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# Patient, Staff and NHS Benefits, Challenges and Sustainability of a Digital Healthcare: A Study of 203 Semi-Structured Interviews, Using a Mixed Methods Analysis.



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**Title Page**

Patient, Staff and NHS Benefits, Challenges and Sustainability of Digital Healthcare: A Study of 203 Semi-Structured Interviews, Using a Mixed Methods Analysis.

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# Patient, Staff and NHS Benefits, Challenges and Sustainability of Digital Healthcare: A Study of 203 Semi-Structured Interviews, Using a Mixed Methods Analysis.

*Digital healthcare in the UK was adopted out of necessity rather than choice during the COVID pandemic. However, as we move forward, UK governments and healthcare services have acknowledged its evident benefits for patients, staff and the NHS service, and are keen to sustain its improvements in the long-term.* ***Objective****: To understand the benefits, challenges and sustainability of a future-proof digital healthcare* ***Design****: A semi-structured interview study, using a mixed methods analysis.* ***Setting****: In NHS services in Wales, UK.* ***Participants****: With clinical and non-clinical staff across a mix of clinical specialities.* ***Outcome measures****: Data captured on measures of benefits, challenges and sustainability of a national video consulting (VC) service, and thematically coded, analysed and presented using mixed methods techniques.* ***Results****: A total of 203 interviews were conducted, and, based on 1.494 coded responses, three dominant themes emerged, with seven sub-themes and 26 categories. Each sub-section is quantified for improved understanding and clarity of experience, and qualitatively supported with direct quotations.* ***Conclusions****: NHS Wales have demonstrated that currently there are an equal measure of benefits and challenges to a national digital healthcare. However, with ongoing government and service support, improvement and evaluation, it has potential for a sustainable digital future.*

***Abstract Summary:***

*Strengths and Limitations*

- *This is a national study, which is representative of Wales.*
- *This study has a large sample size for qualitative research.*
- *This study uses a mixed methods analysis, providing both narrative and quantification of narrative accounts.*
- *Interviews were with clinical and non-clinical staff, therefore benefits and challenges are perceived by them only.*
- *This study was conducted during the COVID-19 pandemic and update and satisfaction of digital healthcare may have been impacted.*

## Background

Wales is a country that is part of the United Kingdom with a population of 3.1 million across a total area of 20,779 km$^2$. Compared to other parts of the UK, Wales has a high rural environment, the oldest age population (21% over 65), the highest proportion of people with a disability (2%) and is the poorest UK country [1-2]. Based on Wales' rurality and demographic profile, it may be assumed that digital healthcare may not be an equitable option for its general population [3-4].

Recently, such assumptions have been challenged however. Welsh data from more than 50,000 NHS patients and staff demonstrates that regardless of what may be considered imitating factors, e.g., age; gender; ethnicity; household income;

location; health status; and disability, digital healthcare, such as video consulting (VC) platforms, can provide equity of care across all patient and staff groups, appointment types and clinical specialties [5]. In support of this, the Welsh Government have recently published a ministerial call for a new digital strategy in Wales, stating that "*digital change offers us a range of new tools for solving old and novel problems*" [7]. It is further argued that "*digital offers the potential to make our experience in the world better, enhancing people's lives [and] strengthening the delivery of public services*" [6]. The digital strategy, and other Welsh Government policies such as Prudent Healthcare and the Future Generations Act [8, 9] look to support and enable a strong digital future for NHS Wales.

## Aims & Methodology

Using a semi-structured interview methodology, the aim of this study was to identify the benefits, challenges, and sustainability of a national digital healthcare service from a representative sample of NHS healthcare professionals (clinical and non-clinical). The NHS Wales Video Consulting (VC) Service was identified as an appropriate service to recruit. A VC platform called 'Attend Anywhere' was funded in 2020 by the Welsh Government for use across NHS Wales. Therefore, the scope of the study is limited to understanding VC via this platform.

The sampling approach taken included three approaches. First, opportunity sampling, which involved an additional question being added to the end of the NHS VC Service feedback survey, requesting VC users to take part in the interview study. Second, to ensure that we interview all types of VC users, emails were randomly sent to all NHS Wales VC Service contacts (approx. 10% of the full database). Furthermore, snowballing sampling was also explored, such as the use of social media platforms and through personal or professional networks. This process lasted for approximately two months until recruitment received at least a 1% representation of all Welsh VC users. Based on the total of 16,000 VC users set up in Wales, and a potential 10% of which who were approached during the time period to take part (approx. =1,600), a total of 203 semi-structured interviews (1.3% of total VC users and 13% of users approached) were held across all health boards in Wales, across a range of specialties.

The inclusion criteria for an interview was to have prior experience of using the NHS Wales VC service in the one-year period (March 2020 – March 2021). On initial contact, all expressions of interest met the inclusion criteria. On agreement to take part, an email was sent out with information of the study and a consent form, along with either a scheduled Microsoft Teams invite for a video interview, or a contact number was obtained for a telephone interview, or face-to-face interview if preferred. A total of 12 people did not attend the scheduled interview, and no follow up arrangements were made. On the day of each interview, consent was read out verbally, and consent was obtained from all of those in this study.

Interviews were audio recorded and transcribed verbatim. A semi-structured interview schedule was constructed for reference purposes, yet a conversational style of interviewing was adopted to allow a more natural dialogue. Thematic analysis was conducted. Initial analysis involved listening to the recordings and reading of the transcripts and making notes, which then led into highlighting and coding areas of interest, as well as flagging up of themes. These themes were reviewed and refined until final conclusions could be drawn. This process was conducted by a research officer (BW), head of research (GJ), national clinical lead (AA), and two supporting research assistants (MW, SA).

To provide a clearer understanding of commonality across themes, and provide a more accurate indication of experience and response, the findings were thematically coded, analysed and presented as both quantifiable information based on the number of dominant and sub-dominant coded responses (referenced as n=), and qualitative data was analysed and presented as direct quotations, which are referenced by respondent's occupation and Health Board.

**Patient and Public Involvement:** No patient or public involvement in the development of this study.

# Results

A total of 203 participants were interviewed including clinical and non-clinical staff across primary, secondary and community care sectors, across all seven Welsh Health Boards in NHS Wales. The personal participant data collected and included in this paper involve their clinical specialties, professions, and Health Boards (shown in

Appendix 1). The demographic data collected included their age, gender and ethnicity (shown in Appendix 2).

From the mixed methods thematic analysis of the 203 interviews, 1,494 direct codes were identified, which resulted in three dominant themes emerging, with seven additional sub-themes and 26 categories. These are displayed in Table 1.

*Table 1: Dominant & Sub-Dominant Themes & Categories*

| **Themes** | **Sub-Themes & Categories** | |
|---|---|---|
| **THEME 1:** | | |
| Benefits (n=506) | **1.1.** Service Benefits (n=157) | **1.1.1** Waiting lists (n=26)<br>**1.1.2** DNAs (n=14)<br>**1.1.3** Monetary Savings (n=14)<br>**1.1.4** Improved Service Delivery / Extra Tool (n=103) |
| | **1.2.** Personal (Clinician) Benefits (n=81) | **1.2.1** Travel & Parking (n=49)<br>**1.2.2** Flexibility (n=32) |
| | **1.3.** Patient Benefits (n=268) | **1.3.1** Travel & Flexibility (n=113)<br>**1.3.2** Home Environment, Family Support & Self-Management (n=52)<br>**1.3.3** Enhanced Communication, Extra Cues & Power Dynamic (n=85)<br>**1.3.4** Hard to Reach Families & Specific Patients(n=18) |
| **THEME 2:** | | |
| Challenges (n=584) | **2.1** Clinical Decisions (n=451) | **2.1.1** Risk & Privacy (n=149)<br>**2.1.2** Patient & Clinical Confidence (n=60)<br>**2.1.3** Takes Time (n=57)<br>**2.1.4** Engagement & Cues (n=64)<br>**2.1.6** Organization (n=39)<br>**2.1.7** Well-Being & Isolation (n=82) |
| | **2.2** Technical Restraints (n=133) | **2.2.1** Audio & Visual (=22)<br>**2.2.2** Internet / Bandwidth (=72)<br>**2.2.3** Incompatible or poor quality platform (=39) |
| **THEME 3:** | | |
| Sustainability (n=404) | **3.1** Future Use (n=244) | **3.1.1** Blended Approach (n=105)<br>**3.1.2** Patient Choice (n=71)<br>**3.1.3** Favor for Face-to-Face (n=10)<br>**3.1.4** Useful Tool (n=58) |
| | **3.2** Future Improvements (n=160) | **3.2.1** Improved Support & Training (n=88)<br>**3.2.2** Awareness & Digital Champions (n=23)<br>**3.2.3** Technical Advancements (n=49) |

## Theme 1: Benefits of Video Consulting

The dominant theme **'Benefits'** is sub-themed into **'service benefits'** (NHS Wales), **'personal benefits'** (NHS staff member) and **'patient benefits'** (patient, family or patient-clinician relationship). As a quantified total of coded benefits, there were 506 individual responses from the 203 interviews that indicate a defined benefit of VC. Of these, 81 responses (16%) were related to 'personal benefits', 157 responses (31%) to 'service benefits' and 268 responses (53%) to 'patient benefits', which were either direct benefits to the patient or family (n=164) or a benefit to the patient-clinician relationship (n=104).

### *Service Benefits*

At the NHS service level, VC was believed to have benefited the NHS service due to decreased appointment waiting times (n=26), fewer missed appointments/'Did Not Attends' (DNAs) (n=14), monetary savings on reduced service expenses (n=14), and improved service delivery (n=103).

For example, staff narrative states that patients are now waiting less time for an appointment due to VC and its contribution to ease of access and reduced waiting lists.

> *"If we continue with virtual clinics, it will improve, as we're not constrained by the physical space anymore with them" (Otolaryngologist, SBUHB)*
>
> *"If we didn't have VC, our waiting list would've increase significantly" (Mental Health/ASD Nurse, ABUHB).*

Furthermore, reductions in missed appointments/DNAs are believed to be associated with the increased use of VC.

> *"There's a massive decline in the DNA's. With my clinics, because they are so in-depth, I book in one-hour slots. Usually, if there was a DNA then I would be waiting over an hour for the next patient, and if two DNA'd then that would be a massive waste of my time. Whereas now, I can carry on with other referrals or other phone calls" (Stroke Nurse, SBUHB)*
>
> *"It has drastically reduced DNAs because there's less excuse now…so it has reduced that, and some people forget about appointments and you can now ring them, and they can quickly join whereas that wouldn't happen if they had to physically get to the appointment" (Psychological Therapist, SBUHB)*

The NHS service also benefited from direct monetary savings in reduced service expenses such as staff or patient travel expenses being claimed back, or costs such as clinic room bookings.

> *"It's got to be saving the health board money, as the elderly patients always need transport (paid by the NHS) to get to hospital" (Vascular Surgeon, ABUHB)*

> *"Massive reduction in our travel, before I was averaging about £200 a month in expenses and now it's barely £20 a monthly" (Occupational Therapist, ABUHB)*

> *"It must have saved us (the NHS) a fortune in booking rooms based in the community. The cost implications are massive" (Physiotherapist, SBUHB)*

VC has also improved service efficacies due to its avoidance of waste on clinical time and resource. This benefit highlights how VC is considered an extra tool in clinical 'tool boxes'.

> *"I work with nurses, radiographers, paramedics, and we've basically, innovated a new service, the VC has helped us to do that" (Physiotherapist, SBUHB)*

> *"The NHS spaces are so overloaded, and a lot of that is inappropriate… so as an alternative VC allows patients to access services" (Mental Health Therapist, CTMUHB)*

> *"…VC is another resource that people can use and it's a tool" (Learning Disabilities Therapist, ABUHB)*

> *"It's just another tool really isn't it…the more tools you have and the more ability you have to offer alternatives, and the more likely you are to be able to absorb the patients that we have" (Physiotherapist, SBUHB)*

### *Personal Benefits*

As a direct personal benefit of VC, the NHS staff report a reduction in their own travel and parking (n=49) and improved flexibility in their working day (n=32), which is said to improve staff wellbeing.

> *"It saves time in my travel time, because I can literally sit in the office do the appointment, write the notes up onto the next one." (Speech & Language Therapist, BCUHB)*

> *"This is transformative for me in terms of travel and how I manage my diary and book people in" (Speech & Language Therapist, CAVUHB)*

> *"We have more flexibility as when we do our appointments, doesn't have to be when a room is available, which I think has been good for staff wellbeing" (Neuromuscular Carer, SBUHB)*

Although these are personal benefits to NHS staff members, they ultimately feed into patient or service benefits as well, as less travel equals more time for other clinical work, and improved flexibility allows more flexible care for patients.

***Patient Benefits***

From the perspective of the NHS staff, there are a wide range of direct patient and family benefits such as the reduction in travel and parking, and improved flexibility (n=113).

> *"VC saves patients travelling. We used to get people in quite regularly just for a check, where now we might not necessarily have to" (Podiatrist, CAVUHB)*
>
> *"The parking really stresses people out in our hospital… so now it works really well that patients can have something offered to them like VC" (Physiotherapist, SBUHB)*
>
> *"It should have been like this before, we're a really rural country so our area would have been ideal for VC as people have to travel so far" (Counsellor, PTHB)*
>
> *"Parents with children have busy lifestyles and a lot going on, so it's easier for them… more flexibility" (Speech & Language Therapist, PTHB)*
>
> *"My patients who are working age, they are doing VC in their work, in a private room" (Neurologist, CTMUHB)*

Furthermore, the virtual environment within the patient's home can encourage family involvement, and positively promote independence and improved patient-centred care (n=52).

> *"It's almost the next best thing they're on their sofa their dog is on their lap and they're chatting away… in their own home is actually quite nice" (Speech & Language Therapist, CTMUHB)*
>
> *"Since using VC, we've been working with the families a bit more and on modifying the home environment rather than working with the child specifically" (Speech & Language Therapist, ABUHB)*

> *"I don't think in the majority of cases it has negatively affected anybody's care. It has probably done the opposite in promoting self-management and self-efficacy and like the patients' treatments. People take the control more and they actually do the exercises…" (Physiotherapist, SBUHB)*

VC is also seen to positively enhance communication and improve cues between clinicians and patients, ultimately balancing out the healthcare power dynamics (n=85). Participants suggested that this improvement may have been due to patients feeling more comfortable in their home environment.

> *"It's opened up communication for us…It's never been so good…I always know everything that is going on, I'm always involved in all the decisions." (Learning Disabilities Nurse, ABUHB)*

> *"It has been invaluable. You can actually see the patient, you're looking for the subtle changes on them so you see if they're being looked after" (Neurologist, CTMUHB)*

> *"You get the added thing that you're seeing them in their home so you're getting cues from what you see behind them" (Primary Mental Health Assessor, SBUHB)*

> *"VC is a real levelle3r. It's not a power situation, it's much more about you and I doing this piece of work… the therapeutic relationship has started off on a better foot." (Administrator, PTHB)*

> *"When they come into the hospital, things are very structured and professional. That professionalism gets in the way…, but having contact through VC makes the patient seem a lot more relaxed." (Acute Adult Psychiatrist, ABUHB)*

The narrative also suggests that there are specific types of patients and families that VC add an additional level of benefit to. For example, hard to reach families (n=18) whereby VC can remove many of the challenges associated to access of care.

> *"With hard to reach families or families that don't have transport…" (Speech & Language Therapist, ABUHB)*

> *"It's enabled me to work with people I wouldn't have been able to see face-to-face" (Mental Health Therapist, ABUHB)*

## Theme 2: Challenges

As a quantified total of coded challenges, there were 584 individual responses from the 203 interviews that indicate a defined challenge of VC. The dominant theme

**'Challenges'** (n=584) is sub-themed into two sections: as **'clinical decisions'** (n=451) and **'technical restraints'** (n=133). The sub-theme 'clinical decisions' is sub-categorised as 'risk and privacy' (n=149), 'confidence' (n=60), 'takes more time' (n=57), 'engagement & cues' (n=64), 'organisation' (n=39) and 'well-being and isolation' (n=82). The sub-theme 'technical restraints' is sub-categorised as 'audio and visuals' (n=22), 'Internet and bandwidth' (n=72) and 'platform incompatibility' (n=39).

### *Clinical Decisions*

The narrative on challenges relating to clinical decisions were associated to concerns surrounding VC's delivery of clinical care, particularly what participants felt may be clinically missed, may take more clinical time, or affect clinicians themselves.

Participants commented on the 'risk' surrounding VC as a cause for concern for some people in certain specialities, regarding missing certain aspects of an appointment that may be better seen or identified face-to-face, e.g., being able to physically examine a patient.

