

Using video consultation technology between care homes and health and social care professionals: a scoping review and interview study during COVID-19 pandemic

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Ethical approval

Ethical review was not required for the scoping review as no primary research data was collected. The interview study received ethics approval from the University of Hertfordshire Ethics Review Board on 7 September 2020 (reference number HSK/SF/UH/04266).

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Keywords: remote consultations, telemedicine, digital health, older adults, residential care

Key Points

- Contrary to previous evidence, health and social care practitioners working with care homes were able to learn and rapidly adopt video consultation technology in response to the COVID-19 pandemic.
- A fragile infrastructure with unreliable access to equipment, software, and internet is an enduring barrier to uptake and use.
- Compared with earlier studies, the use of multiple platforms to communicate with care home staff, residents and their families is a new finding. It is unclear how this range of online communication to inform older people's care is documented.
- Rapid adoption of the technology highlighted how different approaches to data gathering and sharing between organisations needs standardisation. Careful attention should be paid to how relationships between care homes and health and social care services are strengthened.
- Future and ongoing use of this technology is sustainable. If it is used to complement in-person visits or as a possible substitute is undecided. The impact of online consultations on care home staff workload is unknown.
- Assessment of residents' capacity to participate, documenting their preferences and providing appropriate technical support and carer assistance need to be known and consistently documented by NHS and care home staff.

Abstract

Background: The COVID-19 pandemic disproportionately affected care home residents' and staffs' access to health care and advice. Health and social care professionals adapted rapidly to using video consultation (videoconferencing) technology without guidance. We sought to identify enablers and barriers to their use in supporting care home residents and staff.

Methods: A scoping review of the evidence on remote consultations between healthcare services and care homes. Interviews with English health and social care professionals about their experiences during the pandemic. Findings were synthesised using the Non-adoption, Abandonment, Scale-up, Spread, Sustainability framework.

Results: Eighteen papers were included in the review. Twelve interviews were completed. Documented enablers and barriers affecting the uptake and use of technology (e.g., reliable internet; reduced travelling) resonated with participants. Interviews demonstrated rapid, widespread technology adoption overcame barriers anticipated from the literature, often strengthening working relationships with care homes. Novel implementation issues included using multiple platforms and how resident data were managed. Healthcare professionals had access to more bespoke digital platforms than their social care counterparts. Participants alternated between platforms depending on individual context or what their organisation supported. All participants supported ongoing use of technologies to supplement in-person consultations.

Conclusions: The evidence on what needs to be in place for video consultations to work with care homes were partly confirmed. The pandemic context demolished many documented barriers to engagement and provided reassurance that residents' assessments were possible. It exposed the need to study further differing resident requirements and investment in digital infrastructure for adequate information management between organisations.

Word count: 250

Background

The NHS has committed to using technology (e.g., video consultation and telemedicine) to support the delivery of services as stated in the NHS Long Term Plan to upgrade technology and digitally-enabled care[1]. During the COVID-19 pandemic, the NHS and local authorities needed to reduce the number of in-person appointments to lessen the risk of spreading the virus. Deployment and implementation of video consultation solutions were accelerated[2]. In the early stages of the pandemic, reports suggested that some health and social care staff had found the switch to video consultations difficult[3], exacerbated by a lack of guidance on how to best facilitate this change[4].

Previous evidence on remote consultations (videoconferencing and telemedicine) suggested they could be cost-effective and feasible[5–8] enhancing access to services, continuity of care[9,10], and greater staff confidence[11], reduction in unplanned hospital admissions[6]. Despite this evidence, there was limited uptake of healthcare innovations in care homes attributed to leadership, culture, space, time, and relationships between staff[12]. The rapid adoption due to the COVID-19 pandemic appeared to accelerate the use of video consultation in care homes.

This study focused on the implementation and use of video consultation technology to identify the enablers, barriers and contextual factors related to the use of this technology by health and social care professionals working with care homes during the COVID-19 pandemic.

