any health checks in advance. Other than the additional time spent on completing the health check, there were no changes to the client's care routine.

Training was provided directly by Whzan and their offer consists of:

- Training to operate the Blue Box - to familiarise staff with technology and to make them aware of the correct processes to use and clean the tools
- Training to set up and navigate the dashboard - to support admin staff with the set up of the dashboard, onboarding staff and clients and reviewing readings for each client

Further, Restore2 training was offered to all staff, to strengthen care professional's knowledge around spotting early signs of deterioration. The majority of Restore2 training sessions were delivered by a practice educator nurse at Torbay and South Devon NHS Foundation Trust, while one provider organised their own training session.

4.6 Methods: Outcome

Please describe and explain the outcomes. Outcomes are the metrics or measures that have been chosen to provide evidence that the objectives of the study have been accomplished, this could include

- *Describing the primary and secondary outcomes measures with the primary outcome(s) identified, whether all the outcomes identified support the needs of the objectives, are all objectives supported by the outcomes, a 'theory of change' or logic model to describe the pathway of change (intervention) to effect (outcomes).*

We defined all outcomes related to homecare recipients as the primary outcomes for this project. These included:

- Reassurance and increased sense of safety for homecare recipients and their loved ones
- Reduced conveyance, hospitalisation and A&E attendance
- Reduction in hospital (re)admissions
- Reduction in ambulance calls and conveyances and presentation to A&E
- Shorter wait times to receive treatment
- Reduction in falls and UTIs
- Increased trust in social care provider

Secondary outcomes included both staff- and system-related outcomes as below:

- **Staff Outcomes**
  - Creating opportunity for upskilling of care workers
  - Increase in confidence for care workers to communicate with health colleagues
  - Time savings for escalating concerns to primary care
  - Increased sense of wellbeing for staff due to reduced stress
  - New staff attracted to the sector

- **System outcomes**
  - Relationships between primary care and social care become stronger and more collaborative due to frequent opportunities to connect (local delivery group meetings, weekly huddles)
  - Time savings due to more effective triaging and additional health data from remote monitoring

All outcomes listed above are in line with the objectives outlined in chapter 3.

The logic model diagram can also be found in the appendices.

4.7 Methods: Data

Please detail

- *Are all data sources fully described.*
- *Have you explained how each of the data collected meets each of the outcomes.*
- *Are all outcomes captured by the data appropriately.*
- *Are the methods for capturing data consistent across groups, and where there is any inconsistency and is this highlighted.*
- *Are time points for collecting data described fully.*

Data Sources

We used a combination of qualitative and quantitative data sources to address the primary and secondary outcomes, outlined in section 4.6.

Below is an overview of the data sources we identified and to which extent we were able to use them given the constraints in time and scope in this project.

Qualitative data

- **Interviews with Homecare Recipients and Family Members:**
  - to capture insights around feelings of reassurance and safety due to regular health checks with Whzan
  - to provide insights into patient and family experiences relating to hospitalisation, falls, and general wellbeing
  - time points for collecting data:
    - time point 1: between July and September 2024 - the first interview was held as soon as a consent from from a client was received
    - time point 2: November - December 2024
- **Interviews with Staff Members**
  - to explore staff members' perceptions of upskilling opportunities, confidence in communicating with health colleagues, and overall wellbeing due to having access to the Whzan telemonitoring device
  - time points for collecting data:
    - time point 1: July 2024
    - time point 2: December 2024
- **Workshop Insights**

- to identify themes on system relationships and collaborative practices
  - time point for collecting data: December 2023 and January 2024

Quantitative Data

- **Survey Data**
  - We used two different platforms to distribute surveys to the following groups:
    - Gobby - for staff and management. Gobby is an interactive and dynamic survey tool, which enables respondents to see previous respondents' answers. We conducted 2 separate surveys via Gobby, one with staff on perspectives and experiences of tech, and one (split into primary and social care respondents)
      - time points for collecting data
        - time point 1: July 2024
        - time point 2: December 2024
      - respondents
        - staff survey time point 1:7-10 (not all respondents answered all questions)
        - staff survey time point 2: 10 -12 (not all respondents answered all questions)
        - PC & SC survey time point 1: 4 PC; 9 SC
        - PC & SC survey time point 2: 1 PC; 4 SC

    - Menti - for steering group members. Menti offers to host a survey live during a meeting and directly display the results to the group.
      - time points for collecting data
        - time point 1: May 2024
        - time point 2: December 2024
      - respondents
        - time point 1: 4 respondents
        - timepoint 2: 3 respondents

  - Respondent groups included:
    - Staff members - capturing general experience with using Whzan, any changes to health and wellbeing, stress levels, confidence and opinions about upskilling opportunities
    - Management - capturing insights into relationships across the system, including trust, shared values, shared goals, understanding between parties

        - Project stakeholders and members of the steering group - capturing general sense on project direction and achievements, assessing risk and potential of the Kit4Care model

- **Whzan Data**
    - The data received from Whzan includes:
        - Number of clients onboarded and added to the dashboard each month
        - Individual readings taken (blood pressure, temperature etc.)
        - NEWS2 scores taken and broken down into low, medium and high risk
    - Time points for collecting data: report received each month starting August 2024 until December 2024

- **One Devon Data Set**
    - As part of the national work to develop Shared Care Records, Devon created the One Devon Data Set (ODDS). The One Devon Data Set was to provide data in relation to hospital admissions and readmissions, presentations to A&E, and hospital stays. The purpose to include data from the ODDS was to identify additional measures that would further describe and evidence the project value, including support to the financial case for change.
    - The team at the ODDS was engaged, however, due to the sample size and time constraints of the project, we were unable to obtain data from the One Devon Data Set as originally planned.
    - Despite initial inclusion, this data source would have provided limited value due to the low number of clients with relevant readings, offering minimal actionable insights.

Consistency in data collection

Efforts were made to standardise data collection methods across all groups. Surveys were distributed using the same platform per recipient group and one set of interview protocols used consistently with all participants. Workshops were facilitated with a structured agenda to guide discussions and maintain focus on defined outcomes.

4.8 Methods: Analysis

Please outline and consider

- *Are the methods of analysis fully described for each of the outcomes.*
- *Are the methods of analysis appropriate for each of the outcomes.*

Interview analysis

To analyse the transcripts from our individual and group interviews with staff and clients, we have followed the steps of a thematic analysis, in which we coded and grouped the interview data by broader concepts before organising them into distinct themes and sub-themes.

Survey analysis

A series of surveys were distributed during our data collection period, most of which were taken at two different time points to observe any changes in experience, or perception, over time.

We took a simple, descriptive approach to answers and either calculated the average response given (where responses ranged from 1-5), or broke down the proportion of respondents that gave each answer. Where surveys were taken twice (steering group survey, survey with primary and social care, and survey with other staff), and where the same questions were asked at both timepoints, we compared the responses and described any differences in response trends visible between the two timepoints.

Additionally, in the survey exploring experiences and attitudes of primary and social care staff, we split responses into two groups, primary and social care, and explored any differences in proportion of respondents answering each question between each group. As discussed above, we worked with a relatively small sample size, and the number of respondents in the primary and social care staff groups were not even. Thus, although proportions are a helpful way to illustrate similarities or differences in response between the two groups, we also included whole numbers in our analysis to make clear where a smaller sample size had a greater likelihood of increasing the variance in responses.

5 Results

Please provide detail on the characteristics of participants and/or setting targeted by the intervention and or comparisons where applicable. Participants may be service users, carers, staff etc. Some suggested setting characteristics which may be relevant to the interpretation of results

- *Type of setting (e.g. nursing home, residential home, service users own home).*
- *Size of setting (e.g. no. beds).*
- *Are the participants and settings described.*
- *Where appropriate, are any loss to follow up or non-adherence to group protocol described.*
- *Where there are multiple groups, are key potential confounding features compared between groups and, where any differences occur, are these reported in the methods or discussion.*
- *Are results for all outcomes reported.*
- *Are all tables and figures included providing useful information*
- *Where is it based e.g. urban/rural, distance to health care providers.*

5.1 Results: Discussion

Please outline and consider whether

- *The results are summarised clearly for all key outcomes.*
- *The results relate back to the objective(s) or whether they been interpreted based on previous knowledge.*
- *Are the key limitations of the project discussed.*
- *The implications and conclusions of the project are clearly presented and whether these are appropriate given the project design, execution, and limitations.*

This section includes both quantitative and qualitative results from our research. The findings are presented by stakeholder group, starting with a profile of each provider and their local challenges, followed by insights from staff members, homecare recipients and their families, key project stakeholders, social and primary care representatives, the steering group and non-project participants.

Each section outlines the questions that were asked and the findings and recommendations directly link back to the project objectives.

Kit4Care in numbers

To give an overview of the size of the Kit4Care project, please refer to the below table:

Number of providers having participated in Kit4Care	5
Number of care workers trained across all providers	51
Number of clients monitored across all providers	87
Number of individual readings taken between June and November 2024	• 176 blood pressure readings • 327 pulse readings • 191 oxygen readings • 181 temperature readings
Number of NEWS2 Scores taken between June and November 2024	• NEWS2 (0): 21 • NEWS2 (1-4): 54 • NEWS2 (5-6): 17 • NEWS2 (7+): 9

Local challenges & models

This project focused on domiciliary care providers delivering homecare services in Devon. There were initially six care providers who registered interest to participate in the pilot and an additional four providers, who were interested to be onboarded later throughout the project.
Four care providers disengaged from the project, the majority of which felt that they didn't have the capacity to support the project at the time and one provider who disengaged due to their local GP practice not wanting to support the project.

The remaining five providers actively engaged in the project throughout the entire duration. They were able to prioritise project activities and had capacity within their teams to roll out the Kit4Care model within their organisation.

In this section, we present an anonymised profile of each provider who participated in the Kit4Care project. The profile includes an overview of some of their local challenges as well as the delivery and escalation model they chose to test.

Provider A

For Provider A, the local challenges identified at the beginning of the project included:

- **Recognition of social care**: the provider described their relationship with local GP practices as "challenging". Staff shared experiences where they are not treated as professionals and there is no recognition how social care supports the system.
- **Limited options for referral:** options for staff to refer a client are limited. Staff have a duty of care to escalate anything that is identified as a concern and only options are lengthy GP referral (see below), 111 or 999.
- **Long wait times**: the referral pathway is time consuming for providers. It was repeatedly cited that they could be on the phone waiting to get through to a GP practice for 20 minutes which impacts on operational effectiveness in the care agency and increased pressure in supporting the care of other clients. Examples were shared where staff members have gotten through to the practice on the phone after a long wait, only to be told they needed to send an email. Lack of clarity on preferred escalation pathways. Long wait times also have an effect on care workers' schedules.
- **Communication with GP practices**: some experiences where GP practices have not wanted to collaborate with the provider to work on an improved escalation protocol.
- **Lack of data sharing**: Providers hold a lot of data about their clients that GPs do not have access to and vice versa. Having more connected data systems would allow every party to deliver better care.

Provider A delivers homecare to 77 clients. Provider A had access to three Whzan Blue Box kits. A select group of care workers has been trained to use the kits and initially trialled scheduled 2 hour rounds, during which a member of the team would visit clients just to take their observations. This proved to be both challenging from a scheduling perspective and was not an approach clients preferred. Provider A is now including the health checks in their regular care visits.

During this pilot, the team has been using their existing escalation pathway and have escalated any concerns to the relevant GP practice via telephone. In their referral, they have included the NEWS2 score and individual readings where appropriate.

Provider B

A workshop was held including representatives from two local providers (provider B and C) and local GP practices. The local challenges reported by providers included:

- **Time for referrals / escalation**: providers described it as challenging to reach GPs quickly and efficiently when having to escalate concerns about their clients. For some providers, phone calls are the only referral route and staff are spending many hours trying to get through. The PCN uses an AI tool to triage cases, which is their preferred method of receiving referrals, with a 48h response time. It is perceived as challenging for care workers to find time to complete this form.
- **Communication and relationships between health and social care**: There are currently no existing forums for health and social care to connect and little mutual understanding of each other's challenges. Care professionals recount experiences where clinical staff have dismissed their concerns, as a result of which a client has ended up as a patient in hospital.
- **Lack of funding**. Providers raised that the South West has less funding allocated than more densely populated places and that the lack of funding results in valuable services or monitoring equipment not being offered to patients where it could contribute to keeping them well for longer. Service providers mentioned that they might make the decision to use technologies to provide a better service to their clients because they morally can't justify not doing it - but have to decide to do this without the necessary funding.
- **Data sharing:** There is no data sharing between services. GPs don't have direct access to district nurses, care staff need to contact DN separately. The lack of connection often leads to care workers being in a "messenger" role and having to relay messages between GPs, pharmacies and district nurses because they don't communicate directly to one another.

Provider B delivers domiciliary care services to 96 clients and is located in an urban setting.

Provider B selected two team members to take readings with the Whzan boxes on a regular basis. The health checks were delivered as part of a dedicated round, where the staff member would visit several clients only to take the readings with the Whzan box. Additional team members had also received the training but due to the model chosen for delivering health checks and a limited number of devices, only two staff members were able to deliver the checks. Each staff member had one box assigned to them.

To brief clients about this project, a member of the team had gone out to visit their clients. As part of this visit, the client was introduced to the project and care staff discussed the information leaflet with them, which was specifically designed for this pilot (linked in the appendix). To the clients who consented to participate in the pilot, they received one health check each week to

begin with. After feedback from clients, the frequency was adjusted to fortnightly.

Provider B followed a standard escalation protocol by which the care worker would call the GP directly and inform them of any abnormal readings.

In the area in which Provider B operates, an option has been added to the selection menu on the phone to GP practices, which is designed to give care staff quicker access to the practice team.

Provider C

The co-design workshop to identify local challenges was held together with Provider B.
Provider C delivers homecare services to 54 clients and is located in an urban setting. Provider C delivers both care at home as well as in a day centre.
10 staff members have been trained to use Whzan and 9 clients are receiving regular checks, out of which 7 are recipients of homecare and 2 are clients visiting the day centre. Provider C is using four Whzan boxes.
Provider C is working with several GP practices. With most practices, Provider C directly shares any concerns with the GP practice via phone call. One of the local GP practices set up an inbox dedicated to referrals from Provider C to save the provider time when escalating via the phone. The inbox has not needed to be used for escalations so far.