> *"VCs not a one-stop shop, sometimes you want to check blood and do blood pressure, so it doesn't do that" (Paediatric Consultant, ABUHB)*

> *"You may miss things because you haven't got that 'hands on', and that is a worry. But, if you think, right I couldn't see everything that I needed to, but that's where your clinical reasoning comes in , and you go out to see that child" (Physiotherapist, CTMUHB)*

In addition, the challenge around 'privacy' was predominately discussed by participants in mental health services, and generally associated to specific types of patients, such as those with a history of abuse or currently living in a domestic abuse household.

> *"They might not be able to speak freely, on a laptop, you don't know who else is going to be hidden in the room" (Clinical Psychologist, ABUHB)*

> *"For some clients it's just not safe for them to do therapy in their own home, they may have children, they may have partners, they may have abusive partners and no privacy so that's one side of it. The other side of it, some patients don't want their childhood trauma beamed across their living room which is their safe space" (Clinical Psychologist, PTHB)*

Some of the participants discussed 'confidence' around VC and the required technology was portrayed as a challenge for some patients and clinicians. Interestingly, these findings suggested some participants shadow colleagues whilst learning to use VC, which impacts digital confidence. Some participants felt more comfortable with this 'copying' behaviour where this learned culture helped participants move to VC with growing confidence. This copying has the potential of positive or negative responses, but it is important to acknowledge its presence, particularly when exploring new digital innovations.

> *"Sometimes patients are shy around VC. But are getting more familiar with it. Its personal choice, I guess" (Mental Health Nurse, ABUHB)*
>
> *"So, I was quite daunted by it at the beginning, but I feel really positive about it now. Often you feel the anticipation doing a new thing for the first time" (Clinical Psychologist, BCUHB)*

However, it was stated how it catches on more as the new culture embeds itself.

> *"I think some colleagues think it's more difficult than it is, they were scared of it, but I've shown them and it's easy to use… It's so easy to use and it's a brilliant resource" (Community Nurse, SBUHB)*
>
> *"Some are more comfortable with it and others will avoid it, but with practice they're getting better at it but perhaps more training, that's more specific to how to do a video call" (Physiotherapist, HDUHB)*

Some participants felt extra 'time' was needed for VC uptake, as opposed to other consultation methods. This challenge was apparent when training was necessary to use the platform or where patients needed additional explanations and support during their VC. A small number of participants also commented on the additional 'setting-up' time needed to conduct a VC.

> *"You're doing a lot explaining of how to use the camera etc., which takes away from actually assessing them" (GP, BCUHB)*
>
> *"There's a training element that's taken a little bit of time out of my diary, workload overall" (Counselling Psychologist, ABUHB)*
>
> *"We just go into clinic a bit beforehand and make sure everything is set up" (Paediatric Nurse, SBUHB)*

For some participants there were challenges surrounding 'engagement' with patients via VC, particularly with the lack of visible body language and trying to get 'cues'. For example, several participants found it difficult to achieve the same level of engagement with new patients or younger patients. While facial cues can be picked up well during VC, a number of participants found this more demanding during their virtual consultations.

> *"…The key thing is you have to know the patient. If you're talking to new patients you haven't met before you don't know what to expect of them, or them of you, there's no relationship there and it tends to go on and on. Whereas with patients you know it is a quick consultation, straight to the point …you both have confidence in what you're saying to each other" (Cardiologist, SBUHB)*

> *"Video feels less personal, it's difficult to strike up a rapport" (Occupational Therapist, ABUHB)*

> *"You don't get to pick up on those cultural non-verbal cues from VC patients" (Neurologist, SBUHB)*

Some participants reported that VC appointments within their services have increased the amount of 'organisation' required surrounding appointment set-up and consultation. For example, some services struggled to have a streamlined booking process in place, while others found it difficult to manage the sheer number of virtual waiting rooms for their patients.

> *"It's just managing the waiting room which is tricky for us. We have multiple doctors, multiple nurses running clinics at different times of the weeks." (Administrator, SBUHB)*

> *"It's going well- it works really well actually. The software works brilliantly, it's the organisation around it that works less well- but that's not the fault of the software" (Infectious Disease Consultant, CAVUHB)*

A further challenge that participants reported was the impact that VC had on their own wellbeing. Some participants reported a greater increase in workload due to the use of VC. This was often paired with feelings of isolation for some participants who were conducting VC from home and not seeing work colleagues as often as before.

> *"My work load has definitely increased and I do feel a lot more tired at the end of the day, and I think that has a lot to do with just sitting in front of the screen" (Speech & Language Therapist, PTHB)*

*"You just don't have the contact with your colleagues or patients, that physical contact, communication" (Physiotherapist, PTHB)*

### *Technical Restraints*

The narrative on challenges relating to technological restraints were discussed predominately regarding 'audio and visual' difficulties when using the VC platform, 'internet and bandwidth' issues or 'poor quality or incompatibility' problems for participants to use as a consultation method.

For a number of participants, audio and visual impacted on the quality of their VC calls. For example, the audio at times could be robotic and the picture quality of the video could be blurred. This was a challenge for many participants as it could negatively impact appointments and damage rapport and conversations with patients if this arose mid-call, particularly when discussing sensitive or emotional information.

*"When the quality of the video is poor, it's very unpleasant… It's not that it impacts the session as such. It's not as good as other face to face platforms so I don't understand why that would be. It's more comfortable when the picture is clear" (Health Psychologist, SBUHB)*

*"A very minor gripe is that the quality is not as good as other formats. Although, this could be due to peoples phones or the laptops they are using." (Physiotherapist, SBUHB)*

Linked with poor audio and visuals is the internet and bandwidth connections that participants had when using VC. For some, their internet allowed them to use VC as intended with no connectivity interruptions. However, for others with poorer connectivity caused issues. Participant narrative suggested that in some services, they were nervous to attempt to use VC following connectivity problems that disrupted the call with a patient.

*"If people's internet isn't stable, there's a huge delay which makes it really hard" (Clinical Psychologist, PTHB)*

*"One couple we tried, we had to give up because the technology wasn't good enough. It causes huge amounts of stress. It has an impact on the assessment and the therapeutic relationship" (Psychotherapist, ABUHB)*

In some instances, the participant narrative suggests that at times, the quality of the VC platform is too poor for consultation use. For some, patients were unable to access the VC platform. Some participants found the technology aspect of VC incredibly stressful. For some services this has had a negative impact on their views of VC and how this would fit in with their consultation methods.

> *"There are some issues, but it's been the technology stress that has actually put on me more than anything else... It's nobody's fault- it's just the way it is… but technology is definitely the biggest stressor and that's why I feel sorry for our patients" (Physiotherapist, CAVUHB)*

> *"For the most part it is very good, I think it's on the side of the client sometimes they struggle to get on to the system but that could be due to them delaying their appointment as well, might not always be technology." (Administrator, PTHB)*

## Theme 3: Sustainability

The dominant theme **'sustainability'** counted for 404 responses, and is sub-themed into two sections: **'Future Use'** (n = 244) and **'Future Improvements'** (n = 160). Having a blended approach (n = 105), Patient choice (n = 71), Favour for face-to-face (n = 10) and VC as a useful tool (n = 58) have been sub-categorised within **'Future Use'** with their total of codes relating to sustainability. For **'Future Improvements'**, Improved Support, Training & Resource (n=88), Awareness & Digital Champions (n=23) and Technical Advancements (n=49) are sub-categorised.

### *Future Use*

Many participants reported that they would like VC embedded into NHS practice for the long-term, but as a 'blended approach', with a mix of face-to-face and virtual appointments adopted where clinically appropriate. However, 'patient choice' was seen to be just as important.

> *"I am definitely using VC the most, but quite a few people are on a blended approach… I think that blended approach is useful" (Paediatric Consultant, ABUHB)*

> *"In the future maybe clinic settings could have a mixture of everything" (Neurology Nurse, CTMUHB)*

> *"I would love to keep using VC. There's always going to be a time for face-to-face in clinics, but I think together they will work really well" (Occupational Therapist, CTMUHB)*

It was felt that a combination would ensure the best possible care for the patient, and that clinicians are confident in making these clinical judgment calls. However, regardless of clinicians making these clinical calls, many participants expressed their awareness that decisions surrounding the future use of VC are made above them amongst managerial staff and specific to health boards.

> *"…it just depends on what our Health Board says" (Health Visitor, SBUHB)*

> *"I think there is reluctance in other areas and it's what the NHS is all about, the culture … the chain management. I [as a Manager] have sold it to my team and very much this is how you solve things" (Manager, ABUHB)*

But there was however a strong sense of 'want' for VC to continue being part of NHS Wales, with discussions within services on how VC will be best integrated.

> *"Overall it has been really positive for clinicians and patients, and we are looking to take it forward and make it a bigger part of our service" (Neuromuscular Doctor, SBUHB)*

> *"…we've started having conversations about how we can integrate VC into the working diary" (Speech & Language Therapist, SBUHB)*

But a small few still wish to return to traditional means of face-to-face.

> *"I hope it gets back to normal soon I'm not doing this job for another 20 years over the screen" (Child Development Nurse, ABUHB)*

> *"The gold star is face-to-face." (Child & Adolescent Mental Health Nurse, ABUHB)*

When looking at the future of VC, participants expressed that they want to be able to give the patient a choice when deciding on their mode of consultation. This emphasises the focus participants put on patient-centred care.

At present, the majority of participants believe this choice to be a 'service choice' due to the demands of the service during the pandemic and the need to limit face-

to-face contact. Similarly, it is the service choice for many participants to use face-to-face where they see that face-to-face contact is more appropriate.

> *"Past the pandemic, VC will undoubtedly be something which will be incorporated into the system. It is definitely going to be some sort of hybrid system where patients are offered the choice" (Physiotherapist, SBUHB)*
>
> *"We wanted to keep choice for our clients… not everybody has the technology or doesn't know how or use it, and it's about client safety" (Counsellor, CAVUHB)*

A number of participants within the findings reported a preference for face-to-face; as time has gone on they have become 'fed up' of only using VC. This emphasises that at present, the use of VC depends on the need of the service and what that specific service and Health Board have decided, despite a number of participants focusing on patient involvement and choice with VC.

> *"We're getting fed up and want to be back face-to-face"* (Physiotherapist, SBUHB)
>
> *"I think for us front line hands on workers we very much want to get back to that hands on and seeing our patients face-to-face"* (Child Development Nurse, ABUHB)

A large proportion of the narrative involved the value of VC. Many participants could perceive VC becoming a valuable asset to take forward within their services and being added as a 'tool' for professionals to reach for with patients.

> *"I definitely think it should stay and be added to our skills, definitely"* (Health Visitor, SBUHB)
>
> *"I would be very disappointed if this was withdrawn from us as a service"* (Renal Medicine Nurse, BCUHB)

### *Future Improvements*

Many of the participants expanded their thinking into future improvements for VC that were considered vital in moving forward with its use and ensuring its sustainability long-term. These improvements include 'increased support and training', VC 'awareness' and digital champions' and 'technical advancements'.

While VC has been used across a large range of services, several participants commented on areas that needed further work such as improved levels of support and training which would enable participants to keep using VC. For example, having technical support would increase confidence using VC amongst participants as well as additional training sessions to consolidate learning and add to VC knowledge and skills. A number of participants also felt as though VC drop-in sessions for any questions would be beneficial and an opportunity to fit in around schedules.

> *"I think drop-in sessions would be good for those sort of questions too" (Health Visitor, SBUHB)*
>
> *"I would really like another training session now I've used it for a few months, um, because I would really like a session to consolidate" (Physiotherapist, CAVUHB)*
>
> *"I would maybe need a bit more training, a refresher I suppose if I wanted to go into adding someone else into the call or go into a different call but for the moment just adding one patient and talking to them one-to-one, it is so easy" (Physiotherapist, CTMUHB)*

There were a number of participants who reported being 'digital champions' or 'super users' for VC and thus, took the lead role on the roll out of VC within their service. This was considered important for leading the way, especially in encouraging uptake among the less confident or motivated members of their team.

While digital champions are not deemed essential by participants to use VC, having colleagues who were available to go to for support and advice was incredibly useful for participants. Closely linked to participants having the support to use VC amongst their colleagues is also the needed improvement of raising awareness of VC. Without the support of making VC known within services, participants felt as though it was difficult for those [clinicians] using it to make contact with patients. Participants reported awareness is necessary amongst patients, clinicians and administrative staff alike.

> *"We have a VC group, a task and finish group, and they've looked at some of them who are less confident or looking at a 'buddying up system' and how to support therapists who are less confident" (Speech & Language Therapist, BCUHB)*
>
> *"I'm a super user. So I've been training people up on VC" (Psychologist, ABUHB)*

> *"More options to share tech with people, borrowing something for a limited time, and have someone go into show them how to work it. Or liaise with other organisations like Age Cymru who have digital coaching" (Psychotherapist, ABUHB)*
>
> *"A bigger media presence with it on TV for something and for me it needs to not be medic-people… it needs to be the AHPs, the nurses saying we can do these things this way" (Physiotherapist, SBUHB)*

While a number of participants had these three levels of awareness in place throughout their service, other participants commented on the noticeable gaps and the need for improvement. A particular issue noted by participants was that if administrative staff are not as well informed about VC as participants hoped; if administrative staff do not offer VC, then patients do not know it is available and the awareness never increases. In turn, participants found this a struggle and emphasised that improvements to appointment set-ups were needed for a clear and seamless integration through the VC system, as without this, VC is less productive at both the individual level and also service level.

> *"VC is here to stay, but it needs the organisation behind it… to ensure that they have had a practice run, so they come in my call and know what buttons to press" (Cardiologist, SBUHB)*
>
> *"I would really push for that seamless integration… but that improves all the time doesn't it" (GP, CAVUHB)*
>
> *"The administrative team did not implement VC. They did not see it as important, they did not see it as a priority" (GP-BCUHB)*
>
> *"I'm trying to get my administrative staff to ask patients whether they'd like to be seen face to face or virtually." (Paediatric Neurologist, SBUHB)*

Appropriate technology and available space to be able to conduct participant VC is considered a much needed future improvement. While the majority of participants felt as though they had been provided with the adequate technology to run VC, there were a small number of participants who felt there had not been a push for VC from their managers and health boards, and so they lacked the equipment and technology as VC was not seen as a priority. For example, many participants noted that they were without correct head sets and devices to run their VCs.

> *"Have to treat them like a normal clinic in terms of needing a room to conduct those VCs privately so I still can't do those from my shared office" (Oncologist, BCUHB)*
>
> *"We don't really have the equipment, it would be great if we had laptops and better cameras and things" (Occupational Therapist, CTMUHB)*
>
> *"There isn't enough infrastructure in the hospital to support the system. For example, they don't have enough cameras, they don't have enough speakers so we have to take our own equipment." (Infectious Disease Consultant, CAVUHB)*

Conducting VC from the office and from home, some felt as though equipment was lacking. For the office environment, there is a needed improvement in ensuring there is adequate space to conduct the VCs that is private, to ensure confidentiality. Office environments also need to have the appropriate technology and WIFI connections to ensure VCs can be conducted without disruptions. For participants working from home, there was a consensus that more should be done to ensure they are able to work from home and be provided with equipment.

Equally important to improving the technology access and space is the technical improvements to the VC platform itself. There are noticeable improvements that participants felt would.

> *"I would really push for is high-quality video" (GP, CAVUHB)*
>
> *"The expansion of the capacity of VC to do groups would be good" (Physiotherapist, PTHB)*
>
> *"The thing a lot of us are screaming out for is an interactive platform where we can get the person on the other side to show us what they are doing" (Therapy Assistant, SBUHB)*

# Discussion

It is important to view these results in their historical context. The period of March 2020 -2021 involved the rapid adoption and spread of VC at the beginning of the COVID-19 pandemic across Wales. The use of VC enabled many healthcare services, especially community, mental health and outpatient teams to continue to offer a service to patients when there was limited or no access to face to face delivery in clinic or hospital settings. VC represented an immediate and very helpful tool to enable healthcare professionals to provide patient care and to social distance. Whilst

greater use of digital technologies and remote monitoring in healthcare have been longstanding NHS objectives, findings from across the UK suggest that "*The single biggest reported factor reported as enabling an increase in video consulting was the cancellation of non-essential face to face appointments. Changes in staff and patient attitudes were also considered important.*" [10].

As such, it is not surprising to have found significant themes in this study about the benefits of using a video consulting platform for both patients, health care staff and services in these circumstances and to have captured some of the technical, organisational and capability issues that such a rapid deployment of a new way of working bring.

