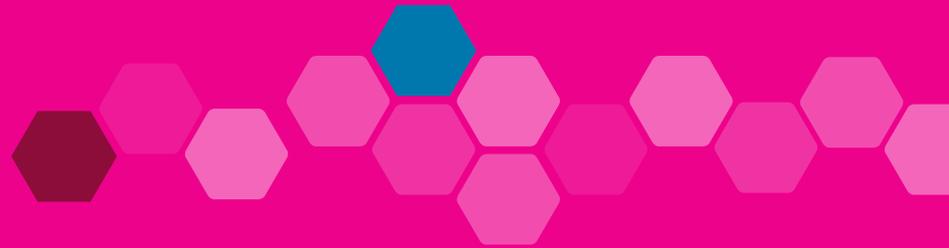




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Evaluation of the **Attend Anywhere / Near Me** video consulting service in Scotland, 2019-20



HEALTH AND SOCIAL CARE



Evaluation of the Attend Anywhere / Near Me video consulting service in Scotland, 2019-20



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Abbreviations and Glossary of Terms

Abbreviation / Term	Definition
Attend Anywhere	Video call system and service designed to support remote health and care consultations
Basecamp	Online project management and document sharing application.
BSL	British Sign Language
CEO	Chief Executive Officer
CHI number	Community Health Index – unique numeric identifier allocated to a patient
Cisco	Video conferencing technology provider
COPD	Chronic Obstructive Pulmonary Disease
DNA	Did Not Attend
EMIS	A healthcare clinical and administrative system, used mainly in primary care
GDPR	General Data Protection Regulations
HSW	Healthcare Support Worker
HSCP	Health and Social Care Partnerships – bring together Local Authorities and local Health Boards to plan and deliver integrated adult community health.
Hub site	The location where the clinician is based during the video consultation
Internet browser	A piece of software installed on a computer system / computers that provides access to the internet and websites.
IRIHS	Interdisciplinary Research in Health Sciences (University of Oxford)
IT	Information Technology
Jabber	Video conferencing technology provided by Cisco
Makaton	A language programme that uses symbols, signs and speech to enable people to communicate
mPower	An EU-funded project to help older people with long-term conditions to live independently.
MS	Multiple Sclerosis
NASSS	N on-adoption, A bandonment and Challenges to S cale-up, S pread and S ustainability – an analytical framework developed to explain individual and organisational challenges to adoption and sustained use of technology-supported programmes in health and care.

Abbreviation / Term	Definition
NHS Health Boards	NHS Scotland has 14 territorial Health Boards, which cover specific geographical areas. They are responsible for the protection and improvement of their population's health, and for the delivery of frontline healthcare services. There are also 7 Special NHS Boards.
NHS Near Me	National branding name in Scotland for the video consultation services using the Attend Anywhere platform
NRSPCC	NHS Research Scotland Permissions Coordinating Centre
PAS	Patient Administration System, providing clinical and administrative information, mainly used in hospitals
Polycom	Video conferencing technology provider
Primary care	Primary health care is the first point of contact with the NHS. It includes community-based services provided by, for example, GPs, community nurses, pharmacists; and by allied health professionals such as physiotherapists and speech and language therapists.
R&D	Research and Development
REC	Research Ethics Committee
SCI Gateway	National technology system which integrates primary and secondary systems
Secondary care	Mainly hospital-based health care provision, including emergency care (via Accident & Emergency), outpatient departments and elective treatments.
Spoke site	The location where the patient is based during the video consultation
Tertiary Care	Specialist health services for people with a condition requiring high levels of expertise and support services
TEC	Technology Enabled Care
TrakCare	Specific Patient Administration System used in most hospitals across Scotland
UCPN number	Unique Care Pathway Number - a unique identifier allocated to new referrals to a consultant led service, to enable identification of patient pathways.
URL	Uniform Resource Locator - the browser address of an internet web page
VC	Video Consulting or Video Consultations
Waiting area	A virtual online waiting area which patients access via an internet link and then wait for their appointment

Executive Summary

Introduction

Attend Anywhere is a video consultations service used across health and care services in Scotland. In July 2019 the Scottish Government commissioned the University of Oxford (Department of Primary Care Health Sciences) to undertake an independent evaluation of the service. The aim of the evaluation was to review progress and achievements in relation to the use and outcomes of Attend Anywhere, and to develop an understanding of the implementation experience to date. We also sought to make recommendations relevant to any future scaling-up, spread and sustainability of Attend Anywhere and similar digital services. The field work was done between August 2019 and early March 2020, before the COVID-19 outbreak.

Attend Anywhere is the name of the video consultations platform, purpose-built to meet the needs of the health and care sectors, for which a national licence has been procured for Scotland.

Near Me is now the public-facing name used to describe video consulting services provided via the Attend Anywhere platform in Scotland. This name was developed by patients in NHS Highland, and was not in universal use across Scotland at the time of the fieldwork for this evaluation.

For the purposes of this evaluation report, the term 'Attend Anywhere' is generally used, unless research participants referred specifically to 'Near Me'.

Background

Attend Anywhere was launched in Scotland in December 2016 as part of a wider national Technology-Enabled Care (TEC) programme, which aimed to drive the widespread adoption of technology to help plan and improve health and care services and outcomes for citizens. The TEC programme was set up to respond to the need for service transformation in the context of rising demand for health and social care; and to re-engineer services and care pathways in a more person-centric way. A key objective is to improve citizen access to health and care services from remote parts of Scotland. Attend Anywhere is intended for use by both health and social care organisations, and by both primary care (community-based health services including GPs) and secondary care (mainly hospital services). However at the time of this evaluation most activity was hospital-based, on which this report therefore has a strong focus.

The Attend Anywhere video consultations platform works via the internet. People can access a video clinic through a device, such as a laptop computer, mobile smartphone or tablet, provided that they use specified internet browsers. People use an internet link to access a 'virtual' online waiting area, where service providers meet them and provide the video consultation. This process has been designed to align with the ways in which people

usually attend face to face appointments, and with established health and care processes and workflows. This is illustrated in the diagram below.¹

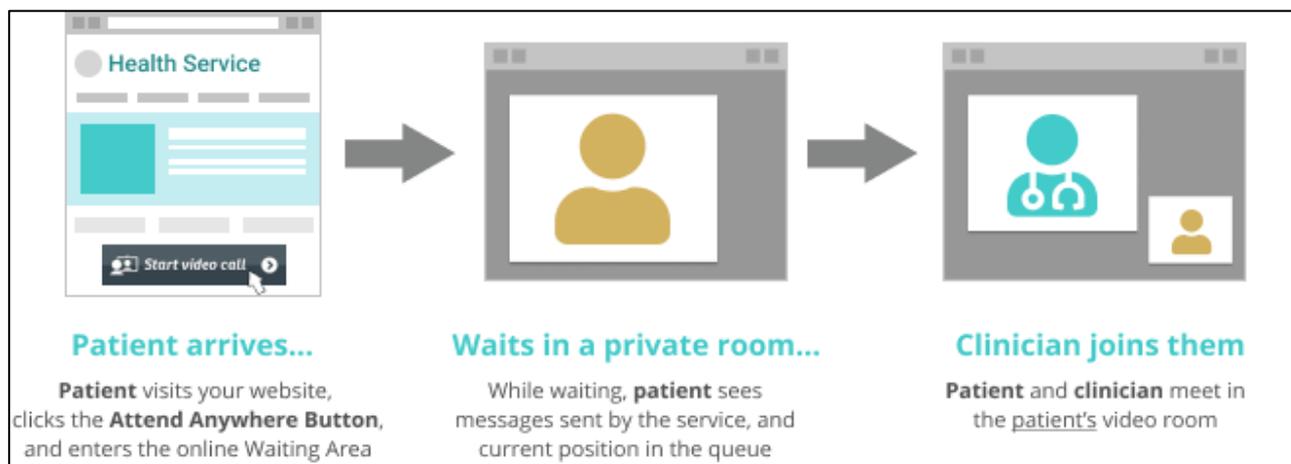


Figure 1: Process for a patient attending an online video consultation with a clinician

Research Methods

The evaluation used mixed-method (mainly qualitative) methodology, structured and guided by a multi-level theoretical model (NASSS: non-adoption, abandonment and challenges to spread, scale-up and sustainability [1]), developed to explain individual and organisational challenges to adoption and sustained use of technology-supported programmes in health and care.

Between August 2019 and early March 2020, we undertook research with seven of the 14 local territorial Health Boards in Scotland, six of which we visited in person. These boards were selected to explore variation of experience in different geographical areas (urban, rural, islands) and in boards with higher and lower use of Attend Anywhere. We visited 11 sites across Scotland (10 hospitals, one GP surgery), conducted remote interviews with staff from a further 17 sites (7 hospitals, 7 GP practices, 2 community settings and one third-sector organisation), and observed some video consultations. We also met and interviewed senior-level stakeholders. In total, we conducted 140 interviews with doctors, nurses, allied health professional, healthcare and third sector support workers, clinician and non-clinical managers, administrators, IT support staff, patients and their relatives, and national-level stakeholders (government, policy implementation, professional leaders, industry). The report also incorporates routinely-collected data on uptake of the service in different localities, extracted from the Attend Anywhere system.

We analysed data thematically, combining descriptive quantitative data with synthesized qualitative themes. Draft findings were presented to study participants in face-to-face and virtual meetings in February 2020 and a draft report was shared with the Scottish Government in March 2020. This report incorporates feedback from those consultations.

¹ Diagram from NHS Scotland National Video Conferencing Service website: <https://www.vc.scot.nhs.uk/attendanywhere/>

Use of Attend Anywhere

At the time of our evaluation, Attend Anywhere was being used for a wide range of conditions and clinical services (see summary table Appendix A). Three different service models were in use:

- **Hub-home:** Clinician connects from clinic to patient at home.
- **Dyadic hub-spoke:** Clinician in specialist 'hub' centre connects to patient in remote 'spoke' health or care site without additional staff member present (e.g. in an unstaffed kiosk).
- **Triadic hub-spoke:** Clinician in specialist 'hub' centre connects to patient in remote 'spoke' health or care site with an additional staff member (nurse, GP, healthcare support worker [HSW]) present.

In all the above models, the specialist clinician occasionally consulted from home.

Video consultations via Attend Anywhere were occurring in all 14 local Health Boards and at the Golden Jubilee National Hospital (NHS Scotland's National Waiting Times Centre). Two boards, Highland and Grampian, had both been 'early adopters' and accounted for 62% of all activity in 2019, but use of Attend Anywhere was still at an early stage in most Boards. The Attend Anywhere service in Highland was strongly branded as 'NHS Near Me' from the outset; the 'Near Me' branding was subsequently applied across the whole country.

In 2019, almost 7000 consultations were conducted via Attend Anywhere across approximately 35 different clinical specialties involving 180 clinical departments and 64 GP services; 91% of this activity was in secondary (i.e. hospital care). Attend Anywhere has also been used by a number of third sector organisations to provide advice, support, counselling and palliative care to service users. This includes two services in particular: Rape Crisis Grampian (159 consultations during 2019) and MS Revive (which supports people affected by multiple sclerosis: 120 consultations).

We observed many examples of up-and-running video consultation services using Attend Anywhere, and heard predominantly positive comments from staff and patients, who described various advantages of video consultations over conventional face to face appointments, although some clinicians had concerns about video consulting in general. However at the time of our study (up to Mar 2020), the proportion of Attend Anywhere activity in relation to other outpatient appointment activity (i.e. face to face and telephone appointments) still appeared to be relatively low. In the highest-using health board, video consultations were estimated to be 1-2% of overall board activity. Across all health boards, many services were still at early stages of implementation, and there was great variation in terms of levels of activity. Approximately 130 clinical departments (70%) had conducted five or more video appointments during the 12-month collection period.

Key Findings

Using the domains of the NASSS framework, our assessment of the reasons for both the adoption and use of Attend Anywhere, and its relatively limited uptake to March 2020, are listed below.

Clinical appropriateness

- a. Attend Anywhere consultations appeared to be most readily implemented for routine follow-up of chronic, stable conditions, especially when the main purpose of the consultation was to convey test results and affirm that the patient remained asymptomatic. Clinicians generally considered it clinically inappropriate and unsafe to use remote consultations for poorly-defined and less predictable conditions, rare conditions, and those where specialist tests or treatments were unavailable locally. In relatively high-volume specialties such as diabetes and heart failure with well-established clinical networks (e.g. where specialist nurses and GPs with special interest worked from a community hospital with a specialist available for phone advice), local staff considered that video consultations were rarely clinically needed.
- b. For some conditions, such as care of the elderly with complex needs, there were both advantages (e.g. less travel) and disadvantages (e.g. deafness, low digital literacy) with remote consulting by video.
- c. The triadic hub-spoke model could also support care of more complex conditions such as chronic pain or cancer. Such models relied on a high degree of trust between the specialist and the local staff member; they seemed to depend on a positive and longstanding personal relationship between them, and (often) individualised training. Such models tended to work well until a particular individual left but then folded, raising questions about their sustainability.

The Technology

- a. The Attend Anywhere technology was, in general, dependable and produced high-quality video and audio, partly due to the software and partly because many services (especially in Highland) had invested in high-quality peripherals such as screens and noise-cancelling microphones. Patients reported that staff with strong accents were harder to understand via a remote connection.
- b. The kit available in most clinics (both hub and spoke) was experienced by staff as easy to set up and use, and more or less standardised instructions and protocols were found across the country. The strong 'Near Me' branding in Highland was popular with most but not all staff.
- c. Many clinicians expressed reluctance to move from a hub-and-spoke model to a hub-home model because they would be unable to control the technical quality of the patient's connection and also because some clinicians considered the home setting inappropriate for clinical or confidentiality reasons. In some settings, patients were assessed for their suitability to use the hub-home model and offered a trial technical connection before their appointment.
- d. Attend Anywhere is modelled on the workflow of a medical clinic (rather than a conference call), with a 'single point of entry' (typically a button to click on the hospital website) and a virtual waiting room for each patient, where the clinician can

join them when ready. We observed many clinicians and reception staff who were adept at managing the 'arrival' of patients and the virtual waiting room; we also met staff who had not yet gone up the learning curve for this task and who were uneasy about this step.

- e. We identified some technical problems with integration of Attend Anywhere software with appointment-booking software in hospitals (usually TrakCare), and also compatibility issues with internet browser and local network firewall arrangements that were in place in some hospitals (notably, the Golden Jubilee Hospital National Waiting Times Centre).

Summary of benefits as perceived by staff and patients

Staff and patients described various advantages of the Attend Anywhere service over conventional clinic appointments.

- a. Less need for travel meant financial savings (including patient travel, staff travel and the costs of staff accompanying patients transported between sites), environmental benefits (reduced carbon footprint) and less stress and hassle. Some patients were too unwell to make long journeys.
- b. Access to specialists was sometimes quicker and more direct, and with advanced technology, specialist opinions could be provided (e.g. ophthalmology examinations using a virtual slit lamp).
- c. Staff and patients perceived the virtual consultations to be shorter and more to-the-point (for example, time was not spent bringing the patient into the room).
- d. The triadic model allowed a support nurse or GP to directly observe a difficult conversation (e.g. breaking bad news or explaining options).
- e. In some cases, the hub-home model allowed holistic care of a complex or dying patient by involving family carers in the consultation.
- f. Occasionally, patients who were reluctant to attend hospital (e.g. because of past trauma) were able to engage with the service.
- g. Because Attend Anywhere created the possibility to radically redesign a service, some staff members gained development opportunities. They received bespoke training from a specialist clinician, which, along with self-study, allowed them to undertake aspects of an extended role under supervision.

Other staff views about Attend Anywhere

With few exceptions, the concerns we heard were not about the technology but about the concept of video consulting in general or the logistics of the service.

- a. A minority of staff interviewed (most of whom had had little or no experience of Attend Anywhere) were opposed to video consulting on principle, mainly because they felt it threatened the quality and safety of the clinical consultation, especially the ability to connect emotionally and develop a strong therapeutic relationship with the patient.
- b. Other staff were supportive in principle but saw no immediate clinical need to set up video consultations. GPs in remote sites, for example, were happy to do home visits to the few patients who could not get to the surgery, and staff in remote community

hospitals said that patients had to attend for their blood tests anyway so might as well see the clinician at the same time. For those in less remote sites, the introduction of video was rarely a priority.

- c. Some staff who had not yet set up Attend Anywhere locally (or been involved in a video consulting service) described a high logistical barrier to establishing and running a video consultation service (e.g. developing a new system of transmitting a prescription to the patient's local pharmacy when the patient was not there to take it).
- d. Some staff in remote community hospitals expressed concern that the introduction of video clinics would mean "losing" a consultant-led local service (in the sense that a monthly in-person visit would cease), though other staff in the same settings depicted the change in terms of "gaining" a service (in the sense of access to certain specialists who had previously been unavailable).
- e. Our dataset included two examples of consultants who were depicted as providing poor value for money because they provided clinics from a distant location without committing to training and developing local staff or helping to improve the service.

Organisational conditions associated with implementation and scale-up

- a. Organisations which adopted Attend Anywhere most readily had the following features: a receptive context for change (history of successful innovation; strong, visionary leaders; a clear, positive narrative about the technology; and good data systems that can monitor the effects of the change in a timely way), slack resources (people or money that could be channelled into the change effort), a predominance of supporters over opponents, and senior clinical and management buy-in.
- b. Variation in preconditions and the presence or absence of innovators (people keen on new products and new ways of working), champions (people who believe in an innovation and seek to persuade others of its benefits) and change agents (people with the skills, time and personal qualities to drive through the change and recruit others to help) helped explain why different specialties and remote sites came on board with Attend Anywhere at different rates.
- c. Sites where Attend Anywhere was working well (notably Highland and Grampian, which had a longer history of using virtual consultations to improve access from remote areas), had taken a system approach to supporting spread and scale-up, informed by the principles of participatory co-design, workflow redesign and quality improvement. In some sites, the introduction of Attend Anywhere clinics was strongly data-driven and strategic (for example, to address the problem of a service that was underperforming or the retirement of a key specialist).
- d. Such examples appeared to be more embedded and enduring than when a local Attend Anywhere service had been set up by a single enthusiast, or where the project was framed in terms of installing a technology, making sure it works and responding to problems.
- e. Both dyadic and (even more so) triadic hub-spoke models raised logistical challenges and required various kinds of double-handling (e.g. appointments needed to be made, rooms booked, and staff members made available, at two sites). In some remote sites, there was much redundancy (e.g. staff were allocated to a hub clinic for a whole morning but only one or two patients were seen); in others, a lone staff member had to juggle multiple roles.

- f. Hub-spoke appointments also depended on a strong sense of mutual awareness. To ensure smooth running of the clinic at the remote site, for example, staff in the 'hub' site needed to gain a sense of the realities and pressures there and accommodate to those. Where this did not happen, the clinic was perceived by staff and patients as problematic and stressful.

Wider contextual issues

- a. The strategic drivers for introducing Attend Anywhere in Scotland include a strong national policy push for technology-enabled care; a system-wide quality improvement ethos (a major goal of which was to reduce the human, financial and environmental burden of travel); the emergence of a new generation of high-quality, affordable technology; and positive feedback from patients. But as noted above, these drivers did not play out evenly, since some organisations were inherently more innovative and had a more conducive set of preconditions.
- b. Staff and patients in all the sites we visited were proud of their NHS, which they saw as reflecting deeply-held and widely-shared core values including high-quality universal healthcare provision and equity of access. In this context, the Attend Anywhere video service was generally (but not universally) seen as enhancing the existing service rather than replacing or threatening it.
- c. The introduction of video consultations, especially to rural and remote areas, should be seen in the context of a wider move to improve connectivity and reduce isolation for Scottish citizens (e.g. the 'Reaching 100%' infrastructure to deliver superfast broadband to 100% of homes and businesses by end 2023 and the 'Infil' programme to improve mobile coverage in Scotland). The expansion of these broadband and 3G/4G networks provide multiple routes for Attend Anywhere to be used across the country. Whilst 92% of Scottish homes now have access to broadband, for many this has happened relatively recently.
- d. The TEC Attend Anywhere scale-up programme has played a key role in providing local programme leads with the technical and human resource needed to introduce and support the new service model. But it has also facilitated the inter-organisation learning, leveraging national level resources for support (e.g. the national video consulting (VC) support team) and informing national level policies (e.g. ICT infrastructure standards) that have a bearing on local implementation of Attend Anywhere in clinical settings.

Outcomes

In 2018 the Scottish Government commissioned a TEC Data Review and Evaluation Options Study [2], which presented potential outcomes of a generic VC workstream. We have used our analysis to reflect on likely contributions to the potential short-term outcomes shown in that model, summarised briefly below.

- a. **Increased number of patients using VC instead of face to face.** Clear increase in Attend Anywhere appointments. However, context of use is important, such as an understanding of what video is actually replacing (e.g. home visits or out-patient clinic appointments; phone or face to face appointments).

- b. **Improved access to specialist services.** Greatly improved access for patients living in remote areas, and to rapid specialist opinion.
- c. **Less need to travel.** Reduced travel and other time savings for patients living in remote areas and travelling from the islands.
- d. **Improved management of certain conditions.** VC can support person-centred and holistic care; multi-disciplinary and multi-site working with the patient; and infection control.
- e. **Improved access for hard to reach groups.** Improved access for patients with frailty, multi-morbidity or anxiety; but risks excluding people with low digital literacy, confidence, access to technology.
- f. **Reduced professional travel and improved efficiency.** Reduced need for travel among clinicians, allied health professionals and specialists on-call for emergency care; improved service efficiency and quality.
- g. **Improved collaboration between professionals and new ways of working.** Opportunities to redesign services, develop less specialist staff and create new local service capabilities.

Recommendations

Based on the findings, we suggest the following actions to support continued scale-up, spread and sustainability.

- **Recommendation 1:** Produce for each clinical specialty ‘rules of thumb’ for what kind of clinical conditions and encounters are generally safe for video consultations.
- **Recommendation 2:** Basic training and multiple try-out opportunities for staff and patients.
- **Recommendation 3:** Develop and disseminate analysis of system-level evidence about potential financial savings from Attend Anywhere.
- **Recommendation 4:** Identify and address clinical and care governance and safeguarding issues.
- **Recommendation 5:** Working with professional networks, disseminate stories of up-and-running services.
- **Recommendation 6:** Communicate the “gaining a service” narrative.
- **Recommendation 7:** Assign and support local champions.
- **Recommendation 8:** Provide set-up support for ready-to-roll sites, paying careful attention to routines between participating sites.
- **Recommendation 9:** A Quality Improvement Collaborative to maximise inter-site learning.
- **Recommendation 10:** Implement a consistent national branding for the video consultation service across the country.

Postscript

A further phase of the evaluation has been commissioned to explore the rapid scale-up of Attend Anywhere in response to the COVID-19 pandemic.

1. Background and aims

1.1 About the evaluation

This evaluation was conducted during Aug 2019-March 2020 by a research team based within the Interdisciplinary Research in Health Sciences (IRIHS) unit at the University of Oxford. It was commissioned by the Scottish Government to deliver policy and practice-focused outputs which can shape and direct future investment decisions, programme management and national support activities for remote video consultations across Scotland. In particular, the evaluation sought to provide evidence to support the spread and scale-up of video-based access to health & social care services.

The evaluation focused on the implementation and scaling up of Attend Anywhere, which is a bespoke video call system that has been purpose-built for the health sector. It works via an internet browser and can be used on a computer, mobile and tablet device using the internet browsers Google Chrome, Microsoft Edge or Apple Safari. Attend Anywhere is more than a technology; it is a framework to introduce and support remote video consultations at scale.

An initial national licence for the Attend Anywhere system was procured on behalf of the Scottish Government in October 2016. Following the outcomes of initial pilot work, a further two-year national contract, with an option for a third year, was established in October 2017, in order to provide local health and social care organisations across Scotland with access to the system free of charge.

Financial investments had also gone into developing and expanding the service model during 2018/2019, including the NHS 'Near Me' projects in NHS Highland (developing video consultations to patients at home or local clinics) and the 'scale-up challenge' to support implementation across a number of participating health boards [3].