Provider D

Provider D and their local GP practice have had a positive relationship and expressed joint interest to participate in the Kit4Care project. Participants were of the opinion that many processes were already working very well.
During our co-design workshop with representatives from the provider and local GP practices, the following local challenges were identified:

- **Data**: individuals shared a frustration with IT systems not communicating with one another and different parties being unable to access each other's notes about a client. Shared records would allow everyone to deliver better care.
- **Care packages**: care plans and packages not being very uniform, making it difficult to keep an overview of services included in different offers
- **Funding, staff and time:** In order to make sustainable changes for the system, sufficient funding, staff and time are required.

Provider D delivers domiciliary care services to 60 clients. The provider is located in a rural setting.

Provider D both offers domiciliary care services as well as care home services. The team had access to four Whzan boxes and identified four care workers to do regular checks with the devices. Three devices were used on homecare rounds and one device was kept in the care home. A total of 15 care workers were trained to use the devices, which was to make sure that there would be good coverage in case of absence, i.e. holiday, sickness.
Care staff set up a chat group between themselves, in which they shared any feedback about the process, difficulties they experienced or good practices and to coordinate further training sessions. In addition to the online training session offered by Whzan, Provider D also organised their own internal session, at which staff members were encouraged to familiarise themselves with the device and test it on one another. Provider D shared face to face training sessions as a success factor in their set up.
The escalation process Provider D agreed with their local practices included the use of a bypass number, which would be dialled to contact the practice directly.
The clients who consented to the pilot were well in general, with no escalations having to be made to the GP, 111 or the ambulance services.

Provider E

Provider E joined the project at a later point. Due to difficulties with their local GP practice's commitment to be actively involved in the project, we were unable to hold a co-design workshop to identify local challenges.
Provider E delivers homecare services to 72 clients and is delivering homecare services in a small town as well as rural surroundings.
Provider E had access to three Whzan devices, which were assigned to a dedicated person each. Before participating in the Kit4Care project, Provider E had already been doing regular monitoring on their clients with tools similar to those found in the Whzan device.
The care manager was involved in sharing information leaflets about Whzan with the clients and collected signed consent forms. Where consent was given, a note was added to the care plan that the client was happy for data to be shared with their GP. Clients in one particular area were approached and 15 clients consented to having their readings taken with Whzan.
Provider E opted for an approach where the health checks were included in the regular visits. In the event of an increased NEWS2 score, the care professional emails the office staff, who pass the data on to the relevant GP practice.

Staff survey and interviews

A survey was distributed to all staff who might be responsible for taking readings on the Blue Boxes. This was predominantly domiciliary care staff, though sometimes included managers of staff as well. The survey assessed the impact of the RESTORE2 training and how the use of the Whzan Blue Box may have impacted care workers' confidence, ability to communicate health concerns effectively and ability to support their patients. Qualitative findings from our in-depth interviews were also pulled through where relevant to add nuance to survey responses received.

Time point 1

At the first time point, we had a range of 7-10 respondents answering each question.

Staff surveyed felt a range of confidence levels around sharing concern for their client with a GP, with at least one respondent selecting each level from 2-5 (on a scale of 1-5 with 5 being most confident), and the greatest proportion of respondents answering “3” (4; 40%). When given the option to elaborate, a similar range of answers were given, with some feeling GPs sometimes “brushed them off” or didn’t have enough time to hear concerns, where others felt confident sharing with GPs or felt they were taken seriously due to their status as a carer.

Through interviews, it emerged that another key way the Blue Boxes supported confidence was through the reduction in decision-making pressure during critical moments. Care workers often face uncertainty when clients appear unwell, which sometimes necessitates escalating concerns to services like 111. The Blue Box technology simplifies this process by offering clear health data, reducing unnecessary calls and enabling timely, informed decisions. This not only eases the care worker’s mental load but also streamlines care delivery. Although specific examples were limited, the general consensus was that when functioning properly, the Blue Boxes have the potential to significantly reduce stress and improve confidence among care workers.

Six of eight (75%) respondents indicated they call out an ambulance less than once a month (figure 1) if they have concerns over their clients health, while the remaining 25% (2 respondents) indicate they do it monthly. One respondent highlighted in a free-text response that making and organising the calls can take too long, and take away from limited time for patient care, while another said they will only rely on ambulances when they’re confident there’s nothing more they can do.

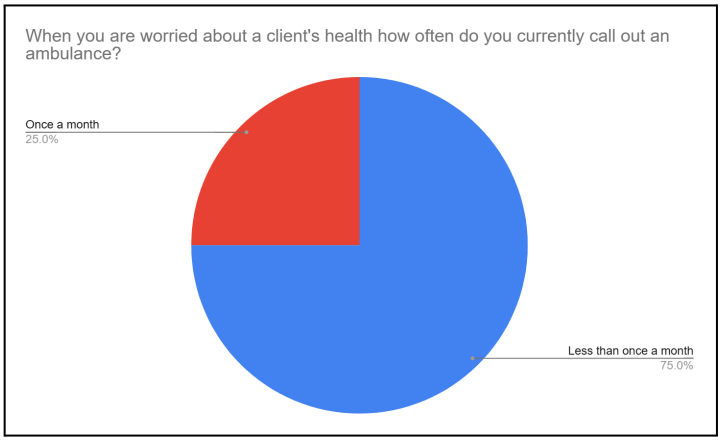


Figure 1. *Staff survey time point 1: Ambulance use*

When asked whether their clients often seem concerned about their own health, and ask for medical input, the majority indicated that “yes they are often worried”, but it was an even proportion (3 of 7; 43%) who said that their clients do ask them to follow up with a healthcare professional, as those who say their clients do not ask them to. Respondents raised that this may be due to fear of having to go to the hospital, and their client expressing they don’t want to “bother” the professionals.

When asked about their experience in-role, the respondents were very positive, 100% (7) of respondents selected the most positive answer available (5 in a 1 to 5 scale) when asked whether they held a “sense of pride about the work they do” (figure 2). 85% (6 of 7) also chose the most positive available answer to indicate they felt that there were opportunities to progress or develop in the role, sharing that they felt there were opportunities for upskilling available, and that they wanted to develop specific skill areas going forward.

When asked about their daily stress levels, most staff (6 of 7; 86%) placed their stress quite low at either a 1 or 2 out of 5, and the remaining 14% (1 respondent) placed theirs at a 3. No staff indicated their daily stress sat at the two highest ratings of 4 or 5 (figure 3).

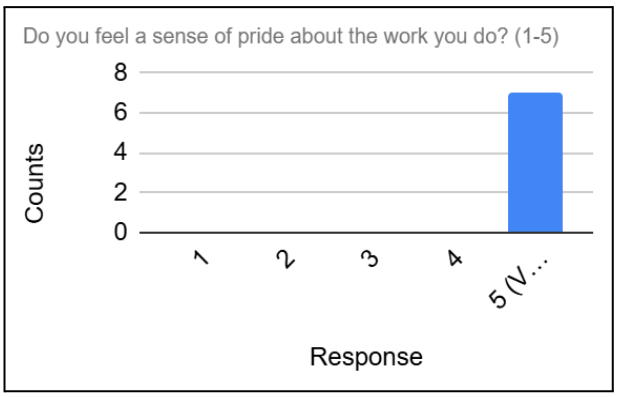


Figure 2. *Staff survey time point 1: Pride in role*

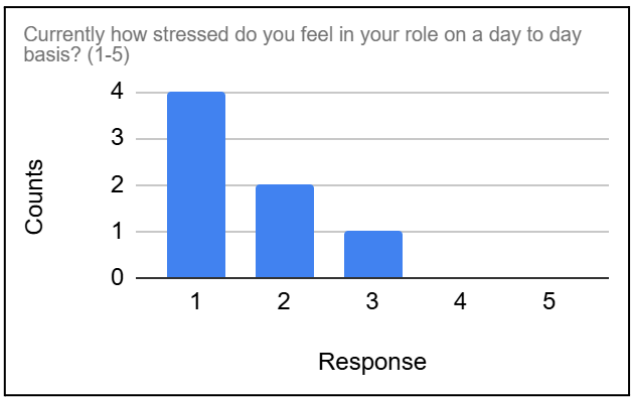


Figure 3*. Staff survey time point 1: Daily stress*

Staff were also invited to rate their experience of the Blue Box training, and share any details they thought relevant. There was quite a mix of responses, with respondents rating the usefulness of the session at 1, 2, 3, and 5 out of 5 (very useful). The highest proportion of these ratings was a 5 (3 of 7; 43%), with 2 selecting a rating of 3 (29%), and 1 response each for ratings of 1 and 2 (14%).

The free text section offers insights around the variability of these responses: Just over half (3/5) of free-text answers indicated that training would have been stronger if it had included more practical, hands-on, and in-person learning (figure 4). As with the ratings there were positive and negative perceptions of the training, with one respondent indicating it felt " a little weak", while another that stated it was "very interesting".

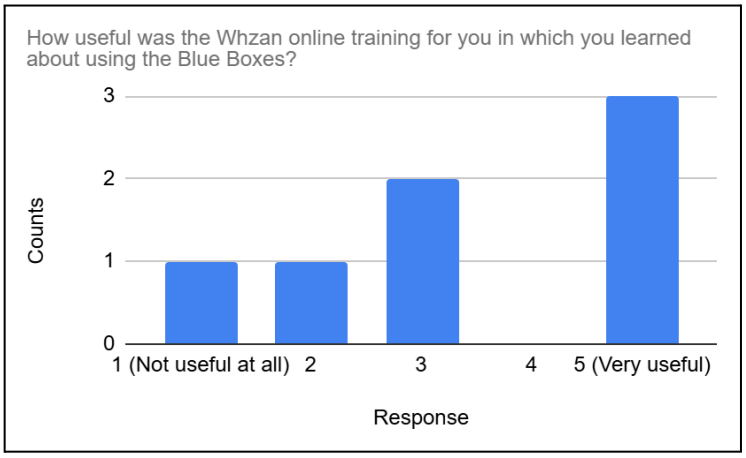


Figure 4. *Staff survey time point 1: Usefulness of Whzan Blue Box training*

During interviews, this sentiment was echoed as the general consensus was that face to face training sessions would have been preferred - even by those who felt generally positive about the online training they'd done.

A further insight around training collected through conversation with staff, was that training delivered by different external facilitators often felt like it was lacking in context, and that the external facilitators were perceived as less prepared. Staff highlighted occasions where they had not yet been equipped with the relevant log-in details before a session and so couldn't actively test the boxes and engage fully with training. Some even expressed that the manner in which training was set up contributed to a "slow down" or reduction in care workers taking regular readings.

One provider reported receiving regular "in-house" and in-person training from a health professional through the NHS. Through receiving regular sessions, the team has been able to develop a relationship with the training facilitator, which staff members felt has aided their learning process.

Those staff who received in-person, in-house-led follow-up training shared in interviews that they felt more confident using the Blue Boxes than they had after the online sessions alone. Once they did feel confident and had the chance to actively test it, most staff described the technology as "straightforward".

Time point 2

A second survey was circulated to staff approximately 4 months after the first to assess their views and experiences in role after having had a period of time to use Whzan with their clients. This survey included new questions as well as a repeat of relevant previous ones. The second survey had slightly more respondents with number of responses per question ranging from 10-12

Figure four shows that nearly all individuals (10 of 12) who responded to a question asking about their overall experience with the technology over the past month rated it 'good'. The remaining two respondents chose the highest answer of 'excellent', with both groups indicating they saw a number of benefits of using the technology. No one chose the two options of 'poor' or 'very poor'.

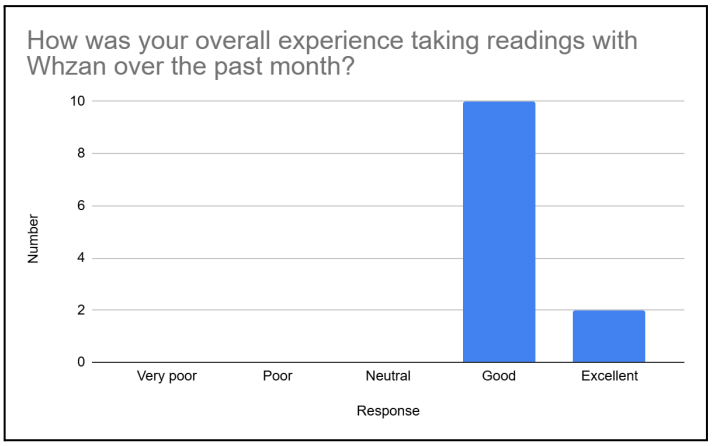


Figure 5. *Staff Survey time point 2: Experience taking readings with Whzan Blue Box*

Respondents were asked whether they got the sense that their clients worried about their health and, if they did, whether their clients often asked them to follow up with healthcare professionals. The highest proportion of responses (5; 42% - the same proportion as at time point 1) felt both that their clients worried regularly, and that they were asked to contact healthcare professionals. For this group in particular, the benefits of staff who are able to support clients using Blue Box readings holds the potential to bring immediate peace of mind and, in cases where escalation is not warranted, remove additional demand on healthcare professionals who may have otherwise been consulted.

No respondents indicated that Whzan had any negative impact on clients' peace of mind (figure 5). Slightly over half (7; 58%) had a very positive sense of Whzan's impact, indicating that it had made their clients feel more reassured than before the technology had been introduced, while the remainder (5; 42%) selected that client's level of assurance stayed the same.