Many of the benefits discovered in this study, have potential to continue to bring long -term gains, especially the reduction in miles less travelled for healthcare, better utilisation of buildings and resources, flexible ways of working, reduction in missed appointments and increased patient choice. The challenge now, as we are in the recovery phase of the pandemic, is to re-orientate utilisation away from VC being seen as an 'emergency response' and to ensure that it becomes a mainstream method of delivering healthcare. As blended delivery models of video, telephone and face to face consultation become possible; this will require health and social care staff, in partnership with patients, to co-design what the 'new normal' pattern of consultations looks like for each clinical specialty and service. It's highly likely that differences will emerge between specialities based on clinical need for physical examinations and observations for instance. Key ingredients in the success of this next co-design phase will be incorporating the patient's choice of method of consultation (video, telephone and face to face), whilst balancing service demand and effectiveness, the most appropriate medium for that moment in clinical care and clinician preference.

The challenges the study have highlighted align with wider findings from "*health systems research that disruptive technological innovation, especially in heavily institutionalised environments, is complex, uncertain, challenging and risky. Success is not just about new technologies but also about their clinical safety, how we make them work, and whether NHS infrastructure can accommodate them at speed and scale.*" [10]. This study highlights that whilst there were many benefits from the rapid deployment of VC across Wales, inevitably the speed of adoption will mean that there

are issues to address and a need to continuously improve [11]. describe several health technology implementation factors that enable the roll out of technology in real-world settings. These include "skills and knowledge; motivation and attitudes; user-centred design; ways of working; safety and equity; resources and infrastructure; and culture and leadership…[and they add] It is not difficult to see how rolling out changes during a pandemic may have created challenges in each of these areas." Horton et al 2021. The thematic findings in this study correspond with these key factors, and so potentially illustrate the areas where the next phase of continuous improvement must focus.

It is now important to reflect on the learning we have gained from this period and the potential role for VC in a sustainable healthcare system. The findings from this study highlight the benefits to patients and staff of being able to access and deliver healthcare through VC and provide a helpful lens through which to see where continuous improvement should focus for greatest impact on patient and staff experience and outcomes.

## Conclusion

Overall participant narrative highlights both benefits and challenges from VC use within NHS Wales' services. It has also been important to consider the sustainability of VC and how participants see VC being used in their services, and what they deem necessary for its long-term success.

**Author contributions**: GJ contributed to the main design of the study and development of the research questions, the main structure and write-up of the paper, and final amendments to the manuscript. GJ, BW, MW, SA conducted the data collection and analysis. GJ, AB, SK, AA discussed and interpreted the data once analysed. AB completed the discussion. SK, MO, AA helped structure the manuscript, and contributed to the programme and clinical understanding of the findings and shaped the conclusions. AA was responsible for overseeing the full development of the study design and data collection, the analysis and development and final sign-off of manuscript from a clinical and programme perspective. All authors contributed to proof-reading and amendments of the final manuscript.

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**Statement of Data Sharing:** The analysed data is published on the TEC Cymru website in the format of a full report of all data for the public to view. To access this report please see https://digitalhealth.wales/tec-cymru**.** Other data can be requested as a reasonable request to the corresponding author.

**Ethics Statement**

Prior to the start of the study, national ethical approval was obtained [SA/1114/20].

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*Appendix Table 1-2*

*Appendix Table 1 Participant Demographics*

*Appendix Table 2 Interview Participants by Speciality, Profession & Health Board.*

*Appendix 1: Interview Participants by Speciality, Profession & Health Board.*

| Speciality & Profession | Health Board(s) | Total (n=203) |
|---|---|---|
| **Mental Health** **consultant, nurse, psychologist, therapist, counsellor, assessor, technician, management, assistant & trainee* | ABUHB, BCUHB, CAVUHB CMTUHB, HDUHB, PTHB, SBUHB | **52** |
| **Speech and Language** **therapist, assistant, head of department* | ABUHB, BCUHB, CMTUHB, PTHB, SBUHB | **29** |
| **Physiotherapy** **therapist, senior lead* | ABUHB, BCUHB, CAVUHB, CMTUHB, HDUHB, PTHB, SBUHB | **22** |
| **General Practice (GPs) & Out of Hours GP** **doctor, nurse* | BCUHB, CAVUHB, CMTUHB, PTHB, SBUHB | **16** |
| **Occupational Therapy** **therapist, technician* | ABUHB, BCUHB, SBUHB | **9** |
| **Child Health & Paediatrics** **consultant, nurse, medical secretary, advisor* | ABUHB, BCUHB, PTUB, SBUHB | **9** |
| **Dietetics** **dietitian* | BCUHB, CAVUHB, CMTUHB, PTHB | **6** |
| **Health Visitor** | SBUHB | **6** |
| **Podiatry** **therapist, consultant* | CAVUHB | **2** |
| **Oncology** **consultant* | SBUHB | **3** |
| **Respiratory Medicine** **nurse, consultant, team lead* | ABUHB, PTHB, SBUHB | **3** |
| **Booking Centre** **administration staff* | PTHB, SBUHB | **3** |
| **Trauma & Orthopaedics** * consultant, surgeon, administration | ABUHB, CAVUHB | **3** |
| **Rheumatology** **consultant, director, therapist* | ABUHB | **5** |
| **Neurology** **nurse, consultant* | ABUHB, PTHB, SBUHB | **3** |
| **Cardiology** **nurse* | BCUHB, SBUHB | **2** |
| **Community Nursery Nurse** **nurse* | SBUHB | **2** |
| **Plastic Surgery** **surgeon* | CMTUHB, SBUHB | **2** |
| **Ward Management** **nurse, therapist* | ABUHB, SBUHB | **2** |
| **Gynaecology** **doctor, associate specialist* | ABUHB, CMTUHB | **2** |
| **Sexual Health** **adviser* | CAVUHB | **2** |
| **Neurosurgery** **nurse, associate specialist* | CMTUHB | **2** |
| **Renal Medicine** **nurse* | BCUHB | **1** |
| **Community Continence** **nurse* | SBUHB | **1** |
| **Orthotics** **orthoptist* | ABUHB | **1** |
| **Dental** **dentist* | SBUHB | **1** |
| **Audiology** | ABUHB | **1** |
| **Diabetes** | ABUHB | **1** |

| | | |
|---|---|---|
| *nurse | | |
| **Otolaryngology** *medical secretary | SBUHB | **1** |
| **Fertility** *associate specialist | SBUHB | **1** |
| **Ophthalmology** *surgeon, optometrist | ABUHB, SBUHB | **2** |
| **Clinical Genetics** *consultant | CAVUHB | **1** |
| **Dermatology** *nurse | ABUHB | **1** |
| **Infectious Diseases** *consultant | CAVUHB | **1** |
| **Social Care** *MDT | ABUHB | **1** |
| **Stroke Management** *nurse | SBUHB | **1** |
| **Anaesthetics Care** *doctor | ABUHB | **1** |
| **Lymphedema** *therapist | SBUHB | **1** |
| **Gastroenterology** *consultant | CMTUHB | **1** |

*Appendix 2 Participant Demographics*

| | **Proportion** |
|---|---|
| **Age** | |
| 18-25 Years | 0% |
| 26-35 Years | 29% |
| 36-45 Years | 21% |
| 46-55 Years | 40% |
| 56-65 Years | 9% |
| 65 Over | 1% |
| **Gender** | |
| Male | 26% |
| Female | 74% |
| **Ethnicity** | |
| White | 84% |
| Black, African, Caribbean or Black British | 1% |
| Asian or Asian British | 14% |
| Mixed or multiple Ethnic Groups | 1% |

BMJ Open

# Benefits, Challenges and Sustainability of Digital Healthcare for NHS Wales: A Qualitative Study

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**Title Page**

# Benefits, Challenges and Sustainability of Digital Healthcare for NHS Wales: A Qualitative Study.

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**Up to five keywords or phrases suitable for use in an index.** Video Consulting, Digital Healthcare, Mixed Methods, National Health Service (NHS); Quality Improvement

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*Digital healthcare in the UK was adopted out of necessity rather than choice during the COVID pandemic. However, as we move forward, UK governments and healthcare services have acknowledged its evident benefits for patients, staff and the NHS, and are keen to sustain its improvements in the long-term.* ***Objective****: To understand the benefits, challenges and sustainability of a future-proof digital healthcare* ***Design****: A semi-structured interview study was conducted.* ***Setting****: In NHS services in Wales, UK.* ***Participants****: With clinical and non-clinical staff across a mix of clinical specialties.* ***Outcome measures*** *Semi-structured interviews were conducted to address benefits, challenges and sustainability of a national video consulting (VC) service, and thematically coded using a quantification method of qualitative work.* ***Results****: A total of 203 interviews were conducted, and, three dominant domains emerged, with seven themes and 26 categories.* ***Conclusions****: NHS Wales have demonstrated that currently there are an equal measure of benefits and challenges to a national digital healthcare. However, with ongoing government and service support, improvement and evaluation, it has potential for a sustainable digital future.* ***Limitations****: Nevertheless, it's important to acknowledge that these findings were captured during a pandemic.*

***Abstract Summary:***

*Strengths*

- *This is a national study, which is representative of Wales.*
- *This study has a large sample size for qualitative research.*
- *This study provides both narrative and quantification of narrative accounts.*

*Limitations*

- *Interviews were with clinical and non-clinical staff, therefore benefits and challenges are perceived by them only, and not patients.*
- *This study was conducted during the COVID-19 pandemic and update and satisfaction of digital healthcare may have been impacted.*

# Background

Wales is a country that is part of the United Kingdom with a population of 3.1 million across a total area of 20,779 km$^2$. Compared to other parts of the UK, Wales has a high rural environment, the oldest age population (21% over 65), the highest proportion of people with a disability (2%) and is the poorest UK country [1-2]. Based on Wales' rurality and demographic profile, it may be assumed that digital healthcare may not be an equitable option for its general population [3-4]. However, there is currently little research to support that there may be any health disparities in Wales.

Though, such assumptions have been challenged recently, and suggest otherwise. For example, Welsh data from more than 50,000 NHS patients and staff demonstrates that regardless of what may be considered limiting factors, e.g., age; gender; ethnicity; household income; location; health status; and disability, digital healthcare, such as video consulting (VC) platforms, can provide equity of care across all patient

and staff groups, appointment types and clinical specialties. In other words, there may not be a digital divide in Wales, as early evidence suggests that the same type of digital care can be offered and accepted by all, regardless of status [5].

In support of this, the Welsh Government have recently published a ministerial call for a new digital strategy in Wales, stating that "*digital change offers us a range of new tools for solving old and novel problems*" [6]. It is further argued that "*digital offers the potential to make our experience in the world better, enhancing people's lives [and] strengthening the delivery of public services*" [6]. The digital strategy, and other Welsh Government policies such as Prudent Healthcare and the Future Generations Act [7, 8] look to support and enable a strong digital future for NHS Wales. Early evaluations and research has been conducted in Wales, which demonstrate the early successes of the government's strategy [9-11].

## Aims & Methodology

The aim of this study was to identify the benefits, challenges, and sustainability of a national digital healthcare service from a representative sample of NHS healthcare professionals (clinical and non-clinical). The NHS Wales Video Consulting (VC) Service was identified as an appropriate service to recruit. A VC platform called 'Attend Anywhere' was funded in 2020 by the Welsh Government for use across NHS Wales, to include all primary, secondary and community healthcare. The service included unlimited and free access to the VC platform, and additional training, evaluation and support by the national VC team. Thus, as researchers from the national VC team, the scope of the study is limited to understanding VC via the Attend Anywhere platform.

We conducted semi-structured interviews with staff to identify the benefits, challenges and sustainability of VC across NHS Wales. An opportunity and convenience sampling approach were taken to recruit NHS staff using VC for an interview. First, sampling involved adding an additional question to the end of the NHS VC Service feedback survey, requesting VC users to take part in an interview (this feedback survey appears at the end of each VC appointment). Secondly, to ensure that we interviewed all types of VC users, emails were randomly sent to all NHS Wales VC Service contacts (approx. 10% of the full database). Furthermore, social media platforms and personal/professional networks were used to further recruit.

This process lasted for approximately two months (September – November 2020) until recruitment received at least a 1% representation of all Welsh VC users. Based on the total of 16,000 healthcare professionals registered and set up with VC in Wales, 10% were approached to take part in interviews (approx. =1,600), a total of 203 semi-structured interviews were completed with participants across all health boards in Wales, across a range of specialties. This resulted in a 1.3% representation of all Attend Anywhere VC users in Wales.

The inclusion criteria for an interview were to have prior experience of using the NHS Wales VC service in the one-year period (March 2020 – March 2021). On initial contact, via an introductory email or phone call, all expressions of interest met the inclusion criteria, which was to confirm eligibility using a tick box exercise. Interested respondents were sent an email with study information and a consent form. In addition, a scheduled Microsoft Teams invite for a video interview was arranged, or a contact number was obtained for a telephone interview, or face-to-face interview if preferred. A total of 12 people did not attend the scheduled interview, and no follow up arrangements were made. With each interview, consent was read out verbally, and consent was obtained from all of those in this study.

Each interview lasted approximately 45 minutes. Interviews were audio recorded and transcribed verbatim. A semi-structured interview guide was constructed and included questions that asked about their experience and opinions of VC (topic guide shown in Appendix 1). A conversational style of interviewing was adopted to allow a more natural dialogue.

Thematic analysis was conducted, using original transcripts. Initial analysis involved listening to the recordings and reading of the transcripts and making notes, which then led into highlighting and coding emergent codes and areas of interest, about experience and opinions of VC, as well as flagging up of common domain, themes and categories. These were reviewed and refined until final conclusions could be drawn.

This process was predominately conducted by four researchers. These include a research officer (BW), a head of research (GJ), a national clinical lead (AA), and two supporting research assistants (MW, SA). The interviews guide was developed by GJ, SK, and AA. The interviews were conducted by BW, MW and SA. The coding was conducted by BW, MW, SA and consensus of coding by GJ. SK and AA. Analysis and

development of domains, themes and categories was conducted by GJ, BW and SA, and checked and confirmed by all authors.

To provide a clearer understanding of commonality across domains, themes and categories, and provide a more accurate indication of experience and response, using a quantification method of the qualitative work, the findings were thematically coded, analysed and presented as both quantifiable information based on the number of dominant and sub-dominant coded responses (referenced as n=), these were determined by the number of times an idea theme emerged, using two full rounds of coding (initial and final). Qualitative data was analysed and presented as direct quotations, which are referenced by respondent's occupation and Health Board. Qualitative guidelines, found online via EQUATOR, were used to assist with this process.

**Patient and Public Involvement:** No patient or public involvement in the development of this study. However, the interviews were guided by standard research principles.

## Results

A total of 203 participants were interviewed including clinical and non-clinical staff across primary, secondary and community care sectors, across all seven Welsh Health Boards in NHS Wales. Participant data collected, include clinical specialty, profession, and associated Health Boards (shown in Appendix 2). Demographic data collected include age, gender and ethnicity (shown in Appendix 3).

From the thematic analysis of the 203 interviews, a quantification of qualitative work was conducted. In total, 1,494 direct codes were identified, which resulted in three dominant domains emerging, with seven themes and 26 categories. These are displayed in Table 1.