Uptake and use of Attend Anywhere has steadily grown following the launch of this scaling up programme, and by the time of writing this report (early 2020), all 14 territorial Health Boards and the Golden Jubilee National Hospital were enrolled. In addition, services have been established across a wide range of Health and Social Care Partnerships² (HSCP) and Third Sector organisations (see Appendix A).

This evaluation applied a mixed-methods (qualitative and quantitative) approach to provide a deeper understanding of outcome achievements in relation to the uptake and use of Attend Anywhere, review its current and potential for service improvement, and identify barriers and facilitators that have a bearing on the continued expansion of the video consultation services.

The main aims were as follows:

² Health and Social Care Partnerships bring together Local Authorities and local Health Boards to plan and deliver integrated adult community health, including primary care, and social care services, including services for older people.

- a. To assess Attend Anywhere's progress and achievements in relation to the use and outcomes of Attend Anywhere.
- b. To develop an understanding of the implementation experience of Attend Anywhere to date.
- c. To make recommendations relevant to any future scaling-up, spread and sustainability of Attend Anywhere and similar digital services.

1.2 A brief history of Attend Anywhere in Scotland

There has been a long established strategic intent to use video for remote consulting, and this has been consistently advocated through Scotland's eHealth Strategy [4,5] and Scotland's Digital Health & Care Strategy [6]. It has been viewed as a means to improve citizens' access to health and care services and, ultimately, to improve their health outcomes.

In 2014, the Scottish Government established the Technology Enabled Care (TEC) Programme, which included a series of workstreams to drive the widespread adoption of technology to support self-management, access to care and remote management within health and social care. The Scotland-wide programme was set up to respond to the need for service transformation in the context of rising demand for health and social care. Through central funding, the programme aims to drive deployment at a local level alongside national infrastructure and support work, and to place Scotland at the forefront of innovative approaches to technology enabled care.

In the context of Scotland's unique geography, video consulting was seen as enabling the pooling of expertise and provision across the country to ensure a better patient experience that reached those in the farthest corners of the country. The TEC programme's video-consulting (VC) workstream focused on the roll out of video consultations across Scotland. This initially involved a range of pilot studies using different video consulting technologies, including Cisco Jabber and Polycom devices, to improve communication between health and social care organisations.

In 2015, the TEC team became aware of Attend Anywhere, which has evolved in collaboration with Australian governments, universities and public hospitals over many years to support business-as-usual video call access to public health services by patients. The Attend Anywhere organisation was founded in Melbourne, Australia in 1998. It operates on a not-for-profit basis, selling licences to healthcare organisations, constituting user accounts that allow the creation and management of 'virtual waiting areas'. Each clinician or staff member within a service has their own clinic account and can use the same waiting area. The licence cost will vary depending on the number of waiting areas used by the health organisations.

Attend Anywhere uses internet browser-based video technology that can be accessed by a member of the public using their own device, be it a laptop, tablet or mobile phone. It has been designed to match the consulting workflow.

Attend Anywhere consists of three main components:

- a. **A service and operations layer** – this includes professional assistance and advice from a team of experts, providing recommended ways of introducing and running video consultations within existing workflows and a supporting resource centre (e.g. guidance, implementation protocols, template patient leaflets).
- b. **A management layer** – software platform design to help implement the Attend Anywhere model within healthcare settings. This includes a web-based management console to allow the care provider to see when the patient has arrived in the virtual waiting area, and to manage video appointments through existing processes and systems. Staff can create/manage the waiting areas, control access to them and view detailed reports about adoption and use.
- c. **A video technology layer** – open-source video technology called WebRTC video technology, which is integrated with the software platform in a way that meets security and privacy requirements

One of the defining features of the Attend Anywhere model for video consulting is the ‘inbound’ (or ‘person-centric’) workflow, which seeks to emulate the ways in which patients physically attend their appointments. For example, a single button on a website (or consistent weblink address on an appointment letter) offers a consistent channel or ‘front door’ for patients to access a ‘virtual waiting room’ (potentially managed by a receptionist), before being joined virtually by the clinician. This is illustrated in the diagram below.³

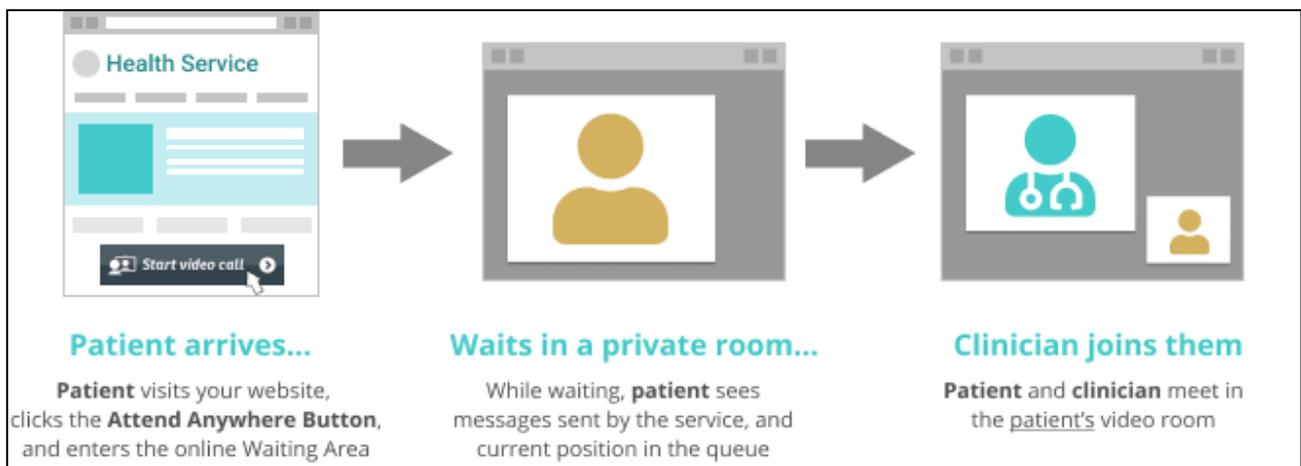


Figure 1: Process for a patient attending an online video consultation with a clinician

This contrasts with other mainstream video consulting tools that might be described as providing an ‘outbound’ workflow; in that, the video call is configured around a specific meeting slot which people are invited to join via a unique internet (URL) link, at a particular time:

“[Conventional] video conferencing is outbound, provider-centric, simple workflows. The purpose is to get the person into the slot as quickly as possible. Whereas

³ Diagram from NHS Scotland National Video Conferencing Service website: <https://www.vc.scot.nhs.uk/attendanywhere/>

healthcare isn't like that. Healthcare involves inbound patient-centric workflows. They are complex.” (#53, CEO and founder, Attend Anywhere)

An initial licence for Attend Anywhere was procured by the Scottish Government for Scotland in October 2016 and formally launched by the Cabinet Secretary for Health and Sport in December 2016 for initial piloting. This started with a one year ‘pathfinder’ programme to assess a range of factors including technical feasibility, usability and demand for the video consulting system. Access to the platform was provided free of charge to Health Boards, Health and Social Care Partnerships and Third Sector organisations.

NHS Highland was one of the early adopter sites, where a clinician-manager (a pharmacist by training) with a strong interest in quality improvement thought that a video link might be used to solve the problem of patchy provision of specialist pharmacy services.

“Our problem was in remote parts we can't recruit skilled professionals such as GPs or pharmacists. The question I started with was could we do medication reviews, polypharmacy reviews that kind of thing, via video link?” (#1 Debbie, clinician-manager)

Debbie gained two quality improvement fellowships (one funded by a charity and one by the Scottish Government); she travelled to the USA to see video consulting models in action, and developed her skills in quality improvement and co-design. The pilot pharmacy project, which used Attend Anywhere, was successful in demonstrating improved access to pharmacists and greater convenience for patients in rural areas, and Debbie could see that the model had much wider potential.

“I invited the CEO of NHS Highland to see what we'd done. She was so impressed that she gave me a secondment to develop a video outpatient service. She wanted me to extend what I'd done for pharmacy to cover medical appointments too.” (#1 Debbie, clinician-manager)

In January 2018, funding was provided to NHS Highland to establish video clinics in Caithness (in the far north of Scotland). Following approval by NHS Highland of the business case to fund the ongoing service, an additional award was made in July 2018 to support the one-off costs to extend the service across Highland.

Debbie worked with others to undertake detailed service redesign work in some remote areas. A strong, patient-centred branding was seen as important.

“History is as important as geography. [Remote region in NHS Highland] had felt rather low priority. Historically NHS Highland had not engaged much with this particular community. There's a vocal public campaign group; it was set up a few years ago after they shut one of the hospitals, that campaign group is still active. They feel that they're the forgotten community. I said to Debbie, let's take a co-design approach; build some bridges. Debbie is very personable. People like her, even though she works for the [NHS Highland] board. We had to avoid this being framed as “you're gonna cut our services and give us the VC instead”. We had to sell it carefully: “use VC to prevent a 6-hour round trip to Inverness”. So we held a public

meeting, doing a joint presentation and hearing feedback. It's what they called an ideation workshop – it's a bit of a fancy focus group – we did process mapping. We got them to add steps, take away steps.” (#50 Pauline, clinician-manager)

Debbie and Pauline's efforts to establish both a central 'hub' (at their base in Raigmore Hospital, Inverness) and 'spoke' centres across NHS Highland from which patients could connect to the service, gradually created a network effect. In other words, because more and more sites were being established, that increased the opportunities for further development.

“If Debbie's set up an NHS Near Me in a new place, we follow her.” (#15 Moragh, respiratory consultant providing a remote clinic)

As the national infrastructure grew, local staff considered which remote services were a priority for them. An important driver here, both nationally and locally, was cost. In the Western Isles, for example, a systematic analysis of the budget spent on travel costs revealed a large pot of funding that could potentially be redeployed to support remote services. This issue is discussed further in the section on organisational issues, below.

A final contributor to what one interviewee called a “confluence of drivers” for developing the Attend Anywhere service was positive feedback from patients.

“I thought we'd discover it was as good as face to face and better than nothing. What we actually discovered was patients preferred it. There was a strong patient voice saying it was much better. That changed my thinking.” (#1 Debbie, Clinician-manager, Highlands)

Largely because of media coverage, and also via word of mouth from others who had used the service, patients had begun to contact the hospital asking whether they could have their consultation by video.

Interest in Attend Anywhere grew nationally through TEC team outreach activity with Health Boards, taken on and driven locally by clinical champions. In NHS Grampian, for example, Attend Anywhere was introduced in 2017 within the Gastroenterology clinic, led by a consultant looking to improve on the current VC consulting system.

“We had been doing video clinics for a long long time. I had been doing video clinics since 2009, but we used to use the meeting room structure. So patients had to go into a GP surgery or local hospital and then sit in a waiting room, waiting for me to connect from clinic and not knowing if I was running late or what was happening.... And then, coincidentally, I was speaking at the event that Attend Anywhere was launched at, and so we got talking and it was what we were waiting for”. (#67, Kevin, consultant gastroenterologist)

Based on the success of the funded Highland programme, as well as the other unfunded developments, the Attend Anywhere Scale-Up challenge was launched in November 2018. The TEC Programme provided scale-up funding totalling £1.6 million, in which Health Boards and HSCPs were provided with up to £150K for programmes of work related to the introduction and scale-up of Attend Anywhere for remote consultations. By

mid-2019, uptake and use of Attend Anywhere had expanded across all 14 territorial board areas and the Golden Jubilee National Hospital, as well as a wide range of Health and Social Care Partnerships and Third Sector organisations.

The ways in which service teams use Attend Anywhere to connect with patients and service users varies across settings and specialties, and are summarised under three different models of use:

- **Hub-home**, in which the clinician connects from the clinic to patient at home (or other locations on personal devices),
- **Dyadic hub-spoke**, in which the clinician in a specialist 'hub' centre connects to patient in remote 'spoke' health or care site without additional staff member present (e.g. in an unstaffed kiosk)
- **Triadic hub-spoke**, in which the clinician in a specialist 'hub' centre connects to patient in remote 'spoke' health or care site with an additional staff member (nurse, GP, healthcare support worker (HSW)) present.

These three models were used to support remote consulting of patients within a single Health Board, and for consultations across Health Boards, including the provision of services from mainland hospitals to patients living in the islands, and services provided by the Golden Jubilee National Hospital.

Whilst local evaluations provided valuable information about the uptake and potential benefits of this new service model, it was decided that an independent and comprehensive evaluation was needed to review progress and produce recommendations for the scale-up, spread and sustainability of Attend Anywhere (and similar digital services) going forward.

1.3 Structure of the report

This report presents the key findings and lessons on the uptake and use of Attend Anywhere across health and social care in Scotland. The remaining sections in this report are structured around three main parts:

- The methods, including sampling strategy, data collection and analysis.
- The findings, on the factors influencing adoption, use and scale-up.
- The discussion, focusing on the programme achievement, outcomes and recommendations for future scale-up.

As noted above, the term 'Near Me' is a branding developed by NHS Highland to describe their video consulting services established using Attend Anywhere. Some boards have also adopted the Near Me service name, but have been encouraged to ensure staff members are aware (for training and navigation purposes) that the underlying technology continues to be delivered by Attend Anywhere. For this reason both the terms 'Attend Anywhere' and 'Near Me' are used by interviewees. We use both terms in this report. Some staff outside Highlands thought that Near Me was a different technology. Some staff who talked about Attend Anywhere were actually referring to other video technology (e.g. Cisco Jabber).

2. Methods

2.1 Locations and sampling

Between August 2019 and March 2020, we collected a range of data comprising ethnographic field notes, interviews, documents and direct observation of technologies (computers, screens, peripherals) and the rooms and spaces they were used in. We purposefully selected a sub-sample of Health Boards for qualitative data collection, in order to analyse data within the organisational context. These were selected to explore variations in geography (urban and rural, islands), clinical context, regional (NHS territorial health boards) and adoption progress. The selection was guided by initial scoping interviews with local project leads at each health board. The geographical areas covered by the NHS Health Boards are shown in Figure 2 below.

NHS Scotland Health Board Areas

- | | |
|------------------------------|-------------------|
| 1. Ayrshire and Arran | 8. Highland |
| 2. Borders | 9. Lanarkshire |
| 3. Dumfries and Galloway | 10. Lothian |
| 4. Fife | 11. Orkney |
| 5. Forth Valley | 12. Shetland |
| 6. Grampian | 13. Tayside |
| 7. Greater Glasgow and Clyde | 14. Western Isles |

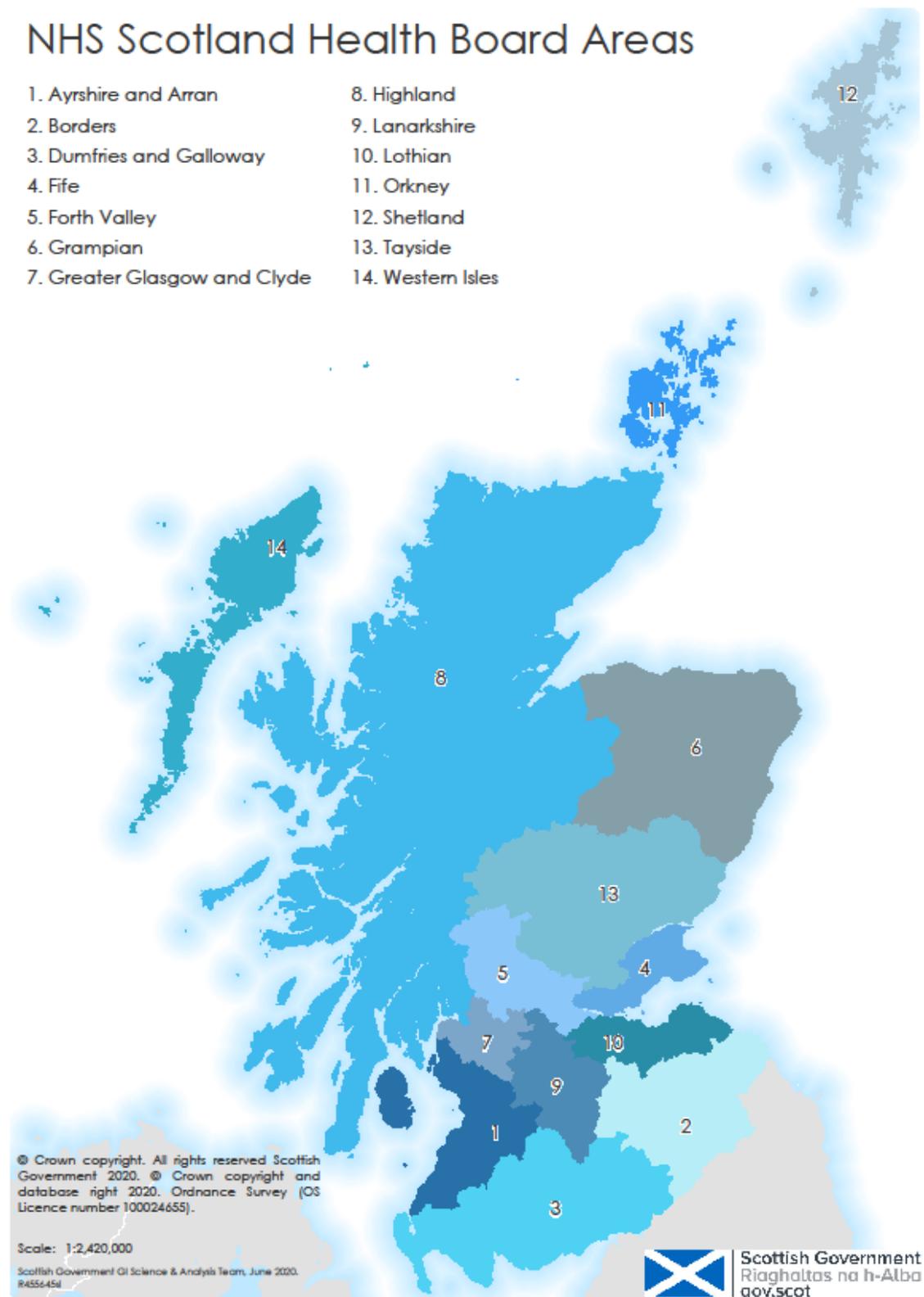


Figure 2: NHS Scotland Health Board areas

To collect these data, we (JW and TG) undertook a total of 6 visits to Scotland, along with phone and video calls. A total of 11 sites were visited in person (see Table 1).

Table 1: Sites visited during fieldwork

Health Board	Site
NHS Forth Valley	Falkirk Community Hospital
NHS Highland	Raigmore Hospital, Inverness Portree Hospital, Skye New Craigs Hospital, Inverness - mental health
NHS Grampian	Aberdeen Royal Infirmary Woodend Hospital, Aberdeen
NHS Great Glasgow and Clyde	Glasgow Royal Infirmary
NHS Orkney	Balfour Hospital, Kirkwall Dounby Surgery, Orkney
NHS Western Isles	Uist and Barra Hospital, Benbecula, Western Isles Western Isles Hospital, Stornoway

We conducted remote interviews with staff and patients who were based at 17 additional sites (see Table 2).

Table 2: Sites for remote interviews

Health Board	Site
NHS Grampian	2 GP Practices in Aberdeenshire Rape Crisis Grampian
NHS Greater Glasgow and Clyde	Hospice in Paisley Inverclyde Royal Hospital
NHS Highland	Bedford Hospital, Fort William Caithness Hospital GP practice in Fort William GP practice in Wick Maternity services in Argyll & Bute
NHS Forth Valley	Clackmannanshire Community Health Care Centre Forth Valley Royal Hospital
National Waiting Times Centre	Golden Jubilee National Hospital
NHS Lothian	St John's Hospital
NHS Orkney	GP Practice in Rousay
NHS Western Isles	2 GP practices, Isle of Lewis

In addition, we met with representatives from Scottish Government, NHS Scotland, industry (Attend Anywhere), the national VC Support team and other national level organisations relevant to the use of video consultations.

In total, we conducted 140 interviews and observed eight remote consultations. These are summarised in Table 3.

Table 3: Participant groups

Stakeholder groups	Interviews
Doctors	29
<i>GPs (9)</i>	
<i>Consultants (18)</i>	
<i>Dual accredited (2)</i>	
Nurses	18
Allied health professions	22
<i>Physiotherapists (7)</i>	
<i>Dietitians (4)</i>	
<i>Counsellors (3)</i>	
<i>Speech and Language Therapists (3)</i>	
<i>Psychologists (2)</i>	
<i>Pharmacists (2)</i>	
<i>Occupational Therapist (1)</i>	
Health support worker	2
Third sector support worker	1
Clinician-managers	4
Non-clinical managers	14
Admin / support	8
EHealth/IT staff	9
Patients	16
Relatives/carers	5
National level stakeholders	12
Total	140

2.2 How we did the interviews

Participants for interviews were identified in one of three ways: direct contact (e.g. clinicians or managers who had been recommended to us by the Scottish Government or who were listed as having a strategic role in video consulting nationally or locally); indirect contact ('snowballing' from an interviewee by asking them to recommend someone else); and social media (via a Twitter call using the key word Attend Anywhere and NHS Near Me). All interviewees gave informed consent either in writing or on tape.

Most people were interviewed individually but some chose to be interviewed in pairs (e.g. consultant plus specialist nurse) or (in three cases) a group of up to five (Macmillan nurses, Colorectal Surgery team and an administrative support team). Staff interviews were conversational in format, with the staff member identifying the key issues they wished to speak about. A prompt list of key topics was used where needed.

The 140 interviews covered 139 interviewees; one person was interviewed twice because they had used Attend Anywhere both as a staff member and as a patient. Of the 140 interviews, 120 were audiotaped with consent; contemporaneous notes were written or typed during all interviews. Interviews lasted from 15 to 45 minutes. Tapes were not fully transcribed (partly for resource reasons and partly to avoid loss of overview, since salient issues were often captured succinctly by making field notes) but we returned to the audiotape to obtain a verbatim record where needed. Six consultations were audiotaped with patient and clinician consent.

Ethical Approval

The study received NHS Research Ethics Committee (REC) approval in June 2019 (ref 19/LO/0550) and NHS Research Scotland Permissions Coordinating Centre (NRSPCC) approval in October 2019, with subsequent local approvals obtained from Research and Development (R&D) departments within each health board.

2.3 Data analysis

Data were pseudonymised by giving each interviewee a different name (gender and ethnically matched). A spreadsheet of real names and pseudonyms was kept on an encrypted hard drive.

Data was managed and stored confidentially and securely at the University of Oxford. We paid strict attention to the General Data Protection Regulations (GDPR) and followed data management and data security policies at the University of Oxford, which can be supplied on request.

Field notes and typewritten interview notes (along with selected audio transcripts) were organised into an Excel spreadsheet using the 'framework' method, in which each row represents an interviewee (or document) and each column represents a different thematic category. Sections of text are copied and pasted into categories, which were taken from the NASSS framework [1] (specifically, the sub-domains on the right of Figure 3 below). NASSS is a multi-level theoretical model which helps predict and evaluate the success of technology-supported health or social care programmes.

We then considered each thematic category in turn, along with the interactions and interdependencies between these categories. We produced a provisional draft of our findings, broadly structured around the NASSS framework domains, which was circulated to all interviewees and stakeholders who had requested to see it. We amended the draft to correct factual errors. Where people (rarely) disagreed with our interpretation of our findings, we have included their perspective as well as our own.