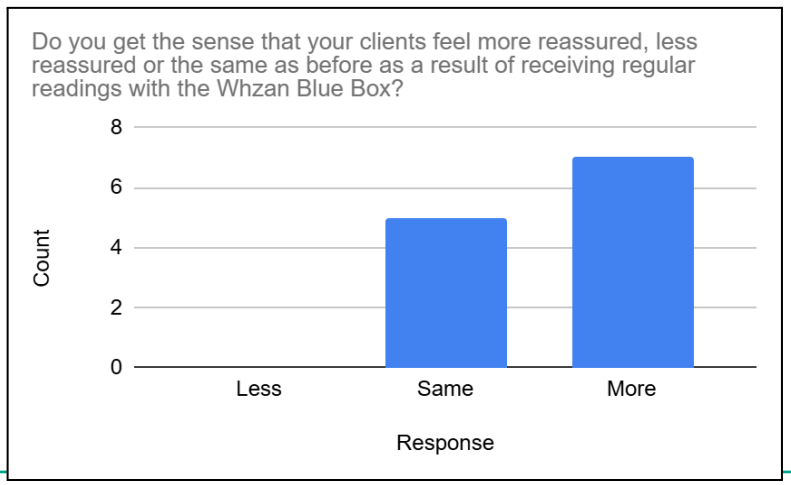


Figure 6. *Staff survey time point 2: Whzan Blue box readings' ability to reassure clients*

Respondents provided a number of examples where the clients themselves were reassured about their health when they were feeling a bit unwell or off, and the Blue Box reading confirmed their readings were in a normal range. One respondent also highlighted the gratitude of a family whose loved one had been recently discharged from hospital and whose condition worsened, which was flagged through a Blue Box reading and subsequent escalation to their GP.

At both timepoints, the majority of respondents indicated that they call out an ambulance less than once a month. The proportion is slightly higher at time point 2, up to 81% (9) from 75% (6) at time point 1.

One third (3) of respondents who were asked to share examples of having called an ambulance after taking a Blue Box reading were able to give examples. One involved a client with low oxygen and shortness of breath, one whose vitals were taken after he collapsed, and another who'd had a fall and who, after their vitals were read, showed a very high temperature which alerted medical staff to investigate his condition further, eventually determining they were septic. The remaining respondents (6) indicated they had not yet found themselves in a situation where the readings had led to the need for more medical support.

Beyond providing general reassurance to their clients, staff stressed that the ability to take a reading when there was a concern with a client, and retake it later on to ensure the reading had returned to normal prevented needing to call an ambulance. One respondent also indicated their relief that the Blue Box functioned in a low-signal area.

When asked how confident they feel sharing client health concerns at the GP surgery, the most chosen answer (6; 60%) indicated they were at a '5; very confident', with 20% (2) rating their confidence at a 4. This is an improvement on confidence levels at time point 1, where the majority of responses (7 total; 70%) rated their confidence at a '2' or '3'. Only one respondent rated their confidence at a '1' (figure 7).

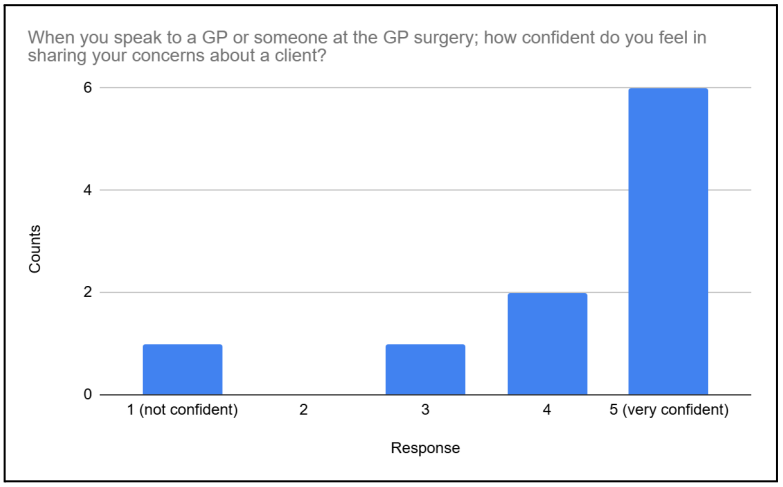


***Figure 7**. Staff survey time point 2: Confidence sharing client concerns with GP*

Generally, respondents also indicated that the Blue Box improved their confidence, with 70% (7) selecting this answer. The remainder (3; 30%), indicated it hadn't had an impact on their confidence (figure 8). What's clear is that no staff perceived the Blue Box to have had any negative impact on their confidence and found that, generally, it had been a beneficial addition to their ability to offer care with confidence.

This view came through in the qualitative data as well. Whether they felt it had yet impacted on their confidence or not, staff agreed on the potential of the Blue Boxes to increase care workers' confidence by allowing them to present objective readings to GPs.

Care staff reported that they felt increasingly confident after having attended the training and after having had the time to practice taking readings for a few months, which speaks to the necessity of giving staff a long training and trial period to get comfortable with the technology. In interviews, it was generally perceived as helpful that staff are able to share more information with the GP about any concerns they have about their clients.

A crucial nuance gleaned from interviews with staff is that they reported that the use of the Blue Boxes only increased confidence and reassurance under the condition that the relevant GP practices were informed of this new escalation model and acknowledged the process. There were occasions reported where a member of the GP practice wasn't aware of the Kit4Care project or NEWS2 scores, which made the staff member feel like they were "a burden" when they contacted the GP and had to take time to explain why they had gotten in contact.

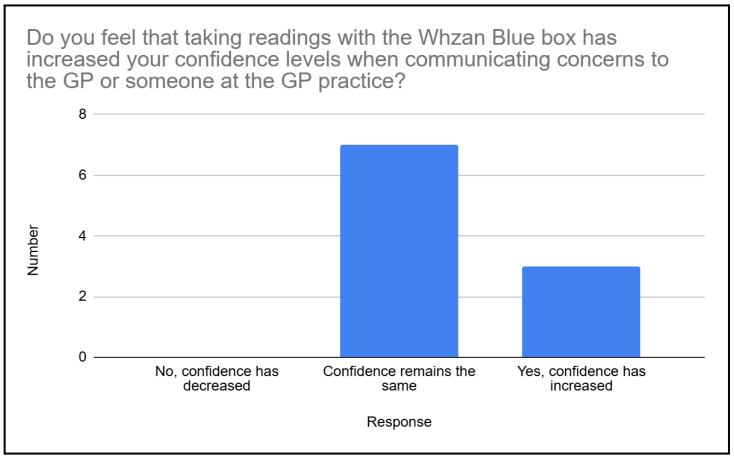


Figure 8. *Staff survey time point 2: Impact of Whzan Blue Box on confidence communicating concerns to GP*

When given the option to elaborate on a time when they experienced a change in their confidence when communicating concerns about a patient to a GP, respondents indicated they had "more details regarding concern" to share with GPs, 'more accurate medical details', having information on new readings, and it supporting their ability to inform a GP so they are equipped to make a decision.

Responses to the question "do you feel you have the opportunity to develop/progress in your current role were more varied than in time point one, with answers given spanning ratings of 1,3,4 and 5. That said, 80% (8) respondents to a question asked only in the time point 2 survey, agreed that the addition of technology in domiciliary care added the opportunity for more learning and progression into their role. When asked whether they were excited by the use of technology in domiciliary care, the responses were similarly 70% (7) yes, and 30% (3) no (figure 9).

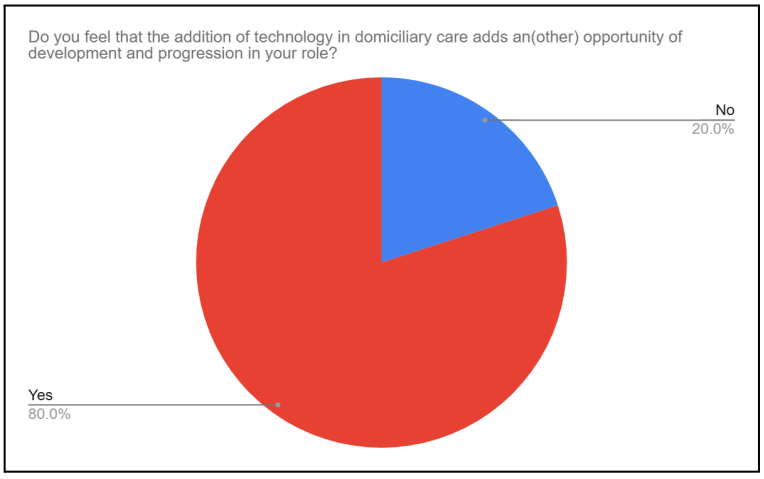


Figure 9*. Staff survey timepoint 2: Development and progression of career through technology*

When asked in interviews about their sense of progression and development, staff again expressed a broadly positive perception of ‘upskilling’, and a number of staff mentioned that they “always appreciate the opportunity for more training”. Training on the use of Whzan was listed alongside other skills they had developed to progress in their role, such as use of a raiser chair and dressing client’s wounds.

Some staff, though still positive, already had previous experience taking readings and felt well-equipped and confident to do so prior to training, while some were of the opinion that training less-so offered a chance for development, and instead represented training like any other in a care role: “just something that is part of the job, as the job keeps evolving.”

When interviewed around the added aspect of responsibility that accompanies the use of the Blue Boxes, there was a mix of opinions. Some care staff enjoy the additional responsibility of using remote monitoring tools for their clients, especially those who were already familiar with taking readings, and were happy to put their skills back into practice again. Others approach the topic of responsibility with caution, pointing out that not everyone will want this additional responsibility as part of their care job and that it may be easier to train selected staff members.

In comparison to the survey in time point 1, respondents indicated a greater level of daily stress in their role (figure 10). Whereas in the first survey, no one gave a rating above a 3 (out of 5, with 5 being the most stressed), 2 respondents (20%) selected a rating of 4 at time point 2. A rating of three was the most selected answer at time point 2 at 30% (3), as compared to 1 being the most selected answer to this question in survey 1 at 54% (3). This may reflect changing conditions in the work environment.

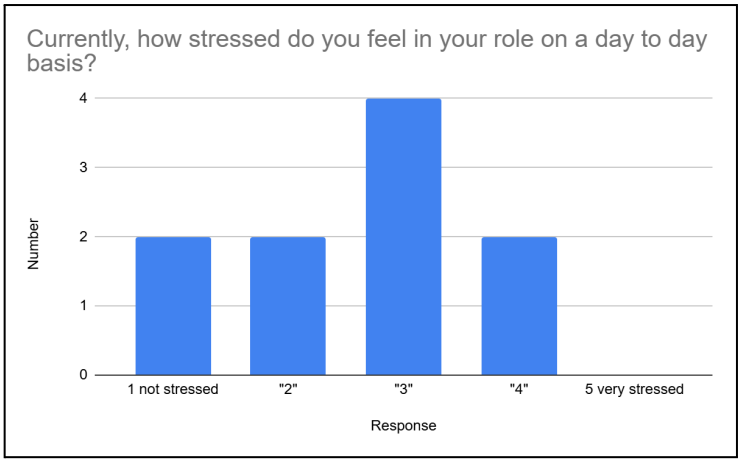


Figure 10. *Staff survey time point 2: Daily stress*

When asked whether stress levels might have changed due to the use of the Blue Box, respondents' answers were quite mixed. Some more positively pointed out the peace of mind, some were neutral and indicated it had no impact on their stress, and a handful (3) indicated it can be stressful when the technology doesn't work, or freezes, and that in these instances having to manually input scores takes away from their limited time with clients.

In interviews, there were also mixed experiences, and staff shared examples both where using the Blue Boxes had reduced their stress levels as well as those where it has increased them. Largely, care workers reported that the use of remote monitoring technology like Whzan's Blue Boxes has the potential to alleviate stress and pressure in their roles.

Those who found that the Blue Boxes added stress to their roles, mentioned that the technology can often introduce logistical, technical, or operational challenges. They discussed feeling uncertain about whether they had taken readings correctly or escalated issues appropriately, leading to self-doubt and anxiety.

This was mentioned frequently in relation to manually adding readings of a client's respiratory rate. Care workers also noted that when the system fails to function as expected, it can create frustration for both themselves and their clients. Some care workers shared experiences where this had left them embarrassed or with their confidence undermined, which increased stress in their role.

Despite potential stresses, staff were resoundingly positive about the technology's potential. They indicated that they see it as a useful addition to domiciliary care that should be replicated elsewhere, demonstrating that although there may be the odd challenge with the technology, that this is outweighed by their perceived value of its impact. To questions both about whether they would choose to continue to use Whzan and whether they would recommend it to other colleagues in domiciliary care, 100% of respondents (all 10), selected 'yes'.

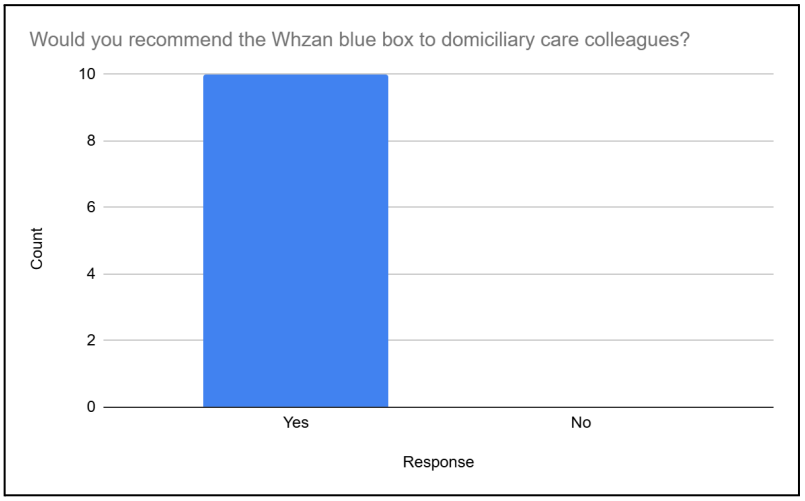


Figure 11. *Staff survey time point 2: Recommending Whzan Blue Box to colleagues*

One care worker spoke to this point, highlighting the Blue Box's potential benefit through a helpful example. The worker recounted an instance involving a client that was experiencing a manic episode where despite their extensive experience, they were overwhelmed. They noted that if someone in a similar future experience had access to Blue Box technology, that it might provide a clear first step, allowing them to ensure the patient’s physical health was stable, and then allowing them to focus fully on managing the client’s mental health.