*Table 1: Dominant Domains, Themes & Categories*

| **Domains** | **Themes/Categories** | |
|---|---|---|
| **Domain 1:** | | |
| Benefits (n=506) | **1.1.** Service Benefits (n=157) | **1.1.1** Waiting lists (n=26)<br>**1.1.2** DNAs (n=14)<br>**1.1.3** Monetary Savings (n=14)<br>**1.1.4** Improved Service Delivery / Extra Tool (n=103) |
| | **1.2.** Personal (Clinician) Benefits (n=81) | **1.2.1** Travel & Parking (n=49)<br>**1.2.2** Flexibility (n=32) |
| | **1.3.** Patient Benefits (n=268) | **1.3.1** Travel & Flexibility (n=113)<br>**1.3.2** Home Environment, Family Support & Self-Management (n=52)<br>**1.3.3** Enhanced Communication, Extra Cues & Power Dynamic (n=85)<br>**1.3.4** Hard to Reach Families & Specific Patients(n=18) |
| **DOMAIN 2:** | | |
| Challenges (n=584) | **2.1** Clinical Decisions (n=451) | **2.1.1** Risk & Privacy (n=149)<br>**2.1.2** Patient & Clinical Confidence (n=60)<br>**2.1.3** Takes Time (n=57)<br>**2.1.4** Engagement & Cues (n=64)<br>**2.1.6** Organization (n=39)<br>**2.1.7** Well-Being & Isolation (n=82) |
| | **2.2** Technical Restraints (n=133) | **2.2.1** Audio & Visual (=22)<br>**2.2.2** Internet / Bandwidth (=72)<br>**2.2.3** Incompatible or poor quality platform (=39) |
| **DOMAIN 3:** | | |
| Sustainability (n=404) | **3.1** Future Use (n=244) | **3.1.1** Blended Approach (n=105)<br>**3.1.2** Patient Choice (n=71)<br>**3.1.3** Favor for Face-to-Face (n=10)<br>**3.1.4** Useful Tool (n=58) |
| | **3.2** Future Improvements (n=160) | **3.2.1** Improved Support & Training (n=88)<br>**3.2.2** Awareness & Digital Champions (n=23)<br>**3.2.3** Technical Advancements (n=49) |

## Domain 1: Benefits of Video Consulting

The dominant domain **'Benefits'** is themed into **'service benefits'** (NHS Wales), **'personal benefits'** (NHS staff member) and **'patient benefits'** (patient, family or patient-clinician relationship). As a quantified total of coded benefits, there were 506 individual responses from the 203 interviews that indicate a defined benefit of VC. Of these, 81 responses (16%) were related to 'personal benefits', 157 responses (31%) to 'service benefits' and 268 responses (53%) to 'patient benefits', which were either direct benefits to the patient or family (n=164) or a benefit to the patient-clinician relationship (n=104).

### *Service Benefits*

At the NHS service level, VC was believed to have benefited the NHS service due to decreased appointment waiting times (n=26), fewer missed appointments/'Did Not Attends' (DNAs) (n=14), monetary savings on reduced service expenses (n=14), and improved service delivery (n=103).

For example, staff narrative states that patients are now waiting less time for an appointment due to VC and its contribution to ease of access and reduced waiting lists.

> *"If we continue with virtual clinics, it will improve, as we're not constrained by the physical space anymore with them" (Otolaryngologist, SBUHB)*

> *"If we didn't have VC, our waiting list would've increase significantly" (Mental Health/ASD Nurse, ABUHB).*

Furthermore, reductions in missed appointments/DNAs are believed to be associated with the increased use of VC.

> *"There's a massive decline in the DNA's. With my clinics, because they are so in-depth, I book in one-hour slots. Usually, if there was a DNA then I would be waiting over an hour for the next patient, and if two DNA'd then that would be a massive waste of my time. Whereas now, I can carry on with other referrals or other phone calls" (Stroke Nurse, SBUHB)*

> *"It has drastically reduced DNAs because there's less excuse now…so it has reduced that, and some people forget about appointments and you can now ring them, and they can quickly join whereas that wouldn't happen if they had to physically get to the appointment" (Psychological Therapist, SBUHB)*

The NHS service also benefited from direct monetary savings in reduced service expenses such as staff or patient travel expenses being claimed back, or costs such as clinic room bookings.

> *"It's got to be saving the health board money, as the elderly patients always need transport (paid by the NHS) to get to hospital" (Vascular Surgeon, ABUHB)*
>
> *"Massive reduction in our travel, before I was averaging about £200 a month in expenses and now it's barely £20 a monthly" (Occupational Therapist, ABUHB)*
>
> *"It must have saved us (the NHS) a fortune in booking rooms based in the community. The cost implications are massive" (Physiotherapist, SBUHB)*

VC has also improved service efficacies due to its avoidance of waste on clinical time and resource. This benefit highlights how VC is considered an extra tool in clinical 'tool boxes'.

> *"I work with nurses, radiographers, paramedics, and we've basically, innovated a new service, the VC has helped us to do that" (Physiotherapist, SBUHB)*
>
> *"The NHS spaces are so overloaded, and a lot of that is inappropriate… so as an alternative VC allows patients to access services" (Mental Health Therapist, CTMUHB)*
>
> *"…VC is another resource that people can use and it's a tool" (Learning Disabilities Therapist, ABUHB)*
>
> *"It's just another tool really isn't it…the more tools you have and the more ability you have to offer alternatives, and the more likely you are to be able to absorb the patients that we have" (Physiotherapist, SBUHB)*

### *Personal Benefits*

As a direct personal benefit of VC, the NHS staff report a reduction in their own travel and parking (n=49) and improved flexibility in their working day (n=32), which is said to improve staff wellbeing.

> *"It saves time in my travel time, because I can literally sit in the office do the appointment, write the notes up onto the next one." (Speech & Language Therapist, BCUHB)*
>
> *"This is transformative for me in terms of travel and how I manage my diary and book people in" (Speech & Language Therapist, CAVUHB)*

*"We have more flexibility as when we do our appointments, doesn't have to be when a room is available, which I think has been good for staff wellbeing" (Neuromuscular Carer, SBUHB)*

Although these are personal benefits to NHS staff members, they ultimately feed into patient or service benefits as well, as less travel equals more time for other clinical work, and improved flexibility allows more flexible care for patients.

***Patient Benefits***

From the perspective of the NHS staff, there are a wide range of direct patient and family benefits such as the reduction in travel and parking, and improved flexibility (n=113).

*"VC saves patients travelling. We used to get people in quite regularly just for a check, where now we might not necessarily have to" (Podiatrist, CAVUHB)*

*"The parking really stresses people out in our hospital… so now it works really well that patients can have something offered to them like VC" (Physiotherapist, SBUHB)*

*"It should have been like this before, we're a really rural country so our area would have been ideal for VC as people have to travel so far" (Counsellor, PTHB)*

*"Parents with children have busy lifestyles and a lot going on, so it's easier for them… more flexibility" (Speech & Language Therapist, PTHB)*

*"My patients who are working age, they are doing VC in their work, in a private room" (Neurologist, CTMUHB)*

Furthermore, the virtual environment within the patient's home can encourage family involvement, and positively promote independence and improved patient-centred care (n=52).

*"It's almost the next best thing they're on their sofa their dog is on their lap and they're chatting away… in their own home is actually quite nice" (Speech & Language Therapist, CTMUHB)*

*"Since using VC, we've been working with the families a bit more and on modifying the home environment rather than working with the child specifically" (Speech & Language Therapist, ABUHB)*

> *"I don't think in the majority of cases it has negatively affected anybody's care. It has probably done the opposite in promoting self-management and self-efficacy and like the patients' treatments. People take the control more and they actually do the exercises…" (Physiotherapist, SBUHB)*

VC is also seen to positively enhance communication and improve cues between clinicians and patients, ultimately balancing out the healthcare power dynamics (n=85). Participants suggested that this improvement may have been due to patients feeling more comfortable in their home environment.

> *"It's opened up communication for us…It's never been so good…I always know everything that is going on, I'm always involved in all the decisions." (Learning Disabilities Nurse, ABUHB)*

> *"It has been invaluable. You can actually see the patient, you're looking for the subtle changes on them so you see if they're being looked after" (Neurologist, CTMUHB)*

> *"You get the added thing that you're seeing them in their home so you're getting cues from what you see behind them" (Primary Mental Health Assessor, SBUHB)*

> *"VC is a real levelle3r. It's not a power situation, it's much more about you and I doing this piece of work… the therapeutic relationship has started off on a better foot." (Administrator, PTHB)*

> *"When they come into the hospital, things are very structured and professional. That professionalism gets in the way…, but having contact through VC makes the patient seem a lot more relaxed." (Acute Adult Psychiatrist, ABUHB)*

The narrative also suggests that there are specific types of patients and families that VC add an additional level of benefit to. For example, hard to reach families (n=18) whereby VC can remove many of the challenges associated to access of care.

> *"With hard to reach families or families that don't have transport…" (Speech & Language Therapist, ABUHB)*

> *"It's enabled me to work with people I wouldn't have been able to see face-to-face" (Mental Health Therapist, ABUHB)*

# Domain 2: Challenges

As a quantified total of coded challenges, there were 584 individual responses from the 203 interviews that indicate a defined challenge of VC. The dominant domain **'Challenges'** (n=584) is themed into two sections: as **'clinical decisions'** (n=451) and **'technical restraints'** (n=133). The theme 'clinical decisions' is sub-categorised as 'risk and privacy' (n=149), 'confidence' (n=60), 'takes more time' (n=57), 'engagement & cues' (n=64), 'organisation' (n=39) and 'well-being and isolation' (n=82). The theme 'technical restraints' is sub-categorised as 'audio and visuals' (n=22), 'Internet and bandwidth' (n=72) and 'platform incompatibility' (n=39).

### *Clinical Decisions*

The narrative on challenges relating to clinical decisions were associated to concerns surrounding VC's delivery of clinical care, particularly what participants felt may be clinically missed, may take more clinical time, or affect clinicians themselves.

Participants commented on the 'risk' surrounding VC as a cause for concern for some people in certain specialities, regarding missing certain aspects of an appointment that may be better seen or identified face-to-face, e.g., being able to physically examine a patient.

> *"VCs not a one-stop shop, sometimes you want to check blood and do blood pressure, so it doesn't do that" (Paediatric Consultant, ABUHB)*

> *"You may miss things because you haven't got that 'hands on', and that is a worry. But, if you think, right I couldn't see everything that I needed to, but that's where your clinical reasoning comes in , and you go out to see that child" (Physiotherapist, CTMUHB)*

In addition, the challenge around 'privacy' was predominately discussed by participants in mental health services, and generally associated to specific types of patients, such as those with a history of abuse or currently living in a domestic abuse household.

> *"They might not be able to speak freely, on a laptop, you don't know who else is going to be hidden in the room" (Clinical Psychologist, ABUHB)*

> *"For some clients it's just not safe for them to do therapy in their own home, they may have children, they may have partners, they may have abusive partners and no privacy so that's one side of it. The other side of it, some*

*patients don't want their childhood trauma beamed across their living room which is their safe space" (Clinical Psychologist, PTHB)*

Some of the participants discussed 'confidence' around VC and the required technology was portrayed as a challenge for some patients and clinicians. Interestingly, these findings suggested some participants shadow colleagues whilst learning to use VC, which impacts digital confidence. Some participants felt more comfortable with this 'copying' behaviour where this learned culture helped participants move to VC with growing confidence. This copying has the potential of positive or negative responses, but it is important to acknowledge its presence, particularly when exploring new digital innovations.

*"Sometimes patients are shy around VC. But are getting more familiar with it. Its personal choice, I guess" (Mental Health Nurse, ABUHB)*

*"So, I was quite daunted by it at the beginning, but I feel really positive about it now. Often you feel the anticipation doing a new thing for the first time" (Clinical Psychologist, BCUHB)*

However, it was stated how it catches on more as the new culture embeds itself.

*"I think some colleagues think it's more difficult than it is, they were scared of it, but I've shown them and it's easy to use… It's so easy to use and it's a brilliant resource" (Community Nurse, SBUHB)*

*"Some are more comfortable with it and others will avoid it, but with practice they're getting better at it but perhaps more training, that's more specific to how to do a video call" (Physiotherapist, HDUHB)*

Some participants felt extra 'time' was needed for VC uptake, as opposed to other consultation methods. This challenge was apparent when training was necessary to use the platform or where patients needed additional explanations and support during their VC. A small number of participants also commented on the additional 'setting-up' time needed to conduct a VC.

*"You're doing a lot explaining of how to use the camera etc., which takes away from actually assessing them" (GP, BCUHB)*

*"There's a training element that's taken a little bit of time out of my diary, workload overall" (Counselling Psychologist, ABUHB)*

> *"We just go into clinic a bit beforehand and make sure everything is set up" (Paediatric Nurse, SBUHB)*

For some participants there were challenges surrounding 'engagement' with patients via VC, particularly with the lack of visible body language and trying to get 'cues'. For example, several participants found it difficult to achieve the same level of engagement with new patients or younger patients. While facial cues can be picked up well during VC, a number of participants found this more demanding during their virtual consultations.

> *"…The key thing is you have to know the patient. If you're talking to new patients you haven't met before you don't know what to expect of them, or them of you, there's no relationship there and it tends to go on and on. Whereas with patients you know it is a quick consultation, straight to the point …you both have confidence in what you're saying to each other" (Cardiologist, SBUHB)*

> *"Video feels less personal, it's difficult to strike up a rapport" (Occupational Therapist, ABUHB)*

> *"You don't get to pick up on those cultural non-verbal cues from VC patients" (Neurologist, SBUHB)*

Some participants reported that VC appointments within their services have increased the amount of 'organisation' required surrounding appointment set-up and consultation. For example, some services struggled to have a streamlined booking process in place, while others found it difficult to manage the sheer number of virtual waiting rooms for their patients.

> *"It's just managing the waiting room which is tricky for us. We have multiple doctors, multiple nurses running clinics at different times of the weeks." (Administrator, SBUHB)*

> *"It's going well- it works really well actually. The software works brilliantly, it's the organisation around it that works less well- but that's not the fault of the software" (Infectious Disease Consultant, CAVUHB)*

A further challenge that participants reported was the impact that VC had on their own wellbeing. Some participants reported a greater increase in workload due to the use of VC. This was often paired with feelings of isolation for some participants who were conducting VC from home and not seeing work colleagues as often as before.

*"My work load has definitely increased and I do feel a lot more tired at the end of the day, and I think that has a lot to do with just sitting in front of the screen" (Speech & Language Therapist, PTHB)*

*"You just don't have the contact with your colleagues or patients, that physical contact, communication" (Physiotherapist, PTHB)*

### *Technical Restraints*

The narrative on challenges relating to technological restraints were discussed predominately regarding 'audio and visual' difficulties when using the VC platform, 'internet and bandwidth' issues or 'poor quality or incompatibility' problems for participants to use as a consultation method.

For a number of participants, audio and visual impacted on the quality of their VC calls. For example, the audio at times could be robotic and the picture quality of the video could be blurred. This was a challenge for many participants as it could negatively impact appointments and damage rapport and conversations with patients if this arose mid-call, particularly when discussing sensitive or emotional information.

*"When the quality of the video is poor, it's very unpleasant… It's not that it impacts the session as such. It's not as good as other face-to-face platforms so I don't understand why that would be. It's more comfortable when the picture is clear" (Health Psychologist, SBUHB)*

*"A very minor gripe is that the quality is not as good as other formats. Although, this could be due to peoples phones or the laptops they are using." (Physiotherapist, SBUHB)*

Linked with poor audio and visuals is the internet and bandwidth connections that participants had when using VC. For some, their internet allowed them to use VC as intended with no connectivity interruptions. However, for others with poorer connectivity caused issues. Participant narrative suggested that in some services, they were nervous to attempt to use VC following connectivity problems that disrupted the call with a patient.

*"If people's internet isn't stable, there's a huge delay which makes it really hard" (Clinical Psychologist, PTHB)*

> *"One couple we tried, we had to give up because the technology wasn't good enough. It causes huge amounts of stress. It has an impact on the assessment and the therapeutic relationship" (Psychotherapist, ABUHB)*

In some instances, the participant narrative suggests that at times, the quality of the VC platform is too poor for consultation use. For some, patients were unable to access the VC platform. Some participants found the technology aspect of VC incredibly stressful. For some services this has had a negative impact on their views of VC and how this would fit in with their consultation methods.

> *"There are some issues, but it's been the technology stress that has actually put on me more than anything else... It's nobody's fault- it's just the way it is… but technology is definitely the biggest stressor and that's why I feel sorry for our patients" (Physiotherapist, CAVUHB)*

> *"For the most part it is very good, I think it's on the side of the client sometimes they struggle to get on to the system but that could be due to them delaying their appointment as well, might not always be technology." (Administrator, PTHB)*

## Domain 3: Sustainability

The dominant domain **'sustainability'** counted for 404 responses, and is themed into two sections: **'Future Use'** (n = 244) and **'Future Improvements'** (n = 160). Having a blended approach (n = 105), Patient choice (n = 71), Favour for face-to-face (n = 10) and VC as a useful tool (n = 58) have been sub-categorised within **'Future Use'** with their total of codes relating to sustainability. For **'Future Improvements'**, Improved Support, Training & Resource (n=88), Awareness & Digital Champions (n=23) and Technical Advancements (n=49) are sub-categorised.

### *Future Use*

Many participants reported that they would like VC embedded into NHS practice for the long-term, but as a 'blended approach', with a mix of face-to-face and virtual appointments adopted where clinically appropriate. However, 'patient choice' was seen to be just as important.