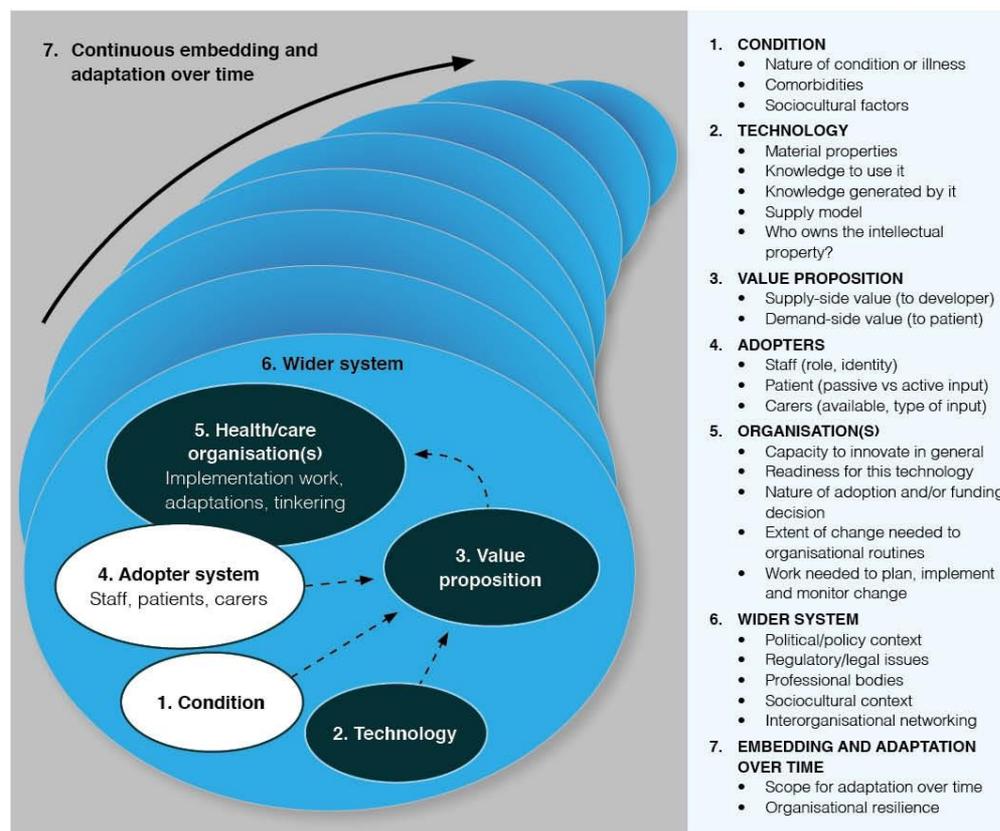


Figure 3: NASSS framework

3. Findings

3.1 Uptake and use of Attend Anywhere

By the time of writing this report (early 2020) all 14 local Health Boards and the Golden Jubilee National Hospital were enrolled on the scale-up programme. The uptake and use across Health Boards and clinical areas are presented in Appendix A, based on activity data collected through the Attend Anywhere system during Jan-Dec 2019.

During this period, 6719 Attend Anywhere consultations were conducted across all health boards. Most of this activity (91%) was within secondary (i.e. hospital) care and other community health services (excluding GP practices). This included approximately 180 clinical departments with 'active' waiting areas ('active' meaning used at least once during this period) across all health boards. These were all at different stages of implementation,

and there was great variation in the level of video clinic activity across clinical departments. The graph in Appendix B presents the spread of video clinic activity across services.

Approximately 130 clinical departments (70%) had conducted five or more video appointments during the collection period.

The activity included approximately 35 different clinical specialties. Gastroenterology presented the highest frequency of appointments, but was only routinely used within two Health Boards (Highland and Grampian). Haematology was the second highest specialty, but was mainly focused within one Health Board (Highland). Psychiatry and psychology related services presented the highest uptake rate across Health Boards, and was the third highest area with regard to frequency of video appointments overall. The full list of specialties and associated activity are presented in Appendix C.

The remaining 9% of Attend Anywhere activity across health and social care was through 64 GP services. Similarly, these were all at different stages of implementation, with 23 (36%) of these services having conducted five or more video consultations.

Around 62% of consultations via Attend Anywhere were conducted within two Health Boards; NHS Highland (42%) and NHS Grampian (20%). Although it is important to note that many clinicians based within these two Health Boards also run remote consultations with the patients based in the NHS Western Isles, NHS Shetland and NHS Orkney. This meant that the appointment activity was captured within the Attend Anywhere accounts at the hub sites where the clinician was based, even though the patient was based at an island site (either at home or at the hospital)

Furthermore, 50% of the GP activity was concentrated within NHS Grampian, where there is a specific TEC-funded programme to support scale-up within community and primary care across Aberdeenshire.

The activity data was captured through the Attend Anywhere platform, as opposed to NHS systems, and so it was not possible to establish the proportion of video in relation to other appointments types (i.e. face to face and telephone appointments). However, based on preliminary analysis conducted by local teams within some health boards, it would appear that the proportion of Attend Anywhere activity was a relatively low proportion of overall outpatient activity. For example, In NHS Highland, it was estimated that Attend Anywhere constituted 1-2% of outpatient clinic activity across the Health Board. Similarly, within NHS Grampian it was estimated that 16-18% of patients opted to use video for their consultation within one of the most established services that routinely offers video appointments. However, it is important to note that these estimates were based on preliminary analyses, and there are other aspects of outpatient activity to account for (e.g. new versus return appointments). This highlights the value of being able to access routinely collected data from the patient administration systems, rather than relying solely on the Attend Anywhere platform, to monitor use of video consultations in relation to wider clinic activity. Whilst this type of data collection was beyond the scope of this evaluation, we recommend utilising these sources of data for future evaluations going forward (see Discussion section, below)

In addition to the use of Attend Anywhere for clinical appointments within the Health Boards, a number of third sector organisations have been using video for counselling, advice services and hospice care. Two organisations in particular have been using it on a routine basis with service users: Rape Crisis Grampian (conducting 159 consultations during Jan-Dec 2019) and MS Revive (which supports people affected by multiple sclerosis: conducted 120 consultations).

3.2 User experience surveys

During Jan-Dec 2019, 679 online patient surveys were completed immediately after the video consultation, representing about 10% of consultations (see full details in Appendix D). Of these, 98% of the patients stated that they would choose the video option again.

When asked what mode(s) of transport they would have used if travelling to the clinic, most patients (61%) said they would have used a private car and 11% would have used train/bus. Other forms of transport included plane (6%), ferry (5%), taxi (4%), hospital transport (3%) and cycling (1%). For some patients (10%) the journey would have involved a combination of these different modes of transport. Only a small minority of patients said they would have walked (4%) or cycled (1%) to the clinic (graph in Appendix D).

According to the surveys, the average (estimated) distance they would have travelled (one-way) if going to the clinic was 51 miles, ranging greatly from less than one mile to 1300. (See full graph in Appendix D.) It was also reported by some (17%) that the Health Board would have paid for the journey; of these the average distance travelled was 104 miles.

The benefits and disadvantages perceived by patients are presented in Table 4. The main benefits included saving travel (stated by 72% of the sample), convenience (62%), saving time (57%) and saving money (39%). Relatively few negatives were reported by patients. The main negative was not being able to hear the clinician properly (7% of respondents) and not being able to see the clinician properly (4%), with some saying that a face to face appointment would have been better (3%).

Table 4 Benefits and disadvantages perceived by patients (N=679)

Benefits	% reported
Saved travel	72%
Convenience	62%
Saved time	57%
Saved money	39%
Did not have to wait as long for the appointment	29%
Did not have to take time off work	28%
Did not need someone to take me	23%
Because of my condition it was safer/easier	23%
Did not have to arrange child care	13%
Other*	2%
Disadvantages	% reported
Could not hear the person properly	7%
Could not see person properly	4%
Face to face would have been better	3%
Had to have another appointment face to face anyway	2%
Could not find somewhere private to conduct the call	1%
Took longer to arrange	1%
Use mobile data allowance	1%
Cost money to do	<0%
Was too complicated	<0%
Other**	3%

* examples of 'other' benefits included feeling more comfortable at home and less stress from journey

** the majority of 'other' disadvantages related to the technical connection or duration in the virtual waiting area.

In most cases (76%), patients reported that consultations ran with no technical problems. Of those reporting technical problems, the issues mainly related to audio-video quality (e.g. moments of sound loss, lack of synchronisation between video and audio), as

opposed to complete technical failures that prevented use. However, some did report delays in establishing a connection or the call dropping out during the consultations.

During Jan-Dec 2019, 755 clinician surveys were completed, representing about 11% of consultations (see full details in Appendix D). Of these, the majority (71%) reported that the consultation ran with no technical problems. Around 17% of the clinicians felt that such technical issues impaired the consultation.

The benefits and disadvantages perceived by clinicians are summarised in Table 5. The main benefits reported by clinicians included avoidance of travel for patients (56%) and themselves (38%). It was also felt that the video option made it easier and safer for patients with mobility problems due to their health condition (10%). Another perceived benefit was reduction in appointment duration (20%). Although, in some cases (2%), it was felt that video actually made the consultation longer.

Table 5 Benefits and disadvantages perceived by clinicians (N=755)

Benefits	% reported
Saved service user travel	56%
Saved clinician travel	38%
Took less time	20%
Avoided patient travel by plane/ferry	14%
Avoided use of patient transport	11%
Safer/easier because of patient's condition	10%
Other*	8%
Disadvantages	% reported
The video and audio quality impaired the consultation	17%
Face to face would have been better	8%
Could not do everything via video, needed to arrange another appointment	2%
Service user/patient was uncomfortable with the technology	2%
Appointment took longer	2%
Other**	9%

* example 'other' benefits included more rapid assessment of patient, allowing patient to attend while at work and seeing the patient despite adverse weather conditions

** example 'other' disadvantages included minor technical issues connecting and assistant needed for the patient using the technology.

3.3 Which clinical conditions and services were [un]suitable for Attend Anywhere?

Conditions and services for which Attend Anywhere worked well

Our interviewees affirmed a consistent finding from previous research – that some but not all conditions are appropriately managed through a remote video consultation. Examples of clinical conditions that seemed well-suited to the remote medium included:

- **Routine follow-ups of chronic, stable conditions**, especially those monitored using evidence-based protocols and biomarkers (blood tests), where the main purpose of the consultation is to confirm that the patient remains asymptomatic and to give and discuss the test results.

“I’d say the majority [of Attend Anywhere for routine follow-up consultations] go well. Patients get told they’re responding well to treatment. See you in a month, [they ask] do I have to come to Inverness, [the reply is] no, we can do it via Attend Anywhere, and they’re delighted.” (#71 Penelope, Macmillan nurse)

“Renal medicine for example. We’ve always had good remote support from the renal physicians, they were always happy to give advice based on blood results, now they’ve got one more tool with the video link.” (#33 Lynne, GP and physician)

“There’s no difference [between face to face and video appointments]. He always asks me the same questions.” (#43 Patrick, haematology patient with chronic blood disorder)

“For our service there are a lot of appointments that are routine reviews, prescribing, that don’t need that level of intensity, so video works ok for that... New patients we don’t do via video, but for return patients you don’t have to examine. Say you have to examine lymph nodes, or chest. If you have to do that regularly, then there is no point doing it via video link. But say you have someone with lymphoma, and after one or two courses of treatment, there is nothing left to find.” (#58, Richard, consultant haematologist)

- **Fracture clinic follow-ups**, in which the patient is X-rayed locally before a video consultation with orthopaedic specialist who reviews images and can gain a view of the recovering limb via tablet or peripheral camera.
- **Other surgical follow-ups**, in which the review of their recovery or treatment outcomes can be reliably determined by a combination of the patient’s accounts and visual assessment that does not require physical contact, such as hand trauma rehabilitation.

“The hand tendons patients work for these [video] follow up appointments because as long as I can see the hand move, I know the tendons are attached. I don’t

necessarily need to feel it. So I know there has not been a failure of the surgery.”
(#71, Michelle, physiotherapist)

- **Some psychology and psychiatry** where the main form of management is talking therapy, with or without medication.

“My case load is about 50% personality disorder. Of the rest, 25% are schizophrenia or schizoaffective, and the other 25% are anxiety, depression or OCD [obsessive-compulsive disorder]. Most of these would be eligible [for video consultations]. I wouldn’t see new patients but the follow-ups, fine.” (#2 Jake, psychiatrist)

- **Counselling and advice services, involving listening, talking and providing information.**

“They can do it from where ever they think is best, they can be in their own home, sitting in a car. It is completely confidential... The whole subject matter comes up quicker and trust is easier to build. And if they feel safe they find it easier to talk.”
(#68 Esther, Rape Crisis support)

- **Dietetics** e.g. adults with obesity and “fussy eater” children.
- **Speech and language therapy**, including work on breathing and voice control for children and adults with quiet voices

“Some kids who’d been reluctant, but when they could see themselves on the screen, it seemed to empower them.” (#39 Louise, speech and language therapist)

Attend Anywhere was also used for more complex telemedicine arrangements, in which a GP with special interest or secondary care clinician (consultant, specialist nurse, physiotherapist) connected with the patient to a tertiary care specialist:

- **Chronic pain** (GP with special interest links to tertiary care pain clinic).
- **Dermatology** (dermatology specialist nurse links to consultant dermatologist).
- **Pre-operative assessment** (specialist nurses examine patients locally, using a peripheral camera to allow an anaesthetist to assess the patient’s pharynx via video link).
- **Respiratory conditions** (a generalist nurse examines patients locally, links to a respiratory consultant and specialist respiratory nurse via video, using an electronic stethoscope if needed).

“[We use video for] just about any respiratory condition: bronchiectasis, COPD [chronic obstructive pulmonary disease], asthma, ILD [interstitial lung disease].” (#4 Niamh, specialist respiratory nurse)

“The nurse at the other end examines the patient and does the breath test. And then, I chat to the patient, then I come off the screen to dictate the letter, then Niamh [specialist nurse] stays on the video with the patient to start the self-management education.” (#3 Moragh, respiratory consultant)

- **Cancer care** (Macmillan nurses support and examine patients locally, as well as giving and overseeing cancer medication; they sit in on patients’ video consultations with oncologists, attend multidisciplinary team meetings by video link; and liaise with other specialist nurses e.g. stoma care).

Interviewer: “Can you give me an example of how cancer care works with Attend Anywhere?”

Respondent: “Sure. Here’s a patient, [type of cancer], they’d got progression of disease and a lot of treatments have been problematic, so we needed to discuss their last options. It was a combination of chemo[therapy] and a targeted therapy. So we had a long consultation [via video link with the consultant oncologist] about what’s available, weighing up the side effects bearing in mind this patient’s history. And it turns out that with this drug, only one in four will benefit. So there was a long discussion with the wife present, and we all had to be realistic – what if you’re in the 3 out of 4 who don’t benefit? So they said they’d think about it and we fixed up for me to visit them at home 48 hours later. It was a very difficult, emotional consultation. Considering whether to take treatment. That sort of consultation is normal for us on this side of the service.” (#26 Leanne, Macmillan nurse)

- **Palliative care** (Macmillan nurses oversee terminally ill patients, linking with palliative care consultants and hospice nurses and pharmacists by video as needed).
- **‘Team around the child’** (for children with complex needs, a video consultation can bring together multiple specialists including the GP, paediatrician, educational psychologist, occupational therapist, speech and language therapist). We met one parent who had hosted such a meeting in their home, with four staff attending in person and five linking via Attend Anywhere. A specialist wheelchair service based in Glasgow was also involved in this case:

“We had a new buggy delivered. They [wheelchair service] showed us the same buggy their end, showed us how to take it apart put back together, adjust all the supports. That saved us a trip and saved a long wait for the appointment. It was important because early intervention is recommended for all children with major disability.” (#38 Leonie, parent)

- **Stroke rehabilitation** (healthcare support worker with the patient in remote site, linking with neurologist or rehabilitation specialist at specialist centre).

- **Pulmonary rehabilitation classes** (in which a respiratory physiotherapist takes a group of patients through an 8-week course).

“Pulmonary rehab. It’s for COPD, any chronic respiratory condition causing breathlessness. It’s physio led, physical exercises repeated over 8 weeks, and then you measure how able they are to recover. It won’t strengthen their lung function, but it will strengthen their muscles. They will learn that they’ll get breathless, but that breathlessness is safe. They learn pacing. We’ve started doing it by video in a hub and spoke model, class in Fort William of 8 people, using the Near Me screen. We have tried to do it with patients at home, but you get the dog barking and the doorbell ringing in the background! Otherwise if you lose a physio you lose the class.” (#4 Niamh, respiratory specialist nurse).

- **Hand surgery** (physiotherapist runs a remote hand clinic, using video link to specialist hand surgeon in tertiary care centre, Figure 4 below).

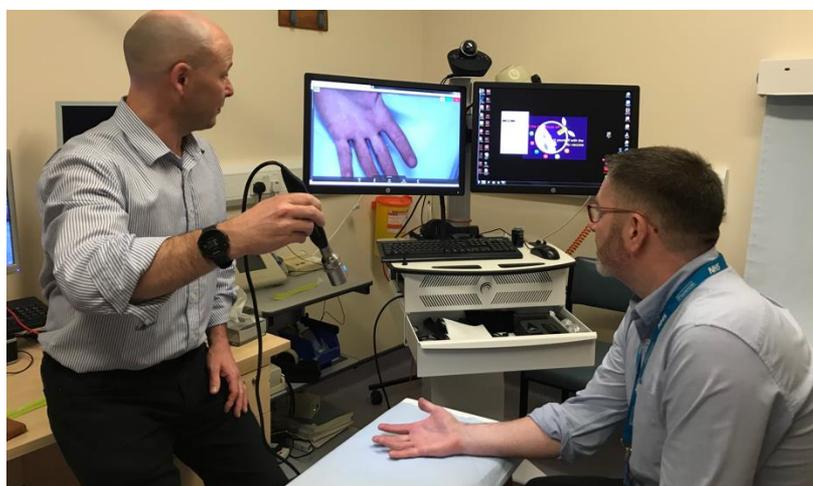


Figure 4: Physiotherapist in remote hospital linking to tertiary care specialist hand surgeon⁴

An important observation on these more complex care arrangements is that the pairings between generalist and specialist appear to be ad hoc and based on strong interpersonal relationships with a high degree of trust and positive regard. The list above should be read as a selection of examples of where enthusiastic clinicians (innovators, champions and change agents) have made the service work, *not* as a generalisable or exclusive list of where Attend Anywhere *will* work.

Contra-indications and Cautions

The above examples all feature *either* conditions for which consultations are highly predictable *or* ones in which a clinician is present at a remote centre with the patient. Conditions for which our interviewees felt that it would be difficult or impossible to offer the

⁴ Participants consented to use of photo for this report

service via Attend Anywhere include the following (note that the quotes are anecdotal and included for illustration only):

- **Poorly-defined conditions**, where each patient is likely to require a different set of investigations and different package of care, and this cannot be predicted in advance.

“We wouldn’t do the fibromyalgias by VC as they need working up; they [rheumatologists] want clearly-defined stuff like sacro-ileitis, inflamed joints. [...] And the very general stuff – medicine, surgery, paed’s – is too broad for remote.” (#33 Lynne, GP and physician)

- **Rare conditions**, where the volume of work from the remote site is insufficient to fill even a small clinic.

“We had a couple of teens with eating disorders a few years ago; we thought we might set up a remote clinic, but they’ve gone now. There’s not really anyone with a severe eating disorder locally now.” (#33 Lynne, GP and physician)

- **When essential tests or medication are unavailable locally.**

“We’re constrained by drug expiry dates. Haematology drugs for example have short expiry times so patients have to go to Inverness.” (#24 Ellie, Macmillan nurse, remote site)

- **Some psychiatric conditions** such as paranoia or certain forms of schizophrenia, in which part of the illness is a delusion about the technology (e.g. a belief that one’s thoughts might be captured), or those in which the patient’s mental state is highly unstable.

“There’s safeguarding to think about, say if a patient becomes distressed and you can’t de-escalate it, and they start self-harming, what if the tech cuts out. I’ll give you two examples: an anxiety attack or the patient becoming hostile.” (#2 Jake, psychiatrist)

Not all conditions could be cleanly divided into those for which Attend Anywhere was “suitable” or “unsuitable”. In some, there was a trade-off that had to be managed using clinical and wider judgement. **Frail elderly patients**, for example, were a complex and heterogeneous group, about whom views were divided. On the one hand, clinicians and managers were aware that elderly patients were sometimes reticent to use new technologies and may have conditions (such as cognitive impairment or poor hearing or vision) that would make a remote consultation more difficult. Many also felt that the face-to-face assessment would provide much richer clinical and social information (one geriatrician talked about using his sense of smell as well as hearing and vision). On the other hand, most clinicians also recognised that such patients also found travelling difficult and it was sometimes difficult to coordinate carers to help them attend.

“For some elderly people ... there’s an NHS bus that runs from [remote setting] to Inverness, but imagine a frail person on that bus – it takes 3 hours and doesn’t stop for the toilet.” (#50 Pauline, clinician-manager)

“[With video consulting] I’m worried about its impact on frail people. In my experience, for elders it doesn’t work, their relative ends up shouting to them. You get the odd one that Skypes their grandchildren. But mostly they’ve got sensory impairment or cognitive impairment and they need someone else to use the technology. And what you get is, the older person themselves is shut out of the conversation. It can be, it’s often more the daughter you’re talking to than the patient.” (#45 Tom, geriatrician)

Another ambiguous clinical area was **sexual health** and conditions relating to **gender**. On the one hand, a remote component to the service provided the opportunity for consulting more anonymously; on the other hand, locally-based staff who knew the patient were sometimes inevitably involved.

“It’s a small community. Everyone knows everyone. We’ve got a sexual health nurse, but we struggle with contact tracing. That’s hard to do with a limited service; it could be done via Attend Anywhere. Sexual health is a specialty that’s already done a lot with tech, like text messaging results. But gender [reassignment] stuff for example – patients might want to go away for that.” (#33 Lynne, GP and physician)

In some specialties, there was perceived to be little need for video consulting. For example, conditions which were **highly visual** – notably, ophthalmology, dermatology, radiology and some kinds of plastic surgery – were often (though not always – see example on page 49) better suited to asynchronous ‘store and send’ arrangements rather than real-time video consultations. In this model, photographs could be taken and sent by email to a distant specialist along with a clinical history; a diagnosis and management plan could be returned along with annotations to the image.

Several specialties (e.g. heart failure, diabetes) ran **clinical networks** in remote settings in which nurses or GPs with special interest worked from a community hospital, advised and supported by a consultant based on the main site. In most such cases, there was little need for video consultations with patients because the nurses had been upskilled to a level that allowed them to practise with a high degree of independence. Liaison with specialists, when needed, occurred by phone. Similarly, a specialist physiotherapist described telephone contact with the tertiary care hub (without the patient present) as “quicker and easier” than arranging a video consultation with the patient present (#34 Christine, specialist physiotherapist). However, see page 49 for examples of the important added opportunities of the video service to support staff training and extended staff roles.

3.4 What were the technological benefits and challenges with Attend Anywhere?

Quality and dependability

Most patients and staff interviewed who had used Attend Anywhere were impressed with its technical performance. They described the technology as very dependable, easy to use and providing excellent visual and sound quality.

"We love it." (#31 Naomi, service manager)

"It worked great. I went to the Near Me suite in [remote] hospital and we had our chat, everything went perfectly. No problems. We could see and hear each other. Everything that we each wanted to say was said. Personal contact was missing but that didn't matter. Someone explained what it [the technology] was going to do, then once the link was established she went away. She would have stayed but I didn't need her." (#47 Hamish, patient, speaking about mental health consultation)

Staff and patients who had used previous teleconferencing software described Attend Anywhere as a "step change" in technical quality.