Homecare recipients and family members

Homecare recipients across five providers received regular health checks with the Blue Boxes over a time period of 3 to 4 months.

To evaluate client experiences, we held two interviews with homecare recipients. The same interview was completed at two timepoints, one interview before the individual received health checks with the Whzan Blue Box and one after having received health checks for 3-4 months.

The interview questions explored the clients' perception and openness to technology being used in the care they receive, whether they experience a sense of reassurance and safety from it and whether they have experienced any notable benefits from the use of remote monitoring technology.

Out of 87 clients, who were monitored with Whzan, 20 clients and family members agreed to participate in the evaluation of the project. All clients and family members who gave consent to being interviewed were contacted, not all of which resulted in an interview. In summary, we interviewed 8 clients and 4 family members at the first timepoint and 7 clients and 4 family members at the second timepoint.

Relationships with care provider

The initial interviews demonstrated that homecare recipients and their families felt they had exceptionally good and trusting relationships with both their care providers and care workers who come to visit. Interviewees often mentioned their care workers by name and highlighted how valuable the additional support felt to them. Some criticised a lack of continuity in staff and would like for the same person to visit them more consistently.

> Homecare recipient *"My care worker is very good and is very thoughtful. She works very hard and is more of a friend than a care worker."*

We did not see any change in quality of the relationships homecare recipients experienced with their care providers and care workers over time when the Blue Box was introduced. All interviewees scored their relationship as highly satisfactory (between 8 - 10 on a scale of 1-10, with 10 being excellent.)

Perception of technology

The briefing which clients received about the Whzan Blue Box also varied; some clients did not have extensive information about the health monitoring technology upfront, while others have been left with information materials or have had a conversation with their care worker about it. Some individuals pointed out that they were already familiar with the tools (i.e. blood pressure machine) from when they had been to the hospital.

In light of the different levels of information which was shared with clients, their general perception of the use of technology in care was quite mixed.

Whilst some clients and their families could see the benefit to their health of using technology, others were worried about losing the human element to the care they receive.
Some interviewees mention concerns about the trustworthiness of technology, making them cautious around new devices, while other clients expressed that technology was vital to them remaining healthy. Some family members hoped that the regular checks would catch any deterioration in their relatives at an earlier stage.

> Homecare recipient *"I'm cautious with tech but do understand why we need it."*

> Homecare recipient *"My care workers had an issue the other day as they couldn't get any Wi-Fi. So they took the readings manually."*

No concerns were expressed directly by clients in regards to personal health data being shared electronically. One client mentioned that they were fine with it knowing that the data would end up with their GP anyway.

Generally, we were not able to detect any changes in individuals' perception about technology after they had used it.

Experience of receiving regular health checks

The number of health checks each individual received differed. Some have had regular (weekly or fortnightly) checks, while others have only received one-off checks from their care workers.

There weren't any drastic changes in regards to the level of reassurance clients felt before and after receiving health checks with Whzan. One client felt that their carers would pick up any changes to their health with or without the box but the majority of interviewees expressed that they either liked having the checks or felt indifferent and unbothered by them, and therefore, would choose to continue having them because they could see the benefits. Generally, clients reported feeling comfortable while their care worker was performing a health check with Whzan.

Some homecare recipients as well as family members mentioned feeling reassurance when the results came back normal, and on occasions where the results were elevated, they expressed reassurance because they knew the care worker would follow this up with their GP.

One individual also felt that receiving the regular checks at home would reduce visits to the GP.

> Homecare recipient *"[Because of the regular health checks from my care worker], I don't have to go to the doctors as much as I don't like going"*

We have gained additional insights from staff members about how they have experienced their client's reactions to the newly introduced health checks with Whzan.

Some providers reported having invested a significant amount of time to brief their clients well and have arranged a visit specifically to make the client aware of the new routine. Some providers shared that all of their clients were open to receiving the health checks, while others shared examples where clients have expressed concern about the regular health checks.

Care staff highlighted some of their clients who regularly experience anxiety about their health. They have felt that the health checks helped to reduce their anxiety and given them confirmation that they were in good health. Another client seemed to be enjoying the additional time that the care staff spent with them as a result of taking regular readings.

Generally, staff members felt that the regular health checks provided their clients and their family members with reassurance. One client's daughter and another client's wife expressed to a staff member that they felt very reassured about having regular readings taken on their loved ones, as these normally happen much more infrequently. On one occasion a family member also actively encouraged their loved one to participate.

However, several care professionals also reported their clients feeling unnerved by receiving the regular checks, who have expressed that there must be "something wrong with them" that they were suddenly receiving weekly health checks by their care provider. Staff members responded to these concerns by changing the frequency of the readings and by explaining that the health checks were taken as a preventative measure and that they would help escalate concerns more quickly to a health professional.

Experiences ranged from clients receiving a lot of reassurance from the regular routine, to clients who had a neutral reaction and responded indifferently, to those who seemed like the health check was an inconvenience for them and felt particularly uncomfortable with the data sharing element and didn't want their details to be shared.

Client feedback and recommendations

Clients gave the following feedback and recommendations to improve processes:

- **Dedicated times for health checks**: clients generally preferred to receive health checks as part of their usual visit or to have a dedicated day and time in the week communicated to them, during which their health check would be done.
- **Communicating results and next steps**: while care staff generally communicated the results of their health checks well, one client felt like this could be made more explicit to

ensure that the client or their loved ones are not worrying about the results later. Clients also wish to know whenever their GP will be contacted as a result of the readings.

- **Readings automatically being shared with client's GP**: homecare clients have expressed that they wish for their GP to have a record of all of the readings taken by the homecare provider. One client shared that they arranged to see the GP and wished to discuss their recent blood pressure readings which had been taken by their care provider, but unfortunately the GP did not have any record of those. This wish was shared by other clients and family members. One family member felt that readings being shared with the GP automatically, could reduce the number of appointments that their mother needed.

  Family member: *"It would be good if the readings were linked to mum's medical records so that the GP would have them."*

Client outcomes

As part of this pilot, a range of benefits were identified. Notable benefits included:

- **Detecting deterioration more quickly than usual**: each time care staff felt a concern or a client directly expressed a concern, the Whzan box was used to identify any abnormalities.
  On one occasion, a client reported feeling unwell, despite their vital signs being normal. Staff members agreed to continue daily monitoring and already the next day, the client's vital signs had changed drastically. Based on this information, care staff have been able to escalate the concerns more quickly to a health professional. Staff mention that it is particularly useful when having built up a history of readings, in which case any changes are easily visible.

- **Clients having quicker access to treatment:** especially in scenarios where the GP practice was aware of the use of Whzan, a member of their team has been able to act very quickly.
  In one example, a GP visited a client based on elevated vital signs and was able to detect a chest infection for which they prescribed antibiotics. Care staff feel that this has been able to speed up response times by at least 24 hours.
  Another example was reported where a client was already under observation due to having recently been to hospital. When their care worker reported a high NEWS2 score, the practice immediately prioritised their visit to this client.

- **Only calling GP / ambulance when really necessary:** without having access to Whzan, staff reported that they normally call the GP or the ambulance much more often. Without having access to the objective measurements, staff members have to follow their

duty of care and report concerns to a GP or the ambulance whenever in doubt. Staff members reported that having access to Whzan reduces calls as they report the concerns that have been validated by the device.

- **Life saving interventions**: on two occasions, Whzan has led to a life-saving intervention. Whzan has helped to escalate concerns which led to identifying sepsis and a chest infection respectively. Both clients received treatment quickly following this diagnosis and have recovered well.

Examples of Whzan demonstrating positive client outcomes

- **Sepsis diagnosis**: following a client's fall, the care provider went out to check on the client and took both the raiser chair as well as the Whzan kit with them. Upon arrival, they took the client's vital signs, starting with the temperature, which was above 39 degrees. Based on this information, they called the ambulance and meanwhile, kept monitoring the client's temperature, which kept increasing. Due to the care professional sharing the temperature readings with the ambulance, the client was prioritised and immediately admitted to hospital, where sepsis was detected. The client received treatment immediately and recovered well.

- **Antibiotics prescribed for chest infection**: during a routine visit, a care worker took their client's vital signs and noticed low oxygen levels, which they informed the GP of. Within the same hour, the GP came to see the client and identified a chest infection for which they were prescribed antibiotics. The client was able to recover from their chest infection.

- **Adjusting medication**: during a routine visit, a care worker detected low blood pressure, which was escalated to the GP. Based on this information, the client's blood pressure medication was reviewed and it was found that this needed to be adjusted. The client's medication has since been adjusted and their blood pressure has stabilised.

Primary care & social care surveys & interviews

The second survey we distributed focused on asking stakeholders from primary care and social care settings about their experience of the technology. Recipients of this survey included our key stakeholders at all social care providers and all participating GP practices. The majority of the survey respondents have not been directly utilising the Whzan Blue Boxes but have been supporting the rollout of the project in their respective organisations in their managing or supervisory capacity, attending project-wide stakeholder meetings, and are well-placed to comment on working relationships and dynamics and whether the technology held the potential to alleviate high care demands placing pressure on the health system.

This survey utilised 'Gobby', a new survey software that allows survey response options to change iteratively by allowing respondents to see answers given by prior respondents to free-text questions. Quantitative data from the surveys has been integrated with qualitative findings to add additional context.

Time point 1

To bear in mind as comparisons are drawn between primary and social care answers is that slightly over double the number of responses were received from social care workers (9), as primary care workers (4), meaning that there may be less opportunity to showcase variability in answers in the primary care sample, and it may represent a slightly less accurate picture than primary care respondents answers.

Overarchingly across the questions asked in the survey, a trend emerged wherein both primary care and social care workers experienced key themes more positively with those in their same roles. Within this, primary care workers' experiences of social care colleagues were on the whole slightly more positive than the reverse. Across all questions social care respondents seemed to experience a wider variety of experiences.

Mutual respect

All primary care respondents rated the mutual respect they felt in their relationship with other primary care workers as a 4 or 5 out of 5 (high mutual respect), while social care respondents placed their ratings between 2 and 4, with the greatest proportion (4 responses; 44%) rating mutual respect with primary care colleagues at a two and none rating it at a 5 (figure 12).

A different trend emerged when the question is flipped to focus on mutual respect experienced by staff in their relationship with social care colleagues: 89% (8 responses) of social care respondents rated mutual respect at a 4 (56%) or 5 (33%), though there was one respondent,

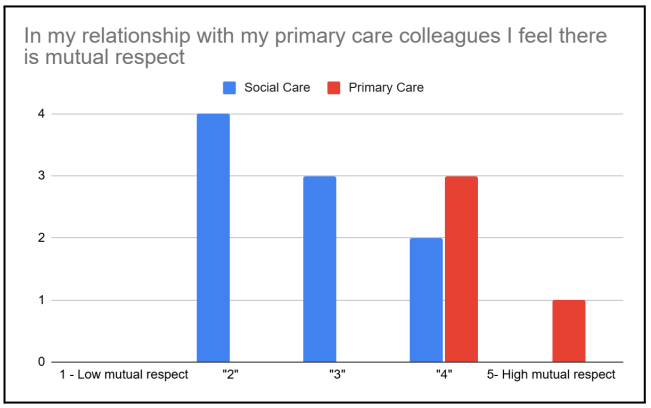
rating it at a 1 (figure 13). As for primary care respondents, 75% (3 responses) rated mutual respect between a 4 and 5, with the remaining 25% rating it at a 3.

From the above we can see that, though respondents are more likely to experience greater mutual respect with colleagues from their own sector, primary care workers still experience high levels of respect for their social care colleagues, while the reverse is not as clear cut, and shows that social care staff do not experience high levels of mutual respect from primary care colleagues but indicate a more varied, and generally less positive experience.

To add to this are a few experiences that were highlighted during interviews with social care staff. On the limited occasions, where social care staff did inform the practice of a concern they identified with their client, experiences were quite mixed.

In one example, a social care professional perceived the way in which a GP practice member responded to them escalating concerns about a client as mistrusting. It appeared that staff members at this particular practice were unaware that domiciliary care providers were carrying out regular health checks and that it had been agreed that they would report any elevated readings to the practice using the NEWS2 score. The care professional was asked where they had received training to take readings, suggesting either mistrust in the care workers' qualification or lack of knowledge about the Kit4Care project. As a result, the care professional felt disrespected.

This particular example underscores the importance of ensuring training is given to all GP staff who may come across Blue Box readings and NEWS2 scores so as not to diminish the trust between primary and social care colleagues.



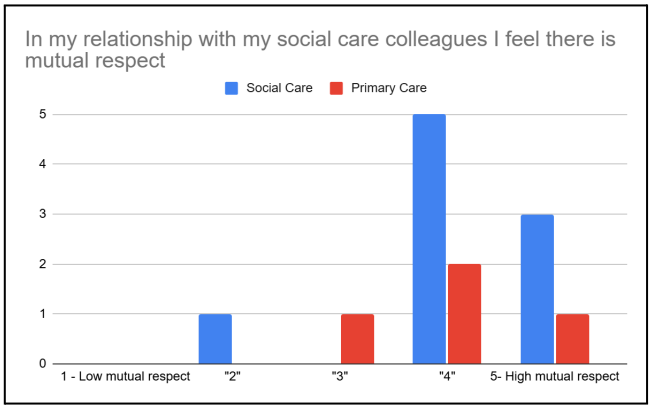


***Figure 12**. PC & SC survey time point 1: Mutual respect with PC colleagues; **Figure 13**. PC & SC survey time point 1: Mutual respect with SC colleagues*

Deep understanding

Respondents were asked whether they felt there was deep understanding present in their relationship with primary and social care colleagues and whether they felt they had an

understanding of their colleagues' role and experiences. When asked about this dynamic relative to primary care colleagues, all primary care respondents rated their experience as a 4 or 5.

In contrast, the highest proportion of social care respondents (5 responses; 56%) rated their experience as a 2, though the remaining 4 answers sat between 4 (2) and 5(2) and showed social care respondents had a range of low/neutral to very positive experiences with primary care colleagues.

To add to the interpretation of these findings, social care staff often mentioned during interviews that they had thought about the way the Kit4Care model might be perceived by their primary care colleagues and the benefits they foresee it having on primary care services, specifically GPs and District Nurses.