> *"I am definitely using VC the most, but quite a few people are on a blended approach… I think that blended approach is useful" (Paediatric Consultant, ABUHB)*
>
> *"In the future maybe clinic settings could have a mixture of everything" (Neurology Nurse, CTMUHB)*
>
> *"I would love to keep using VC. There's always going to be a time for face-to-face in clinics, but I think together they will work really well" (Occupational Therapist, CTMUHB)*

It was felt that a combination would ensure the best possible care for the patient, and that clinicians are confident in making these clinical judgment calls. However, regardless of clinicians making these clinical calls, many participants expressed their awareness that decisions surrounding the future use of VC are made above them amongst managerial staff and specific to health boards.

> *"…it just depends on what our Health Board says" (Health Visitor, SBUHB)*
>
> *"I think there is reluctance in other areas and it's what the NHS is all about, the culture … the chain management. I [as a Manager] have sold it to my team and very much this is how you solve things" (Manager, ABUHB)*

But there was however a strong sense of 'want' for VC to continue being part of NHS Wales, with discussions within services on how VC will be best integrated.

> *"Overall it has been really positive for clinicians and patients, and we are looking to take it forward and make it a bigger part of our service" (Neuromuscular Doctor, SBUHB)*
>
> *"…we've started having conversations about how we can integrate VC into the working diary" (Speech & Language Therapist, SBUHB)*

But a small few still wish to return to traditional means of face-to-face.

> *"I hope it gets back to normal soon I'm not doing this job for another 20 years over the screen" (Child Development Nurse, ABUHB)*
>
> *"The gold star is face-to-face." (Child & Adolescent Mental Health Nurse, ABUHB)*

When looking at the future of VC, participants expressed that they want to be able to give the patient a choice when deciding on their mode of consultation. This emphasises the focus participants put on patient-centred care.

At present, the majority of participants believe this choice to be a 'service choice' due to the demands of the service during the pandemic and the need to limit face-to-face contact. Similarly, it is the service choice for many participants to use face-to-face where they see that face-to-face contact is more appropriate.

> *"Past the pandemic, VC will undoubtedly be something which will be incorporated into the system. It is definitely going to be some sort of hybrid system where patients are offered the choice" (Physiotherapist, SBUHB)*
>
> *"We wanted to keep choice for our clients… not everybody has the technology or doesn't know how or use it, and it's about client safety" (Counsellor, CAVUHB)*

A number of participants within the findings reported a preference for face-to-face; as time has gone on they have become 'fed up' of only using VC. This emphasises that at present, the use of VC depends on the need of the service and what that specific service and Health Board have decided, despite a number of participants focusing on patient involvement and choice with VC.

> *"We're getting fed up and want to be back face-to-face"* (Physiotherapist, SBUHB)
>
> *"I think for us front line hands on workers we very much want to get back to that hands on and seeing our patients face-to-face"* (Child Development Nurse, ABUHB)

A large proportion of the narrative involved the value of VC. Many participants could perceive VC becoming a valuable asset to take forward within their services and being added as a 'tool' for professionals to reach for with patients.

> *"I definitely think it should stay and be added to our skills, definitely"* (Health Visitor, SBUHB)
>
> *"I would be very disappointed if this was withdrawn from us as a service"* (Renal Medicine Nurse, BCUHB)

### *Future Improvements*

Many of the participants expanded their thinking into future improvements for VC that were considered vital in moving forward with its use and ensuring its sustainability long-term. These improvements include 'increased support and training', VC 'awareness' and digital champions' and 'technical advancements'.

While VC has been used across a large range of services, several participants commented on areas that needed further work such as improved levels of support and training which would enable participants to keep using VC. For example, having technical support would increase confidence using VC amongst participants as well as additional training sessions to consolidate learning and add to VC knowledge and skills. A number of participants also felt as though VC drop-in sessions for any questions would be beneficial and an opportunity to fit in around schedules.

> *"I think drop-in sessions would be good for those sort of questions too" (Health Visitor, SBUHB)*
>
> *"I would really like another training session now I've used it for a few months, um, because I would really like a session to consolidate" (Physiotherapist, CAVUHB)*
>
> *"I would maybe need a bit more training, a refresher I suppose if I wanted to go into adding someone else into the call or go into a different call but for the moment just adding one patient and talking to them one-to-one, it is so easy" (Physiotherapist, CTMUHB)*

There were a number of participants who reported being 'digital champions' or 'super users' for VC and thus, took the lead role on the roll out of VC within their service. This was considered important for leading the way, especially in encouraging uptake among the less confident or motivated members of their team.

While digital champions are not deemed essential by participants to use VC, having colleagues who were available to go to for support and advice was incredibly useful for participants. Closely linked to participants having the support to use VC amongst their colleagues is also the needed improvement of raising awareness of VC. Without the support of making VC known within services, participants felt as though it was difficult for those [clinicians] using it to make contact with patients. Participants reported awareness is necessary amongst patients, clinicians and administrative staff alike.

> *"We have a VC group, a task and finish group, and they've looked at some of them who are less confident or looking at a 'buddying up system' and how to support therapists who are less confident" (Speech & Language Therapist, BCUHB)*
>
> *"I'm a super user. So I've been training people up on VC" (Psychologist, ABUHB)*
>
> *"More options to share tech with people, borrowing something for a limited time, and have someone go into show them how to work it. Or liaise with other organisations like Age Cymru who have digital coaching" (Psychotherapist, ABUHB)*
>
> *"A bigger media presence with it on TV for something and for me it needs to not be medic-people… it needs to be the AHPs, the nurses saying we can do these things this way" (Physiotherapist, SBUHB)*

While a number of participants had these three levels of awareness in place throughout their service, other participants commented on the noticeable gaps and the need for improvement. A particular issue noted by participants was that if administrative staff are not as well informed about VC as participants hoped; if administrative staff do not offer VC, then patients do not know it is available and the awareness never increases. In turn, participants found this a struggle and emphasised that improvements to appointment set-ups were needed for a clear and seamless integration through the VC system, as without this, VC is less productive at both the individual level and also service level.

> *"VC is here to stay, but it needs the organisation behind it… to ensure that they have had a practice run, so they come in my call and know what buttons to press" (Cardiologist, SBUHB)*
>
> *"I would really push for that seamless integration… but that improves all the time doesn't it" (GP, CAVUHB)*
>
> *"The administrative team did not implement VC. They did not see it as important, they did not see it as a priority" (GP-BCUHB)*
>
> *"I'm trying to get my administrative staff to ask patients whether they'd like to be seen face-to-face or virtually." (Paediatric Neurologist, SBUHB)*

Appropriate technology and available space to be able to conduct participant VC is considered a much needed future improvement. While the majority of participants felt as though they had been provided with the adequate technology to run VC, there were a small number of participants who felt there had not been a push for VC

from their managers and health boards, and so they lacked the equipment and technology as VC was not seen as a priority. For example, many participants noted that they were without correct head sets and devices to run their VCs.

> *"Have to treat them like a normal clinic in terms of needing a room to conduct those VCs privately so I still can't do those from my shared office" (Oncologist, BCUHB)*
>
> *"We don't really have the equipment, it would be great if we had laptops and better cameras and things" (Occupational Therapist, CTMUHB)*
>
> *"There isn't enough infrastructure in the hospital to support the system. For example, they don't have enough cameras, they don't have enough speakers so we have to take our own equipment." (Infectious Disease Consultant, CAVUHB)*

Conducting VC from the office and from home, some felt as though equipment was lacking. For the office environment, there is a needed improvement in ensuring there is adequate space to conduct the VCs that is private, to ensure confidentiality. Office environments also need to have the appropriate technology and WIFI connections to ensure VCs can be conducted without disruptions. For participants working from home, there was a consensus that more should be done to ensure they are able to work from home and be provided with equipment.

Equally important to improving the technology access and space is the technical improvements to the VC platform itself. There are noticeable improvements that participants felt would.

> *"I would really push for is high-quality video" (GP, CAVUHB)*
>
> *"The expansion of the capacity of VC to do groups would be good" (Physiotherapist, PTHB)*
>
> *"The thing a lot of us are screaming out for is an interactive platform where we can get the person on the other side to show us what they are doing" (Therapy Assistant, SBUHB)*

## Discussion

It is important to view these results in their historical context. The period of March 2020 -2021 involved the rapid adoption and spread of VC at the beginning of the COVID-19 pandemic across Wales. The use of VC enabled many healthcare services, especially community, mental health and outpatient teams to continue to offer a service to patients when there was limited or no access to face-to-face delivery in clinic or hospital settings. VC represented an immediate and very helpful tool to enable healthcare professionals to provide patient care and to social distance. Whilst greater use of digital technologies and remote monitoring in healthcare have been longstanding NHS objectives, findings from across the UK suggest that "*The single biggest reported factor reported as enabling an increase in video consulting was the cancellation of non-essential face-to-face appointments. Changes in staff and patient attitudes were also considered important.*" [12].

As such, it is not surprising to have found significant themes in this study about the benefits of using a VC platform for both patients, health care staff and services in these circumstances and to have captured some of the technical, organisational and capability issues that such a rapid deployment of a new way of working bring.

The three domains discussed in this study, and the related themes and categories are however of great importance to this area of work, and it provides understanding of the experience or opinions of NHS staff using VC, which for many, was the first time using digital healthcare. For future interventions, this evidence is crucial.

Many of the benefits discovered in this study, have potential to continue to bring long -term gains, especially the reduction in miles less travelled for healthcare, better utilisation of buildings and resources, flexible ways of working, reduction in missed appointments and increased patient choice. The challenge now, as we are in the recovery phase of the pandemic, is to re-orientate utilisation away from VC being seen as an 'emergency response' and to ensure that it becomes a mainstream method of delivering healthcare. As blended delivery models of VC, telephone and face-to-face consultation become possible; this will require health and social care staff, in partnership with patients, to co-design what the 'new normal' pattern of consultations looks like for each clinical specialty and service. It's highly likely that differences will emerge between specialities based on clinical need for physical examinations and observations. Key ingredients in the success of this next co-design

phase will be incorporating the patient's choice of method of consultation (VC, telephone and face-to-face), whilst balancing service demand and effectiveness, the most appropriate medium for that moment in clinical care and clinician preference.

The challenges the study have highlighted align with wider findings from "*health systems research that disruptive technological innovation, especially in heavily institutionalised environments, is complex, uncertain, challenging and risky. Success is not just about new technologies but also about their clinical safety, how we make them work, and whether NHS infrastructure can accommodate them at speed and scale.*" [12]. This study highlights that whilst there were many benefits from the rapid deployment of VC across Wales, inevitably the speed of adoption will mean that there are issues to address and a need to continuously improve [13]. These include "skills and knowledge; motivation and attitudes; user-centred design; ways of working; safety and equity; resources and infrastructure; and culture and leadership…[and they add] It is not difficult to see how rolling out changes during a pandemic may have created challenges in each of these areas." [13]. The thematic findings in this study correspond with these key factors, and so potentially illustrate the areas where the next phase of continuous improvement must focus.

It is now important to reflect on the learning we have gained from this period and the potential role for VC in a sustainable healthcare system. The findings from this study highlight the benefits to patients and staff of being able to access and deliver healthcare through VC and provide a helpful lens through which to see where continuous improvement should focus for greatest impact on patient and staff experience and outcomes.

# Conclusion

Overall participant narrative highlights both benefits and challenges from VC use within NHS Wales' services. It has also been important to consider the sustainability of VC and how participants see VC being used in their services, and what they deem necessary for its long-term success.

## Limitations

Due to this study being conducted during a pandemic, may influence the update of digital healthcare, as many face-to-face services were unavailable. Furthermore, this study was conducted with NSH staff only, and therefore patient voices were missed. Future research should seek to focus on these gaps.

**Author contributions**: GJ contributed to the main design of the study and development of the research questions, the main structure and write-up of the paper, and final amendments to the manuscript. GJ, SK, BW, MW, SA conducted the data collection and analysis. GJ, AB, SK, AA discussed and interpreted the data once analysed. AB completed the discussion. SK, MO, AA helped structure the manuscript, and contributed to the programme and clinical understanding of the findings and shaped the conclusions. AA was responsible for overseeing the full development of the study design and data collection, the analysis and development and final sign-off of manuscript from a clinical and programme perspective. All authors contributed to proof-reading and amendments of the final manuscript.

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**Statement of Data Sharing:** The analysed data is published on the TEC Cymru website in the format of a full report of all data for the public to view. To access this report please see https://digitalhealth.wales/tec-cymru**.** Other data can be requested as a reasonable request to the corresponding author.

### Ethics Statement

Prior to the start of the study, ethical approval was obtained [SA/1114/20] from the Aneurin Bevan University Health Board Ethics & Risk Committee.

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# Appendix

*Appendix Table 1-2*

*Appendix Table 1 Participant Demographics*

*Appendix Table 2 Interview Participants by Speciality, Profession & Health Board.*

# Topic Guide for Evaluation

1. **Type of Service/Type of clinician (speaking to):**
2. **Opening Question – get a feel of how they feel about VC.**
   **Ask – how do you find VC – do you like it?**
   Overall rating/experience VC – for you & your service

3. **What works for VC?** (technically, clinical conditions or patients demographics, geographic area and so on)
   What doesn't work for VC?

4. **Benefits & Challenges of VC**

Probe for DNA rates – increase/decrease, probe for type of travel expenses clinicians would usually claim, probe for biggest benefit for patients and so on.

5. As we come out of Wave 1 and enter Wave 2
   **How has your VC experience been, and how has it improved (or not)?**

   (Probe here if it's being used more or less in this time)

6. **What is VC being used for?**
   How often?
   Approx. number & types of clinicians using VC? (Probe: who's NOT using it, why?)
   Approx. number of & types of patients using VC?

**Duration of VC, TC, F2F (e.g., how much of each approx. is being used)**

**Is VC offered as a patient choice or a service choice?**

7. **How is VC set up in your service?**

- Process of booking, who does it, how it's done? (e.g., by admin or clinician)
- Is VC implemented in their systems - Can they book a VC straight from the system – or is it still manual
- On a measure delivering VC - in terms of ad hoc (at 1) to routine practice (at 10) – where is your service currently sitting?
-

8. **Do you see yourselves / and your service using VC in the long-term future?**
   What will your service look like in the future – regarding VC & its place (approx. amount of long-term VCs do you see happening?)

   How do **clinicians, admin and management teams feel about VC** – do they all to use it? Who is the most/least set-up or keen?