"In previous years we used video conferencing, Cisco then Jabber. There were big screens, there was lots of support but it really didn't work. [Interviewer: why not?] Technical issues – you'd go into a room and there wasn't a cable; someone had removed it. It was always a wee bit fraught, always a bit of an adventure what you'd find when you went to set up the clinic. You never knew what would happen. We got very good at workarounds. Then with Attend Anywhere it was much more reliable." (#3 Moragh, consultant)

"We had a patient recently, a new diagnosis of [type of] cancer, she'd had a previous video linked with the neurologist, using Jabber, for [neurological condition]. She didn't like it, didn't feel she connected well with consultant. When she was told we were using a video link for her oncologist appointment, she was apprehensive and didn't think she was going to get much out of it. Afterwards, the patient said "it was like she [oncologist] was in the room with me". And it felt the same distance apart as we would have been in the room." (#23 Patricia, Macmillan nurse)

Not all staff held negative views about Jabber (one of the video technologies that had been used before Attend Anywhere). Indeed, one or two interviewees who sang the praises of what they thought was Attend Anywhere were actually using Jabber. For example, a Jabber connection was used to undertake pre-operative assessment of surgical patients on the Western Isles who were booked to have their operation at the Golden Jubilee National Hospital near Glasgow, where some clinical services continue to use Jabber (due to compatibility problems between Attend Anywhere and the firewalls). The nurses' positive experience may be explained by the fact that they never had to set up the technology (they used it in a hospital that had good local IT support and a technical team always set it up and checked it before their clinic). Nevertheless, in most cases those who had gone from Jabber to Attend Anywhere preferred the latter. The few exceptions to this included situations in which the ability to control the camera were considered

important for conducting a clinical examination, such as complex neurological examinations involving gait, limbs and eye movements:

“You have control, you can move it around, you can zoom in put right up to the eyes and see the pupils...For Attend Anywhere, if you wanted to move it around, you would need the person to take the camera and move it around.” (#65, David, consultant neurologist)

A number of iterative improvements had been made in recent months to the basic Attend Anywhere technology. Staff were particularly pleased with the new screens, better-quality webcams and noise-cancelling microphone provided by NHS Highland, which greatly improved sound quality. The ‘screen share’ function within Attend Anywhere was also considered useful in consultations that would typically involve the sharing of visual information when conducted face to face. Whilst it was deemed possible to still undertake the consultation in the absence of these visual cues, the ability to retain this aspect of the interaction was considered important for effective dialogue.

“Particularly with IBD [inflammatory bowel disease] patients, I have been able to share the screen with them so we can go through things at the same time. It is particularly good for discussing scan results. Normally I set it up before I start the clinic, get the X-ray software up, results up, so I can flip between the two if required.” (#59, Simon, Colorectal Surgeon)

Several interviewees described occasional problems with sound – either one party not hearing the other at all, or very weak sound despite settings on full volume. One of us experienced this latter problem when a patient who had planned to come to the local community hospital for an interview was informed they should not attend (because of an infection outbreak). Whilst the patient was happy to be interviewed via Attend Anywhere, the initial connection resulted in no sound and a re-dial produced only weak sound. Technical troubleshooting from the on-site staff could not resolve this. The patient, who used Attend Anywhere regularly, said this was the first time it had happened to her.

We heard a single account of one occasion when the audio worked but not the video (#38).

Some interviewees had minor complaints which they considered to be technical but which may have been due to how others chose to use the technology.

“That message “you are first in the queue” doesn’t mean anything – it might say you’re second but then he might suddenly come on.” (#44 Victoria, wife of patient)⁵

Several patients and staff pointed out that it was hard to understand – and be understood by – clinicians whose first language was not English. Some tried to lip-read but found they were unable to.

⁵ The software does allow for this feature to be disabled

When filling out the online evaluation form for Attend Anywhere, Lachlan (#12, patient) came to the question “could you hear the clinician ok?” He read the question three times and seemed confused. His wife said, “come on Lachlan, you could hear him, couldn’t you?”. He replied, “Yes, I could hear him perfectly well – but I couldn’t follow him.” (field notes, remote clinic)

The problem of not following clinicians’ accents was the single most common concern raised by patients and healthcare support workers (who often accompanied patients in their video consultations). Some patients were keen to point out that they were not being racist and described the doctor as “nice” but incomprehensible. One patient had seen the same doctor in both a face-to-face appointment and a remote one and commented that they could understand what they said only in the former setting. Some commented that the doctors also had trouble following their strong Scottish accents.

Ease of use (and adjustments needed to use Attend Anywhere effectively)

In general, Attend Anywhere was considered very easy and intuitive to use. The ability to connect to the virtual waiting areas via a consistent URL meant that patients were provided with a ‘single point of entry’ to a clinical department on an appointment letter and/or the Health Board website. Within NHS Highland, this functionality was further simplified for patients through a virtual reception desk. This meant that patients could access clinical services via a single button on the website, which some (but not all) services have implemented. Within NHS Highland, patient entry was managed by a main reception team who welcomed them and directed their video call to the appropriate virtual waiting area (see Figure 5, below).

“It has a single point of entry on the website. Previously [with other products], it was incredibly confusing for patients – there were different links for different specialties. Now they just press start and there’s a video call happening. They even see the same receptionist [as they would if attending face to face], the real person comes on screen and chats to them, then moves them into the right virtual waiting room. We’ve made it easy for patients, we hold all the complexity.” (#1 Debbie, clinician-manager)

Integrating the receptionist role in this way requires considerable effort and collaboration with outpatient departments.

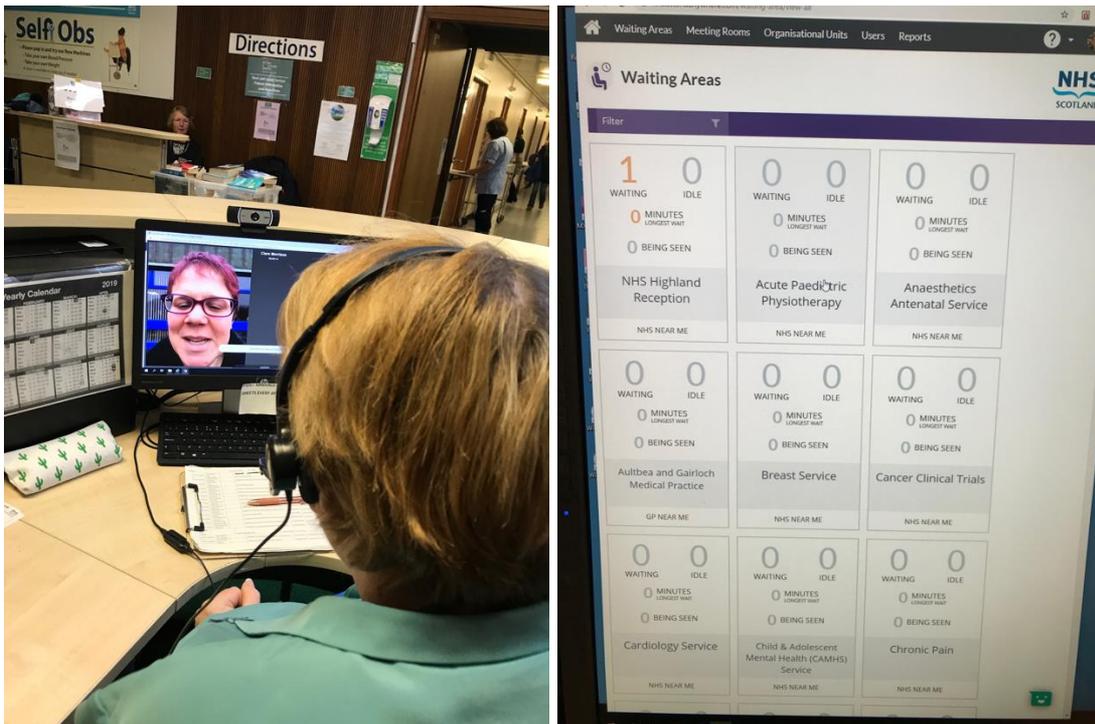


Figure 5: Front desk receptionist at Raigmore Hospital, Inverness, dealing with both face-to-face arrivals and Attend Anywhere video calls⁶

In other Health Boards, patients were either provided with the clinic-specific URL (e.g. in the appointment letter) or could manually select the relevant clinic waiting area on the Health Board website. In some services, the virtual waiting areas were managed by local reception teams, to mirror the workflow and processes of a regular clinic:

“From a patient perspective, if you turn up to the clinic and you check in with the receptionist, they know they are in the right place. If you have sat in the right place, if you have been sitting there for 15 minutes you can eye ball people and say you are still here. If you go on video you have nobody there, you have got a thing saying you are third in the queue but you can’t see anybody. You wonder if you are in the right place. So if received by receptionist at least you get that reassurance.” (#81, Denise, Project Manager)

Other services relied on the clinician to monitor the waiting areas themselves. Whilst this was mainly considered manageable on a small scale or during the early stages of service development, many believed an administrator or receptionist would need to be involved if the service was to become more routine and scaled up. But how this would be structured and managed would depend on the existing administrative structures, workflows and roles:

“So when the patient arrives in the [virtual] waiting room they pop up on your screen, so you can see them waiting....I would know to expect the patient... If I was doing it on a larger scale, and if you were doing clinics that were both part [face to face] and

⁶ Modelled by staff - participants consented to use of the photo for this report

part Attend Anywhere, having a receptionist checking in the waiting room would be a good idea. The biggest problems would be making sure you had receptionists that were happy to deal with it.” (#112, Gemma, consultant dermatologist)

“The clinician would manage the waiting room. And have a list of patients and work through each patient that’s waiting...We have included our admin support to do the letter and the appointment. But I think another job they will have to do is actually view the virtual waiting room during the day – just to make sure no one has popped in unexpectedly, or time up at the wrong time. Because patients do that all the time, even if they have the appointment letter. So they could potentially do that in the virtual waiting area as well. So we’ve got to think about all these things, and try to manage that” (#139, paediatric physiotherapist)

Despite Attend Anywhere being described as “simple” (by the Attend Anywhere CEO), and positive comments by clinical staff on the usability, there was still a learning curve before people became confident using it. Some but perhaps not all of the connectivity problems described above may have been due to lack of familiarity of the users with basic set-up issues such as ensuring that sound and camera are enabled.

“There are often connection issues, generally at start of call. Sometimes it can take 5-10 minutes to do the speaker and mic test, for example when it doesn’t recognise the speaker or the mic, it’s a fuff getting set up. One of my colleagues adds 10 minutes to the appointment time.” (#38 Leonie, speech and language therapist)

Clinicians also said they had to get used to consulting in a subtly different way to take account of the physical and symbolic differences in the technology-supported environment.

“I’ve modified my consultation style because of the lag [in sound transmission]. If you don’t do that, there’s a moment of over-talking and interruption. So now I give more time [after speaking] to make sure that the patient knows my speech has been completed. We use silence quite a lot in psychiatry anyway. At the beginning of the consultation I do what I call a “technical introduction” – I take 3 or 4 mins to explain to patient the technological process. There’s a mini-script you need to go to. For example “if it cuts out, this is what to do”.” (#2 Jake, psychiatrist)

Attend Anywhere had functionality to bring in clinicians or relatives from a different site (see example on page 30 ‘Team around the child’). But this function seemed to be used very rarely. We observed one consultation in which the daughter of a cancer patient wanted to join the consultation (at the patient’s invitation), but *“these particular doctors won’t allow it”* (#8 Nicola, healthcare support worker). An elaborate workaround was proposed in which one of the staff tried to link the daughter in via Facetime on an ipad, but in the event, the connection failed. The doctor’s reasons for not using the full functionality of Attend Anywhere were not clear, but may have been a combination of limited technical confidence and uneasiness about handling the more complex dynamic of a three-way conversation.

Material infrastructure and IT support needs

The clinician-manager who had led the introduction of Attend Anywhere to NHS Highland (#1 Debbie) had researched the optimal material surroundings for a high-quality video consultation and encouraged all remote clinics to use a common style. All rooms (or in some cases, the corner of the room that would be in view) were painted grey as this was the optimum for video consultations (for example, it reduced glare and improved the accuracy of skin tone). In addition, Debbie had helped supply all remote clinics in NHS Highland with high-quality peripherals such as the noise-cancelling microphones mentioned above.

“We’re fortunate because we’ve got good stuff [equipment] in here. We got it because of Debbie and Near Me.” (#19 Jennifer, nurse)

One or two clinics had been fitted out with highly specialised peripherals such as an advanced camera that produced a very high resolution, magnified image. It had been bought from the USA at a cost of £6000. This “scope” could be used directly (e.g. for skin lesions) or linked to an auroscope (for viewing the ear canal) or a long spatula (for depressing the tongue and getting a view of a patient’s airway). The quality of visual images was exceptionally good.

“The Scottish TEC [Technology Enabled Care centre] couldn’t find us one, we asked but they weren’t set up to find stuff for us, only to help implement if we found it ourselves. I saw it in America when I visited the VA [Veterans’ Administration]. The camera is good value because it is used by many specialties – dermatology, pre-op assessment (anaesthetists), rheumatology, hand surgery.” (#17 Julian, physiotherapist)

Whilst excellent material infrastructure did indeed improve the technical quality of consultations, it usually meant that Attend Anywhere consultations had to be conducted from one particular room (often the largest and most comfortable consulting room in the building). In some places, this room was in high demand, sometimes for two different virtual clinics running at the same time. Occasionally, there was friction between a healthcare support worker supporting a virtual clinic and a consultant who wanted to use the “nice” room for their own face-to-face clinic.

In some but not all staffed clinics, the video room had been arranged to emulate the physical arrangements of a face-to-face consultation. In one oncology setting, for example, there was a small table between the patient and the screen (Figure 6). The patient would lean on it, rest a bag or notepad on it, and view the doctor on the screen “as if” they were consulting across a desk. This was viewed as a positive but serendipitous arrangement.

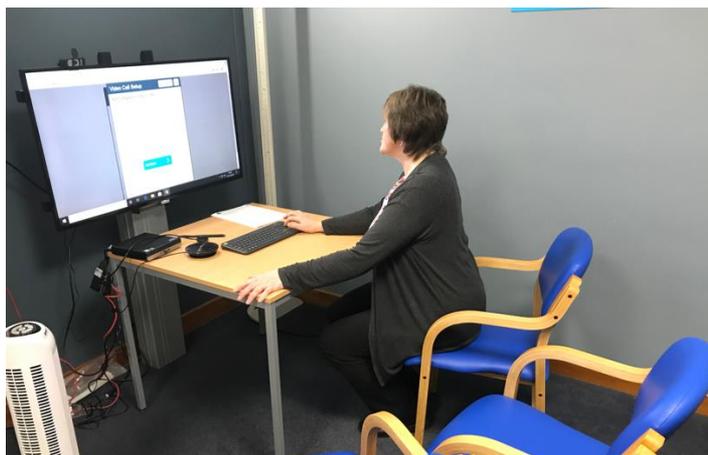


Figure 6: Table and screen in a Macmillan Near Me video consulting room⁷

“That table was a bit of a mistake. We were told we’d need something to put the two bits of kit [e.g. microphone] on, when it turned up it was twice the size we thought we’d ordered, but it ended up really good. We bring them a cup of tea.” (#26 Leanne, Macmillan nurse)

The need for local infrastructure to optimise the call may be one reason why only a small fraction of Attend Anywhere consultations occurred in patients’ homes even when this option was available.

“Staffed clinic rooms tend to be used for three reasons: internet connectivity is really poor in many people’s homes; the device itself is usually better – we’ve got the nice screen, the high-quality microphone and so on; and some calls need clinical support. We also have about 15 unstaffed clinic rooms. Hit the button and it turns on, they don’t need a staff member – it’s locked down, can only get to the NHS Near Me website.” (#1 Debbie, clinician-manager)

“I’m not keen on that [patient at home]. It is a bit like a phone consultation. Phone consultations are really bad because the patient is not always somewhere appropriate when you ring the phone... So you don’t quite know what you are going to get with the home ones. And lighting, that can be a problem. Depends where they ‘park’ themselves. You may get kids screaming about. So when they have to go somewhere and present themselves, it is better.” (#58, Richard, consultant haematologist)

The material infrastructure in remote sites required (but did not always have adequate) IT support, as we discuss on page 58 onwards.

For services running Attend Anywhere appointments with patients at home, it was necessary to ensure patients had access to the appropriate technology and were aware of the requirements for a good quality consultation. This was often achieved through a

⁷ Participant consented to use of the photo for this report

combination of direct communication and information resources provided to the patient upon booking the appointment.

“When we started, it was quite a bit of work because I would look at the return waiting list Near Me, and the patient would have to be contacted to explain the whole process, and do a line check.... If the patient was not able to use Attend Anywhere, and wanted a phone appointment—there was quite a lot of backwards and forwards. Now, when the person is vetted, they get sent a letter saying you have been vetted for a Near Me, please do a line check. So now, the onus is on the patient to do the line check, and if they don’t like it or can’t do it, my number is on the letter. And then I can offer the option of the Near Me room”. (#61, Beverley, medical secretary).

Another form of support for patients at home was the opportunity to test call and gain some familiarity with the technology. Whilst the Attend Anywhere system allows for users to test the connectivity of the device, some services enrolled staff to allow patients to call them in preparation for their appointment. In NHS Highlands, this was formalised further through the virtual reception desk, in which patients could call the central virtual reception desk at a designated time every Friday.

Local clinical support for Attend Anywhere consultations

Healthcare support workers (sometimes) and Macmillan nurses (almost always) sat in on the consultation with the patient. They always offered to leave the room but were often asked to stay – either for emotional support or to help them understand what the doctor was saying. Sometimes, they were needed to undertake a limited physical examination or adjust equipment under instruction from the doctor by video, after which they usually offered to leave (and were usually asked by the patient to stay).

“Maggie is a healthcare support worker who works with Diane. She’s reassuring and down to earth. She’s good at supporting people with the tech, she settles them in and talks them through it. She’s very enabling”. (#33 Lynne, GP and physician)

[Interviewer: What kind of patient would want you sitting in with them?]

“Epilepsy for example. They seem to want me in with them, some have LD [learning disability]. Rehab – knees, aches and pains, neuropathies, they sit there, I have to test their reflexes, I get my tendon hammer, and this thing with my finger and their nose [a test for tremor], and watching them walking up and down; these are follow-ups, their first appts would have been face-to-face so we’re checking against a baseline. Sleep apnoea, quite a few have to have their machine adjusted, there’s a mask, they may need new mask and filters, there’s a data card that records everything, I have to send it to Inverness via internal mail”. (#42 Oona, healthcare support worker)

“Chemo[therapy] patients when they’re on treatment, they’re not feeling 100%. We [Macmillan nurses] can explain things they don’t understand or pick up. It’s a 3-way conversation but we know the main conversation is between consultant and patient, but he looks for information from us as well. The interpretation of a question can be different between patient and oncologist. That’s why we attend with them – we’re with them throughout their whole journey”. (#41 Penelope, Macmillan nurse)

Some patients were opposed to using Attend Anywhere from home because a particular member of healthcare staff (whom they mentioned by name) would then not be available for emotional support or to help explain the specialist's words

In some clinical settings, the support of a health practitioner on the remote end was necessary for conducting physical tests and assisting the specialist with remote examinations. The familiarity and understanding between the clinician and remote practitioner often played an important role in collaborating and coordinating actions effectively for the purposes of the examination.

"Because [the Near Me nurse assistant] just needed a few tips here and there. And by the end of the first consultation, there was, occasionally I would have to say can you do this, can you do that, she would run through the examination part of it. She was good of course and I had already worked out how to ask her to do things in a way that would work. Which also meant I had to modify my neurological examination." (#56, Bebak, consultant in neuro rehabilitation)

Issues with other technical systems

The routine use of Attend Anywhere for remote consulting relies on the configuration of other technical systems. One major challenge has been the integration of video (Attend Anywhere) appointments within the clinical administration systems used across secondary care services. Most, but not all, Boards use TrakCare, but not all are on the same version. Most services seek to incorporate Attend Anywhere appointments within their existing face to face clinic ('mixed' clinics). However, the ability to set up TrakCare to account for the mixed arrangement of appointments was variable across Health Boards, depending which version was being used. With the 2016 version used by some boards, appointment letters can only be generated for one appointment type (i.e. face to face or video). This has meant that some teams have had to develop 'workarounds', either by manually creating appointment letters or by running 'shadow' video clinic schedules alongside the existing face to face clinic schedule; both of which require additional work on the part of administrative and/or clinical staff and increase potential for error (e.g. patient receiving two conflicting letters, double booking):

The dependability of Attend Anywhere has also been affected by hospital network configurations, such as security and internet browser settings. In one Health Board (Golden Jubilee National Hospital), efforts needed to be made by the IT staff and the Attend Anywhere support team to resolve problems routing the video call through the local network. After a lot of diagnosis and work, it was established there was a very unique issue to do with a partially blocking web cookie. In this case, the workaround was to wipe the internet browser cache before loading the application. Whilst this was an effective troubleshoot option, it was not considered to be a scalable way for clinicians to run their video clinics.

As noted above, Attend Anywhere works on internet browsers Google Chrome and Apple Safari, but not on Internet Explorer. As Internet Explorer remained the default internet browser for NHS computers in many boards, varied approaches were taken to enable access to Google Chrome on NHS computers for the purposes of using Attend Anywhere.

Up until January 2019, Google Chrome was not recognized as a ‘supported’ internet browser within the NHS Scotland National Infrastructure Standard, which raised governance and security concerns among some eHealth departments, further holding up implementation efforts.

Although Google Chrome has posed challenges for some services, the national NHS Scotland rollout of Microsoft Office 365 will mean that Microsoft Edge (which Attend Anywhere is compatible with) will soon become the standard NHS internet browser, and so should overcome these issues.

3.5 What value did the Attend Anywhere service bring for patients, staff and the service?

Almost everyone we interviewed who had been personally involved in the Attend Anywhere video consultation service had positive things to say about it. Clinical directors used words like “quality improvement”, “convenience” and “choice” to describe what they saw as a significantly improved patient experience. Below, we describe some specific aspects of the added value (both financial and non-financial) of Attend Anywhere, before (in the next section, page 51 onwards) describing staff and patients’ concerns that Attend Anywhere might bring negative value.

Less need to travel

An obvious and frequently-mentioned advantage of video consulting is reduced need for patients to travel. This was linked to lower NHS and patient-borne costs, since some but not all costs of travel for NHS appointments are reimbursed, and (assuming growth of the service) a potentially reduced carbon footprint for the NHS in Scotland. Staff talked of the vast distances that some remote patients needed to travel for what was sometimes a very short and straightforward appointment. Those on islands were dependent on planes and ferries, and parts of the mainland were also many hours’ drive (often on poor roads) from their nearest hospital. Older patients in particular were often not physically well enough or strong enough to make the round trip in a day. Some were simply too sick to travel.

“In the winter, there’s often fog, the flight might be late, then they miss their appointment, or they might miss the flight home, or it’s delayed. I’ve had people vomiting in plastic bags that they had to buy from WH Smith at the airport with their own money. Not good”. (#24 Ellie, Macmillan nurse, Western Isles)

Both cancer and respiratory clinicians described terminally ill patients who had been reluctant to consult by video until they were too sick to make the journey. In both cases, the patient was said to have been very satisfied with the remote consultation and had asked for their next consultation to be by video.

The benefits of less need to travel were confirmed by patients, in terms of satisfaction with the service and living with their condition:

“It was more efficient because I wasn’t exhausted from the journey, my mind was fully engaged. The dialogue itself was far more constructive.... So I would say it was actually better than a face to face. Because I was in a better physical and mental

condition to describe my symptoms of the preceding six months, since I had last spoken to her.” (#83, Oliver, patient, respiratory).

Reduced need to travel was seen as a means to improve equity of service delivery, in which service access may be restricted by travel distance and/or limited mobility.

“For patients that have had repairs to tendons in their hands, we have clear management guidelines where we will put them in splints for five weeks and essentially immobilise their hands.... So it means that they can't drive, they can do basic movements, but it immobilises them quite a lot and impacts their independence. So if have a patient that lives three hours away and they can't drive, it is very difficult for us to see them. We also say as part of the guidelines that we want to see them once a week to make sure their tendon repair is still functioning... But that then becomes very problematic because they need to get some form of transport to see us for an appointment.... Patient benefit has always been the driver. It was more about us being able to provide equitable care. We really felt if Jo Bloggs who lived round the corner can be seen as often as we like -- but there was doubt about asking people to drive in.” [#71 Michelle, physiotherapist]

Faster and more direct access to specialists

Before the introduction of a video consultation option, patients in remote areas faced a long wait until a specialist visited their local clinic (in some cases, such visits occurred only every three months), or a long journey to a specialist tertiary care centre. Video consultations allowed them to get specialist opinions much more promptly, reducing stressful delays in diagnosis.