Methods

The study was commissioned by an NHS Community Trust and comprised a scoping literature review and interviews with health and social care professionals to develop our understanding of the enablers and barriers to the use of video consultations experienced by staff working with care homes (residents and staff). We used the Non-adoption, Abandonment, and challenges to the Scale-up, Spread, and Sustainability of health and care technologies (NASSS) framework[13] to synthesize findings relating to seven domains: (1) an understanding of the health condition/social care need(s); (2) the properties of the technology and relevant peripherals; (3) the value proposition for residents, users and developers; (4) the role and input of the adopters; (5) organisational factors; (6) the wider

system; (7) adopting and embedding the technology over time. This framework considers the multiple levels of influence and relationships highlighting what supports and hinders effective technology implementation, especially in healthcare settings[14].

Scoping review

A scoping review was conducted to identify the known factors affecting technology implementation with care homes. A scoping review maps the key concepts underpinning a research area and the main sources and types of evidence available[11]. Studies were identified through systematic searches of PubMed and the Cochrane Library and keyword searches on Google Scholar in July 2020 and updated in October 2021. MeSH headings and free-text terms related to videoconferencing, telehealth, and digital health were combined with terms related to care homes and long-term care (see Supplementary material 1). We tracked citations and checked reference lists of relevant reviews. Searches were restricted to the last 10 years to capture video technologies likely to be in use. Table 1 summarizes the eligibility criteria. The video consultation technology could be stand-alone, or part of a larger, complex intervention. The inclusion criteria were applied independently at two levels (abstract and full text) by two reviewers (KW, ND). Any uncertainty was resolved by consensus. Disagreements between reviewers were resolved by discussion or by recourse to a third reviewer (JL).

As this was a scoping review, no formal quality assessment tool was used[15]. Data extracted included: study design; the purpose for technology use (e.g. assessment, diagnosis, management, clinical support); setting; funding; staff involved (e.g. which care home staff and which professionals); whether residents directly involved; the technology/tools used; support provided for use of technology; and data on barriers and facilitators of implementation. Using content analysis, we compiled a descriptive overview of the implementation and use of such technology from the papers. Data were coded, integrated into common themes, and categorised as support to encourage adoption and/or enablers or barriers to use. Text was condensed and synthesized while still preserving the core meanings. Using the NASSS framework, we organised the text into the relevant domains and interpreted our findings so they could be compared to the interview findings.

Interviews with health and social care professionals

Semi-structured individual interviews were conducted from November 2020 to January 2021 with health and social care professionals (e.g. General Practitioners and social workers) working with care homes in Hertfordshire. We employed a purposive sampling strategy. Participants were identified via the local NHS Trust and Adult Social Care services. The Medical Director and Research Lead at the NHS Community Trust provided a list of potential participants who had been working with care homes during the pandemic. Potential participants were sent the participant information sheet and consent form for taking part in the study. Interviews were conducted via videoconferencing or telephone (if preferred), digitally recorded, and professionally transcribed. An interview guide was used to explore prior and current experience of using technology, whether it worked well for particular situations, residents, or events; how it fitted with existing methods of consultation and what it was used for (e.g. assessment, monitoring, review); and what they would change. The interview questions were developed by the research team then reviewed by two healthcare providers (GP and nurse) to ensure acceptability and clarity. The data underwent targeted coding to facilitate the rapid identification of relevant themes. NVivo 12 was used to organise and manage data[16]. A thematic approach informed by implementation factors outlined in the NASSS framework was adopted to analyse the qualitative data.

Ethical review and approval

Ethical review was not required for the scoping review as no primary research data was collected. The interview study received ethics approval from the University of Hertfordshire Ethics Review Board on 7 September 2020 (reference number HSK/SF/UH/04266).

Results

In this section, we provide a summary of the findings from the review and interviews, followed by a synthesis of the combined findings structured by the NASSS domains.