Social care staff recognised that GP practices are overstretched and don't have the time to do additional monitoring. Therefore, they believe that GPs would be welcoming the prospect of social care staff including additional monitoring into their routine. Several staff members spoke to this point without being prompted, which indicates that social care professionals frequently consider the impact of new pathways and procedures on the wider system.

Though we had fewer insights from primary care staff, this same thinking did not appear to be mirrored in relation to social care staff, and may reflect some of the uneven experience of understanding of roles between primary and social care seen in the survey.

In contrast to how social care respondents rated understanding highly with their own roles, social care workers continued to show variability of experiences of understanding with other social workers (ratings from 2-5), though the majority (7 responses; 78%) still rated their experience as a 4 (4 responses) or 5 (3 responses). Similarly 75% of primary care respondents rated their experience as 4 (2 responses) or 5 (1) Broadly, both social care and primary care staff seem to feel they better understand primary care workers roles better than social care staff roles, perhaps due to greater variability in social care role scope, or lack of communications or awareness around social care.

Collaborative Action

When analysing the questions in the survey relating to “collaborative action”, the same trends as described above, were highlighted again. When asked how many individuals agree with the statement around collaboration and clarity of shared aims with primary care colleagues, all responses from primary care staff members sat between 3 and 5, with a rating of 4 being the most selected response by this group (2 responses; 50%).

In contrast, social care respondents selected responses ranging from 1-5, with 1, 2, 3 and 5 receiving the same proportion of selection at 2 responses (22%) each.

When this question was asked about social care colleagues, primary care respondents answered the same way as above, here offering as positive a view of social care colleagues as those in their own roles. Social care respondents, again, showed a more varied response that spanned more negative responses, with responses selected including ratings of 1, 3, 4, and 5, though the highest proportion sat at ratings of 3 or 4 (3 responses and 33% each, or 66% across the two ratings).

Time point 2

In the second survey of primary and social care staff, questions following the same themes were put to respondents alongside some new ones. There was lower uptake with the second survey with 4 respondents from social care and a single respondents from primary care. Comparisons were drawn between social care respondents at the two timepoints, though it is of note that respondents at time point 2 were fewer, and thus more likely to be variable.

Given the very small sample in primary care, there was not sufficient data available to draw comparisons across time to questions answered by primary care workers at time points 1 and 2. Instead the answers given by the time point 2 respondent will be described and at times included in charts to demonstrate where the single answer sits relative to social care responses.

Mutual Respect

At both time point 1 and 2, the most selected answer social care workers gave when rating the mutual respect present in their relationship with their primary care colleagues was a 2 out of 5, which accounts for 3 of 4 votes (75%) at time point 2, and 4 of 9 (44%) at time point 1. There was, however, a single vote (1; 25%) of '5' given at time point 2, which is an improvement over timepoint 1 where no '5's were selected at all, though may represent more of an 'exception' to the trend seen with other respondents.

Though the proportion of respondents who selected this response is lower in timepoint 1 then 2, these ratings appear to reflect a relatively similar experience of low mutual respect with primary care colleagues felt across time by the majority of social care respondents. The single primary care respondent selected a '3' in for this question.

Social care respondents' rating of their relationship with their fellow social care colleagues appears to have remained quite positive across timepoints, and consistently higher than their rating of mutual respect with primary care colleagues (figure 14). In both instances, the majority of respondents' answers fell into a rating of '4' of '5' (tp1- 8; 89%, tp2 - 4; 100%). The sole

primary care respondent selected a rating of '4' for this question, offering a similarly positive rating of mutual respect with their social care colleagues.

The above trends are reflected in social care respondents' answers to the question asking whether they perceived mutual respect, broadly across all colleagues, to have decreased,

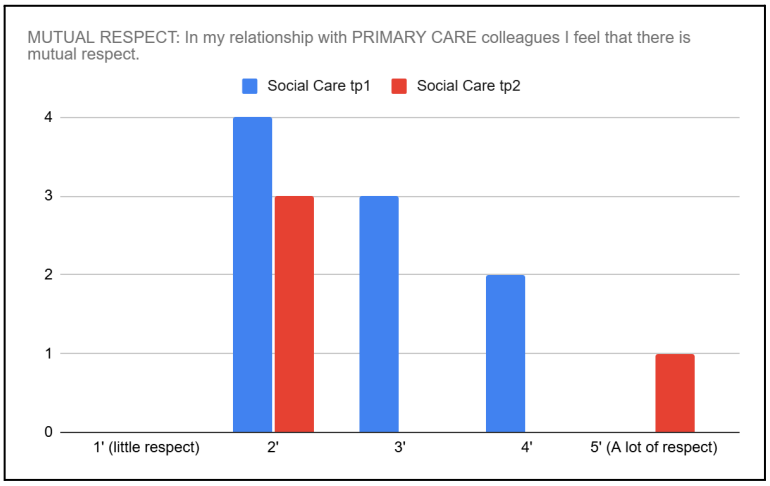


***Figure 14**. PC & SC survey time points 1 and 2: Mutual respect with primary care colleagues*

increased or stayed the same since involvement with Kit4Care, to which all 5 respondents (primary and social care together) answered "stay the same", with their free text answers offering that "no change" had been felt (figure 15). There was a single free text respondent who, despite feeling that mutual respect had stayed the same overall, did highlight a single emergency situation where they perceived their team's responsiveness and ability to assist with triaging had been improved due to information provided by the Whzan Blue Box.

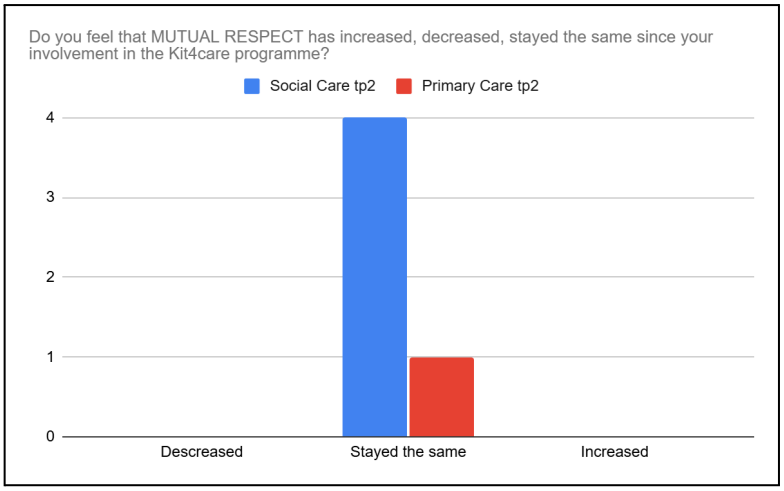


Figure 15. *PC & SC survey time point 2. Changes in mutual respect since introduction of Whzan Blue boxes*

Deep Understanding

Broadly, social care workers perceptions of deep understanding around primary care colleagues roles seemed to lean slightly more positive in time point 2 where, despite there being a rating of '2' given (1; 25%), answers evenly spanned ratings of 2-4, as opposed to social care workers ratings at time point 1 where more than half (5; 56%) selected a rating of '2' (figure 16).

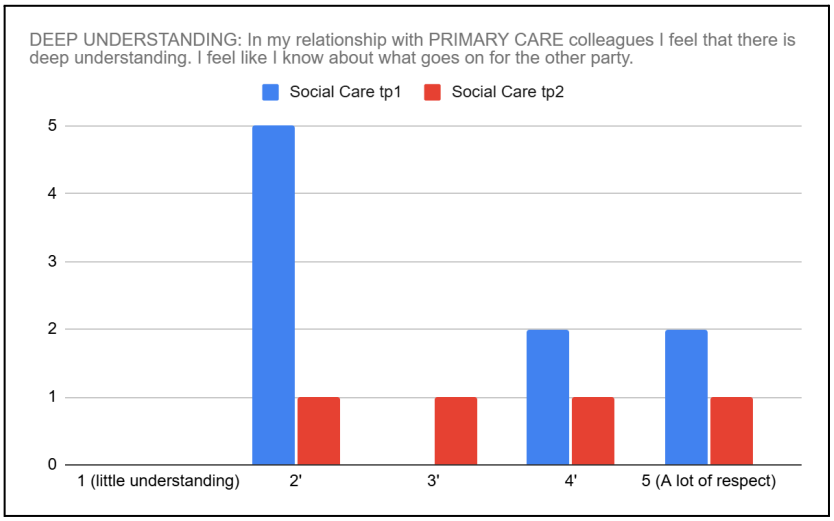


Figure 16. *PC & SC survey time points 1 and 2: Deep understanding in relationship with primary care colleagues*

When rating deep understanding with their own colleagues, social workers ratings are quite similar and positive leaning across time, with both sets of answers ranging from '2' to '5', and the highest proportion of responses being a rating of '4' (tp1- 4; 44%, tp2 - 2 - 50%).
In a similarly positive manner, the single primary care respondent selected a rating of '3' and '4' when rating their deep understanding of primary and social care colleagues respectively.

When all respondents (5 including primary care respondent) were asked whether involvement with Kit4Care had impacted on understanding between colleagues, 3 of 5 (60%) indicated they felt it had stayed the same, while the remaining 2 (40%) felt it had increased (figure 17). This demonstrates that, though Kit4Care may not have been perceived as beneficial for improving staff understanding for all colleagues, it had a positive impact on some and, minimally, no perceived negative impact. The two individuals who selected that understanding had "increased" noted in the free text that it better helped them "understand the pressure GPs are under", and that Kit4Care had helped to 'raise the profile of social care'.

The single primary care respondent selected a rating of '3' and '4' when rating their deep understanding of primary and social care colleagues respectively.

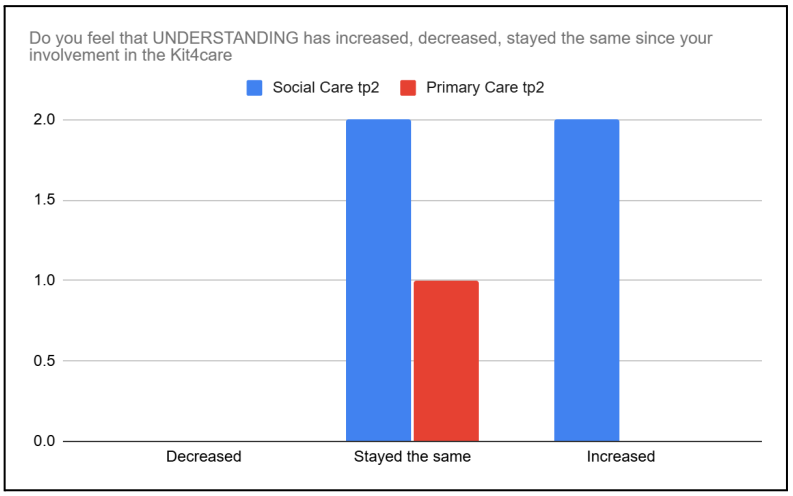


Figure 17. *PC & SC survey time point 2: Understanding in relationships with colleagues since introduction of Whzan*

Collaborative Action

Regarding collaborative action, social workers' perspective on collaboration with their primary care colleagues has shifted slightly. In time point one, respondents gave ratings from '1' all the way through '5', with 2 responses being given for ratings each of 1,2,3, and 5. In time point two all ratings given fell between 2 and 4, though the highest proportion (2;50%) gave a rating of 2 (figure 18).

Though the distribution differed slightly, both timepoints seem to represent a moderate view of collaboration that leans slightly negative (¾ of responses 3 or under) at time point 2.

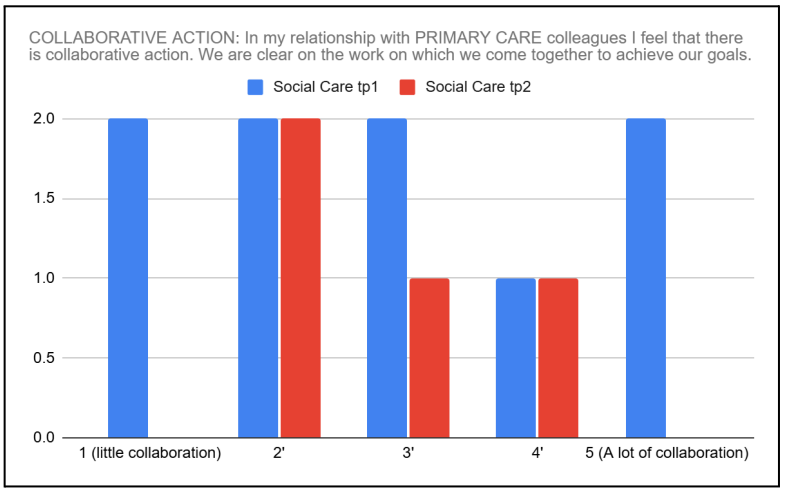


Figure 18*. PC & SC survey time points 1 and 2: Collaborative action in relationships with primary care colleagues*

When social care workers were asked to rate their sense of collaborative action with their own colleagues, there was a slight, positive rise from time point 1 to 2. In time point 1, 56% (5) of respondents rated this collaboration as a 4 or a 5, compared to 75% (3) or responses in time point 2. There was also a single rating of 1 in timepoint one, whereas the lowest rating selected in time point was 2.

Again, the single primary care respondent selected a rating of '3' and '4' when rating their deep understanding of primary and social care colleagues respectively. The trend across the 3 themes explored here is that this individual's responses appear to be slightly higher for social care colleagues over primary care colleagues.

Respondents were then asked whether they perceived their involvement in Kit4Care to have impacted their sense of collaborative action between colleagues. Two respondents who chose to answer indicated it had not impacted their sense of collaboration, one (presumably a social care worker) shared they continued to see little collaborative action aside from a small amount of primary care workers "willing to work in partnership", while another commented that Kit4Care had shown that "good outcomes can be achieved when these groups work together."

In line with the first quote, wherein a social worker expressed that few primary care workers were willing to collaborate, we did see that engagement with the project from primary care workers was notably low. Many GP practices verbally endorsed the Kit4Care project in the beginning and promoted the idea within their practice or PCN though, despite several attempts to follow up on this initial positive conversation, no further conversations took place. Providers have expressed that it would have been valuable to know the reasons why the practice disengaged.