“I've got a [slow-growing cancer]. I'd lost weight, and gone to Inverness for a CT scan. It was initially diagnosed as [a fast-growing form of] lung cancer. My [specialist respiratory oncologist] is Dr X--- who's based down in [English town]. Normally that would have meant a long wait but my GP arranged a video consultation the same day I got the cancer diagnosis. Dr X--- was able to reassure us that he didn't think it was lung cancer, he said the prognosis is not as bleak as you might think. I had lots of small areas which were thought [by the radiologist who reported the CT scan] to be met[astases] but they turned out to be inflammation. But on that first day, my GP read the CT report out to me and it was ooh heck. When I spoke to Dr X---, I could see his face, it was very clear, we had no trouble getting through. Even to wait a few days with that sort of diagnosis would have been awful. He arranged a biopsy, I had that within a couple of weeks and it confirmed he was right. That was 18 months ago.” (#37 Trudy, cancer patient living in Western Isles)

A Macmillan nurse at one remote clinic, which was based in a community hospital, described how they had wheeled a patient on a bed from the ward to the Attend Anywhere consulting room in outpatients to have a video consultation with their oncologist during an inpatient stay for a complication of chemotherapy.

Some interviewees in remote sites described arranging a prompt video consultation to provide a rapid, one-off specialist consultation to reassure the patient and (in particular) back up a decision made by the local doctor or nurse, perhaps when no active treatment

was the recommendation. They saw the video service as helping to avoid situations where patients waited months for a specialist opinion and anticipated an operation, expensive test or cure.

“The other thing is if we send them to Inverness, the patient gets their hopes up.”
(#45 Tom, geriatrician).

Improved access to urgent specialist opinion was also demonstrated in the Ophthalmology setting, in which A&E consultants and optometrists could establish a live video stream for a second opinion on hospital referrals for eye problems. Instead of (what would typically be) a telephone interaction between clinicians, the ophthalmologist could view the patient’s eye via video camera attached to a slit lamp. This new service model was found to provide more timely diagnosis and reduce unnecessary hospital admissions.

“When you see something [via Attend Anywhere] that is instantly recognisable like a contact lens related ulcer or various types of keratitis or marginal keratitis, you know exactly what it is and you know what treatment is going to work for them, and you can start that treatment and say ‘I don’t need to see them’. A phone call - you might get the description, but you would never commit yourself because the examination skills on the part of the emergency department is so variable”. (#91, James, consultant ophthalmologist).

More holistic care, linking with the home and family

Many GPs, and some consultants, spoke of the additional information they gained when video-consulting to patients’ homes about how the illness was affecting them and their families. They spoke of gaining insights into family dynamics (for example, seeing interactions with anxious or overbearing relatives) and observing aspects of patients’ and families’ lifestyle.

“I’ve done a couple [of video consultations] from patient’s home. There was a child, living in [remote part of island]. Good internet at home. The kid was 18 months old. The parents didn’t have to take him to a clinic. I just sent them the link to Attend Anywhere. They just clicked on it at the right time. They [parents] were sitting on sofa in living room, very laid back, and when they were talking about things they fed the boy, they could get stuff from kitchen and ask “is this ok to give him?”, and the kid was on floor the whole time playing with his own toys. I did another one with another parent who wasn’t feeling well, we just shifted it from clinic to home.” (#29 Lisa, dietitian)

Clinicians occasionally seized an opportunity to educate family members in caring tasks or emergency management.

“There was a patient with [a degenerative lung disease], and he has anxiety too. He had this breathless attack on the video. You wouldn’t have wanted it to happen but we were able to support the daughter to assist him. The relatives being able to be present is a great advantage. And if we do it via VC [video consultation], the relatives are more likely to attend.” (#4 Niamh, specialist respiratory nurse)

Overcoming reluctance to see a doctor and visit clinical spaces

We found two examples of patients who had overcome a fear of hospitals or doctors by consulting remotely. In one case, the patient was a teenager who had been referred to a mental health team but had refused to attend. The teen agreed to a remote consultation and felt that it was “a bit like playing a video game in my room”; they subsequently agreed to attend a face-to-face appointment with the same doctor. In the other case, past trauma had made the person extremely reluctant to be physically close to a doctor:

“What I enjoyed about [the video consultation] was I have insecurities from when I was a child. I’ve overcome that, mostly. But I was nervous about being in a room with a surgeon, him taking my [outer garment] off looking at my [part of body]. I was a victim of [briefly describes past trauma]. Having a smear test is the worst. What this appointment did for me is it helped me overcome some of that. When [my clothing] came off and everything, it was ok. The surgeon and the patient, he’s over there [in a different building] and you’re in here. And the fact that he was there and I was in here, it was much easier to communicate.” (#15 Imogen, surgical patient).

Staff also talked about situations when video helped build rapport with individuals that were anxious about engaging and meeting with others to discuss sensitive issues:

“We went out to see a patient – and his reaction to us was quite upsetting, he could not cope to seeing the physios and was quite distressed... At that same time Attend Anywhere had just come in, and we thought this might be helpful in this particular instance.... So we had a virtual consultation. And he actually looked at the physio – made eye contact - for the first time. And was able to say to her what he was worried about... The plan was to alternate face to face and virtual appointments. He actually decided not to use virtual. But I think that option gave that bridge, breaking the fear he had.” (#139, Holly, paediatric physiotherapist)

Financial savings to the service

Although this evaluation does not include an economic evaluation or an exploration of the system-wide financial impact of Attend Anywhere, nevertheless the Scottish Government were also interested in finding out people’s views on financial savings and what local assessments of impact had been made. One important saving was more efficient use of staff time. Clinicians and managers gave numerous examples of substantial savings in staff travel time when they provided a video outpatient clinic from a ‘hub’ hospital instead of traveling to a remote ‘spoke’ clinic.

The use of video links in emergency situations sometimes saved a costly (and perhaps risky) transfer of a patient for a specialist assessment:

“Let’s say the patient presents to [remote rural hospital] in distress, maybe if they’re detained under the Mental Health Act, you’d need to take nurses off the ward to accompany them, but by the time they get seen, the crisis has settled. So they get sent back at a waste of 7 hours of ambulance and nurse time.” (#2 Jake, psychiatrist, Highlands)

Whilst there were many examples of such savings, some video consultation clinics generated considerable additional work for staff in remote clinics (see quote from Diane on page 62).

Home visits were also raised as potential areas for saving practitioner time and travel, where clinically appropriate. In the following extract, the respiratory physiotherapist was able to see a patient with lung disease for a 20-minute video appointment, when it would typically necessitate a two-hour visit to their home because a phone call would not provide sufficient visual and contextual information:

“The other thing you get with Attend Anywhere, you can see people, you can see how breathless they are, you can see the colour of their skin, you can see how much effort they are putting in their breathing. You can hear someone is breathless on the phone, but if you are really put a lot of effort in your breathing your shoulders will move differently, you might go a bit blue so it is really helpful seeing that... Home visits are very time consuming... to do a home visit you are talking at least two hours, whereas the Attend Anywhere visit would take 15-20 minutes.... I may have been able to do it over a phone call. But probably would have ended up doing it as a home visit”. (#66, Natalie, respiratory physiotherapist).

With regard to using Attend Anywhere as an alternative to the patient attending clinic, most staff participants thought that video appointments were of shorter (or about equal) duration than face to face appointments. Shorter durations were attributed to engaging in less ‘orientation’ and ‘social’ talk. This time saving was perceived by staff to be beneficial in terms of ‘keeping to time’ and managing workload (e.g. spending more time with complex patients, completing paper work in allocated clinic time), rather than increasing capacity or volume of activity.

“Both my Near Me appointments and my physical appointments are 15 minutes, same length of time. However, Near Me – as soon as the patient is there it is instantaneous having a conversation. Normally after five or ten minutes of conversation we can conclude it. And that give me five minutes to do dictation, paperwork, complete any referral letter, complete any investigation forms and such like that well within the 15 minutes. It allows me time to look at results before the next patient is there. So it doesn’t tend to run on. But in a traditional clinic, you go out and greet the patient in the waiting room, wait for them to come in, take the jacket off, sit down, introduce, shake their hand – it’s three minutes gone already. And then examine them if required. So then it is 15 minutes plus. Then I’ve got to do administrative part of things. So I find physical clinics tend to get crammed and tend to roll on. The time just disappears.” (#59, Simon, consultant colorectal surgeon).

Some clinicians also reported that capacity and cost-saving could be made through reductions in DNA (did not attend) rates:

“The number of DNAs in my Near Me clinics is virtually zero. I used to have a large proportion who did not attend. For two reasons; one was they would forget because of cognitive impairment. A second is a large number would be waiting for ambulance

and patient transport to pick them up, and they would be one or two hours late and miss their appointment..." (#56, Bebak, consultant in neuro rehabilitation]

Staff convenience, flexible working

Many clinicians pointed out the greater flexibility offered by video consulting. One described being able to continue running some of her clinics from home while off work with a complication of pregnancy. Several consultants lived and worked on the Scottish or English mainland but ran a regular clinic on one of the islands. In some cases, these clinicians had previously lived on the island or travelled there for a face-to-face clinic, but their circumstances had changed so the video option allowed them to continue to see their 'own' patients.

One or two interviewees mentioned staff safety issues with home visits.

"The smoking cessation team, it's a small team and they're pressed. They used to go to [remote setting] but didn't want to go into patients' smoky homes." (#32 Eilidh, service manager)

The uncoupling of clinical delivery from the geographical location of the clinician meant that clinicians could provide input to particular patients when they had a relevant sub-specialist interest. A speech and language therapist with a particular interest in Parkinson's Disease, for example, could be linked via Attend Anywhere to a patient based in another therapist's catchment area.

We heard two examples of consultants who were depicted as offering poor value for money, because they allegedly used a part-time contract for video consulting to increase their personal earnings but were not interested in developing local staff or contributing to improving the local service.

"[Name of] clinic VC Mr [name]. We should be doing it [only] if it's giving us something we haven't got. He's doing it from [country in mainland Europe]. Having him on site is important; when the [name] clinic is going on, we should have a specialist on site. He's using it as an excuse to earn a ton of money and stay in [country]. His family is in [country]. He gets 12 PAs [high salary] a week." (#25 Fiona, clinical service manager)

In addition to the time and financial saving, reduction in travel to the 'spoke' clinics provided greater work satisfaction for the clinicians:

"There is a time saving for me, so I don't have to think I've got to get to this location, I have to potentially be away from home. From a personal satisfaction, I hated driving over to [remote site]. I detested it. It was a long day. I ended up getting a headache. Patients were probably not getting the best of me because it was an early start. So from a personal satisfaction and what the patient gets, I feel better. The patients are getting a better me and better service." (#57, Debra, epilepsy advanced nurse specialist).

Attend Anywhere as an opportunity for radically new service models

The facility for technically high-quality, dependable video consultations through Attend Anywhere offered the opportunity for specialists, generalists and healthcare support workers to collaborate in new ways through extended staff roles and transformed working relationships. In particular, less specialised staff could undertake some specialist functions with remote support (see examples of complex care arrangements on page 29 onwards). As noted previously, these novel arrangements appeared to emerge from prior working relationships between particular individuals that were characterised by mutual respect and trust.

In all cases where new models of care were described, the staff who had developed them were extremely positive and depicted the new model as having greatly improved the patient and staff experience and (usually) solved a specific problem that had existed before, such as a gap in provision or a safety risk.

One major benefit of such arrangements was training and professional development of the remote staff member. In all the quotes below, the less specialised staff members gain bespoke training from a specialist clinician, allowing them to undertake aspects of an extended role under that supervision, thereby feeling valued and gaining professional fulfilment.

"I'm learning lots, can do the hand exams myself now. I know what he's going to say." (#17 Jonathan, physiotherapist who runs a hand clinic linking remotely to a specialist hand surgeon)

"It's [the shift from a visiting dermatologist to a remote service] been a huge change for me. My day to day has gone from following his instructions every couple of months on very minor things to diagnosing, carrying out biopsies, and managing the service. My learning curve has been huge. [...] The first remote consultant was not very experienced in teledermatology, but the next one was. I've learnt how to take better images with her instruction. I'd never used a gel coating under a dermatoscope. She knew it enhances the image. You're learning all the time.. [...] We've been able to feed back to GPs, I'm taking images to forward to someone else, they send them back highlighting things, we then feed them back to the GPs. I'm one module away from a PG (Post-Graduate) Diploma through [distance learning provider], all online. It was as we were developing the new system, I thought "I'm going to be expected to do much more at a much higher level". I've got a regrading going through. So it upskills locally. You have the support via technology to do new things." (#21 Barbara, specialist dermatology nurse)

"I've used it [Attend Anywhere] to give Makaton training. I'd seen [Makaton] used in a nursery setting a while back. [Interviewer: you mean for kids with learning difficulty like Down's?] It is used for that, but you can also use Makaton for normal kids who have delayed language. I gave them [nursery staff in remote site] a link to my Attend Anywhere room, they can come directly into my room [using the 'meeting' function], so that avoids using the virtual waiting room. Nursery staff in [remote site] all sat round the table with a laptop. I shared my screen, showed them stuff, then I set them

some activities and watched what they did with their hands. They could ask me questions, stop me if they needed. It worked well.” (#39 Louise, speech and language therapist)

[Interviewer: Do you go on a course to learn to do physical examinations?] “I’ve got courses coming out my ears, but it’s mostly the consultants who teach me, it’s the best teaching ever. I was taught spirometry by a professor, the loveliest doctor ever. Professor N---. He’s so high up, his wife is also a doctor. He works at the [specialist London hospital]; he flies to [Arab country] to give second opinions to Sheikhs. He’s an absolute sweetheart, nobody could have taught me better. You get to know the way they like to do it, it can be very unique.” [#42 Oona, healthcare support worker)

“Orthopaedics for example. With Near Me [video connection to Inverness], we’re not just a backwater hospital seeing sprained ankles, we’re seeing complex cases via VC.” (#25 Fiona, clinical service manager)

Staff who had benefited from the extended role opportunities (or who had seen others benefit) spoke very positively about the importance of local upskilling, which resonated well with the collaborative and non-hierarchical ethos of many remote clinics (in which everyone “mucked in” rather than keeping strictly to formal job descriptions). These staff depicted traditional ‘visiting consultant’ service models as (often but perhaps not always) old-fashioned and overly hierarchical, especially when the consultant failed to appreciate the skills and experience of local staff.

“It [face to face clinic once a month with visiting surgeon] had been a terrible service! The surgeon was charming to the patients but treated us as slaves and serfs. He’s like Teflon, pings it back, you’ve not done the full work-up of [pre-investigation tests].” (local doctor, code omitted to protect source)

“[On setting up the new video service] we quickly realised that because we weren’t being dictated to by a consultant it would actually be stronger. The old guy was very traditional, very old school, everything had to be laid out just right. I was handmaiden, and wrong. He used to shake the Dictaphone at me and say “darling, make it work”. Most of my job was appeasing patients after they’d seen him. The new system is supported by the way we are here, we’re not hierarchical. He came in with his “I am the big I am”, it didn’t go down well.” (local nurse, code omitted to protect source)

“[When I visit remote island hospital] I have five nurses swarming about me for one clinic, lovely day out, nice cakes, good craic all along.” (mainland-based consultant who is opposed to the video consultation service, code omitted to protect source)

We cautiously conclude that there are situations in which video consulting may not add value if roles and relationships are unchanged, but it can add considerable value if staff are able and willing to transform their relationships to create a new service.

3.6 What concerns were raised about Attend anywhere by patients or staff?

Whilst many staff and patients were keen to describe the added value of Attend Anywhere services, we also spoke to those who were concerned that value was being (or would be) lost. In the sections below, we consider clinical inappropriateness (and clinical risk), time and hassle, lack of 'presence' compared to face-to-face encounters, and the risk of loss of services.

Video consulting is [considered to be] clinically inappropriate in some conditions

As noted in the 'Contra-indications and cautions' section on page 31, we were given many examples of clinical conditions and services for which video consultations were considered to be less suitable than a standard face-to-face consultation, though most clinicians acknowledged that in some cases a trade-off needed to be made.

It is worth commenting that clinicians who used Attend Anywhere had a more flexible and accommodating view of what was clinically appropriate, and tended to make judgements on a case by case basis. Those who had never or rarely used the service tended to hold more rigid views, to take a hierarchical rather than collaborative view of the care they provided, to have 'red lines' (situations, such as breaking bad news, where they considered a contact should *never* be made remotely) and be more likely to depict the remote service as unprofessional or unsafe.

"I can't stand video consultations. First of all, I'm a doctor. I'm owning my patient. A doctor wants to have direct contact with patients. I want to be able to examine them even if I hadn't planned it. There's a lot of bad news in oncology. I make a follow up appointment for 3-6 months. Can I know if they're going to be fine in 3-6 months? No! I can't. If I'd made a VC appt, and then if the scan showed something, I would have to cancel Near Me and book face to face. I can't give bad news when a patient is at home and unsupported. At the very least there'd need to be a professional – a GP or a Macmillan nurse – at the other end." (#46 Veronica, oncologist)

It is noteworthy that the successful video-consultation service operated by Veronica's colleagues operated with precisely the local support that she felt was needed (see quotes from Macmillan nurses on pages 28, 30, 34, 40 and 41 and cancer patient on page 44). Clinicians who lived and worked in remote areas had little sympathy for such absolute views.

"The Inverness consultants don't see how difficult it is to get to Inverness. They need to get over themselves." (#45 Tom, geriatrician)

Video consulting is [perceived as] inconvenient and time-consuming

Some staff unfamiliar with the Attend Anywhere technology considered it more time-consuming than a face-to-face consultation because of set-up issues (see quote on page 38). Those who used Attend Anywhere regularly rarely commented on these issues, which may become less significant with familiarity of use, though some clinicians said they

needed to take some time at the beginning of a remote consultation to explain the different ground rules (see quote on page 32). Our own research has shown that, like for like, remote consultations are actually significantly shorter than face to face ones [7].

Some GP practices in remote areas had installed an Attend Anywhere screen for patients to use for consultant appointments, but had not made (any or much) use of the technology to connect with their own patients at home, mainly because the advantages of video consulting for GP appointments were seen as marginal and had to be weighed against the disadvantages (including clinical risks) and hassles (such as technical connectivity). In the context of a population that was not especially digitally literate, a traditional general practice model (with branch surgeries in remote areas and GPs still undertaking home visits where needed) was seen as offering more benefits than a technological solution.

Extra logistical and administrative work

The physical absence of the patient at the clinic created demand for additional work and resource in settings that involved the sharing of materials (e.g. prescriptions, information sheets) and undertaking of medical tests (e.g. blood tests) as part of the patient assessment care pathway. For example, prescriptions would usually be provided to the patient during the consultation so that they could take this directly to the pharmacy and collect the medication. But following a video appointment, the clinicians and pharmacists needed to conduct additional administrative and coordination work in order for the patient to receive the medication:

“So patients needing something prescribed, the patient would normally receive the prescription in the room, take it to the pharmacy and go home. Now [with Attend Anywhere] we have to send the prescription to pharmacy, specifying where it needs to go, and the pharmacy needs to put in the extra effort to try and get it delivered. And that means we have to schedule appointments slightly differently so that the time-lag of delivery is accounted for [...] And so savings on travel should be going into pharmacy, who would be hit.... They probably have the main hit. They have had to adapt to some extent.” (#58, Richard, consultant haematologist).

Similarly, clinicians and administrators needed to coordinate with relevant services to ensure patients undertook relevant tests.

“If they are here [in face to face consultation] and you need to take blood samples, you do it in that room, at that moment. But with these [video] ones there is so much admin - getting them to see their GPs, make an appointment, get a sample, and so on... If they were here, everything would be done in one moment. We often takes the blood samples ourselves, and they sign the consent form. So it is little things.” (#63, Katrina, genetics counsellor)

The remote environment has less ‘presence’

The minority of clinicians who were opposed “on principle” to video consulting, most of whom had had limited actual experience with it, believed that something was inevitably lost by not being in the room with the patient even when no physical examination was needed. One specialist, whose relative had apparently had a bad experience with a remote

consultation, talked about the impossibility of making proper eye contact (because the webcam catches the eyes at a slight angle). She also felt that really getting to know one's patients as people was impossible unless one met them face to face:

"They're trying to push us into having one [video consultation service for cancer] and not having the face to face visits from us. But the patients are really island people, I want to know what my patient's dog is called, what their daughter is doing, I can't be a good oncologist if I don't know these things." (#46 Veronica, consultant oncologist)

This comment contrasts markedly with those of clinicians on page 45, who saw the Attend Anywhere service as superior to a clinic visit for getting to know the patient's lifeworld (the patient's dog and daughter, for example, might even be in the frame).

Another doctor, who uses Attend Anywhere for meetings but not clinical consultations, wondered about subtle cues and emotional 'presence'.

"Would the dynamics of the consultation be changed in that rapport is more difficult or challenging over VC, would it be more time efficient, less emotionally engaged? The limits of a consultation are more tightly structured within a CDM [chronic disease management] review, so would other things that the patient brings to the table get less attention? Is there something about emotional transference? You can clock that someone is anxious about something, something that's bugging them. Are they worried about it? When you pick up on subtle cues, you open up a dialogue, is that less in evidence in a VC? Unless you know someone really well, perhaps, in which case you already pick up on cues?" (#22 Emma, GP)

Whilst this GP is speaking entirely speculatively (she has never consulted using Attend Anywhere, though she has used it for meetings), we observed one instance of 'red flag' symptoms (a possible early indication of cancer in a patient with a strong family history) that appeared to be overlooked by a consultant who was seeing a patient remotely. In this case, there was no suggestion that the consultant acted in a clinically dangerous or improper way, since he advised the patient to see his GP. However, the dynamic in the consultation was such that the uneasiness of the patient and his wife were very apparent to a doctor (researcher) who was co-located with them but appeared to go unnoticed by the doctor who was consulting remotely. Clearly, it is impossible to generalise from a single case but the example is instructive and the possibility of missing subtle cues may merit further exploration.

'Losing' a face-to-face service

A small number of interviewees viewed the Attend Anywhere service as either actually or potentially reducing provision in their remote area. Such views tended to be held by clinicians who had professional concerns about the remote service and/or reluctance to use the technology, hence they did not view the remote service as an adequate substitute.

"Attend Anywhere in the Western Isles, they've only ever used it to withdraw a service. With Near Me [Attend Anywhere in Highland], sometimes we get an additional service." (#40 Nick, GP on Western Isles, not a regular user of Attend Anywhere)

In the above quote, Nick contrasts “withdrawn” services (by which he means replacement of a monthly or three-monthly face-to-face visit from a consultant based in Stornoway with a regular video clinic) with “additional” services (by which he means a new opportunity for patients to be seen by consultants in Inverness, Glasgow or Aberdeen using the video link).

A colleague of Nick’s, who is more directly involved in running the Attend Anywhere clinics, also spoke in terms of “losing” a service, but felt that the quality of the video service was no worse.

“The Anywheres are OK but we seem to be losing services, they [staff] used to come down. It probably hasn’t reduced the quality of the service.” (#35 Diane, community hospital nurse)*

(* The term “the Anywheres” means Attend Anywhere appointments on the Western Isles, because unlike in NHS Highland, these are not branded as NHS Near Me. Diane also spoke of “the Near Mes” by which she meant Attend Anywhere appointments to Inverness.)

3.7 Organisational issues in implementing and scaling up the service

Preconditions for success: leadership, resources, champions, data

As noted in the ‘Brief history’ section (page 12), the strategic drivers for introducing Attend Anywhere included a strong national policy push for technology-enabled care; a system-wide quality improvement initiative (a major element of which was to reduce the human, financial and environmental burden of travel); the emergence of a new generation of high-quality, affordable technology; and positive feedback from patients. But these drivers did not play out evenly in all settings, since some organisations were inherently more innovative and had a more conducive set of preconditions.