**How do you feel about VC?**

- Workload (increased, decreased)
- Overall wellbeing of self & colleagues
- Burnout/VC Fatigue? Other

9. What **additional support** do you/does your service need?
   What else would make VC better?

*Point to TEC website and resources if unknown*

10. **Memorable stories/moments/cases.**

*Appendix 2: Interview Participants by Speciality, Profession & Health Board.*

| Speciality & Profession | Health Board(s) | Total (n=203) |
|---|---|---|
| **Mental Health** **consultant, nurse, psychologist, therapist, counsellor, assessor, technician, management, assistant & trainee* | ABUHB, BCUHB, CAVUHB CMTUHB, HDUHB, PTHB, SBUHB | **52** |
| **Speech and Language** **therapist, assistant, head of department* | ABUHB, BCUHB, CMTUHB, PTHB, SBUHB | **29** |
| **Physiotherapy** **therapist, senior lead* | ABUHB, BCUHB, CAVUHB, CMTUHB, HDUHB, PTHB, SBUHB | **22** |
| **General Practice (GPs) & Out of Hours GP** **doctor, nurse* | BCUHB, CAVUHB, CMTUHB, PTHB, SBUHB | **16** |
| **Occupational Therapy** **therapist, technician* | ABUHB, BCUHB, SBUHB | **9** |
| **Child Health & Paediatrics** **consultant, nurse, medical secretary, advisor* | ABUHB, BCUHB, PTUB, SBUHB | **9** |
| **Dietetics** **dietitian* | BCUHB, CAVUHB, CMTUHB, PTHB | **6** |
| **Health Visitor** | SBUHB | **6** |
| **Podiatry** **therapist, consultant* | CAVUHB | **2** |
| **Oncology** **consultant* | SBUHB | **3** |
| **Respiratory Medicine** **nurse, consultant, team lead* | ABUHB, PTHB, SBUHB | **3** |
| **Booking Centre** **administration staff* | PTHB, SBUHB | **3** |
| **Trauma & Orthopaedics** * consultant, surgeon, administration | ABUHB, CAVUHB | **3** |
| **Rheumatology** **consultant, director, therapist* | ABUHB | **5** |
| **Neurology** **nurse, consultant* | ABUHB, PTHB, SBUHB | **3** |
| **Cardiology** **nurse* | BCUHB, SBUHB | **2** |
| **Community Nursery Nurse** **nurse* | SBUHB | **2** |
| **Plastic Surgery** **surgeon* | CMTUHB, SBUHB | **2** |
| **Ward Management** **nurse, therapist* | ABUHB, SBUHB | **2** |
| **Gynaecology** **doctor, associate specialist* | ABUHB, CMTUHB | **2** |
| **Sexual Health** **adviser* | CAVUHB | **2** |
| **Neurosurgery** **nurse, associate specialist* | CMTUHB | **2** |
| **Renal Medicine** **nurse* | BCUHB | **1** |
| **Community Continence** **nurse* | SBUHB | **1** |
| **Orthotics** **orthoptist* | ABUHB | **1** |
| **Dental** **dentist* | SBUHB | **1** |
| **Audiology** | ABUHB | **1** |
| **Diabetes** | ABUHB | **1** |

| | | |
|---|---|---|
| **nurse* | | |
| **Otolaryngology** **medical secretary* | SBUHB | **1** |
| **Fertility** **associate specialist* | SBUHB | **1** |
| **Ophthalmology** **surgeon, optometrist* | ABUHB, SBUHB | **2** |
| **Clinical Genetics** **consultant* | CAVUHB | **1** |
| **Dermatology** **nurse* | ABUHB | **1** |
| **Infectious Diseases** **consultant* | CAVUHB | **1** |
| **Social Care** **MDT* | ABUHB | **1** |
| **Stroke Management** **nurse* | SBUHB | **1** |
| **Anaesthetics Care** **doctor* | ABUHB | **1** |
| **Lymphedema** **therapist* | SBUHB | **1** |
| **Gastroenterology** **consultant* | CMTUHB | **1** |

*Appendix 3 Participant Demographics*

| | **Proportion** |
|---|---|
| **Age** | |
| 18-25 Years | 0% |
| 26-35 Years | 29% |
| 36-45 Years | 21% |
| 46-55 Years | 40% |
| 56-65 Years | 9% |
| 65 Over | 1% |
| **Gender** | |
| Male | 26% |
| Female | 74% |
| **Ethnicity** | |
| White | 84% |
| Black, African, Caribbean or Black British | 1% |
| Asian or Asian British | 14% |
| Mixed or multiple Ethnic Groups | 1% |

BMJ Open

# Benefits, Challenges and Sustainability of Digital Healthcare for NHS Wales: A Qualitative Study

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| | |

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**Title Page**

# Benefits, Challenges and Sustainability of Digital Healthcare for NHS Wales: A Qualitative Study.

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**Up to five keywords or phrases suitable for use in an index.** Video Consulting, Digital Healthcare, National Health Service (NHS); Quality Improvement

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*Digital healthcare in the UK was adopted out of necessity rather than choice during the COVID pandemic. However, as we move forward, UK governments and healthcare services have acknowledged its evident benefits for patients, staff and the NHS, and are keen to sustain its improvements in the long-term.* ***Objective****: To understand the benefits, challenges and sustainability of a future-proof digital healthcare* ***Design****: A semi-structured interview study was conducted.* ***Setting****: In NHS services in Wales, UK.* ***Participants****: With clinical and non-clinical staff across a mix of clinical specialties.* ***Outcome measures*** *Semi-structured interviews were conducted to address benefits, challenges and sustainability of a national video consulting (VC) service, and thematically coded using a quantification method of qualitative work.* ***Results****: A total of 203 interviews were conducted, and, three dominant domains emerged, with seven themes and 26 categories.* ***Limitations****: It's important to acknowledge that these findings were captured during a pandemic.* ***Conclusions****: NHS Wales have demonstrated that currently there are an equal measure of benefits and challenges to a national digital healthcare. However, with ongoing government and service support, improvement and evaluation, it has potential for a sustainable digital future, in which the benefits can outweigh the challenges.*

***Abstract Summary:***

*Strengths*

- *This is a national study, which is representative of Wales.*
- *This study has a large sample size for qualitative research.*
- *This study provides both narrative and quantification of narrative accounts.*

*Limitations*

- *Interviews were with clinical and non-clinical staff, therefore benefits and challenges are perceived by them only, and not patients.*
- *This study was conducted during the COVID-19 pandemic and update and satisfaction of digital healthcare may have been impacted.*

# Background

Wales is a country that is part of the United Kingdom with a population of 3.1 million across a total area of 20,779 km$^2$. Compared to other parts of the UK, Wales has a high rural environment, the oldest age population (21% over 65), the highest proportion of people with a disability (2%) and is the poorest UK country [1-2]. Based on Wales' rurality and demographic profile, it may be assumed that digital healthcare may not be an equitable option for its general population [3-4]. However, there is currently little research to support that there may be any health disparities in Wales.

Though, such assumptions have been challenged recently, and suggest otherwise. For example, Welsh data from more than 50,000 NHS patients and staff demonstrates that regardless of what may be considered limiting factors, e.g., age; gender; ethnicity; household income; location; health status; and disability, digital healthcare, such as video consulting (VC) platforms, can provide equity of care across all patient

and staff groups, appointment types and clinical specialties, which suggests that the same type of digital care can be offered and accepted by all people in Wales, regardless of status [5].

In support of this, the Welsh Government have recently published a ministerial call for a new digital strategy in Wales, stating that "*digital change offers us a range of new tools for solving old and novel problems*" [6]. It is further argued that "*digital offers the potential to make our experience in the world better, enhancing people's lives [and] strengthening the delivery of public services*" [6]. The digital strategy, and other Welsh Government policies such as Prudent Healthcare and the Future Generations Act [7, 8] look to support and enable a strong digital future for NHS Wales. Early evaluations and research have been conducted in Wales, which demonstrate the early successes of the government's strategy [9-11].

## Aims & Methodology

The aim of this study was to identify the benefits, challenges, and sustainability of a national digital healthcare service from a representative sample of NHS healthcare professionals (clinical and non-clinical). The NHS Wales Video Consulting (VC) Service was identified as an appropriate service to recruit. A VC platform called 'Attend Anywhere' was funded in 2020 by the Welsh Government for use across NHS Wales, to include all primary, secondary and community healthcare. The service included unlimited and free access to the VC platform, and additional training, evaluation and support by the national VC team. Thus, as researchers from the national VC team, the scope of the study is limited to understanding VC via the Attend Anywhere platform.

We conducted semi-structured interviews with staff to identify the benefits, challenges and sustainability of VC across NHS Wales. An opportunity and convenience sampling approach were taken to recruit NHS staff using VC for an interview. First, sampling involved adding an additional question to the end of the NHS VC Service feedback survey, requesting VC users to take part in an interview (this feedback survey appears at the end of each VC appointment). Secondly, to ensure that we interviewed all types of VC users, emails were sent to all NHS Wales VC Service contacts. Furthermore, social media platforms and personal/professional networks were used to further recruit.

This process lasted for approximately two months (September – November 2020) until recruitment received at least a 1% representation of all Welsh VC users. Based on the total of 16,000 healthcare professionals registered and set up with VC in Wales, 10% were approached to take part in interviews (approx. =1,600), a total of 203 semi-structured interviews were completed with participants across all health boards in Wales, across a range of specialties. This resulted in a 1.3% representation of all Attend Anywhere VC users in Wales.

The inclusion criteria for an interview were to have prior experience of using the NHS Wales VC service in the one-year period (March 2020 – March 2021). On initial contact, via an introductory email or phone call, all expressions of interest met the inclusion criteria, which was to confirm eligibility using a tick box exercise. Interested respondents were sent an email with study information and a consent form. In addition, a scheduled Microsoft Teams invite for a video interview was arranged, or a contact number was obtained for a telephone interview, or face-to-face interview if preferred. A total of 12 people did not attend the scheduled interview, and no follow up arrangements were made. With each interview, consent was read out verbally, and consent was obtained from all of those in this study.

Each interview lasted approximately 45 minutes. Interviews were audio recorded and transcribed verbatim. A semi-structured interview guide was constructed and included questions that asked about their experience and opinions of VC (topic guide shown in Appendix 1). A conversational style of interviewing was adopted to allow a more natural dialogue.

Following Braun and Clarke's approach [12], thematic analysis was conducted, using original transcripts. Initial analysis involved listening to the recordings and reading of the transcripts and making notes, which then led into highlighting and coding emergent codes and areas of interest, about experience and opinions of VC, as well as flagging up of common domain, themes and categories. These were reviewed and refined until final conclusions could be drawn.

This process was predominately conducted by four researchers. These include a research officer (BW), a head of research (GJ), a national clinical lead (AA), and two supporting research assistants (MW, SA). The interviews guide was developed by GJ, SK, and AA. The interviews were conducted by BW, MW and SA. The coding was conducted by BW, MW, SA and consensus of coding by GJ. SK and AA. Analysis and

development of domains, themes and categories was conducted by GJ, BW and SA, and checked and confirmed by all authors.

To provide a clearer understanding of commonality across domains, themes and categories, and provide a more accurate indication of experience and response, using a quantification method of the qualitative work, the findings were thematically coded, analysed and presented as both quantifiable information based on the number of dominant and sub-dominant coded responses (referenced as n=), these were determined by the number of times an idea theme emerged, using two full rounds of coding (initial and final). Qualitative data was analysed and presented as direct quotations, which are referenced by respondent's occupation and Health Board. Qualitative guidelines, found online via EQUATOR, were used to assist with this process.

**Patient and Public Involvement:** No patient or public involvement in the development of this study. However, the interviews were guided by standard research principles.

## Results

A total of 203 participants were interviewed including clinical and non-clinical staff across primary, secondary and community care sectors, across all seven Welsh Health Boards in NHS Wales. Participant data collected, include clinical specialty, profession, and associated Health Boards (shown in Appendix 2). Demographic data collected include age, gender and ethnicity (shown in Appendix 3).

From the thematic analysis of the 203 interviews, a quantification of qualitative work was conducted. In total, 1,494 direct codes were identified, which resulted in three dominant domains emerging, with seven themes and 26 categories. These are displayed in Table 1.

*Table 1: Dominant Domains, Themes & Categories*

| **Domains** | **Themes/Categories** | |
|---|---|---|
| **Domain 1:** | | |
| Benefits (n=506) | **1.1.** Service Benefits (n=157) | **1.1.1** Waiting lists (n=26)<br>**1.1.2** DNAs (n=14)<br>**1.1.3** Monetary Savings (n=14)<br>**1.1.4** Improved Service Delivery / Extra Tool (n=103) |
| | **1.2.** Personal (Clinician) Benefits (n=81) | **1.2.1** Travel & Parking (n=49)<br>**1.2.2** Flexibility (n=32) |
| | **1.3.** Patient Benefits (n=268) | **1.3.1** Travel & Flexibility (n=113)<br>**1.3.2** Home Environment, Family Support & Self-Management (n=52)<br>**1.3.3** Enhanced Communication, Extra Cues & Power Dynamic (n=85)<br>**1.3.4** Hard to Reach Families & Specific Patients(n=18) |
| **DOMAIN 2:** | | |
| Challenges (n=584) | **2.1** Clinical Decisions (n=451) | **2.1.1** Risk & Privacy (n=149)<br>**2.1.2** Patient & Clinical Confidence (n=60)<br>**2.1.3** Takes Time (n=57)<br>**2.1.4** Engagement & Cues (n=64)<br>**2.1.6** Organization (n=39)<br>**2.1.7** Well-Being & Isolation (n=82) |
| | **2.2** Technical Restraints (n=133) | **2.2.1** Audio & Visual (=22)<br>**2.2.2** Internet / Bandwidth (=72)<br>**2.2.3** Incompatible or poor quality platform (=39) |
| **DOMAIN 3:** | | |
| Sustainability (n=404) | **3.1** Future Use (n=244) | **3.1.1** Blended Approach (n=105)<br>**3.1.2** Patient Choice (n=71)<br>**3.1.3** Favor for Face-to-Face (n=10)<br>**3.1.4** Useful Tool (n=58) |
| | **3.2** Future Improvements (n=160) | **3.2.1** Improved Support & Training (n=88)<br>**3.2.2** Awareness & Digital Champions (n=23)<br>**3.2.3** Technical Advancements (n=49) |

## Domain 1: Benefits of Video Consulting

The dominant domain **'Benefits'** is themed into **'service benefits'** (NHS Wales), **'personal benefits'** (NHS staff member) and **'patient benefits'** (patient, family or patient-clinician relationship). As a quantified total of coded benefits, there were 506 individual responses from the 203 interviews that indicate a defined benefit of VC. Of these, 81 responses (16%) were related to 'personal benefits', 157 responses (31%) to 'service benefits' and 268 responses (53%) to 'patient benefits', which were either direct benefits to the patient or family (n=164) or a benefit to the patient-clinician relationship (n=104).

### *Service Benefits*

At the NHS service level, VC was believed to have benefited the NHS service due to decreased appointment waiting times (n=26), fewer missed appointments/'Did Not Attends' (DNAs) (n=14), monetary savings on reduced service expenses (n=14), and improved service delivery (n=103).

For example, staff narrative states that patients are now waiting less time for an appointment due to VC and its contribution to ease of access and reduced waiting lists.

> *"If we continue with virtual clinics, it will improve, as we're not constrained by the physical space anymore with them" (Otolaryngologist, SBUHB)*
>
> *"If we didn't have VC, our waiting list would've increase significantly" (Mental Health/ASD Nurse, ABUHB).*

Furthermore, reductions in missed appointments/DNAs are believed to be associated with the increased use of VC.

> *"There's a massive decline in the DNA's. With my clinics, because they are so in-depth, I book in one-hour slots. Usually, if there was a DNA then I would be waiting over an hour for the next patient, and if two DNA'd then that would be a massive waste of my time. Whereas now, I can carry on with other referrals or other phone calls" (Stroke Nurse, SBUHB)*
>
> *"It has drastically reduced DNAs because there's less excuse now…so it has reduced that, and some people forget about appointments and you can now ring them, and they can quickly join whereas that wouldn't happen if they had to physically get to the appointment" (Psychological Therapist, SBUHB)*

The NHS service also benefited from direct monetary savings in reduced service expenses such as staff or patient travel expenses being claimed back, or costs such as clinic room bookings.

> *"It's got to be saving the health board money, as the elderly patients always need transport (paid by the NHS) to get to hospital" (Vascular Surgeon, ABUHB)*
>
> *"Massive reduction in our travel, before I was averaging about £200 a month in expenses and now it's barely £20 a monthly" (Occupational Therapist, ABUHB)*
>
> *"It must have saved us (the NHS) a fortune in booking rooms based in the community. The cost implications are massive" (Physiotherapist, SBUHB)*

VC has also improved service efficacies due to its avoidance of waste on clinical time and resource. This benefit highlights how VC is considered an extra tool in clinical 'tool boxes'.

> *"I work with nurses, radiographers, paramedics, and we've basically, innovated a new service, the VC has helped us to do that" (Physiotherapist, SBUHB)*
>
> *"The NHS spaces are so overloaded, and a lot of that is inappropriate… so as an alternative VC allows patients to access services" (Mental Health Therapist, CTMUHB)*
>
> *"…VC is another resource that people can use and it's a tool" (Learning Disabilities Therapist, ABUHB)*
>
> *"It's just another tool really isn't it…the more tools you have and the more ability you have to offer alternatives, and the more likely you are to be able to absorb the patients that we have" (Physiotherapist, SBUHB)*

### *Personal Benefits*

As a direct personal benefit of VC, the NHS staff report a reduction in their own travel and parking (n=49) and improved flexibility in their working day (n=32), which is said to improve staff wellbeing.

> *"It saves time in my travel time, because I can literally sit in the office do the appointment, write the notes up onto the next one." (Speech & Language Therapist, BCUHB)*
>
> *"This is transformative for me in terms of travel and how I manage my diary and book people in" (Speech & Language Therapist, CAVUHB)*

*"We have more flexibility as when we do our appointments, doesn't have to be when a room is available, which I think has been good for staff wellbeing" (Neuromuscular Carer, SBUHB)*

Although these are personal benefits to NHS staff members, they ultimately feed into patient or service benefits as well, as less travel equals more time for other clinical work, and improved flexibility allows more flexible care for patients.

***Patient Benefits***

From the perspective of the NHS staff, there are a wide range of direct patient and family benefits such as the reduction in travel and parking, and improved flexibility (n=113).

*"VC saves patients travelling. We used to get people in quite regularly just for a check, where now we might not necessarily have to" (Podiatrist, CAVUHB)*

*"The parking really stresses people out in our hospital… so now it works really well that patients can have something offered to them like VC" (Physiotherapist, SBUHB)*

*"It should have been like this before, we're a really rural country so our area would have been ideal for VC as people have to travel so far" (Counsellor, PTHB)*

*"Parents with children have busy lifestyles and a lot going on, so it's easier for them… more flexibility" (Speech & Language Therapist, PTHB)*

*"My patients who are working age, they are doing VC in their work, in a private room" (Neurologist, CTMUHB)*

Furthermore, the virtual environment within the patient's home can encourage family involvement, and positively promote independence and improved patient-centred care (n=52).