With practices who agreed to participate in the project , it was noted by social care providers that there was no engagement from primary care representatives on the weekly huddles nor on the steering group beyond the induction phase.

Both primary and social care colleagues confirmed that there had been very few escalations during the project. Whzan has echoed this view and confirmed that primary care workers are not generally accessing the Whzan data proactively, mostly due to limited capacity.

It appears that the accessing of Whzan data from primary care professionals has been limited to only a few logins throughout the duration of the pilot. Three individuals confirmed that they had never logged into the Whzan portal. One practice, who had set up a dedicated inbox for referrals, reported that this inbox had not received any escalations to date.

Given that escalations, which would provide an opportunity for communication and collaboration between primary and social care staff and happened relatively few times, it is plausible that it

was these limited opportunities for collaboration that led to the above staff perceptions that Kit4Care had little impact on how they worked with colleagues.

An enabler for others that would pursue Kit4Care would be to achieve a GP Sponsor at the outset and seek to access a GP group meeting through the Local Medical Committee (LMC) or similar to socialise the opportunity in advance and use it as a reporting point - receiving updates during the course of the project.

Steering group

A survey was distributed among steering group members, to assess key themes of the implementation process. The same survey was completed by steering group members at two timepoints, May 2024 and November 2024 to allow us to explore any changes in experience of implementing, and belief in the impact of Kit4Care over time.

Each survey question was a statement with which the respondents had to rate their agreement out of 5, with 5 being the highest level of agreement. We then took the average of responses to have an average of agreement rating, allowing us to broadly characterise steering group experience. To note, the sample size for this survey was small, 4 respondents at time point 1 and 3 respondents at time point 2, meaning they may be more variable and represent slightly less accurately the experience of steering group staff on the whole.

Time point 1

When steering group members' sense of a need for urgent change was explored, there was a strong consensus among respondents around the importance of the work, with an average agreement of 4.5 with a statement describing remote monitoring in homecare settings as "urgent" and something that “should not wait” (figure 19). In this same section we saw the lowest average agreement of the whole first survey (rating of 1.3) with the statement positing that the “risk of remote monitoring is greater risk than benefit”, demonstrating steering group members' belief in the positive impact of this technology at timepoint 1.

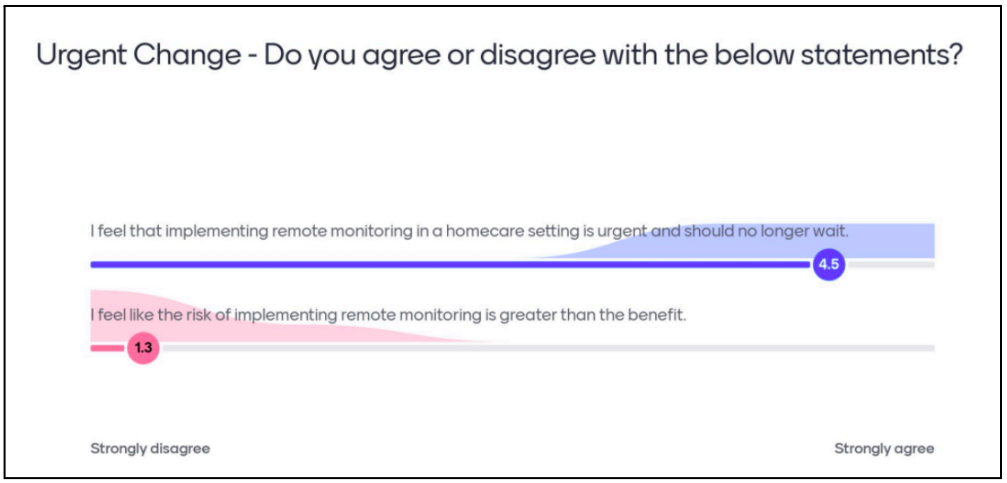


***Figure 19**. Steering group survey timepoint 1: Need for urgent change*

Figure 20 shows the survey’s exploration of the vision held by the steering group saw the statement with the highest agreement of the survey overall; a 4.8 average agreement that the steering group “share the same vision and have the strategy to realise” it. This rating, taken

together with the broadly positive rating (of 4) to two statements focused on the coalition of stakeholders sharing a vision, and holding the commitment, power, and strategy required to impart change, speaks to high levels of perceived cohesion and positive belief in the implementation process. The average rating of belief that the steering and participant group need more commitment and different skill sets than present reflected the same broad trend, with a lower average agreement rating of 2.

Continuing with reflection of the vision of this project, respondents were on average in agreement (rating of 4) that their colleagues and team members understood why remote monitoring was being introduced, and demonstrated low agreement (rating of 2) that the vision “is too complicated or vague”.

On average there was moderately good agreement (rating of 3.3) with statements exploring how this vision had been communicated, including the channels being used, and the level of sharing with teams internally. This same average rating of agreement (of 3.3) was seen in response to both statements tied to the theme of “producing more change”, which indicate that respondents felt fairly positive about their ability to build on the change Kit4Care was creating to impact wider structure and policies.

Despite the overall positivity for the work and its development, there was an average agreement of 3.5 with a statement acknowledging "barriers to achieving our vision", demonstrating that steering groups members are also very aware of challenges facing full Kit4Care implementation. Interestingly, in this same section of the survey which explored “empowering teams to act on the vision”, there was low agreement (of 1.5) with the statement "I feel that there are colleagues within my organisation who are resisting change". This might indicate that barriers being experienced by steering group members are not staff related, or that steering group members are unlikely to experience their colleagues as slowing progress.

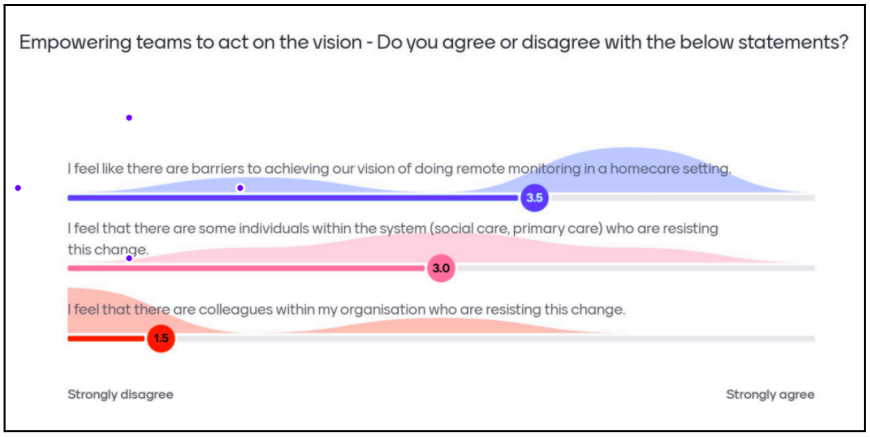


Figure 20. *Steering group survey time point 1: Empowering teams to act*

At time point one there was a relatively neutral average agreement rating (or 2.8) around the success of implementing the project's "New approach", as well as slightly lower agreement statement stating that "internal processes and attitudes are misaligned with the changes we want to promote" at 2.3.

Finally, regarding short term wins to date, there was moderately good average agreement that some had been some and that those had been celebrated, as well as a sense that Kit4Care has led to other initiatives that will benefit the system.
When asked to share what the short term wins were, respondents named things such as increased and shared awareness, improved enthusiasm and collaboration, creating influential champions, and training/upskilling.

Timepoint 2

The second survey saw some changes in perception of the Kit4Care project likely impacted by the additional experience of implementation and its challenges. What came through in both surveys was a sense of urgency around the need for implementing remote monitoring in homecare settings, changing only so slightly from an average agreement of 4.5 to 4.3 at time point 2 (figure 21).

However there also appeared to be areas of implementation that shifted some respondents to viewing remote monitoring as more risky, or that posed challenges. This was evidenced by continued, average agreement (up .2 points to 3.7) that there are indeed barriers facing implementation, rise in agreement (from 1.3 to 2.5) that remote monitoring might hold "more risk than benefit" and that the steering group and wider participant groups might need "greater commitment and different skills to make change happen" (from 2 to 3.3).

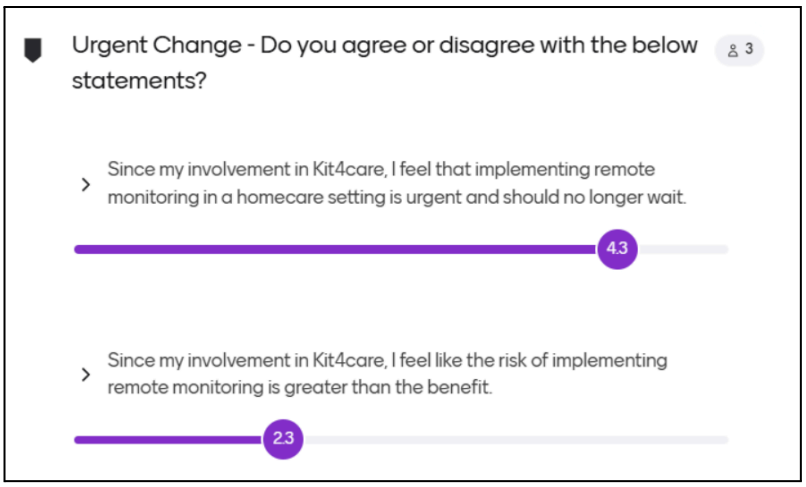


***Figure 21**. Steering group survey time point 2: Need for urgent change*

That said, there was a positive rise in agreement, with statements around using the change of the project to “build on systems, structures and policies” (up one full point to 4.3), as well as a sense that a new approach was being successfully implemented and “creating benefits they could feel” and that some short-terms wins had been achieved, whose average agreement both rose by 0.5 points to 3.3 and 4.3 respectively.

Same as in time point 1, steering group staff also continued to disagree that there were individuals or colleagues within wider systems or their organisations resisting change, which means they continued to experience little friction from those they were working with.

Beyond the above, many average agreement ratings were the same or similar to the first survey, including those around shared vision and understanding of the value of remote monitoring from colleagues (remained a rating of 4) (figure 22), a moderate agreement that “the right communication channels” were being used to communicate the vision (remained a rating of 3.3), and sense that the Kit4Care initiative will lead to other similar projects that will benefit the system (remained a rating of 3.3)

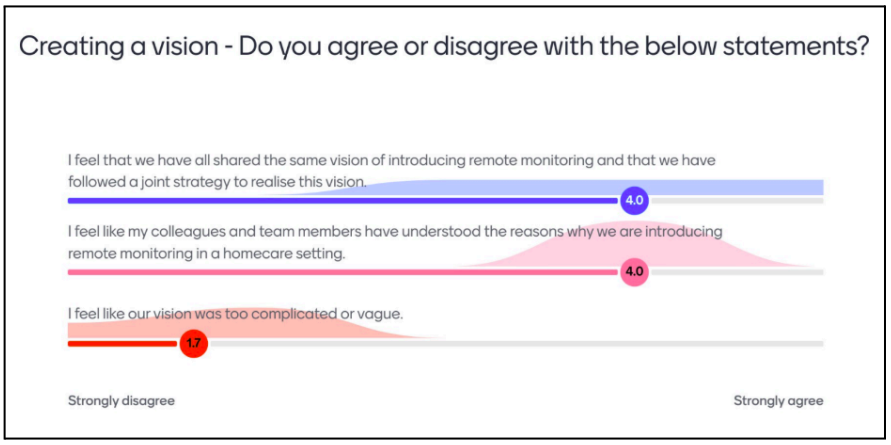


***Figure 22**. Steering Group survey time point 2: Creating a vision*

A statement only asked in survey two saw an average agreement of 3.7 that Kit4Care has been a "catalyst to attract more funding to the sector”. Respondents also flagged that internal communication about the project to teams might improve, with an average agreement rating to this statement reflecting this down 0.5 points to 2.7.

5.2 Results: Additional information

Please outline and consider whether

- *All the key partners are listed.*
- *Any conflicts of interest have been addressed.*

The steering group was a key element to the delivery of the Kit4Care project. The group was chaired by John Bryant and met once a month for the duration of the project. Members of the group included representatives from Care City, DELT, two providers, one PCN and Sentinel Healthcare Southwest. This meant that social care, infrastructure service provider, and primary care were present, along with financial oversight of the project from the budget holder.

Empowering decision making close to the frontline of the project was a success factor as well as gaining insight and perspective from across the range of participants and being able to tailor the activities accordingly and at pace.

An example of a decision made by the group was to agree to a harmonised rate for staff pay in respect of the time spent in training and time spent on taking readings with the Blue Box.

Due to the focussed number of providers who participated in this project, all findings in this report have been anonymised. As a result of the reconfigured timeframe for delivery and reporting of this project, it has not been possible to obtain sign off from all participants that they are happy for their organisations to be mentioned by name.

6 Costs

Please outline and consider if you have included

- *Cost per device/unit - hardware and license costs (if applicable)*
- *Device installation cost (if applicable)*
- *Project resource cost (including implementation support, project management, etc.)*
- *Any additional or change of costs have been explained and approval validated.*
- *Any funding contributors have been included.*
- *Spend v budget – Was the project delivered within budget?*
- *A cost-benefits analysis (use of monetary values to all costs and benefits) and results.*

The table below sets out the total project funds received and expenditure across technology costs and project delivery costs. The project did not utilise the full budget and the reported underspend is to be returned to NHSE.

Total Project Funds	**£208,333**
Technology costs	
Blue Box Devices (20 x £600)	£12,000
Whzan Subscription, Annual (33 x £400)	£13,200
SIM cards, Annual (33 x £60)	£1,980
1 large cuff	£25
Total Technology Costs	**£27,205**
Project delivery costs	
Care City Innovation CIC (Project delivery and evaluation)	£63,435
All provider costs (staff training time and staff time for conducting health checks @£18 per check)	£7,146
RESTORE-2 training	£892
Wellspring consulting (Project sponsorship and oversight)	£16,383
Gobby - survey platform	£1,000
Kit4Care branded items	£2,624
Total	**£91,480**
Underspend	**£89,648**

The table below sets out the costs and benefits of delivering a remote health check once every 2 weeks to 100 residents in receipt of domiciliary care across 4 providers. Costs and benefits are provided over a 6 year period and for Year 1 where costs of technology are highest due to initial purchase of technology.