Research suggests that organisational characteristics associated with successful introduction of innovations include a receptive context for change (history of successful innovation; strong, visionary leaders; a clear, positive narrative about the technology; good data systems that can monitor the effects of the change in a timely way), slack resources (people or money that could be channelled into the change effort), and a predominance of supporters over opponents. For clinical innovation, senior clinician buy-in is crucial. Our findings in this study affirmed these general principles.

We met a number of very able and charismatic leaders and managers (both clinical and non-clinical) who took a systems and human-centred approach to change, sharing power and using their personal qualities and skills to engage, mobilise and support others. We also heard some stories of efforts to introduce the remote service that had stalled because of staff shortages (especially when senior clinicians were replaced by a series of short-term locums) or general lack of resource.

“Attend Anywhere? I don’t use it for consultations. [Interviewer: Why not?] Probably because the practice that I have joined has had a major staffing issue. My

assumption is that they're continually firefighting. You do need to dedicate a bit of time and resource initially even if it saves time in the long run." (#22 Emma, GP who uses Attend Anywhere for meetings)

In one or two cases, a promising remote service failed completely when a key clinician moved on. This was particularly the case with the kind of highly bespoke, transformed service models described on page 49 onwards.

"We did stuff around endoscopy. There was a speech therapist here, who was qualified to put the tube down, and a consultant on the other end. But it was awkward cos they didn't have [the patient's] medical records. And then the consultant retired so it folded. It was person-dependent." (#18 Keith, IT manager)

An important precondition for Attend Anywhere was reliable broadband. Whilst this was generally available, we learnt of one or two remote GP practices which still did not have wifi connection, and other sites where the broadband connection "dropped" so frequently that Attend Anywhere was used for professional meetings but not considered safe enough to support patient care.

A striking feature of the most successful Attend Anywhere services was that their introduction had been data-driven and strategic rather than simply following the clinical interest of a single enthusiast (though the latter was important too). The data-driven approach was sometimes led by service managers and sometimes by clinicians. Often, it occurred as a result of a trigger such as a change in financial flow (as in the first example below), rising workload, a significant event (such as an elderly or sick patient experiencing a dreadful journey) or the retirement of a key specialist (as in the second example below).

"We were starting to look at what it was costing for patient travel but we didn't [initially] have the data. We set up a patient travel database. To travel for an appointment, they need what's called a warrant (permission to travel and approval of the cost of travel). We book the flight. £3.5 million per year for a population of 26,000. We would send everyone, then bill the government at end of year. Then government devolved the budget [which had been set historically]. We needed to now work out who were these patients, where were they going, what for? So we linked in with clinical systems using the patient's CHI number [Community Health Index, the unique patient identifier] and their UCPN [unique care pathway number]. Plug that into a real time dashboard and you can see what patient travel costs are. Having got us a patient travel database, we could then use it [for strategic planning]. We found that the Scottish Government statistics were wrong. For example, oncology would show up 6 appointments in Raigmore [Inverness] per course of treatment but the patient was actually having their treatment here. We were aware of Attend Anywhere; we knew who was travelling; we wanted to get the top ten heavy hitters and ask "is this condition suitable for Attend Anywhere?". The first one was haematology. We could immediately forecast some savings. It all needs to be data driven. Understand patient flows, validate that what that data is implying to you is correct". (#18 Keith, IT manager)

“The resident dermatologist retired so we had to rethink how we did the clinic. Jonathan [service manager #6] and I audited what we had been doing to see what was needed in a new service. We were surprised how few people needed consultant input. Dr [name] would visit 2 days every other month, nobody was vetting the clinics, he’d see anyone from a rash to an outbreak. We have referral guidelines but ... They [patients] don’t always need to be seen by someone at consultant level.” (#21 Barbara, specialist dermatology nurse)

The efforts of IT and service managers like Keith to set up remote services and embed them in business as usual was dependent on clinicians like Barbara who were willing to join the change effort, use the technology and consider working in a different way (see also quote on page 49). Such individuals were relatively rare (described by one interviewee as “the one or two keenies”). In the absence of such individuals, no progress could be made.

“Breast surgeons haven’t bought into Attend Anywhere.” (#23 Patricia, Macmillan nurse)

“I’m not opposed to it; I’m quite in favour, but there’s not a lot of buy-in. Nobody’s really shouting “let’s do this right now”. I don’t think there’s going to be an explosion any time soon.” (#49 Ed, GP, remote island practice)

Ed felt that in the current climate, policy solutions tended to be seen in overly technical terms, whereas many of the problems he faced as a remote GP were not the kind that would be solved by technology (*“It’s not clinically driven. That’s the big thing that’s stopping buy-in. The tech folk will come to us with a solution for a problem we don’t have”*). Whilst he described various challenges in his practice, he did not view the introduction of Attend Anywhere as solving any of these.

Variation in preconditions and the presence or absence of innovators (people who were keen on new products and new ways of working), champions (people who believed in an innovation and sought to persuade others of its benefits) and change agents (people who had the skills, time and personal qualities to drive through the change and recruit others to help) explained why different specialties and remote sites came on board with Attend Anywhere at different rates.

One important aspect of the mobilization effort for clinicians was developing guidance and ensuring that quality and safety were assured (for example, by defining what kinds of patients should and should not be seen by video consultation in each specialty). In some cases, professions in a particular specialty across the country worked together to produce national guidance. For example, national guidance has been developed for telepsychiatry, with recommendations for safe and transferable standards on establishing and delivering video consultations across Scotland (e.g. staff training, contingency planning, ethical and legal considerations).

Embedding and maintaining the change

The research literature on embedding and mainstreaming change identified four key success factors: a socio-technical approach (continually adjusting the technology and work

processes to become better aligned); sense-making (what Carl May calls “cognitive participation” in which staff share a vision and feel part of a positive change effort); training and support (including, for IT, a responsive helpdesk); and monitoring (via timely data on what is working well and what needs changing) [1,7-11]. All these were evident in our dataset.

Having seen the examples of up-and-running video consulting services in the USA, Debbie was keen to ensure that the model became business-as-usual and not restricted to a handful of isolated demonstration projects.

“Prior to 2018 we had a few clinical services who were using video conferencing software. It wasn’t integrated with our systems. If you had a very good secretary you could make it work but it wasn’t going to scale like that. I had to take a system approach. My vision was all services offering VC in a consistent way. We needed to get to the stage where everyone who’s moving around the hospital knows it’s business as usual – for example, if a nurse or administrator moved departments, they’d meet the same systems and services for VC.” (#1 Debbie, clinician-manager)

As they moved to the scale-up phase, various difficulties with the technology and associated work routines (see page 58) emerged. Because Debbie and her team understood the need for socio-technical design, such problems were taken seriously and systematically addressed.

‘Early adopter’ specialties were usually characterised by a willingness to share responsibility for an early phase in which things are likely to go wrong, and to work with the service managers to help embed the technology in systems and processes, and then test the service with carefully selected patients.

“Admin put their hands up and said they weren’t going ahead with it. Initially we didn’t have a virtual receptionist. It was chaotic, as a clinician you desperately want it to be good for the patient, I think that’s why people are reluctant to do it. But things did get better. Debbie was amazing. It was her project management that helped it to fly. We had it sorted, we said let’s make it fly, she said I’m troubleshooting tell me what needs improving and how. So we sent her 3-page emails with long lists of things to change, and she kept improving things. And in early 2018 we ran a small pilot to test the acceptability within our patient group. 18 patients had been invited to consult via VC [video consultation], 16 accepted, 14 attended and all of those said it was as good as face to face.” (#2 Jake, psychiatrist)

Debbie described how, during the set-up phase, the quality improvement team welcomed negative feedback as an opportunity to improve. Responding to the complaints from highly sceptical clinicians in particular, and entering into dialogue with them, produced some converts.

“[Specialty X] is interesting – it’s our most problematic service and our best service. When they started the consultant [name] was so negative it was quite funny. He’s very critical of everything that goes wrong. But we fed all his complaints into the QI cycle. He’s been great, the sound quality wasn’t good enough for him, the picture

wasn't good enough. The more feedback I get the better it gets. And then he phoned me, "I've got a patient whose son is abroad, wants to phone in". I told him you said you'd never do that, he said I know but it's necessary." (#1 Debbie, clinician-manager)

"It is not only someone who is helpful when asking questions, but also always keen to get feedback on how it could change. For any change like this you need someone who is going to drive it forward. Who is passionate about it." (#60, Brenda, administration manager).

Importantly, patients were included in the effort to embed and scale-up the service (see below and quote from Pauline on page 14).

"Patients came up with good ideas. They came up with the name 'NHS Near Me' which we used to brand the service. And they said it [video consulting] is scary. They asked, "could you do open sessions so I can try it out without having to have a consultation?". We now do that on Friday afternoons." (#1 Debbie, clinician-manager)

As noted earlier, whilst Attend Anywhere is a web platform that was extremely dependable, the material infrastructure to support its use needed setting up and regular maintenance. Staff in one busy remote community hospital described a skills gap in this regard, and felt that the absence of on-site IT support was more of a problem than the lack of on-site specialist doctors. Whereas clinical consultations could usually be conducted to a high standard remotely, remote IT support was perceived as awkward and inadequate.

"We have no IT [support]; they give a virtual service. I need to raise a ticket. It works for someone who is office-based, but I'm basically on my feet all day seeing to the patients. They say "we need to take over your computer" but I'm not at my desk. They want to talk me through something I can do remotely. It's no good. We need IT on site. IT support people could come once a week or once a month. Installing stuff. I have to put the disc in, but it's always I'm not free or he's [remote IT support person] not free." (#35 Diane, community hospital nurse)

In that site, there were several pieces of expensive and sophisticated equipment that could not be used because local staff were not confident to set them up.

"We've got the same camera that they have in Y--- [regional hospital]. But we've never used it because of the lack of IT [support]. It isn't set up right; the colour balance isn't right. I'm sure if Jonathan (#6, IT-savvy service manager at Y---) came down here he'd fix it in a jiffy. That fancy camera would be great for assessing people's airways pre-op." (#33 Lynne, GP and physician)

The importance of routines

A routine has been defined as "a repetitive pattern of interdependent action involving multiple actors" [12]. Organisational work is structured around routines – for example, booking appointments, arranging prior tests, processing patients to and through an outpatient clinic, and following up (e.g. arranging a repeat appointment, sending a letter to the GP). Routines tend to be interdependent with other routines, and if one routine

changes it can generate additional work in other routines and processes. As anticipated, we identified some issues (positive and negative) with organisational routines in this study.

The Attend Anywhere technology was developed to address a problem identified with previous software (which had been designed for a different purpose – conference calls). Even when previous products were technically high quality (and hence supported the actual consultation routine well), they aligned poorly with the appointment-booking routine, the ‘arrival’ routine and the ‘following up’ routine. Attend Anywhere was designed to emulate the physical arrival of the patient at the hospital desk, followed by a spell in the waiting room, before being shown into the consulting room. After some initial teething problems, this became embedded in the base hospital in Inverness (see picture page 37), thereby overcoming a major block to embedding and scale-up.

Emulating the outpatient clinic in this way facilitates scale-up because it maintains continuity and enables a degree of flexibility needed for a complex outpatient environment:

“It works because of the way it is set up – to work exactly how the usually outpatient system works, right down to the paperwork... So if I have a Near Me clinic, and I have a patient that needs to come in for injections, I will put them into that slot. More recently. I had a full Near Me clinic starting at 9am and finishing at 1pm and my second patient actually had something on here for a procedure. So they were here, so nipped over to my secretary and said we are here, so can we just see him face to face, so I could.” (#56, Bebak, consultant in neuro rehabilitation)

However, because the Scottish model as implemented when the evaluation was undertaken predominantly involved remote NHS sites rather than connection direct to patients’ homes, all the routines associated with the consultation (booking it, doing the actual consultation, following up) needed to be coordinated across two separate NHS sites. Because of different processes and patient management systems, a manual ‘fix’ had to be implemented to keep the show on the road. A senior manager from one of the island hospitals explains the problem.

The use of video consultations between the island and mainland boards presented challenges for the alignment of different administrative routines. In particular, the islands-based teams needed to manage the spoke locations for patients once they had been identified by the mainland hub service as suitable for a video appointment.

“Our systems have some routines, Highland has theirs. A patient will get referred, someone has to assess whether they’re suitable for VC, and communicate that back to us, we then make a slot. Diedre [#5, nurse] makes that happen manually. [...]. We’re displacing outpatient activity from Raigmore to us. We need to be knowingly double-counting – we need a room each end. For a typical clinic, we also need to provide two nurses and a HSW.” (#18 Keith, IT manager)

Several of our interviewees indicated that aligning the routines for booking appointments required communication (typically by phone or email) between administrators at both sites, both to make the original appointment and to alter it if needed.

“Technologically we don’t have many issues, the issues are around the scheduling of appointments. [When things go wrong we find that] there’s not been much communication among teams. [...]. We have different PAS [patient administration systems] – they use TRAK we use Topaz. The problem with letters is they don’t have the ability to change the location easily.” (#31 Naomi, service manager)

The last sentence in the above quote referred to a patient who had been told the wrong remote clinic to attend, resulting in a great deal of work to reschedule the appointment at the clinic nearest to his home. All this had to be done manually.

Whilst our own fieldwork seemed to suggest that the Inverness team were well-organised and had an efficient system for booking appointments, staff at one remote site (in a different board) described the administration in Raigmore as “disorganised”, because of a perceived inflexibility in amending bookings when asked. This (alleged) lack of flexibility, and particularly the apparent inability of a booking clerk to make a real-time adjustment when contacted by a remote site, is important since it could generate considerable additional work elsewhere in the system.

“They can’t fix things when you speak to them. An overnight receptionist books appointments, but she doesn’t really know the system. [Patient] had been booked into Raigmore; he’d been sent 6 different letters. Ellie, his Macmillan nurse (#24 Ellie, Macmillan nurse, remote site), contacted the clinical team directly and sorted it out. The girls in Highland can’t change a room, they have to escalate it [to someone more senior]. They’re busy. We want to share our room booking tool with Highland. We could put it on the web. Clinics get cancelled then someone moves a room around. I tend to pick up the phone because emails can be misinterpreted. The Near Me team in Highland is only two people. But this is a massive piece of work.” (#32 Eilidh, service manager)

The same manager contrasted this situation with one in a different hospital (in Grampian), in which the booking clerk did have the ability to make a crucial change:

“He [patient] had the letter from Grampian. We didn’t have the link to the [virtual] waiting room, we don’t generally send to Grampian. I found the woman [clinic administrator] on Twitter. She made the link work for her, she put me in touch with their VC helpdesk. They fixed it within minutes. They made me feel like I was the most important person in the world.” (#32 Eilidh, service manager)

We identified various relatively minor but irritating glitches in clinic bookings. One healthcare support worker at a busy staffed NHS Near Me ‘spoke’ site, for example, regularly coordinated patients who were each attending different clinics by video link. Whilst she was sent a list of these patients, it did not include which clinic the patient needed to link to.

“At the end of the day, on [date], I had 6 patients and I did not know what they were coming here for, nobody told me, I had to ask the patients who are you here to see, and that’s embarrassing. It turned out to be gastro. And one psychiatry.” (#42 Oona, healthcare support worker)

We checked Oona's clinic list and found a column called 'Session description' which had various free text entries. Some gave the specialty (e.g. haematology OPD) but others had more generic entries such as 'contact by video link' or 'Raigmore Hospital OPD'.

As with appointment booking, there needed to be a sense of mutual awareness in the actual video clinics. To ensure smooth running of the clinic at the remote site, for example, staff in the 'hub' site needed to gain a sense of the realities and pressures there and accommodate to those. When a patient appeared in the virtual waiting room, this indicated that he or she was sitting in the room at the remote 'spoke' site with a nurse or healthcare support worker, and that no other patient was therefore able to connect from that site. For that reason, most specialties tried to see patients from the virtual waiting room promptly and keep to time (usually by running a dedicated virtual clinic separate from the face-to-face list). The one exception was haematology, where waits of up to two hours (but more typically 45 minutes) were commonplace. In this clinic, virtual patients were slotted in with the general queue of patients attending face-to-face (whose appointments ran equally late). The clinic staff in Inverness were depicted as either not knowing about the knock-on impact on remote sites or not caring about it.

"We have very limited clinical rooms. We use the Near Me room for other things too. We might be trying to slot in that one appointment in with a [face-to-face local] clinic, so there's massive implications for that clinic if the patient is just sitting there. Haematology, there's someone up there and someone down here, and if I'm in with a casualty the clinic can't run. It's massively labour- and facility-intensive. Dietetics [via Attend Anywhere] is much easier, it runs the same for them. If you look at resources there would be a room in use up there and a room in use down here. We're not in for the whole consultation but we're around to take them in, weigh them, the dietitian would call them in themselves. If I'm not there to show the patient in, the clinic grinds to a halt. Some clinics I'll have a HSW with me, but it doesn't always work like that.... It's an extra person." (#35 Diane, community hospital nurse)

But for the haematology team based at the hub, this delay is a consequence of the necessary 'rotational' system, in which the next available consultant takes on the next patient in the queue; considered necessary to manage volume and the possibility for particularly long consultations. This has meant that they have had to book out the remote clinic room for the duration of the outpatient clinic, rather than specific time slots:

"When the [physical] waiting area is busy, people appreciate it is busy and that they will be waiting a long time. But what they don't appreciate is if half the consultations are done by video link, then the waiting room seems empty. And they think, 'Oh its quiet here, why am I waiting?'. And the same the other end [NHS Near Me spokes]," (#58, Richard, consultant haematologist)

Diane's role in the remote community hospital involved a lot of clinical and administrative multi-tasking. While recording a 45-minute interview with her, we were interrupted six times, during which she excused herself to a) take blood from a patient, b) organise an x-ray, c) see a child with an acute injury in casualty, d) get the doctor to sign a form, e) deal with a patient who knocked on the door asking for directions, and f) deal with a patient's relative asking for reassurance. Even though the research interview had been booked out

in advance, Diane was the only person on duty for all the above tasks. Whilst the hospital was remote and small, it was also extremely busy and staff resented the ‘hidden work’ that was generated when haematology did not keep to time.

Another example of unacknowledged transfer of work to remote sites was pre-operative assessments. The pre-operative nurses in Stornoway, Western Isles, said that assessing patients remotely worked well (though, note, the technology used was Jabber not Attend Anywhere). Diane had a different view:

“All pre-op patients need height, weight, blood pressure, sats [blood oxygen saturation], and an airway check [the Mattipatti score], and lots need spiro[metry], ECG, bloods, urine and swabs. The pre-op nurses have 45-90 minutes for that, but they can’t do any of the extra checks. All that is done by us. They’re in a room up there, we’re in a room down here, we do all the actual things, they just ask the questions. If we do all that work, we need to staff accordingly. Management needs to do the sums. It’s double resourced and double roomed to do via video link. Maybe they should train someone down here to do the pre-ops. But I can’t do a pre-op clinic AND run the A&E. They’re not looking at the full picture.” (#35 Diane, community hospital nurse)

The challenges with aligning two sets of hospital routines begs the question of whether more appointments could be run from patients’ homes – a topic we consider in the next section.

Challenges in setting up Attend Anywhere in patients’ homes

The main reason why patients came to NHS sites (or, occasionally, other sites like nursing homes) to have a video consultation was either no internet connection at home or lack of confidence in using technology. The few patients we interviewed who were having regular Attend Anywhere consultations from home had better than average network connections and IT skills.

“How could we improve it? Nothing really. I’m tech savvy, we’ve got BT fibre right to the house now.” (#37 Trudy, patient)

The two senior IT staff we interviewed were reticent about extending Attend Anywhere to patients’ homes.

“As for patients wanting to do things from home – I’d be uneasy about getting involved with people’s own wifi at home. I’d want to avoid the NHS getting dragged into having responsibility for what’s running or not running in their home.” (#18 Keith, IT manager)

“You’ve absolutely got to have good IT support.” (#30 Bill, IT manager)

The question of what kind of support patients would receive to ensure that they were set up to consult remotely from home, and by whom such support would be provided, did not have an easy answer. We heard some anecdotal accounts of clinicians providing such support on an ad hoc basis:

“I’d seen an adult client in [very remote site] when working off island, I saw her several times [meaning, the patient travelled to the mainland]. She had internet, but was technophobic, didn’t have an email address or anything. It was important to make sure she was confident and comfortable with it [Attend Anywhere at home], so I sent another [speech and language] therapist to get her set up for her first appointment, showed her how to use her computer. I made a document with screen shots. She managed to log on twice after that.” [#39 Louise, speech and language therapist]

In addition to ensuring patients were technically set up, there have also been challenges of ensuring patients prepare and base themselves in a location and environment that is suitable for a good quality consultation:

“Some of the challenges we have is around the physical setup of the appointment. Because I am so used to seeing the person’s whole body and assessing how they move all together. And we have had really basic challenges about making sure somebody is sat with a desk in front of them so I can see the hands and that they are in the right position. So we have had some really unusual complications that we were not anticipating.... So I’ve had patients who I have had to review while they were sitting in the passenger seat of a car. We’ve had patients who are evidently at work and are a little bit embarrassed because someone is asking them to do things with their hands. We haven’t developed anything formal, but our requests to the patients are very different now – ‘So this is still a clinical appointment, and I need you to give it the same level of respect that you would give an appointment here. So, you need to find a space with a table in front of you, with nobody to distract you...’” (#71, Michelle, physiotherapist)

“I think a lot of them are too relaxed. I had a few women do it [appointment over video] so they did not have to find childcare. But then, it becomes quite disruptive because you are trying to speak with them about something that is potentially important and the kids are running round and they are saying ‘one minute’”. [#64, Thelma, genetics counsellor].

The value of a ‘quality improvement’ mindset

Available resource to release staff and form dedicated roles to address technical and operational issues (e.g. assess technical readiness, install cameras, redesign workflows, explain and demonstrate the technology) were key enablers to implementation. TEC funding allowed health boards to recruit or provide backfill for staff to support rollout, including project management and operational support. But the success of these roles was also underpinned by a recognition of the need to proactively and strategically drive organisational change, rather than simply focusing on the technical aspects of implementation.

“It is about cultural change and behaviour change... Because it is not a technology solution. It is much bigger than that. And we see people put their hand up for a waiting area, and it gets created. But then they never use it. And they’re probably afraid to use it, in case it breaks or it cuts out during a consultation. So they will need

a lot of hand-holding. And it is about how to help clinicians, how to implement this into practice... I do think it is a broader understanding of behaviour change and engaging at multiple levels. It is not just, on the ground clinicians, but also the more strategic levels as well.” [#74, Susan, project manager]

Following the quality improvement mindset, efforts to embed and scale-up the use of video consultations have been easier when local programme leads had operational support from staff that already had good knowledge of the organisation; usually internally recruited onto the project from outpatient roles (e.g. care-coordinators). These staff members brought ‘tacit knowledge’ (know how) of the complex interrelations between systems and workflows, as well as existing personal relationships and understanding of other key organisational stakeholders. For example, some operational staff described how they drew on their knowledge and experience from working in the outpatients department to help clinic teams incorporate the ‘single point of entry’ (the single URL into the virtual waiting area) into their particular clinic workflows and administrative processes:

“For example, the single point of entry that we are trying to get to. So we have obviously been trying to promote that from the very beginning and had had resistance from outpatient management. So having that background and knowing how clinics are booked, the types of appointments, how patients attend clinics - knowing all of that, and that background. But then also knowing how Near Me works we were able to layout the options for outpatients.” (#80, Lucy, project facilitator).

“You have to bear in mind every speciality runs their service completely differently. There is no uniformity. So how neurology deals with their patient and how they vet their patients will be done completely differently to how dermatology does theirs or how vascular does theirs. And that is how knowledge comes in handy”. (#82, Bianca, project facilitator and trainer].

3.8 What wider (contextual) issues have influenced Attend Anywhere in Scotland?

National policies and priorities

As described in the Background section, strategic drivers for the scaling up of remote video consultations in Scotland have included a strong national policy push for technology-enabled care. The 2019-2020 Programme for Government specifically commits to the scaling up of Attend Anywhere within healthcare with reference to cost-effectiveness, reduced travel and people’s access to services [13]. This work also aligns with a number of national policy priorities, including the waiting times improvement plan [14], realistic medicine [15], the Access Collaborative emphasis on avoiding travel [16], the 2019 National Islands Plan to improve quality of life of Island communities [17] and the impact of health on ‘inclusive’ economic growth [18].