*"It's almost the next best thing they're on their sofa their dog is on their lap and they're chatting away… in their own home is actually quite nice" (Speech & Language Therapist, CTMUHB)*

*"Since using VC, we've been working with the families a bit more and on modifying the home environment rather than working with the child specifically" (Speech & Language Therapist, ABUHB)*

> *"I don't think in the majority of cases it has negatively affected anybody's care. It has probably done the opposite in promoting self-management and self-efficacy and like the patients' treatments. People take the control more and they actually do the exercises…" (Physiotherapist, SBUHB)*

VC is also seen to positively enhance communication and improve cues between clinicians and patients, ultimately balancing out the healthcare power dynamics (n=85). Participants suggested that this improvement may have been due to patients feeling more comfortable in their home environment.

> *"It's opened up communication for us…It's never been so good…I always know everything that is going on, I'm always involved in all the decisions." (Learning Disabilities Nurse, ABUHB)*

> *"It has been invaluable. You can actually see the patient, you're looking for the subtle changes on them so you see if they're being looked after" (Neurologist, CTMUHB)*

> *"You get the added thing that you're seeing them in their home so you're getting cues from what you see behind them" (Primary Mental Health Assessor, SBUHB)*

> *"VC is a real levelle3r. It's not a power situation, it's much more about you and I doing this piece of work… the therapeutic relationship has started off on a better foot." (Administrator, PTHB)*

> *"When they come into the hospital, things are very structured and professional. That professionalism gets in the way…, but having contact through VC makes the patient seem a lot more relaxed." (Acute Adult Psychiatrist, ABUHB)*

The narrative also suggests that there are specific types of patients and families that VC add an additional level of benefit to. For example, hard to reach families (n=18) whereby VC can remove many of the challenges associated to access of care.

> *"With hard to reach families or families that don't have transport…" (Speech & Language Therapist, ABUHB)*

> *"It's enabled me to work with people I wouldn't have been able to see face-to-face" (Mental Health Therapist, ABUHB)*

# Domain 2: Challenges

As a quantified total of coded challenges, there were 584 individual responses from the 203 interviews that indicate a defined challenge of VC. The dominant domain **'Challenges'** (n=584) is themed into two sections: as **'clinical decisions'** (n=451) and **'technical restraints'** (n=133). The theme 'clinical decisions' is sub-categorised as 'risk and privacy' (n=149), 'confidence' (n=60), 'takes more time' (n=57), 'engagement & cues' (n=64), 'organisation' (n=39) and 'well-being and isolation' (n=82). The theme 'technical restraints' is sub-categorised as 'audio and visuals' (n=22), 'Internet and bandwidth' (n=72) and 'platform incompatibility' (n=39).

### *Clinical Decisions*

The narrative on challenges relating to clinical decisions were associated to concerns surrounding VC's delivery of clinical care, particularly what participants felt may be clinically missed, may take more clinical time, or affect clinicians themselves.

Participants commented on the 'risk' surrounding VC as a cause for concern for some people in certain specialities, regarding missing certain aspects of an appointment that may be better seen or identified face-to-face, e.g., being able to physically examine a patient.

> *"VCs not a one-stop shop, sometimes you want to check blood and do blood pressure, so it doesn't do that" (Paediatric Consultant, ABUHB)*

> *"You may miss things because you haven't got that 'hands on', and that is a worry. But, if you think, right I couldn't see everything that I needed to, but that's where your clinical reasoning comes in , and you go out to see that child" (Physiotherapist, CTMUHB)*

In addition, the challenge around 'privacy' was predominately discussed by participants in mental health services, and generally associated to specific types of patients, such as those with a history of abuse or currently living in a domestic abuse household.

> *"They might not be able to speak freely, on a laptop, you don't know who else is going to be hidden in the room" (Clinical Psychologist, ABUHB)*

> *"For some clients it's just not safe for them to do therapy in their own home, they may have children, they may have partners, they may have abusive partners and no privacy so that's one side of it. The other side of it, some*

*patients don't want their childhood trauma beamed across their living room which is their safe space" (Clinical Psychologist, PTHB)*

Some of the participants discussed 'confidence' around VC and the required technology was portrayed as a challenge for some patients and clinicians. Interestingly, these findings suggested some participants shadow colleagues whilst learning to use VC, which impacts digital confidence. Some participants felt more comfortable with this 'copying' behaviour where this learned culture helped participants move to VC with growing confidence. This copying has the potential of positive or negative responses, but it is important to acknowledge its presence, particularly when exploring new digital innovations.

*"Sometimes patients are shy around VC. But are getting more familiar with it. Its personal choice, I guess" (Mental Health Nurse, ABUHB)*

*"So, I was quite daunted by it at the beginning, but I feel really positive about it now. Often you feel the anticipation doing a new thing for the first time" (Clinical Psychologist, BCUHB)*

However, it was stated how it catches on more as the new culture embeds itself.

*"I think some colleagues think it's more difficult than it is, they were scared of it, but I've shown them and it's easy to use… It's so easy to use and it's a brilliant resource" (Community Nurse, SBUHB)*

*"Some are more comfortable with it and others will avoid it, but with practice they're getting better at it but perhaps more training, that's more specific to how to do a video call" (Physiotherapist, HDUHB)*

Some participants felt extra 'time' was needed for VC uptake, as opposed to other consultation methods. This challenge was apparent when training was necessary to use the platform or where patients needed additional explanations and support during their VC. A small number of participants also commented on the additional 'setting-up' time needed to conduct a VC.

*"You're doing a lot explaining of how to use the camera etc., which takes away from actually assessing them" (GP, BCUHB)*

*"There's a training element that's taken a little bit of time out of my diary, workload overall" (Counselling Psychologist, ABUHB)*

> *"We just go into clinic a bit beforehand and make sure everything is set up" (Paediatric Nurse, SBUHB)*

For some participants there were challenges surrounding 'engagement' with patients via VC, particularly with the lack of visible body language and trying to get 'cues'. For example, several participants found it difficult to achieve the same level of engagement with new patients or younger patients. While facial cues can be picked up well during VC, a number of participants found this more demanding during their virtual consultations.

> *"…The key thing is you have to know the patient. If you're talking to new patients you haven't met before you don't know what to expect of them, or them of you, there's no relationship there and it tends to go on and on. Whereas with patients you know it is a quick consultation, straight to the point …you both have confidence in what you're saying to each other" (Cardiologist, SBUHB)*

> *"Video feels less personal, it's difficult to strike up a rapport" (Occupational Therapist, ABUHB)*

> *"You don't get to pick up on those cultural non-verbal cues from VC patients" (Neurologist, SBUHB)*

Some participants reported that VC appointments within their services have increased the amount of 'organisation' required surrounding appointment set-up and consultation. For example, some services struggled to have a streamlined booking process in place, while others found it difficult to manage the sheer number of virtual waiting rooms for their patients.

> *"It's just managing the waiting room which is tricky for us. We have multiple doctors, multiple nurses running clinics at different times of the weeks." (Administrator, SBUHB)*

> *"It's going well- it works really well actually. The software works brilliantly, it's the organisation around it that works less well- but that's not the fault of the software" (Infectious Disease Consultant, CAVUHB)*

A further challenge that participants reported was the impact that VC had on their own wellbeing. Some participants reported a greater increase in workload due to the use of VC. This was often paired with feelings of isolation for some participants who were conducting VC from home and not seeing work colleagues as often as before.

*"My work load has definitely increased and I do feel a lot more tired at the end of the day, and I think that has a lot to do with just sitting in front of the screen" (Speech & Language Therapist, PTHB)*

*"You just don't have the contact with your colleagues or patients, that physical contact, communication" (Physiotherapist, PTHB)*

### *Technical Restraints*

The narrative on challenges relating to technological restraints were discussed predominately regarding 'audio and visual' difficulties when using the VC platform, 'internet and bandwidth' issues or 'poor quality or incompatibility' problems for participants to use as a consultation method.

For a number of participants, audio and visual impacted on the quality of their VC calls. For example, the audio at times could be robotic and the picture quality of the video could be blurred. This was a challenge for many participants as it could negatively impact appointments and damage rapport and conversations with patients if this arose mid-call, particularly when discussing sensitive or emotional information.

*"When the quality of the video is poor, it's very unpleasant… It's not that it impacts the session as such. It's not as good as other face-to-face platforms so I don't understand why that would be. It's more comfortable when the picture is clear" (Health Psychologist, SBUHB)*

*"A very minor gripe is that the quality is not as good as other formats. Although, this could be due to peoples phones or the laptops they are using." (Physiotherapist, SBUHB)*

Linked with poor audio and visuals is the internet and bandwidth connections that participants had when using VC. For some, their internet allowed them to use VC as intended with no connectivity interruptions. However, for others with poorer connectivity caused issues. Participant narrative suggested that in some services, they were nervous to attempt to use VC following connectivity problems that disrupted the call with a patient.

*"If people's internet isn't stable, there's a huge delay which makes it really hard" (Clinical Psychologist, PTHB)*

> *"One couple we tried, we had to give up because the technology wasn't good enough. It causes huge amounts of stress. It has an impact on the assessment and the therapeutic relationship" (Psychotherapist, ABUHB)*

In some instances, the participant narrative suggests that at times, the quality of the VC platform is too poor for consultation use. For some, patients were unable to access the VC platform. Some participants found the technology aspect of VC incredibly stressful. For some services this has had a negative impact on their views of VC and how this would fit in with their consultation methods.

> *"There are some issues, but it's been the technology stress that has actually put on me more than anything else... It's nobody's fault- it's just the way it is… but technology is definitely the biggest stressor and that's why I feel sorry for our patients" (Physiotherapist, CAVUHB)*

> *"For the most part it is very good, I think it's on the side of the client sometimes they struggle to get on to the system but that could be due to them delaying their appointment as well, might not always be technology." (Administrator, PTHB)*

## Domain 3: Sustainability

The dominant domain **'sustainability'** counted for 404 responses, and is themed into two sections: **'Future Use'** (n = 244) and **'Future Improvements'** (n = 160). Having a blended approach (n = 105), Patient choice (n = 71), Favour for face-to-face (n = 10) and VC as a useful tool (n = 58) have been sub-categorised within **'Future Use'** with their total of codes relating to sustainability. For **'Future Improvements'**, Improved Support, Training & Resource (n=88), Awareness & Digital Champions (n=23) and Technical Advancements (n=49) are sub-categorised.

### *Future Use*

Many participants reported that they would like VC embedded into NHS practice for the long-term, but as a 'blended approach', with a mix of face-to-face and virtual appointments adopted where clinically appropriate. However, 'patient choice' was seen to be just as important.

> *"I am definitely using VC the most, but quite a few people are on a blended approach… I think that blended approach is useful" (Paediatric Consultant, ABUHB)*
>
> *"In the future maybe clinic settings could have a mixture of everything" (Neurology Nurse, CTMUHB)*
>
> *"I would love to keep using VC. There's always going to be a time for face-to-face in clinics, but I think together they will work really well" (Occupational Therapist, CTMUHB)*

It was felt that a combination would ensure the best possible care for the patient, and that clinicians are confident in making these clinical judgment calls. However, regardless of clinicians making these clinical calls, many participants expressed their awareness that decisions surrounding the future use of VC are made above them amongst managerial staff and specific to health boards.

> *"…it just depends on what our Health Board says" (Health Visitor, SBUHB)*
>
> *"I think there is reluctance in other areas and it's what the NHS is all about, the culture … the chain management. I [as a Manager] have sold it to my team and very much this is how you solve things" (Manager, ABUHB)*

But there was however a strong sense of 'want' for VC to continue being part of NHS Wales, with discussions within services on how VC will be best integrated.

> *"Overall it has been really positive for clinicians and patients, and we are looking to take it forward and make it a bigger part of our service" (Neuromuscular Doctor, SBUHB)*
>
> *"…we've started having conversations about how we can integrate VC into the working diary" (Speech & Language Therapist, SBUHB)*

But a small few still wish to return to traditional means of face-to-face.

> *"I hope it gets back to normal soon I'm not doing this job for another 20 years over the screen" (Child Development Nurse, ABUHB)*
>
> *"The gold star is face-to-face." (Child & Adolescent Mental Health Nurse, ABUHB)*

When looking at the future of VC, participants expressed that they want to be able to give the patient a choice when deciding on their mode of consultation. This emphasises the focus participants put on patient-centred care.

At present, the majority of participants believe this choice to be a 'service choice' due to the demands of the service during the pandemic and the need to limit face-to-face contact. Similarly, it is the service choice for many participants to use face-to-face where they see that face-to-face contact is more appropriate.

> *"Past the pandemic, VC will undoubtedly be something which will be incorporated into the system. It is definitely going to be some sort of hybrid system where patients are offered the choice" (Physiotherapist, SBUHB)*
>
> *"We wanted to keep choice for our clients… not everybody has the technology or doesn't know how or use it, and it's about client safety" (Counsellor, CAVUHB)*

A number of participants within the findings reported a preference for face-to-face; as time has gone on they have become 'fed up' of only using VC. This emphasises that at present, the use of VC depends on the need of the service and what that specific service and Health Board have decided, despite a number of participants focusing on patient involvement and choice with VC.

> *"We're getting fed up and want to be back face-to-face"* (Physiotherapist, SBUHB)
>
> *"I think for us front line hands on workers we very much want to get back to that hands on and seeing our patients face-to-face"* (Child Development Nurse, ABUHB)

A large proportion of the narrative involved the value of VC. Many participants could perceive VC becoming a valuable asset to take forward within their services and being added as a 'tool' for professionals to reach for with patients.

> *"I definitely think it should stay and be added to our skills, definitely"* (Health Visitor, SBUHB)
>
> *"I would be very disappointed if this was withdrawn from us as a service"* (Renal Medicine Nurse, BCUHB)

### *Future Improvements*

Many of the participants expanded their thinking into future improvements for VC that were considered vital in moving forward with its use and ensuring its sustainability long-term. These improvements include 'increased support and training', VC 'awareness' and digital champions' and 'technical advancements'.

While VC has been used across a large range of services, several participants commented on areas that needed further work such as improved levels of support and training which would enable participants to keep using VC. For example, having technical support would increase confidence using VC amongst participants as well as additional training sessions to consolidate learning and add to VC knowledge and skills. A number of participants also felt as though VC drop-in sessions for any questions would be beneficial and an opportunity to fit in around schedules.

> *"I think drop-in sessions would be good for those sort of questions too" (Health Visitor, SBUHB)*
>
> *"I would really like another training session now I've used it for a few months, um, because I would really like a session to consolidate" (Physiotherapist, CAVUHB)*
>
> *"I would maybe need a bit more training, a refresher I suppose if I wanted to go into adding someone else into the call or go into a different call but for the moment just adding one patient and talking to them one-to-one, it is so easy" (Physiotherapist, CTMUHB)*

There were a number of participants who reported being 'digital champions' or 'super users' for VC and thus, took the lead role on the roll out of VC within their service. This was considered important for leading the way, especially in encouraging uptake among the less confident or motivated members of their team.

While digital champions are not deemed essential by participants to use VC, having colleagues who were available to go to for support and advice was incredibly useful for participants. Closely linked to participants having the support to use VC amongst their colleagues is also the needed improvement of raising awareness of VC. Without the support of making VC known within services, participants felt as though it was difficult for those [clinicians] using it to make contact with patients. Participants reported awareness is necessary amongst patients, clinicians and administrative staff alike.

> *"We have a VC group, a task and finish group, and they've looked at some of them who are less confident or looking at a 'buddying up system' and how to support therapists who are less confident" (Speech & Language Therapist, BCUHB)*
>
> *"I'm a super user. So I've been training people up on VC" (Psychologist, ABUHB)*
>
> *"More options to share tech with people, borrowing something for a limited time, and have someone go into show them how to work it. Or liaise with other organisations like Age Cymru who have digital coaching" (Psychotherapist, ABUHB)*
>
> *"A bigger media presence with it on TV for something and for me it needs to not be medic-people… it needs to be the AHPs, the nurses saying we can do these things this way" (Physiotherapist, SBUHB)*

While a number of participants had these three levels of awareness in place throughout their service, other participants commented on the noticeable gaps and the need for improvement. A particular issue noted by participants was that if administrative staff are not as well informed about VC as participants hoped; if administrative staff do not offer VC, then patients do not know it is available and the awareness never increases. In turn, participants found this a struggle and emphasised that improvements to appointment set-ups were needed for a clear and seamless integration through the VC system, as without this, VC is less productive at both the individual level and also service level.