	6 years	**Year 1**
Total Costs	£272,112	£49,972
Value of benefits	£611,526	£101,921
Cost:Benefit Ratio	2.2	2.0
Breakeven year	Year 2	

Costs and benefits are based on the following assumptions. Due to the short time frame of the technology being in use, the costed benefits are restricted to the following and based on the assumptions detailed in the table below:

- Reduction in hospital admissions
- Reduction in readmissions
- Impact on NHS 111 call, ambulance hear and treat and refer.

Costs	
Number of Blue Boxes (and annual device turnover)	*10 (5%)*
Cost per Blue Box	*£600*
Annual Blue Box Subscription	*£400*
Annual SIM cost per Blue Box	*£60*
Number of domiciliary care providers	*4*
Hours per year of support from managers of domiciliary care providers (coordinating training, changing shifts, restructuring operating model, briefing staff and clients)	*52 hrs*
Hourly cost of managers	*£30*
Number of care staff trained	*20*

Per staff member cost of receiving training (including annual refresher) at 1hr of staff training a year (includes training replacement staff at UK sector average of turnover at 28.3%). Cost is Devon average cost.	*£22*
Additional cost of care staff time to deliver a health check (cost for 15 minutes). Assumption is that the health check will take place within an existing visit	*£5.50*
Review of health check data by GP (10min - based on PSSRU unit costs).	*£49*
Percentage of readings requiring review by GP	*15%*
Blue Box training and consultancy provided free of charge by Whzan	*£0*
Annual cost of delivering training (Restore2) - assuming 5 staff trained in each session	*£592*
Number of GP practices involved	*4*
Annual cost per GP Practice of staff time to set up users on Whzan system - 1 hr per year	*£50*
Annual cost per GP Practice of staff time to attend Whzan training workshops - 2 hours for 1 staff member	*£100*
Annual cost for DPO time per GP practice - Information governance, review & sign - set up in the first year and possibly adjustments/review in subsequent years. 3 hours per staff member at £80 per hour.	*£240*
Benefits	
Unit cost per day of NHS hospital bed (non-elective) https://www.theyworkforyou.com/wrans/?id=2023-03-14.165361.h	*£901*
Rate of emergency non-elective admissions for those in receipt of domiciliary care (conservatively placed at 50% the rate of admissions from care homes - https://www.health.org.uk/sites/default/files/upload/publications/2019/Emergency-admissions-from-care-homes-IAU-Q02.pdf)	*0.35*
Reduction of rate of admissions due to Whzan	*33%*

based on previous research (Unsworth S and Bell T (2017) Interim Evaluation Report: Digital Care Home Tablet. South Tyneside NHS Foundation Trust.)	
Average length of hospital stay (https://www.health.org.uk/publications/long-reads/longer-hospital-stays-and-fewer-admissions).	*8.3 days*
Rate of readmission of over 65s in Devon within 30 days (https://www.cqc.org.uk/publications/themes-care/area-data-profiles). **This benefit is the avoidance of all readmissions by the avoidance of initial admission.*	*18%*
Unit cost for NHS 111 call, ambulance hear and treat and refer. https://s38114.pcdn.co/wp-content/uploads/Feebris-Economic-Impact-2023.pdf	*£74*
Per resident increase in NHS 111 call, ambulance hear and treat and refer. Based on prior Care Home evidence - https://s38114.pcdn.co/wp-content/uploads/Feebris-Economic-Impact-2023.pdf	*0.065*

Sensitivity tests

Assumption	**Sensitivity test**	**Revised Cost:Benefit Ratio (over 6 years)**
Health checks are delivered within existing visits	Health checks are delivered as separate visits with an average of 8 miles per visit at £0.45 per mile travel expense.	2.2
Bed days saved	50% of expected reduction (both admission and re-admission)	1.1
Additional cost of care staff time to deliver a health check (cost for 15 minutes)	Double expected cost	1.7

7 Conclusion

Please provide a summary of evidence, analysis, and perspectives from all stakeholders (social care provider setting; supplier, staff and people receiving care and support) covering the following areas:

- *Barriers*
- *Enablers*
- *Cost-benefits*
- *Limitations and recommendations*

Summary of findings

A summary of the findings is presented framed by the four Context, Mechanism, Outcome configurations (CMOs) statements introduced in the method section.

Collaborative working improving project delivery

The first statement assumed that collaborative working between project stakeholders would lead to successful project set up and delivery, resulting in positive measurable outcomes if there was sufficient trust and communication between organisations and colleagues.

It became clear that it was crucial for local stakeholders to collaboratively consider their unique context and challenges. Findings from the local co-design workshops in each area demonstrated that challenges and barriers differ by location and therefore require a locally developed and tailored operating procedure in alignment with their respective challenges.

In addition to the in-depth local delivery workshops, this project created space for social and primary care colleagues to meet regularly, through the offer of a weekly huddle. This huddle was attended frequently at the beginning, but less as the project progressed. The most mentioned reason for this was a shortage of capacity and that the project was not able to gain priority status within organisations.

The findings suggest that there is still room for improvement when it comes to staff being able to prioritise opportunities to meet with other health and social care colleagues. However, it is important to note that, despite a decrease from the initial regular frequency of communication between health and social care colleagues, the project continued to demonstrate positive outcomes for clients.

Remote monitoring demonstrating positive outcomes for staff

The second statement suggested that staff would experience a range of positive outcomes as a result of the introduction of remote monitoring into domiciliary care settings. It was thought that staff would feel an increased sense of confidence in using remote monitoring tools where there

was an appetite and capacity for learning new technology skills and where their organisation supported them by offering comprehensive training.

Our findings have shown that the majority of staff members demonstrated a willingness and openness towards learning new skills. Due to the project funding, organisations were able to release staff members for training sessions and build in additional time for testing the equipment. Staff noted some suggestions to make the training stronger and more engaging, such as delivering it face to face, and further tailoring it to be context- appropriate.

Several staff members reported their confidence levels increasing due to having access to objective patient readings, which they could easily communicate to a healthcare professional.
As a result of implementation challenges, such as some staff members at GP practices not being aware of the new approach that was trialled, some care professionals also reported occasions where their stress levels increased. Some care staff, who experienced technical issues with the monitoring equipment, also mentioned that this would have an effect on their confidence.

The aim was to use objective health monitoring tools such as the NEWS2 risk score, to introduce a shared language between domiciliary care staff and healthcare staff. On occasions where the GP practices were not aware of the project or were suspicious of care staff communicating NEWS2 scores to them, care staff felt a lack of trust and belief from healthcare colleagues, which has a direct impact on the confidence of social care staff to engage.

It is reasonable to extrapolate that this had poor outcomes for clients and for the retention and recruitment in social care, which then negatively impacts health with increased admissions and delays to discharge.

Technical issues experienced with the Whzan Blue Box were also a factor which could affect staff members' confidence, leaving them feeling stressed or with a feeling they were not competent enough to resolve issues with the technology.

In summary, we have observed a positive relationship between social care staff's confidence levels with both the reliability of the technology, and with the awareness and openness of primary care colleagues with whom they engaged. Where those two factors are fulfilled, staff members' confidence levels increase and they enjoy building their skills and creating new routines that involve Whzan.

Benefits experienced by homecare recipients

The third statement assumed that homecare recipients would experience benefits from the remote monitoring if they had a good relationship with their care provider and had received clear communication about the benefits remote monitoring could hold for their daily lives.

Overall, it was found that all clients have exceptionally good relationships with their care provider. Interview insights have shown us that homecare providers took different approaches to briefing their clients about trialling remote monitoring. Similarly, home care recipients' opinions on the technology was mixed, which we believe may be due to the amount of information shared with them.

We were not able to speak to any clients who had not consented to participate, therefore, insights are limited. Some staff members assumed that reasons for not wanting to receive regular health checks included mistrust in technology and concerns about sharing of their health data online.

During our interviews with homecare recipients and their families, we explored the sense of reassurance, safety, and overall satisfaction they experienced from receiving regular health checks.

Some clients expressed an increased sense of reassurance due to receiving confirmation that their readings were in the normal range while others felt indifferent towards it. While some clients actively enjoyed a regular routine, others have experienced it as an “inconvenience”. Overall, most clients were of the opinion that it would be valuable to continue the remote monitoring in case it picked up an indicator of health decline.

We have found that clients are most open to the idea of remote monitoring if the frequency of the readings are agreed with them, and if a set date and time can be agreed with them where readings cannot be integrated into their usual visits.

The project has demonstrated positive outcomes for clients, such as detecting illnesses at an earlier stage, peace of mind, and quicker access to medication and treatment.

Decentralisation of power

The final statement considered the decentralisation of power to local delivery groups, as a result of trust in the central project team and a clarity around financial issues.

The decentralisation of power was strongly considered in the process of designing the escalation pathways for this project. We recommended for stakeholders from health and social

care to participate in a co-design workshop during which local challenges were explored and solutions designed. The project team offered to facilitate a co-design session for each locality.

When comparing the outcomes of each session, it became evident that the nature of relationships and challenges in each locality differed slightly, reinforcing the importance of local co-design.

This approach meant that decisions were made by those who were directly impacted by the changes and were also in a position to directly implement them. Creating the mechanism whereby the decision making sat with those that were responsible for the delivery of the project, brought clear benefits, including timely decision making, prioritising changes that were relevant to the local context and autonomy.

Members of the steering group were accountable for overseeing the project finances. It was key to provide transparent processes around the distribution of finances, which were communicated openly to all providers. The commitment to transparency was demonstrated by devolving agreed amounts from the budget to the individual providers, which reinforced that the change was in their hands. The response was one that rewarded the trust given.

Barriers and Enablers

This section presents an overview of the barriers and enablers identified during the Kit4Care project.

Barriers

Barriers to the implementation of the Kit4Care project

The identified barriers to rolling out the project largely revolved around communication and logistics, timeline planning, relationships between health and social care staff, and confidence of staff using the technology.

Accessing funding in a timely manner: Prior to Care City being onboarded, there appeared to be difficulties around accessing the awarded funding, which was reported to have prevented project activities from starting for a significant amount of time. Following the first kickoff meeting with all stakeholders, interviewees mentioned that they perceived the set up phase for the project as very long - a delay that slowed overall momentum and buy-in from stakeholders.

Despite the delay, the shift of ownership from the local authority to an external group allowed key project stakeholders greater say and involvement in the funding allocation, which may have supported helpful flexibility in determining how the project would be run.

Communication and support: Implementing the project across a wide geographic area, across different sectors and professional groups posed a challenge. Though consistent communication and huddles were prioritised, stakeholder feedback makes clear that staff desired even greater engagement, and highlights that this should be a budgetary priority in future projects.

Communication within organisations also seemed to have an effect on (re)gaining momentum. Initially, staff members were not always aware that this pilot was happening or were not aware that they were participating in a trial, interviewees report they "felt a bit lost in the beginning" and were "not sure what was going on."

Challenges with timeline planning: The information and governance sign off process took considerably longer than expected which led to stalling of the project. Though ensuring the appropriate elements are in place to deliver a safe and effective project is crucial, some of the procedures and policies that were part of this process felt ill-suited to our innovation-focused project, ultimately causing challenges to delivery.

Conflicting staff priorities: At times, some staff were unable or unwilling to prioritise attending collaborative meetings, which meant project participants had varying levels of understanding and knowledge and may have meant increased variation in how, and how quickly they took up

the technology. System pressures mean it is challenging for new initiatives to rapidly obtain the type of support that might be required, which we recognise is not unique to this project.

Lack of initial confidence among care staff: At the beginning of the project, momentum stalled for some care professionals who were not feeling confident enough to use the Blue Boxes yet in the community yet. They did not have access to locally available support staff to support them through this time of transition.

Lack of collaborative approach between health and social care: Working towards the integration of health and social care services is a known priority of the National Health Services. The survey we conducted with primary and social care staff speaks to the different experiences of staff involved in different stages of the care pathway where staff, more often those from social care, indicated experiencing less mutual respect or understanding with their primary care colleagues than desired. Though this challenge is not unique to this project, it makes clear the need to focus on building strong, trusting and collaborative relationships across the health and social care sector.

Barriers to realising the benefits of the technology for care

The main barriers perceived by staff related to training delivery, the perceived consistency of the remote monitoring equipment and GP awareness about the new escalation approach by system partners. Key barriers raised in relation to client experience revolved around communication and accessibility of information.

Training that was not context-specific: Online training sessions were not perceived as helpful for many staff members. Training sessions that took place online were short and theoretical and lacked wider context for the remote monitoring rollout. This left some staff feeling like they had questions or were still unsure about using the technology, and was experienced as a barrier to the project gaining momentum.

Technology and equipment challenges: While some providers didn't report any issues with the Blue Boxes, others repeatedly experienced issues with logging in, or with difficulty transferring readings in low signal areas. Not having access to the right physical equipment, such as the right size blood pressure cuffs were also cited as barriers to care that could lead to incorrect readings. The provider did respond by supplying appropriate equipment and communicating about how to use the technology in no-signal areas, however these strains seemed to demotivate staff. It is of note that, possibly due to time constraints, there was little engagement of staff with Whzan's technical support offer.

Low GP awareness: The lack of awareness from GP practices about the Kit4Care project posed a significant barrier for care staff, who were left feeling discouraged and insecure. Gaining traction and support remained a challenge. GP engagement remained light with this

being delegated or directed to other staff members. Consequently having sponsorship and mandate from GP partners was a barrier.

Insufficient context: Some clients reported that they did not feel that they received sufficient information around the technology when it was introduced, and that its potential benefits for their unique situation were not explored. This might have meant they had greater reluctance or distrust of the Blue Boxes during initial uses in cases where it was used in their care, and may have lowered their desire to engage with it.