Strong policy support for Attend Anywhere has helped address regulatory and operational challenges over the course of the programme (e.g. including Chrome as a supported internet browser within the NHS Scotland National Infrastructure Standard), and plans to expand its use are now included in the Digital Health and Care Local Implementation

guidance, which is used to align the health board operational plans with government policies.

However, this still presents challenges, as national priorities do not play out evenly across organisations, and there can be different understandings and definitions of scale-up and 'success' across multiple stakeholders.

"Although Near Me is a national initiative and is being pushed, there are other things that are being pushed nationally, like clinical referral triage, which will help tackle demand and will contribute to reducing workload.... There are lots of things around modernising patient pathways. And that ties in with Near Me. But on its own there are other things that will give them more direct results... so it is difficult getting clinicians' time". [#81, Denise, Project Manager]

"Whilst we might present something that we understand to be successful to one director, it may not necessarily be perceived as success for another director, particularly in terms of whether it is directly contributing to whatever is under that director's remit.... For example, some may be very interested in all the target aspects of the healthcare services – if it is contributing to reducing waiting times, if it is contributing to preventing people coming into A&E, so the hard metrics of the NHS.... Whereas if you speak to someone else, like the chief medical officers, they will have a clear focus on realistic medicine and getting an approach that allows the patient themselves to feel in more control." [# 109, Brian, VC programme board).

General context for NHS services in Scotland

Staff and patients in all the sites we visited were proud of their NHS, which they saw as reflecting deeply-held and widely-shared core values including high-quality universal healthcare provision and equity of access. In this context, the Attend Anywhere video service was generally (but not universally) seen as enhancing the existing service rather than replacing or threatening it.

"I'm very impressed with this service. Can't praise the NHS enough. The media's full of criticism but my experience has been brilliant. Everyone's been very kind." (#43 Patrick, patient)

"I don't know if I'm allowed to be political here? [Interviewer: Sure] OK, the politics of healthcare in Scotland I think may facilitate that [introduction of Attend Anywhere]. All boards work in standardised format, very much an NHS Scotland branding. There's no purchaser-provider split. We work across boards in a collegiate manner; we're a social democratic, socialist country. Making money out of health and education is not in our national ethos." (#22 Emma, GP)

We found what one interviewee called a "Russian doll" effect, in which a remote site might be a 'spoke' for some services (connecting, say, to Inverness for several secondary care services not available locally) but also serve as a 'hub' to provide some specialist input to even more remote sites (for example via a geriatrician, generalist physician or GP with special interest). Inverness connected to Glasgow for some specialist tertiary care services. Because many generalists in Scotland had developed one or two specialist

interests, and because (unlike in England) there was no purchaser-provider split, Attend Anywhere links sometimes occurred horizontally rather than vertically and in a reciprocal and collegiate way.

Connectivity and digital literacy

It is important to acknowledge a fairly rapid pace of progress which has probably not yet had full impact. On the Western Isles, for example, high-quality broadband is now widely (though not universally) available but there is not yet a culture of using it.

“A typical thing is an old person gets given a laptop by their family then left on the island [without support to use it]. 4G became a thing here only 2 years ago. There’s not a culture of people owning phones or wireless devices, they used to only turn it [phone] on once a week when they went to town.” (#28 Teresa, service manager, Western Isles)

The ‘Reaching 100%’ (R100) infrastructure initiative was established in May 2016 to deliver superfast broadband to 100% of homes and businesses in Scotland by the end of 2021 [19]. At the time of writing this report, it is estimated that superfast broadband coverage has reached 92% of Scotland premises [20]. The Scottish Government’s 4G Infill programme, which began in May 2018, also aims to improve mobile coverage in the Highlands, Islands and other ‘black spot’ rural areas.

An important initiative in remote parts of Scotland is mPower (<https://mpowerhealth.eu>), an EU-funded project to help older people with long-term conditions to live independently. Community navigators visit people and put together a wellbeing plan that takes account of family support and local community resources as well as relevant online resources. As appropriate, the individual is supplied with a smartphone or tablet and shown how to use it for keeping in touch with their family, doing online shopping and so on.

“M-power is to support people at home using technology. They get a visit, someone makes recommendations. You get a badge to say you’re all right. Maybe they’ll do it through a local housing association who assess people for telecare; people doing the visit are already trusted vetted and trained to go into an old person’s house.” (#18 Keith, IT manager)

This scheme was beginning to explore linking with Attend Anywhere.

“Once we’re assured that the person is comfortable and confident to do a VC, we will then annotate that patient’s record. And the clinician will see that the patient is able to have a VC. It’s done via SCI Gateway⁸, there could be an automatic referral system; it would pick up the demographics, the CHI number.” (#28 Teresa, service manager)

⁸ National technology system that integrates primary and secondary systems (www.sci.scot.nhs.uk/products/gateway/gateway_prod_overview.htm)

National TEC Programme: supporting inter-organisational learning and collaboration

The TEC VC work stream has provided funding through the 'scale-up challenge' (up to £150K) to each participating health board to purchase equipment and recruit and/or buy out staff time to support implementation activities, which further formalised local roll out efforts:

"It made it a formal project, putting rigour and focus and to deliver actions. It helped get all of the stakeholders together at the right time. We would not have been able to do it otherwise, we would have never stood a chance getting it done otherwise, before the funding came in." [#93, Larry, project manager in eHealth)

The TEC VC workstream team have also been forming routes for inter-organisational learning and collaboration through monthly calls/meetings, open webinars sessions and an online discussion forum using 'Basecamp' (online project management and document sharing application). During the time of writing this report, the Basecamp Attend Anywhere forum had nearly 100 users (local programme leads, project managers, operational support and clinical champions and representatives from Attend Anywhere) and has been extensively used by members to raise issues, publicise and share documentation (e.g. guidance, standard operating procedures, public facing resources).

Some perceived a need to build on and enhance these opportunities for shared learning, particularly with regard to reaching frontline staff 'on the ground', linking organisational counterparts and effective signposting to problems and requests:

"I find in the discussion you start picking up on issues that a board are having that other boards have overcome, so at moment I am trying to connect the boards together to share issues. I feel we could do more in that space. Monthly meetings are not the answer. We have got Basecamp but there are not too many people using it broadly." [#74, Susan, project manager]

The national VC Support team (hosted at NHS Grampian) has also played a key role, providing remote support to health boards through helpdesk assistance, operational support and training. Additionally, they help configure and manage administrative settings on users' Attend Anywhere accounts. These roles have recently extended to supporting NHS England trusts adopt Attend Anywhere, as part of the NHS England pilot.

As the national VC Support team interacts with multiple user groups across different organisations on a day to day basis, they are well placed to interface with the Attend Anywhere team (in Australia) to request additional technical support and design requirements.

"Thankfully there is not much that goes wrong with Attend Anywhere. But if there are, we can act as a point to escalate that to the people in Australia, saying there might be a problem with this functionality because x number of people have reported it." [#84 Dee, VC Support Manager)

4. Discussion

4.1 Evaluating progress, outcomes and cost-effectiveness

The 2018 TEC Data Review and Evaluation Options Study [2] included potential outcomes of a generic VC workstream, drawing on an evidence review and represented in a 'logic model'. Notwithstanding the flawed linearity of logic models for change (which underplay the uncertainty, unpredictability and emergent causality of technology-supported change), it provides a useful summary of initial assumptions and expectations regarding the VC work stream. In Table 6, we reflect on the logic-model's proposed short-term outcomes in relation to our analysis.

Table 6: Reflections on the short-term outcomes from 2018 TEC programme review

Proposed short term outcomes	Commentary
Increased number of patients using VC instead of face to face	<p>There is a clear increase in Attend Anywhere appointment activity. However, frequency should be assessed in the context of use (e.g. video as an alternative to a home visit may have greater significance than as an alternative to an outpatient clinic appointment).</p> <p>Video has also been used as an alternative to telephone appointments, and so it is important to explore what video consultations are actually replacing.</p> <p>To date, video appointment activity has been captured using the Attend Anywhere platform. Whilst this provides a useful picture of service engagement, it does not reflect the proportion of video within overall clinic activity. There is also potential for it to capture data in addition to consultation activity (e.g. test calls and piloting during implementation). A more accurate and comprehensive analysis would require data from other sources (i.e. patient administration systems).</p>
Improved access to specialist services	<p>The video option has greatly improved access for patients living in remote areas, where they relied on specialists visiting their home or local clinic, as well as rapid specialist opinion during urgent care situations.</p> <p>Whilst there has been a lot of policy emphasis on reducing waiting times, it is unclear at this stage how, and to what extent, video will impact on service capacity and waiting times. This will likely depend on the context and service model in which the technology is used, and therefore require a more strategic approach to reaching organisational targets.</p>
Less need to travel	<p>Attend Anywhere has helped reduce travel for patients living in remote and rural areas, and patient travelling from the islands. Participants also highlighted other significant time factors beyond long distance travel (e.g. parking, traffic in/around the hospital, sitting in waiting areas, etc), and so it would be useful to focus further on the potential time saving benefits for urban and semi-urban residents, and how virtual access for these groups could be improved.</p>

Proposed short term outcomes	Commentary
Improved management of certain conditions	<p>Many practitioners spoke of how video consulting supported person-centred and holistic care. It allowed them to gain insight into patients' lives at home and with family, and how this related to management of their condition.</p> <p>They also talked about the value of video over telephone appointments, as non-verbal information supported clinical reasoning and more effective dialogue with patients.</p> <p>The option for multiple participants on the video call also created possibilities for more multidisciplinary and multi-site working with the patient, as well as opportunities for more effective patient and carer education.</p> <p>The use of video can help infection control. This was initially highlighted in a small number of high-risk clinical settings (e.g. for a patient with cystic fibrosis), but has since become even more relevant during the COVID-19 pandemic.</p> <p>We found no evidence to suggest that video appointments had a negative impact on the quality of patient care. However, quality of care and clinical governance remain issues for some clinicians, and so outcomes on quality and safety remain important going forward.</p>
Improved access for hard to reach groups	<p>There were a number of social and clinical circumstances in which video was considered preferable over face to face, and enhanced access for hard to reach groups.</p> <p>In particular, it improved equity of access for patients experiencing travel and/or mobility problems due to frailty and multi-morbidity and patients with fear or anxiety engaging with clinical services.</p> <p>But whilst the technology may help engage these groups, the digital medium also risks excluding those with low digital literacy and confidence, and/or limited access to the technology.</p> <p>Effective ways to address the digital divide included the use of local community venues with 'kiosk' computer facilities and opportunities for remote testing and assistance for patients. This has, however, required substantial logistical and collaborative working, with limited success outside of the NHS Highland region. Ongoing infrastructural development of these sites is needed, including partnerships with other digital literacy initiatives (e.g. mPower, community education/peer support programmes).</p> <p>There appears to be a strong case for the use of video to connect prisons with health care services. However, progress has been slow in the face of significant logistical, infrastructural and regulatory challenges. A focused quality improvement programme may be needed to address the complex and unique issues associated with this setting.</p>
Reduced professional travel and improved efficiency	<p>Video consultations have allowed greater flexibility for clinicians who have been routinely travelling to the islands and remote locations to run face to face clinics. Similarly, video has reduced need for travel among allied health professionals providing care</p>

Proposed short term outcomes	Commentary
	<p>to patients in the community, as well as specialists on-call for emergency care.</p> <p>These clinicians consider it to be more efficient for the service (running more appointments at times that would otherwise be spent travelling), but also provided greater work satisfaction and improved their own quality of life, which they felt subsequently improved quality of service.</p>
Improved collaboration between professionals and new ways of working	<p>Attend Anywhere has provided the opportunity to redesign services to address gaps in service provision or a safety risk. In particular, the dyadic and triadic models have provided some staff with development opportunities through bespoke training from specialist clinicians.</p> <p>The local upskilling of less specialist staff through training and development allowed them to undertake extended roles under that supervision, creating new local service capabilities and increasing professional fulfilment.</p>

The 2018 TEC Data Review and Evaluation Options Study also included a preliminary analysis of potential cost-effectiveness measures. These included reductions in hospital admissions, reduced length in hospitals stay, as well as financial savings from reduced travel of patients and clinicians [2].

Whilst this evaluation did not aim to provide an economic analysis of Attend Anywhere, participants' perspectives within the 'value proposition' domain may inform such studies going forward. In addition to the measures highlighted in the 2018 review, our participants also reported potential cost-savings through increased service capacity and efficiency, such as reduced DNA rates and the upskilling of local practitioners to extend their roles.

But the data also revealed that, although there were many examples of such savings, video consultation clinics can also generate considerable additional work for staff in the both the short and long term, and might require additional investment in other parts of the system to support the service model. This includes, for example, the setting up of 'spoke' sites (room allocations, equipment and staffing) for scaling up of the dyadic model, the logistics of prescribing and pharmacy deliveries, as well as administrative and technical support structures.

This highlights the need for a holistic approach to understanding the relative value of different mediums for remote consulting. This will require a consistent and comprehensive approach across multiple interacting dimensions, including clinical and process outcomes, satisfaction and financial cost [21, 22]. More work is needed to develop a theoretically informed framework to measure the relative value of video and face to face consultations, based on a system level perspective of the social and economic impact, and how these relate to economies of scale. The analysis should also take into account the different models of using Attend Anywhere (i.e. hub-home, dyadic, triadic) in relation to the type and extent of resource required as the volume of activity increases.

4.2 Recommendations for scale-up, spread and sustainability

The analytical lens of NASSS was used to surface the process and outcomes of the Attend Anywhere scaling up programme across multiple interacting dimensions. At the time of writing this report (March 2020), the national response to the COVID-19 had just begun, in which remote video consultations could play an important role in the national response. The fieldwork conducted as part of this evaluation preceded these events, and so this is beyond the scope of the evaluation. However, it is likely that subsequent lessons and long-lasting effects will emerge during this time, and so it would be beneficial to monitor these developments across the NASSS domains.⁹

In summary, Attend Anywhere has been used for a wide range of conditions and clinical services, through the application of three different service models: *hub-home*, *dyadic hub-spoke*, and *triadic hub-spoke*. The Attend Anywhere technology was considered generally dependable and produced high-quality video and audio when the service had invested in high-quality peripherals, such as screens and noise-cancelling microphones. Attend Anyway has been modelled on the workflow of outpatient clinics, with a number of defining characteristics that have contributed to the successful use and scalability. In particular, the 'single point of entry' and 'virtual waiting areas' have been used adaptively by clinical teams to mirror existing workflows and fit the new service model within their local settings. However, problems with wider technical systems, such as configuring patient administration systems for video, still pose challenges to mainstreamed use.

Staff and patients described various advantages of the Attend Anywhere service over conventional outpatient appointments. Main advantages include time and cost saving due to reduced travel by patients and staff, quicker access to specialists and more holistic care. Some clinicians were concerned about video consulting in general, particularly in relation to the quality of the consultation and the logistical barriers to establishing and running the service model.

Organisations which adopted Attend Anywhere most readily tended to have a history of successful innovation, visionary leaders, a clear and positive narrative about the technology, good data systems to monitor the effects of the change, people or money that could be channelled into the change effort and strong senior management and clinician buy-in.

There has been strong national level support and a long established strategic intent to use video for remote consulting. This has contributed to the scale-up effort through the TEC programme, allowing 'slack' resources (people and technology) for service implementation, facilitating inter-organisational learning and helping shape relevant regulatory policies.

Drawing on the emerging themes, we propose the following recommendations:

⁹ A further phase of the evaluation has been commissioned to explore a rapid scale-up of Attend Anywhere in response to the COVID-19 pandemic.

Recommendation 1: For each clinical specialty, produce national guidance offering ‘rules of thumb’ for what is generally safe for video consultations

Some but not all conditions are appropriately managed through a remote video consultation. For the clinic-home model, evidence suggests that suitable conditions include:

- Routine chronic disease check-ups, especially if the patient is stable and has monitoring devices at home.
- Administrative reasons e.g. re-issuing sick notes, repeat medication.
- Counselling and similar services.
- Duty doctor/nurse triage when a telephone call is insufficient.
- Any condition in which the trade-off between attending in person and staying at home favours the latter (e.g. in some frail older patients with multi-morbidity or in terminally ill patients, the advantages of video may outweigh its limitations).

Conditions in which video would not be suitable for the home-clinic model include:

- Assessing patients with potentially serious, high-risk conditions likely to need a physical examination (although in some cases registered nurses in care homes could do this under supervision).
- When an internal examination (e.g. gynaecological, rectal) cannot be deferred.
- Co-morbidities affecting the patient’s ability to use the technology (e.g. confusion), or serious anxieties about the technology (unless relatives are on hand to help or care home staff).
- Some deaf and hard-of-hearing patients may find video difficult, but if they can lip-read and/or use the chat function, video may increase accessibility, and use of British Sign Language (BSL) interpreters may be an option for some.

The dyadic and triadic hub-spoke models could also support care of more complex conditions such as chronic pain or cancer. Such models relied on a high degree of trust between the specialist and the local staff member; they seemed to depend on a positive and longstanding personal relationship between them, and (often) individualised training.

Recommendation 2: Basic training and multiple try-out opportunities for staff and patients

The Attend Anywhere technology was, in general, dependable and produced high-quality video and audio. However, it is important to account for digital literacy and confidence of both patients and staff. The hub-home model presents additional challenges to ensuring adequate set-up and call quality. Some clinicians who use the hub-spoke model have expressed reluctance to move to a hub-home model because they would be unable to control the technical quality of the patient’s connection and/or were concerned about time required to troubleshoot or resolve technical problems.

Recommendation 3: Develop and disseminate system-level analysis of the growing evidence about significant financial savings from Attend Anywhere

Staff and patients described various advantages of the Attend Anywhere service over face to face appointments. Different organisations and stakeholders held different priorities and motivations for supporting video consultations. In order to gain senior level strategic support, it will be important to highlight and provide evidence for potential efficiency and financial savings across different strategic areas. This includes, for example, less need for travel (including patient and staff) and increasing service capacity.

Recommendation 4: Identify and address clinical and care governance issues

Service developments require local clinical leadership. Some clinicians were opposed to video consultations because they felt it threatened the quality and safety of the clinical consultation. Others were supportive in principle but saw no immediate clinical need to set up and wanted to observe the outcomes of other services within their specialty. Professional bodies and defence societies (nursing as well as medical) have an important role to play in revisiting traditional definitions of good clinical practice and establishing more contemporary ones.

Although less mature in social care settings, equal consideration will be required on care governance issues.

Recommendation 5: Working with professional networks, disseminate stories of up-and-running services

The service model should be championed and positively communicated by respected opinion leaders, with attention paid to the overall narrative or 'organising vision' within which the technology-supported change is framed. Identify and engage existing inter-organisational and professional clinical networks to endorse the service model and promote sharing of knowledge and best practice. Staff may also benefit from being in 'communities of practice' (groups or networks of people who share an interest in something and are trying to get better at it).

Recommendation 6: Communicate the "gaining a service" narrative

It is important to emphasise what the video consulting can bring to local services and communities. Some staff in remote community hospitals expressed concern that the introduction of video clinics would mean "losing" a consultant-led local service (in the sense that a monthly in-person visit would cease), though other staff in the same settings depicted the change in terms of "gaining" a service (in the sense of access to certain specialists who had previously been unavailable).

Recommendation 7: Assign and support local champions

Social learning from clinical 'champions' who are enthusiastic and confident in using the system is crucial for building capacity. It is important to continue resourcing and building capacity of local clinical champions across multiple disciplines and professions, and to

cultivate their capabilities in facilitating cross-departmental collaborations, linking frontline practice with senior level management.

Recommendation 8: Provide set-up support for ready-to-roll sites, paying careful attention to routines between participating sites

There is high interest and a strong economic case for hub and spoke models that allow for remote consulting between health boards (e.g. island to mainland services) and across other organisations (e.g. prisons to hospitals). However, substantial work is needed to align processes across these organisations. Whilst the spoke hospital sites may be remote and small, they are also extremely busy and under-staffed, and so require support to implement logistical and infrastructural arrangements to call into the hub sites.

Recommendation 9: A Quality Improvement Collaborative to maximise inter-site learning

Scaling up video consultations is not merely installing new technology, but introducing and sustaining major changes to a complex system, requiring both national and local strategic leads. A structured approach to identifying, training and bringing together quality improvement leads, and helping them align and monitor their local activities with wider strategic goals, would help accelerate progress to scale-up and spread.

Recommendation 10: Strengthen national branding

Maintain consistent branding of NHS Near Me across all health boards, ensuring the messaging is consistently applied across multiple dissemination and communication channels targeting patients and staff. Raise awareness through public-facing media to reinforce the identity of the new service model and build familiarity and trust.

4.3 Limitations of the evaluation and recommendations for the future

This study provides a socio-technical (people and technology) perspective that links different levels of data collection and analysis across the NASSS dimensions. One of the advantages to this study was the level of detail achieved, with the support of project managers and service staff (hosting researcher visits, arranging interviews, meetings and site visits, suggesting and introducing other colleagues and stakeholders) and the sharing of local evaluation data and reports (e.g. activity data, surveys).

It is important to acknowledge that the fieldwork was conducted within a sub-set of health boards and services. Whilst sites were selected to include variations in geography (urban and rural), clinical context, regional (NHS territorial health boards) and adoption progress, the findings should not be seen as an exhaustive account. However, the key themes and lessons highlighted in the analysis should be relevant and informative to the other sites and the programme as a whole.

The evaluation highlights three different models of use: *Hub-home* (clinician connects to patient at home on personal device), *Dyadic hub-spoke* (clinician in 'hub' connects to patient in remote 'spoke' setting without additional staff support), and *Triadic hub-spoke*

(the clinician in a specialist 'hub' centre connects to patient in remote 'spoke' site with an additional staff member). Each model presents different implications with regard to the scope for clinical consulting and the resource requirements for development and sustainability. Therefore, more work should be done to assess the merits of each approach and how they are (and could be) applied across the health boards.

The activity data was captured through the Attend Anywhere platform, which provided useful information on the uptake and use of the system. However, there are limitations to relying on this frequency data alone. For example, some of the key service level outcomes (e.g. proportion of video activity, DNA rates) would be based on data captured through other clinical and administrative systems (e.g. TrakCare, EMIS). The extraction and interpretation of such data would require significant time and resource, especially as different services use different electronic (and paper) systems to manage outpatient activity. Therefore this level of analysis was beyond the scope of this evaluation. However, establishing such processes locally, in order to routinely monitor activity, would be beneficial going forward. This would require close collaborative working between the project and clinical teams, in order to define the areas of analysis that would be meaningful to the local context.

The survey data provided a unique insight into the patient and staff perspective immediately after the consultation, which was instrumental in providing broader perspectives on user experience as part of the mixed-methods approach. As with any self-reporting method, it relies on the willingness of participants to respond, which presents potential sample bias. In this particular study, our analysis was based on 679 patient surveys and 755 staff surveys during a period involving 6719 video consultations (about 10% of patients and 11% of staff). There are also limitations with regard to the type of data that can be captured using this approach. For example, information governance requirements meant that personal level data (demographics, location) could not be captured. Patient administration systems may therefore, play another important role in this regard. In particular, such data could be used to further understand difference in uptake and provision across different regions and patient groups.

In sum, ongoing evaluations should make more use of routinely-captured data through patient administration systems. This approach will require significant time and resource for project teams to work collaboratively with clinical teams, in order to ensure that the data and analysis is relevant and meaningful to the particular setting. Some teams have already conducted (and are continuing to run) preliminary analysis in this way, which helped provide some estimates on activity as part of this report. Applying this approach more widely and systematically would help gain a more detailed understanding of uptake and use nationally. It should be noted, however, that the quantitative data only tells part of the story. In order to inform ongoing scale-up, such data should be used alongside a qualitative and contextual understanding of how the technology is being used and how it can become more embedded within routine practice.