> *"VC is here to stay, but it needs the organisation behind it… to ensure that they have had a practice run, so they come in my call and know what buttons to press" (Cardiologist, SBUHB)*
>
> *"I would really push for that seamless integration… but that improves all the time doesn't it" (GP, CAVUHB)*
>
> *"The administrative team did not implement VC. They did not see it as important, they did not see it as a priority" (GP-BCUHB)*
>
> *"I'm trying to get my administrative staff to ask patients whether they'd like to be seen face-to-face or virtually." (Paediatric Neurologist, SBUHB)*

Appropriate technology and available space to be able to conduct participant VC is considered a much needed future improvement. While the majority of participants felt as though they had been provided with the adequate technology to run VC, there were a small number of participants who felt there had not been a push for VC

from their managers and health boards, and so they lacked the equipment and technology as VC was not seen as a priority. For example, many participants noted that they were without correct head sets and devices to run their VCs.

> *"Have to treat them like a normal clinic in terms of needing a room to conduct those VCs privately so I still can't do those from my shared office" (Oncologist, BCUHB)*
>
> *"We don't really have the equipment, it would be great if we had laptops and better cameras and things" (Occupational Therapist, CTMUHB)*
>
> *"There isn't enough infrastructure in the hospital to support the system. For example, they don't have enough cameras, they don't have enough speakers so we have to take our own equipment." (Infectious Disease Consultant, CAVUHB)*

Conducting VC from the office and from home, some felt as though equipment was lacking. For the office environment, there is a needed improvement in ensuring there is adequate space to conduct the VCs that is private, to ensure confidentiality. Office environments also need to have the appropriate technology and WIFI connections to ensure VCs can be conducted without disruptions. For participants working from home, there was a consensus that more should be done to ensure they are able to work from home and be provided with equipment.

Equally important to improving the technology access and space is the technical improvements to the VC platform itself. There are noticeable improvements that participants felt would.

> *"I would really push for is high-quality video" (GP, CAVUHB)*
>
> *"The expansion of the capacity of VC to do groups would be good" (Physiotherapist, PTHB)*
>
> *"The thing a lot of us are screaming out for is an interactive platform where we can get the person on the other side to show us what they are doing" (Therapy Assistant, SBUHB)*

## Discussion

It is important to view these results in their historical context. The period of March 2020 -2021 involved the rapid adoption and spread of VC at the beginning of the COVID-19 pandemic across Wales. The use of VC enabled many healthcare services, especially community, mental health and outpatient teams to continue to offer a service to patients when there was limited or no access to face-to-face delivery in clinic or hospital settings. VC represented an immediate and very helpful tool to enable healthcare professionals to provide patient care and to social distance. Whilst greater use of digital technologies and remote monitoring in healthcare have been longstanding NHS objectives, findings from across the UK suggest that "*The single biggest reported factor reported as enabling an increase in video consulting was the cancellation of non-essential face-to-face appointments. Changes in staff and patient attitudes were also considered important.*" [13].

As such, it is not surprising to have found significant themes in this study about the benefits of using a VC platform for both patients, health care staff and services in these circumstances and to have captured some of the technical, organisational and capability issues that such a rapid deployment of a new way of working bring.

The three domains discussed in this study, and the related themes and categories are however of great importance to this area of work, and it provides understanding of the experience or opinions of NHS staff using VC, which for many, was the first time using digital healthcare. For future interventions, this evidence is crucial.

Many of the benefits discovered in this study, have potential to continue to bring long -term gains, especially the reduction in miles less travelled for healthcare, better utilisation of buildings and resources, flexible ways of working, reduction in missed appointments and increased patient choice. The challenge now, as we are in the recovery phase of the pandemic, is to re-orientate utilisation away from VC being seen as an 'emergency response' and to ensure that it becomes a mainstream method of delivering healthcare. As blended delivery models of VC, telephone and face-to-face consultation become possible; this will require health and social care staff, in partnership with patients, to co-design what the 'new normal' pattern of consultations looks like for each clinical specialty and service. It's highly likely that differences will emerge between specialities based on clinical need for physical examinations and observations. Key ingredients in the success of this next co-design

phase will be incorporating the patient's choice of method of consultation (VC, telephone and face-to-face), whilst balancing service demand and effectiveness, the most appropriate medium for that moment in clinical care and clinician preference.

The challenges the study have highlighted align with wider findings from "*health systems research that disruptive technological innovation, especially in heavily institutionalised environments, is complex, uncertain, challenging and risky. Success is not just about new technologies but also about their clinical safety, how we make them work, and whether NHS infrastructure can accommodate them at speed and scale.*" [13]. This study highlights that whilst there were many benefits from the rapid deployment of VC across Wales, inevitably the speed of adoption will mean that there are issues to address and a need to continuously improve [14]. These include "skills and knowledge; motivation and attitudes; user-centred design; ways of working; safety and equity; resources and infrastructure; and culture and leadership…[and they add] It is not difficult to see how rolling out changes during a pandemic may have created challenges in each of these areas." [14]. The thematic findings in this study correspond with these key factors, and so potentially illustrate the areas where the next phase of continuous improvement must focus.

It is now important to reflect on the learning we have gained from this period and the potential role for VC in a sustainable healthcare system. The findings from this study highlight the benefits to patients and staff of being able to access and deliver healthcare through VC and provide a helpful lens through which to see where continuous improvement should focus for greatest impact on patient and staff experience and outcomes.

## Limitations

Due to this study being conducted during a pandemic, may influence the update of digital healthcare, as many face-to-face services were unavailable. Furthermore, this study was conducted with NSH staff only, and therefore patient voices were missed. Future research should seek to focus on these gaps.

# Conclusion

Overall participant narrative highlights both benefits and challenges from VC use within NHS Wales' services. Nevertheless, moving forward, the benefits are likely to outweigh the challenges, in that many of the challenges identified in this study are relatively simple fixes, which the Welsh Government and TEC Cymru are currently working on, such as improvements in internet connectivity, data integration and VC platform issues. It is also important to consider the ongoing benefits, and sustainability of VC and continue to understand how participants see VC being used in their services, and what they deem necessary for its long-term benefits and success.

**Author contributions**: GJ contributed to the main design of the study and development of the research questions, the main structure and write-up of the paper, and final amendments to the manuscript. GJ, SK, BW, MW, SA conducted the data collection and analysis (all female researchers, and all trained in research methods, ranging from senior to assistant level occupation). GJ, AB, SK, AA discussed and interpreted the data once analysed. AB completed the discussion. SK, MO, AA helped structure the manuscript, and contributed to the programme and clinical understanding of the findings and shaped the conclusions. AA was responsible for overseeing the full development of the study design and data collection, the analysis and development and final sign-off of manuscript from a clinical and programme perspective. All authors contributed to proof-reading and amendments of the final manuscript.

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**Declaration of interest**: none.

**Statement of Data Sharing:** The analysed data is published on the TEC Cymru website in the format of a full report of all data for the public to view. To access this report please see https://digitalhealth.wales/tec-cymru**.** Other data can be requested as a reasonable request to the corresponding author.

**Ethics Statement**

Prior to the start of the study, ethical approval was obtained [SA/1114/20] from the Aneurin Bevan University Health Board Ethics & Risk Committee.

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# Appendix

*Appendix Table 1-2*

*Appendix Table 1 Participant Demographics*

*Appendix Table 2 Interview Participants by Speciality, Profession & Health Board.*

# Topic Guide for Evaluation

1. **Type of Service/Type of clinician (speaking to):**
2. **Opening Question – get a feel of how they feel about VC.**
   **Ask – how do you find VC – do you like it?**
   Overall rating/experience VC – for you & your service

3. **What works for VC?** (technically, clinical conditions or patients demographics, geographic area and so on)
   What doesn't work for VC?

4. **Benefits & Challenges of VC**

Probe for DNA rates – increase/decrease, probe for type of travel expenses clinicians would usually claim, probe for biggest benefit for patients and so on.

5. As we come out of Wave 1 and enter Wave 2
   **How has your VC experience been, and how has it improved (or not)?**

   (Probe here if it's being used more or less in this time)

6. **What is VC being used for?**
   How often?
   Approx. number & types of clinicians using VC? (Probe: who's NOT using it, why?)
   Approx. number of & types of patients using VC?

**Duration of VC, TC, F2F (e.g., how much of each approx. is being used)**

**Is VC offered as a patient choice or a service choice?**

7. **How is VC set up in your service?**

- Process of booking, who does it, how it's done? (e.g., by admin or clinician)
- Is VC implemented in their systems - Can they book a VC straight from the system – or is it still manual
- On a measure delivering VC - in terms of ad hoc (at 1) to routine practice (at 10) – where is your service currently sitting?
-

8. **Do you see yourselves / and your service using VC in the long-term future?**
   What will your service look like in the future – regarding VC & its place (approx. amount of long-term VCs do you see happening?)

   How do **clinicians, admin and management teams feel about VC** – do they all to use it? Who is the most/least set-up or keen?

**How do you feel about VC?**

- Workload (increased, decreased)
- Overall wellbeing of self & colleagues
- Burnout/VC Fatigue? Other

9. What **additional support** do you/does your service need?
   What else would make VC better?

*Point to TEC website and resources if unknown*

10. **Memorable stories/moments/cases.**

*Appendix 2: Interview Participants by Speciality, Profession & Health Board.*

| Speciality & Profession | Health Board(s) | Total (n=203) |
|---|---|---|
| **Mental Health** **consultant, nurse, psychologist, therapist, counsellor, assessor, technician, management, assistant & trainee* | ABUHB, BCUHB, CAVUHB CMTUHB, HDUHB, PTHB, SBUHB | **52** |
| **Speech and Language** **therapist, assistant, head of department* | ABUHB, BCUHB, CMTUHB, PTHB, SBUHB | **29** |
| **Physiotherapy** **therapist, senior lead* | ABUHB, BCUHB, CAVUHB, CMTUHB, HDUHB, PTHB, SBUHB | **22** |
| **General Practice (GPs) & Out of Hours GP** **doctor, nurse* | BCUHB, CAVUHB, CMTUHB, PTHB, SBUHB | **16** |
| **Occupational Therapy** **therapist, technician* | ABUHB, BCUHB, SBUHB | **9** |
| **Child Health & Paediatrics** **consultant, nurse, medical secretary, advisor* | ABUHB, BCUHB, PTUB, SBUHB | **9** |
| **Dietetics** **dietitian* | BCUHB, CAVUHB, CMTUHB, PTHB | **6** |
| **Health Visitor** | SBUHB | **6** |
| **Podiatry** **therapist, consultant* | CAVUHB | **2** |
| **Oncology** **consultant* | SBUHB | **3** |
| **Respiratory Medicine** **nurse, consultant, team lead* | ABUHB, PTHB, SBUHB | **3** |
| **Booking Centre** **administration staff* | PTHB, SBUHB | **3** |
| **Trauma & Orthopaedics** * consultant, surgeon, administration | ABUHB, CAVUHB | **3** |
| **Rheumatology** **consultant, director, therapist* | ABUHB | **5** |
| **Neurology** **nurse, consultant* | ABUHB, PTHB, SBUHB | **3** |
| **Cardiology** **nurse* | BCUHB, SBUHB | **2** |
| **Community Nursery Nurse** **nurse* | SBUHB | **2** |
| **Plastic Surgery** **surgeon* | CMTUHB, SBUHB | **2** |
| **Ward Management** **nurse, therapist* | ABUHB, SBUHB | **2** |
| **Gynaecology** **doctor, associate specialist* | ABUHB, CMTUHB | **2** |
| **Sexual Health** **adviser* | CAVUHB | **2** |
| **Neurosurgery** **nurse, associate specialist* | CMTUHB | **2** |
| **Renal Medicine** **nurse* | BCUHB | **1** |
| **Community Continence** **nurse* | SBUHB | **1** |
| **Orthotics** **orthoptist* | ABUHB | **1** |
| **Dental** **dentist* | SBUHB | **1** |
| **Audiology** | ABUHB | **1** |
| **Diabetes** | ABUHB | **1** |

| | | |
|---|---|---|
| **nurse* | | |
| **Otolaryngology** **medical secretary* | SBUHB | **1** |
| **Fertility** **associate specialist* | SBUHB | **1** |
| **Ophthalmology** **surgeon, optometrist* | ABUHB, SBUHB | **2** |
| **Clinical Genetics** **consultant* | CAVUHB | **1** |
| **Dermatology** **nurse* | ABUHB | **1** |
| **Infectious Diseases** **consultant* | CAVUHB | **1** |
| **Social Care** **MDT* | ABUHB | **1** |
| **Stroke Management** **nurse* | SBUHB | **1** |
| **Anaesthetics Care** **doctor* | ABUHB | **1** |
| **Lymphedema** **therapist* | SBUHB | **1** |
| **Gastroenterology** **consultant* | CMTUHB | **1** |

*Appendix 3 Participant Demographics*

| | **Proportion** |
|---|---|
| **Age** | |
| 18-25 Years | 0% |
| 26-35 Years | 29% |
| 36-45 Years | 21% |
| 46-55 Years | 40% |
| 56-65 Years | 9% |
| 65 Over | 1% |
| **Gender** | |
| Male | 26% |
| Female | 74% |
| **Ethnicity** | |
| White | 84% |
| Black, African, Caribbean or Black British | 1% |
| Asian or Asian British | 14% |
| Mixed or multiple Ethnic Groups | 1% |

# COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

| Topic | Item No. | Guide Questions/Description | Reported on Page No. |
|---|---|---|---|
| **Domain 1: Research team and reflexivity** | | | |
| *Personal characteristics* | | | |
| Interviewer/facilitator | 1 | Which author/s conducted the interview or focus group? | |
| Credentials | 2 | What were the researcher's credentials? E.g. PhD, MD | |
| Occupation | 3 | What was their occupation at the time of the study? | |
| Gender | 4 | Was the researcher male or female? | |
| Experience and training | 5 | What experience or training did the researcher have? | |
| *Relationship with participants* | | | |
| Relationship established | 6 | Was a relationship established prior to study commencement? | |
| Participant knowledge of the interviewer | 7 | What did the participants know about the researcher? e.g. personal goals, reasons for doing the research | |
| Interviewer characteristics | 8 | What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic | |
| **Domain 2: Study design** | | | |
| *Theoretical framework* | | | |
| Methodological orientation and Theory | 9 | What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis | |
| *Participant selection* | | | |
| Sampling | 10 | How were participants selected? e.g. purposive, convenience, consecutive, snowball | |
| Method of approach | 11 | How were participants approached? e.g. face-to-face, telephone, mail, email | |
| Sample size | 12 | How many participants were in the study? | |
| Non-participation | 13 | How many people refused to participate or dropped out? Reasons? | |
| *Setting* | | | |
| Setting of data collection | 14 | Where was the data collected? e.g. home, clinic, workplace | |
| Presence of non-participants | 15 | Was anyone else present besides the participants and researchers? | |
| Description of sample | 16 | What are the important characteristics of the sample? e.g. demographic data, date | |
| *Data collection* | | | |
| Interview guide | 17 | Were questions, prompts, guides provided by the authors? Was it pilot tested? | |
| Repeat interviews | 18 | Were repeat inter views carried out? If yes, how many? | |
| Audio/visual recording | 19 | Did the research use audio or visual recording to collect the data? | |
| Field notes | 20 | Were field notes made during and/or after the inter view or focus group? | |
| Duration | 21 | What was the duration of the inter views or focus group? | |
| Data saturation | 22 | Was data saturation discussed? | |
| Transcripts returned | 23 | Were transcripts returned to participants for comment and/or | |

| Topic | Item No. | Guide Questions/Description | Reported on Page No. |
|---|---|---|---|
| | | correction? | |
| **Domain 3: analysis and findings** | | | |
| *Data analysis* | | | |
| Number of data coders | 24 | How many data coders coded the data? | |
| Description of the coding tree | 25 | Did authors provide a description of the coding tree? | |
| Derivation of themes | 26 | Were themes identified in advance or derived from the data? | |
| Software | 27 | What software, if applicable, was used to manage the data? | |
| Participant checking | 28 | Did participants provide feedback on the findings? | |
| *Reporting* | | | |
| Quotations presented | 29 | Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number | |
| Data and findings consistent | 30 | Was there consistency between the data presented and the findings? | |
| Clarity of major themes | 31 | Were major themes clearly presented in the findings? | |
| Clarity of minor themes | 32 | Is there a description of diverse cases or discussion of minor themes? | |

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

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