Enablers

Enablers to the implementation of the Kit4Care project

Successful and frequent planning and communication among and between participating providers and their staff was crucial to successful rollout, while organisations that had the willingness and ability to prioritise the project also had a better and smoother experience of utilising the technology.

Project management and communication: The project management team was both a delivery resource as well as a reporting mechanism, which worked well for this project.

Proactive project management resources and clear and frequent communication to stakeholders worked well, and the majority of stakeholders and staff members felt that they were kept in the loop about changes and understood their role. Structured meetings and agendas, providing frequent updates to the group and supporting ongoing active engagement were noted as positive ways the project team was able to provide guidance to project participants, and support problem-solving efforts when the project experienced delays.

Some have mentioned the information leaflets as helpful resources and one provider mentioned having set up a WhatsApp chat group to encourage staff members to have discussions about the project and the tech amongst themselves. It was also shown that stakeholders who took advantage of the weekly huddles and other forums were much quicker in implementing remote monitoring into their regular routines.

Kit4Care holding priority: Some organisations have made a decision to prioritise upskilling of staff and viewed the training that participating staff members received as part of the project as in alignment with their development strategy. Some providers have shared plans to introduce specialist roles in their organisation or create senior care assistant roles, who will be taking on remote monitoring responsibilities.

Enablers to realising benefits of the technology for care

Enablers for staff included a mix of organisational project components, such as quality of training, length of trial time with technology, and active engagement from GP surgeries and staff, as well as practical factors such as access to a car, and the ease of use of the technology when it functioned as intended. Largely, clients had the best experiences, were most willing to engage with, and were most satisfied with the tech when it was integrated seamlessly and predictably into their routines.

Hands-on training: Some providers organised face to face sessions with their team following the online training session to encourage their staff to test the Blue Boxes. Staff members reported that they felt more confident after meeting with their peers to actively test the equipment and that hands-on training was beneficial.

Automated technology: Some staff members had done monitoring of their clients' vital signs prior to using the Blue Boxes.Those who were already familiar with the concept, praised Whzan for automatically syncing the readings back to the device, saving them time compared to taking and recording all readings manually. Several staff members agree that Whzan is "easy to use", "straightforward" and to do the checks if all works well.

Access to a car: Having access to a car felt like an enabler to those who were travelling larger distances and were happy to be able to store the kit in their car so that it was available to them at all times. The additional flexibility given by the vehicle allowed them to cover a wider area more efficiently than if they had to work around existing public transport schedules.

Awareness at GP practices: Where practice members were informed about the Kit4Care project, social care staff have felt supported when escalating concerns and it has been a positive experience. For this to work effectively, all GP surgery staff who may encounter social care staff utilising the Blue Boxes should be made fully aware of the technology and coached on how to engage when contacted.

Long trial period with technology: Many staff also described that benefits of the technology becoming more evident over time; clients and staff alike became comfortable with the Blue Boxes, and care staff were able to build up a history of readings to create an accurate baseline that would allow them to detect even small deviations in readings in their clients. The longer a care staff was confident in and utilising the tech, the better the reception appeared to be generally.

Branding: Developing a brand for the project mattered because it enabled participants to have a sense of belonging and to recognise that they were part of something bigger, resulting in ongoing commitment. Domiciliary care services do not take place on a ward or in a care home, which makes it more difficult to decompress collectively as a team, such as at the end of a shift.

For many it is a lone-working service, which carries a sense of being under-valued and out of sight.
Creating a high quality perception of Kit4Care and recognising people for their input was an important feature of the work. For those that had undertaken training, certificates were produced and small items such as a reflective-journal and water bottle were gifted. The project team were moved by the impact that this recognition and acknowledgement created.
Updates and detailed information: Throughout the process, clients made clear that they appreciated feeling up to date and receiving sufficient, detailed information to feel like they could make informed decisions around the technology, and fully understand why it might be of benefit to their situation. This also applied to family members concerned with the care of their loved one.

Regular Health checks: Clients who received their health checks at recurring times found it easier to adapt to the use of Blue Boxes being part of their care routine. Having these checks carried out by a consistent staff member was an added bonus that, where it occurred, left clients feeling more trusting and at ease when having readings taken. Receiving regular communication around the results of their readings was also seen as an enabler to accepting the use of technology and contributing to a sense of involvement and autonomy within their care.

Recommendations and conclusions

In the recommendation and conclusion section below, we have presented a summary of any recommendations, best practices or suggestions mentioned by project participants in interviews and surveys. This section presents recommendations on what needs to be considered when scaling and expanding the Kit4Care model and how it might be integrated into providers' day to day business in a sustainable way.

In summary, we found that care workers are positive about the technology, and that buy-in can be developed in this group over time as they experience its benefits for themselves, that funding would be most sustainable and equitable when supported by both health and social care budgets, and that in-person, tailored training offers the greatest chance of effectively upskilling staff. Staff shared that for taking readings with Whzan to become part of their team's daily routine, they would need enough tech for all staff, as opposed to a few boxes shared within a team, and that ensuring continuity of care (clients having readings taken by a consistent individuals) and clear, structured times and frequency of readings would support greater integration into standard care offered by care staff. Crucially, engagement with and support from primary care providers is essential for productive collaboration, but further training or incentives might be required to obtain it, which has represented one of the more challenging aspects of the pilot.

Notably the project demonstrated that in using a Kit4Care approach to access the knowledge and asset of domiciliary care workers, and enhance their interaction with clinical colleagues

- Communication with medical staff was reduced and there were less unnecessary ambulance call outs
- the alleviation of stress and pressure for care staff and patients was reported
- use of technology that supported in-field assessments and communications with clinicians was felt to be resoundingly positive
- repeated examples given of enabling improved connection and faster clinical response that avoided deterioration and in two cases life-saving interventions
- 100% of care staff using the technology would recommend it to their colleagues

General Attitudes among care workers

By the end of the project, all care workers had clearly expressed both their belief in the benefits of the remote monitoring technology, and all expressed they would choose to continue using it going forward if it were available to them.

Even those care workers who were more sceptical in the beginning, came to see the value of the technology for reassurance and prevention as the project progressed. For example, one

individual interviewed who initially felt that taking readings was “nuisance” to their clients when they had only experienced taking normal readings shifted their views when a health check using the Whzan Blue Box helped them to quickly identify a chest infection in their client and acquire antibiotics for them within the same day.

On the whole, it is felt that the remote monitoring is of benefit to both staff members and clients, with one care worker describing the concept as “brilliant” and others mentioning that these health checks are something their clients now look forward to for the peace of mind they offer.

Funding

Providers would welcome continuous funding or an agreement to share the cost with local primary care organisations, since the remote monitoring activities are actively supporting the primary care system.

Whilst providers agree that social care providers supporting regular monitoring of their clients' vital signs is of direct benefit to the health services, several providers have also highlighted the responsibility of local authorities to reimburse providers for additional time spent with a client who is acutely unwell.

One individual is concerned that social care supporting health related tasks is seen as a way of “doing the work in a cheaper way” compared to it sitting within the health sector.

Only one out of five providers has confidently expressed that they would keep renewing the licenses for the Whzan devices and has described it as a "no brainer" and "never having had to give it a second thought". This provider feels that the cost for the devices and licenses is justifiable given the safety it provides and the benefits it has shown.

The remaining four providers have expressed concerns about the financial commitment and were not sure whether they could justify this expense. Some participants have considered using the equipment without renewing the license and continuing with manual readings.

The cost invested in the remote monitoring technology needs to be proportionate for providers. Ideally, the cost would be fully funded by the health system, or at the very least shared between health and care providers. Whilst improving healthcare outcomes, there is a practical cost to ‘doing the right thing’, which should be commissioned appropriately.

Training

All interviewees were in agreement that training should be taking place face to face to encourage practical learning and increase confidence. Additionally, some staff members have

experienced long gaps between the training and using the equipment and have, therefore, recommended that the knowledge needs to be put into practice shortly after the training.

Some staff members have expressed that they would have liked more extensive training, which also includes clinical knowledge on the normal and abnormal ranges for each of the vital signs.

Finally, care staff have suggested to include guidance sheets in the Blue Boxes, with a short checklist of the tasks they need to perform as part of a health check and other useful tips on what to look out for.

For a scaled approach, the training delivery would have to be reviewed and improved.

Transition from piloting Kit4Care to making it “business as usual”

In theory, the majority of staff is in favour of integrating the remote monitoring model into their day to day business by offering it to additional clients and onboarding additional staff members to use the Whzan tech. Care staff believe that it would be easier for the team to find a routine with the scheduled health checks of all clients and staff members were part of this new approach.

This approach would require the use of additional kits, so that every care worker could be equipped with a device, which, in turn, has financial implications.

In a model where all care staff are trained and are actively taking readings, one care worker envisioned that they could communicate with their care colleagues and leave a note on the Whzan system or in the care log to advise their colleague to do a health check at their next client visit.

Some care professionals believe that remote monitoring would be best suited to a select group of trained staff, ideally senior and experienced care workers. Either way, there is general consensus that everyone in the organisation should be aware of the remote monitoring, so that it can be requested when appropriate.

Finally, one care worker mentioned that they were curious about what else the Whzan Blue Box might be able to do and wanted to explore additional use cases for the equipment.

For a provider to fully integrate the remote monitoring model as part of their usual business, financial implications for time, training and additional kits would have to be considered.

Involvement and collaboration with primary care

In the most basic version of the Kit4Care model, care workers are using the same escalation pathway as before but are sharing additional information with the health care professional. Due

to tight schedules, care workers are often under pressure when they have to escalate concerns. For the model to become sustainable in the long-term, care staff have expressed that they need a quicker escalation route to communicate their concerns to the GP, as is already practiced in care homes. This can be in the form of a bypass number or a bespoke email address or email inbox or as was the case in the Test of Merit, a Clinical Hub.

Several care providers have mentioned being unsuccessful in reaching out to a local GP practice and securing engagement, despite primary care colleagues responding positively to the idea. All care providers are in agreement that they need to be recognised as trusted partners to their local GP practices and that there needs to be a collaborative effort in order to make this model a sustainable success.

It was suggested that introducing a training qualification which is recognised and endorsed by primary care colleagues so that care workers' skills are not questioned.

One individual also felt it might be helpful for the GP practice to actively support establishing clients' baselines both as a way to get them involved early, and support an accurate baseline as a guide for the client;s readings.

One provider felt unable to participate in the project due to their local GP practice expressing that they were not willing to support this approach. GPs seemed to perceive the trial as something that would be a nuisance or add to work load and suggested a different approach to initial engagement. They felt that if first contact about Kit4Care had been made by another GP who was already successfully supporting a provider to use the technology, it would be more likely to persuade other GPs to be open to it, and to centre their consideration on potential benefits for patients. Having GP sponsorship would be important for any attempts of scaling the project going forward. Developing a shared financial case between GP practices and social care providers would be an opportunity to practically explore an integrated commissioning approach with the integrated care board / integrated care partnership.

The development of PCNs (primary care networks) is seen as an important element and enabler. The variety of approach, maturity, collaboration between practices is well recognised. Support for the initiative through a PCN and the potential to work at scale with a hub model offers increased opportunities.

Further, care providers would like for primary care colleagues to actively access their clients' health data and possibly trial setting up alerts and monitoring proactively. That way the escalation process can, again, be shortened as care workers would just have to make the GP practice aware of the client's record, which they could access directly online.

In summary, most care providers agree that they would continue the remote monitoring only under the condition that their local primary care providers were actively involved in shaping and improving the escalation process.

Reviewing and adapting processes

Care workers recommend carefully choosing the frequency of readings and adapt those based on individual client preferences. In some cases the regular readings have been experienced as a "nuisance" to the client, which should be avoided. Suggestions include:

- in line with domiciliary care clients' understandable and recorded desire for continuity of their care team, in using a Kit4Care approach, having it done by a care team known to the client is important
- agreeing a set day or time for the health check or integrating them directly into their standard care visit

Some individuals pointed out that it's also valuable to review internal processes and identify where the remote monitoring can be integrated, i.e. for providers who have a lifting cushion, they could agree that each time the cushion is used, the vital signs are also taken.

One provider who also offers care home services felt that the regular observations would be useful to take ahead of their weekly visit by a member of the local GP practice. This way, the observations could be reviewed by a medical professional on a regular basis.

To successfully roll out and scale the Kit4Care model, frequency and integration of the regular routine needs to be agreed with clients, so that it creates assurance and a sense of added value and care rather than be perceived as an inconvenience for them or feel like an additional worry.

Summary of key take aways

In summary, the key take aways include:

- **Strong relationships and sponsorship**
  - Senior sponsorship in health and social care is vital for reassurance and engagement.
  - Addressing perception gaps, like mutual respect and understanding, is key to successful collaboration.
  - Strong relationships, persistence, and resilience help overcome challenges and keep the project on track.
  - A multi-disciplinary group, where all voices are equal, fosters diverse perspectives, quicker decisions, and greater resilience.
- **High-quality project management**
  - A dedicated project management resource that directs and delivers is key to a successful project roll out. Project timelines need to account for project delays.
- **Funding to support rollout of a new initiative**
  - There is an upfront cost associated with implementing an innovative approach. The benefits of which are often not experienced immediately. Therefore, consistent funding is key to supporting a project for a sufficient amount of time until benefits can be realised.
- **High-quality training setting teams up for success**
  - Prioritising face2face and hands-on training: while online training may appear cheaper, it demonstrates less value and is ultimately more costly as it has to be repeated several times
- **Involvement and collaboration with primary care**
  - Primary Care supporting the implementation of a new model is crucial.
  - A GP “sponsor” can help to make new introductions with other GP practices and endorse the new approach.
- **Appropriate communication channels and brand**
  - Effective communication channels are key to maximising engagement and sharing updates. Regular communication platforms, such as weekly huddles, help address challenges, build relationships, and share positive outcomes.
  - Phone and face-to-face contact are crucial for onboarding and maintaining momentum.
  - Developing a brand identity fosters a sense of belonging, and offering certificates for training and participation boosts engagement and enthusiasm.
  - Clients need to receive sufficient informed about the benefits of remote monitoring to increase the chances of clients opting in to the new approach

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Please add in any acknowledgements.

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