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Appendices

Appendix A:

Attend Anywhere activity across Health Boards (Jan-Dec 2019)

TABLE A1: Video consultations across Health Boards (Jan-Dec 2019)

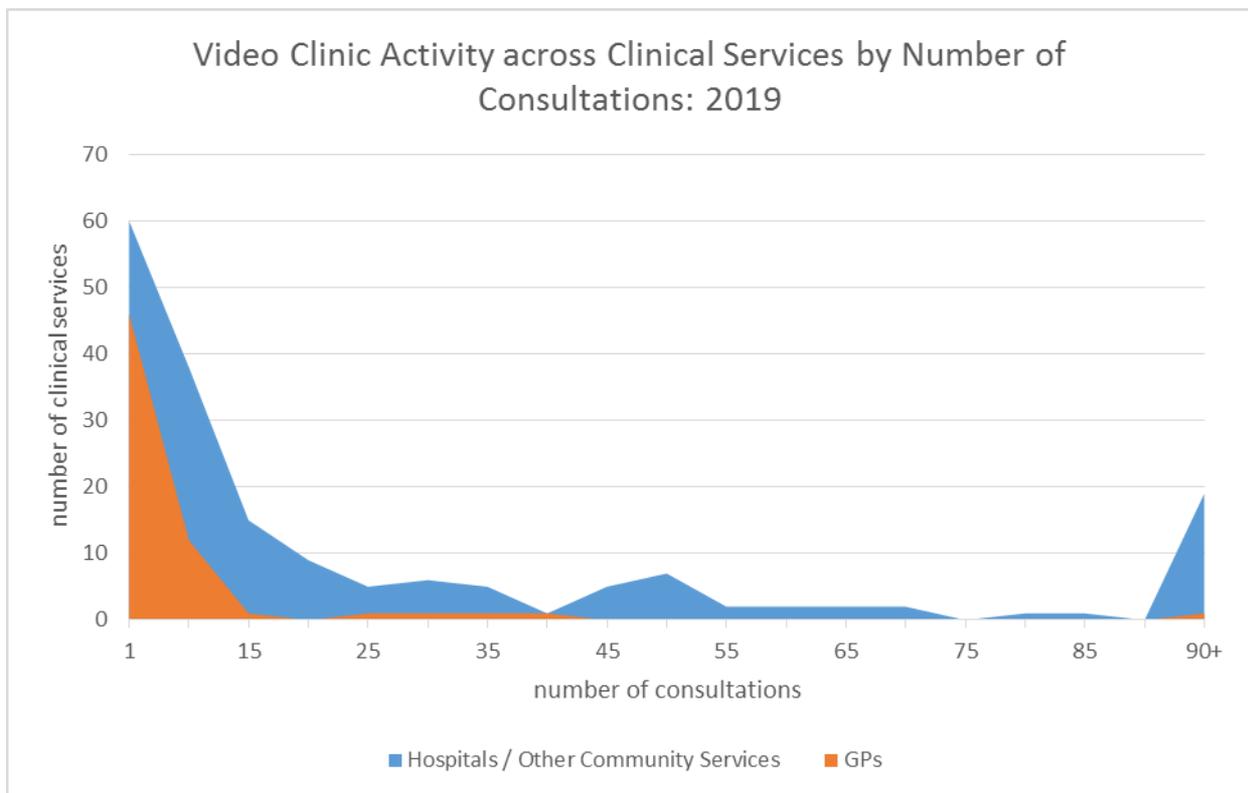
Health Board	Hospitals and other Community Services	GP services	Total
Ayrshire & Arran	282	45	327
Borders	38	27	65
Dumfries and Galloway	177	1	178
Fife	10	3	13
Forth Valley	344	24	368
National Waiting Times Centre (Golden Jubilee National Hospital)	48	-	48
Grampian	1031	169	1200
Greater Glasgow and Clyde	412	7	419
Highland	2675	169	2844
Lanarkshire	288	28	316
Lothian	16	0	16
Orkney	89	2	91
Shetland	157	5	162
Tayside	144	4	148
Western Isles	328	51	379
Total	6039	535	6574

Appendix B:

Attend Anywhere consultation activity across all active health and social care services during 2019

Graph B1: Presents the spread of services according to number of consultations (Jan-Dec 2019).

This includes clinical departments within secondary care plus other HSCP community services (excluding GP services) (N= 180), and GP services (N=64).



Appendix C: Attend Anywhere activity across clinical speciality

TABLE C1: Video consultations activity across different clinical specialties (Jan-Dec 2019).

Clinical Speciality*	No. of Health Boards	Freq. of video consultations
Gastroenterology	2	698
Haematology	2	622
Psychiatry / Psychology	9	536
Oncology	4	354
Respiratory Medicine	6	305
Ophthalmology	4	292
Dietetics	7	284
Speech and Language	7	291
Endocrinology and Diabetes	6	202
Sleep therapy	1	200
Rehabilitation medicine	4	197
Obstetrics & Gynaecology	1	156
Physiotherapy	5	151
Paediatrics	6	144
Dermatology	3	134
Community nursing	2	127
General Surgery	3	123
Neurology	4	117
Clinical Genetics	2	115
Accident and Emergency	2	103
Occupational Therapy	4	94
Trauma and Orthopaedic surgery	3	90
Renal Medicine	3	64

Clinical Speciality*	No. of Health Boards	Freq. of video consultations
Occupational Health	4	52
Cardiology	2	52
Addiction services	4	44
Rheumatology	2	35
Advice services	4	30
Plastic surgery	2	25
Chiropody/Podiatry	2	23
Pain Management	2	19
Counselling	1	16
Prosthetics/Orthotics	2	14
Infectious diseases	1	12
Community mental health	1	10
Urology	1	8
Sexual and Reproductive Health	1	6
Total	-	5745**

*Speciality is the grouping of services by clinical area. Health Boards may have more than one service within a particular speciality.

**Excludes activity data for services that conducted less than five consultations during the data collection period and where it was not possible to determine clinical context of the consultation.

Appendix D:

Online post-consultation survey results during Jan-Dec 2019

The number of patient surveys represents about 10% of all consultations over this period.

The number of staff surveys represents about 11% of all consultations over this period.

Fig D1: Patient survey on using video consultations again, % (N=662)

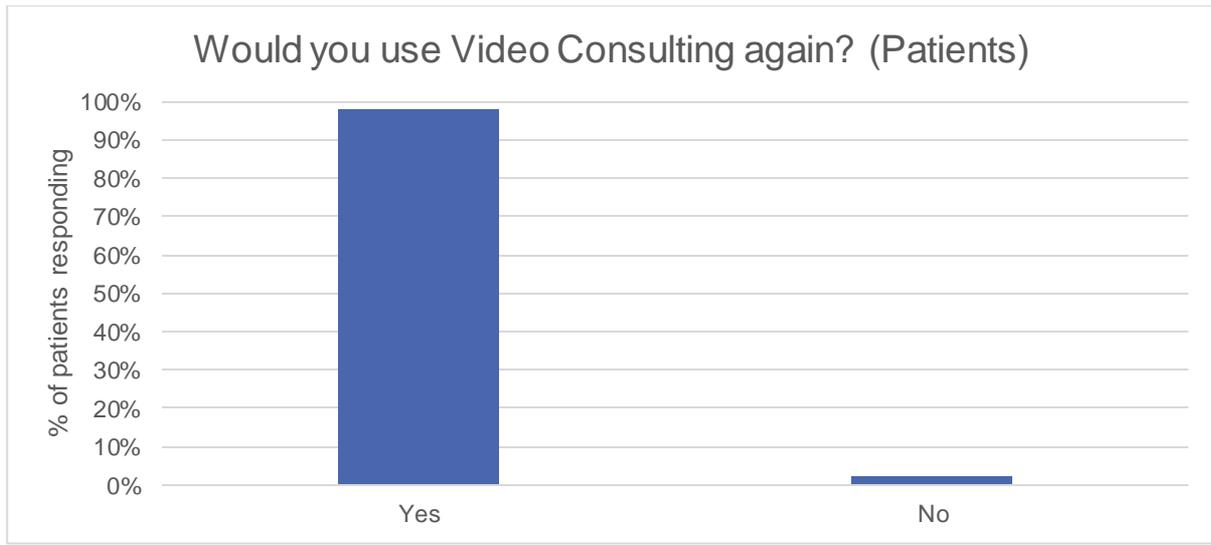


Fig D2: Patient survey on technical problems, % (N=662)

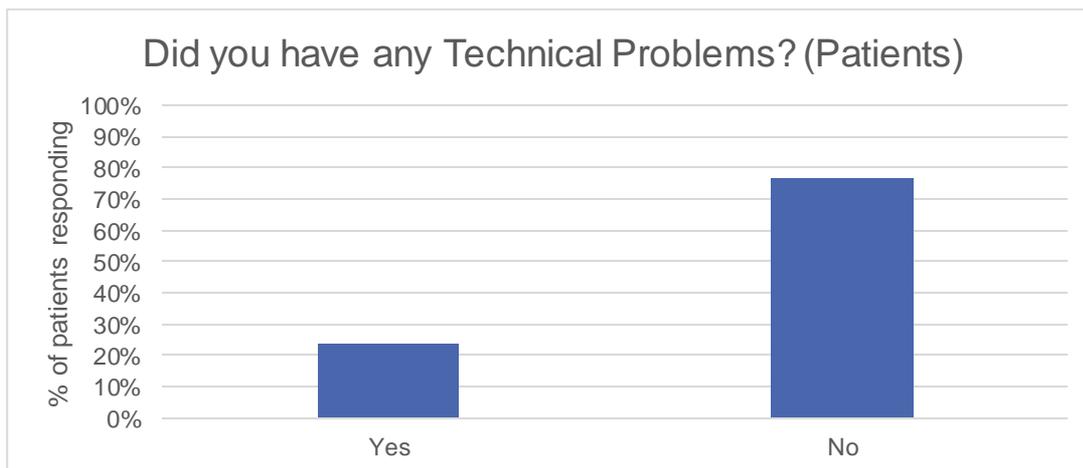


Fig D3: Patient survey on travel to clinic, % (N=679)

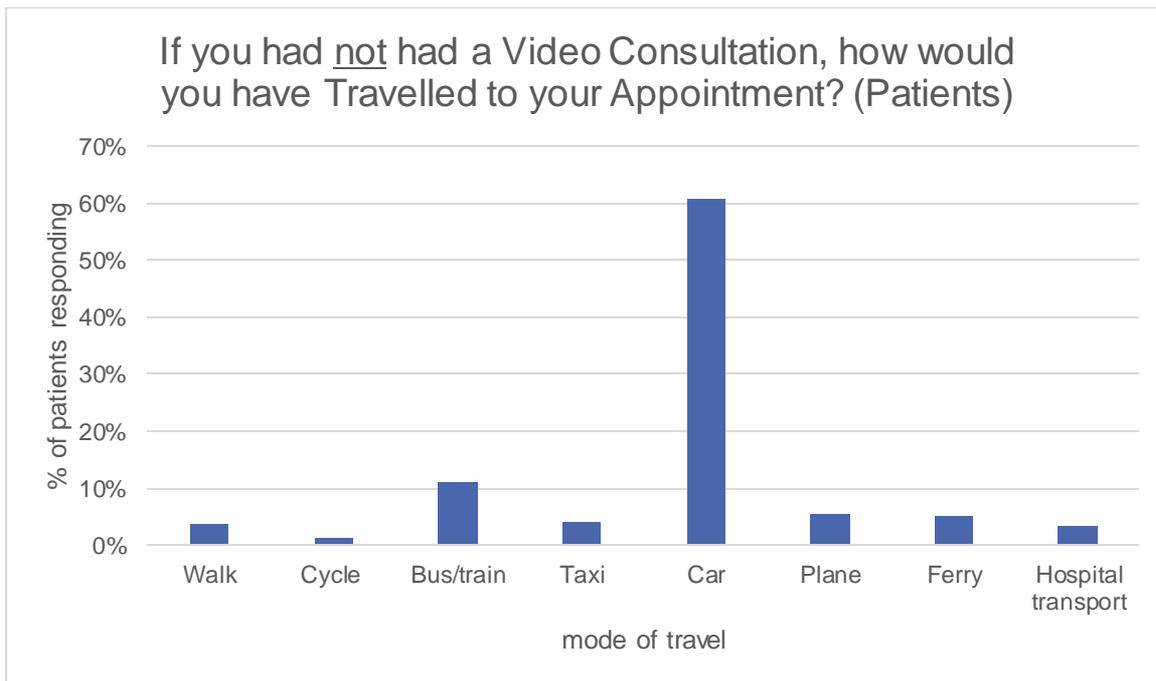


Fig D4: Patient survey on benefits of video consultations, % ? (N=679)

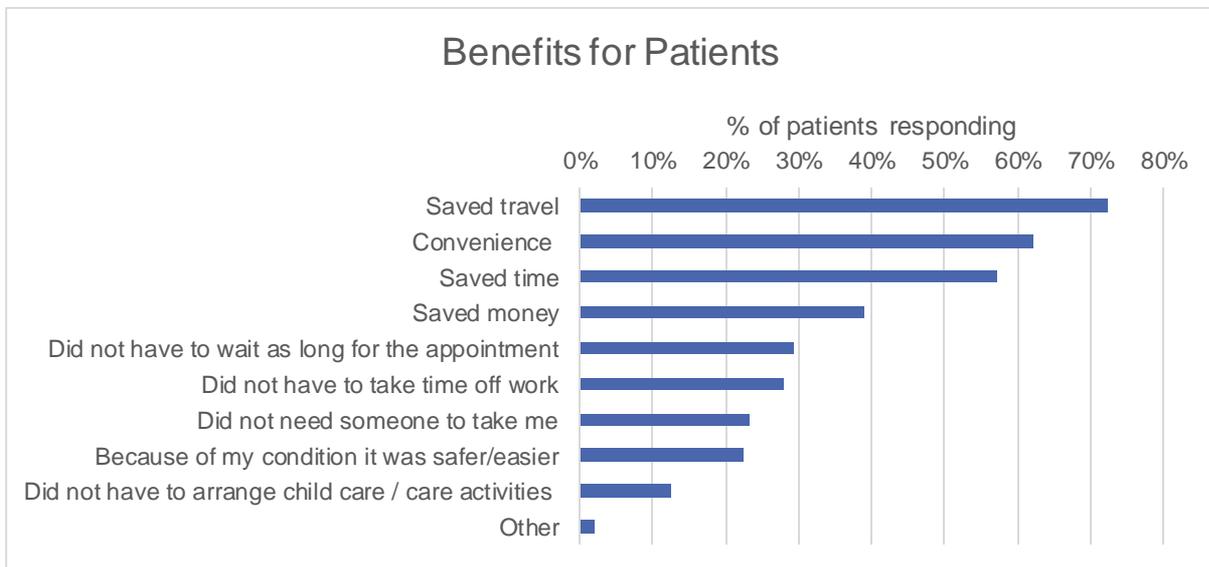


Fig D5: Patient survey on disadvantages of video consultations (N=679)

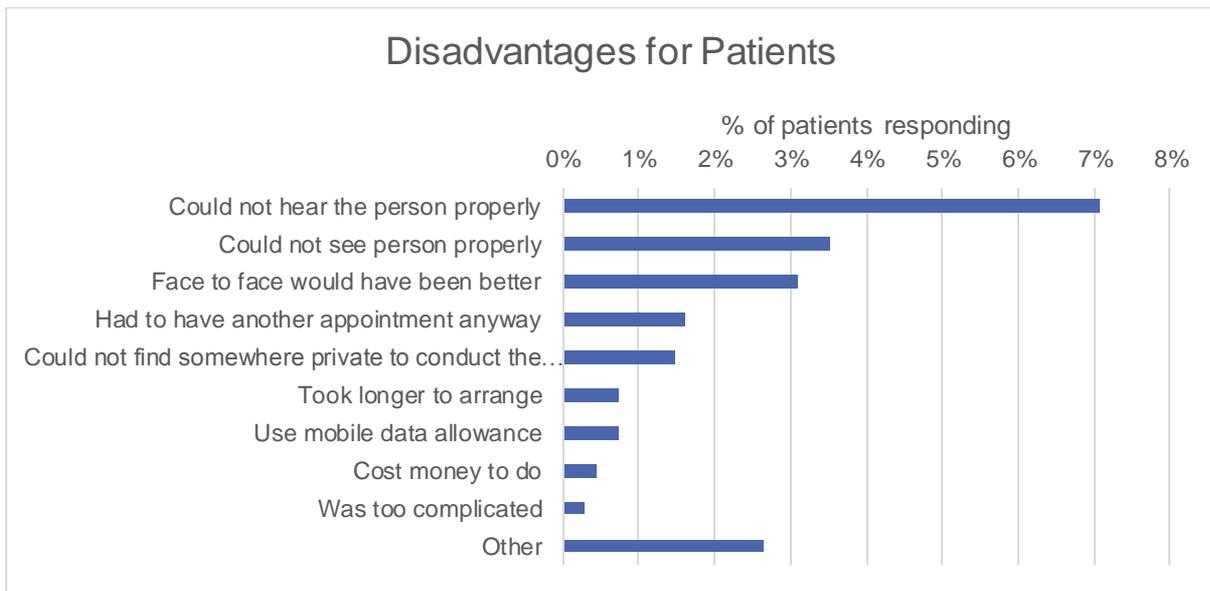
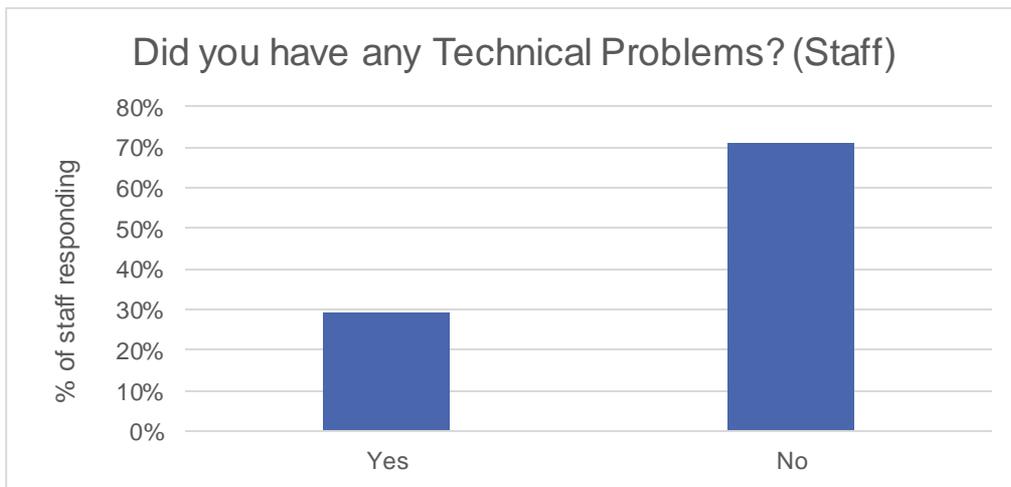


Fig D6: Staff survey on technical problems (N=654)



D7: Staff survey on benefits of video consultations (N=755)

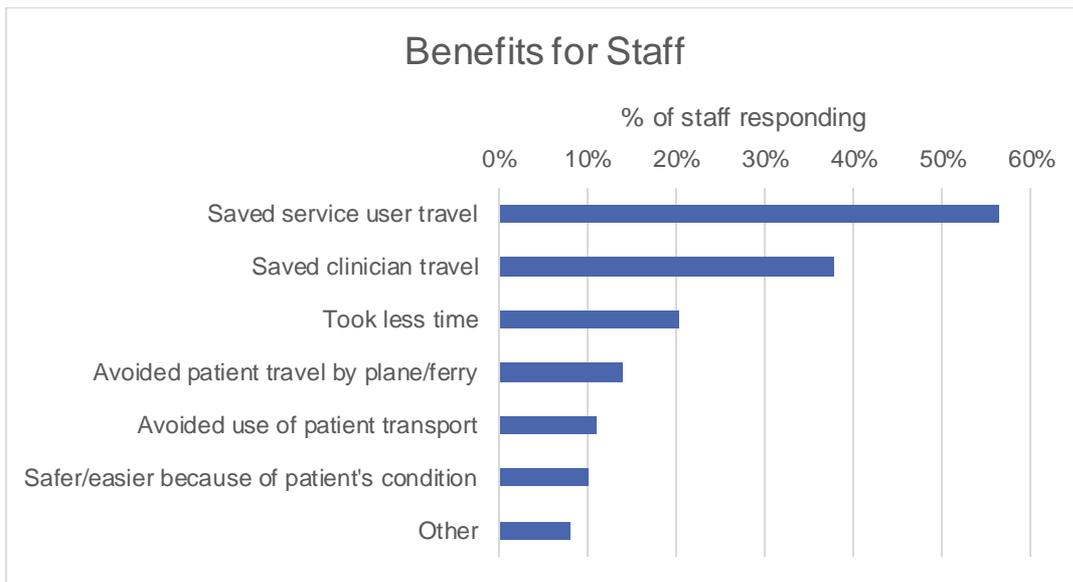
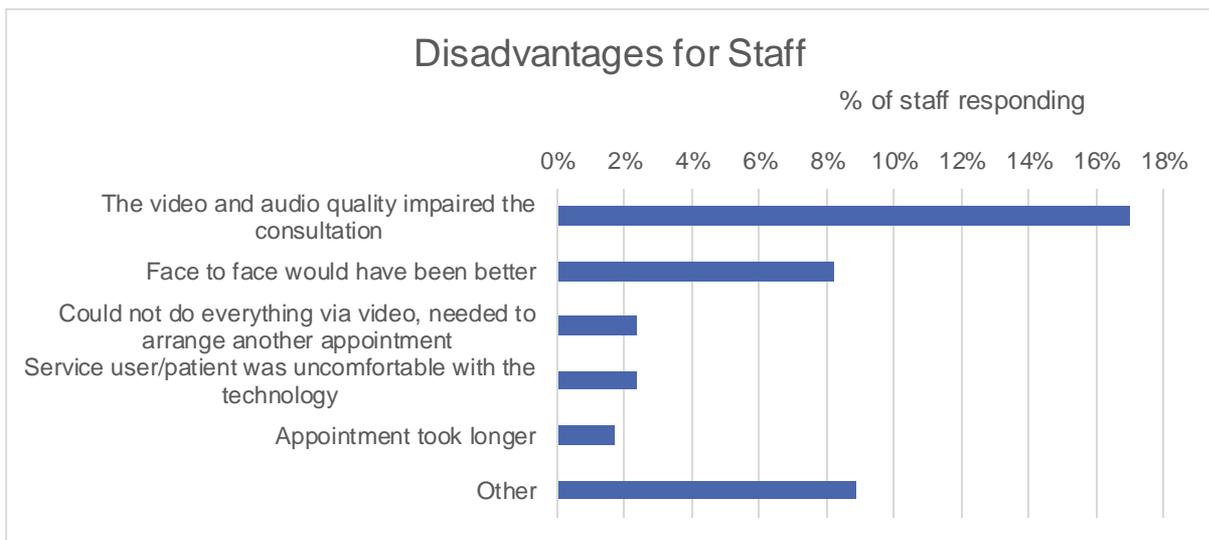


Fig D8: Staff survey on disadvantages of video consultations (N=755)





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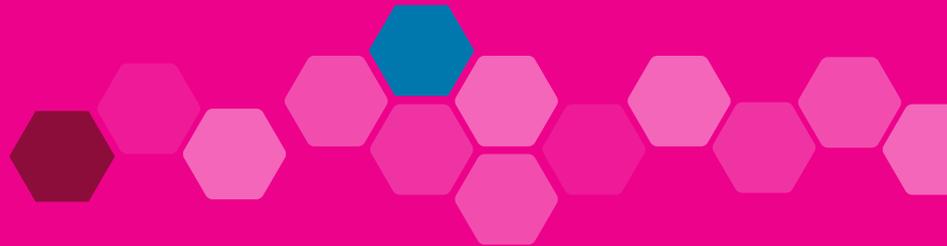
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