Eighteen papers were included in the review (Figure 1). See Table 2 for characteristics of included articles. None were randomised controlled trials. Most studies were published after 2015 and

reported on the perspectives and role of healthcare providers. Studies focused on specialist healthcare services and visits[17,18], including specific clinical specializations (e.g., orthopaedic[19], neurology[20], geriatric mental health[21,22], psychiatry[23,24], palliative care[25,26], dentistry[27], and rehabilitation[26]). Four papers were about services for aiding communication with hospitals and supporting transfers[20,28–30]. One service was designed to support COVID-19 prevention and outbreak management[31]. Videoconferencing alone was studied in most papers[7,8,17–24,28–30,32] but, in four papers, it was part of a complex intervention[25–27,31].

Fifteen professionals working with care homes were invited to participate in the interviews. Five health care (HC) and seven social care (SC) professionals were interviewed. All healthcare professionals were GPs. The social care professionals included varying roles (e.g., managers, deputy managers, social workers, and support or community officers); they involved supporting admittance and discharges from hospital. After 12 interviews, no new codes or themes were identified and all NASSS framework domains were covered. All participants and interviewers were female. Interviews lasted on average 39 minutes. Nearly all the participants reported never using this technology as part of their professional role before the pandemic. Participants reported similar experiences where there were differences in the responses these are noted in the relevant domain.

Synthesis

Themes developed from the scoping review and interviews were reviewed and compared. Common themes were refined and categorised with the NASSS framework domains. Table 3 details examples from the scoping review and interviews that illustrate themes and NASSS framework domains.

Domain 1: the condition

The review identified many challenges of using technology for care home residents. These included residents having complex conditions[17,26], sensory impairments[23,24] (e.g., hearing or vision loss), and cognitive issues[8,26], which affected their capacity to participate. This was

reinforced by the interview findings, providing detail about the specific challenges of ensuring older people could hear and see well enough to focus on the consultation.

Some of the patients, particularly if they were hard of hearing, really struggled with it.

(HC01)

Several mentioned how some residents could get confused or distressed and recognised that there needed to be time to adjust to the new medium.

especially people that have got... mental health or cognitive impairment, sometimes if they're already hallucinating and hearing voices, and all of a sudden someone's started talking out of the computer at them... It can unsettle them for a period of time. (SC01)

Circumstances where it worked well included saving staff time on travel and pre-empting the need for hospital admissions. Although the technology was often a new experience for the resident arguably against assumptions that they could not use technology were dispelled. As one healthcare professional described:

there are a lot of surprises where... Especially you kind of had this perception that maybe if someone is a hundred... They're going to really struggle, but some of them were brilliant, and they had never used an iPad before, but they were absolutely fine. (HC01)

Participants suggested that residents' capability, preferences, and conditions should be used to tailor approaches, but neither the literature nor the interviews provided examples of how to achieve this and assess suitability for different residents.

Domain 2: the technology

The studies in the review provided few details about the technology and equipment used. Most studies focused on single technologies. In contrast, interviews described the use of multiple communication software and videoconferencing platforms rather than bespoke products. Some were able to use platforms designed for healthcare, supported by the NHS (e.g., Attend Anywhere[33] and AccuRx[34]), but others were more reliant on commercially available, mass-market products (e.g., Microsoft Teams[35], Zoom[36] and FaceTime[37]). Choice of platform was influenced by

availability, familiarity, functionality, who there were talking to and the content of the conversation. Applications widely available on mobile phones were often used for conversations with residents' families (e.g. WhatsApp[38] and FaceTime[37]) mimicking the difference in face-to-face encounters between professionals and a conversation with a relative.

I'm doing the MS Teams or video stuff for professional, with professionals, I'm finding that very useful... And then I think the video stuff is quite handy for, obviously, relatives that aren't able to see their loved ones that are in hospital or in the care home, so they can use FaceTime and things like that. (SC02)

Only one study[20] from the review mentioned data security and protection; it recommended the use of a virtual private network and taking measures for data encryption. This was a major concern discussed in the interviews, particularly by social care professionals. Some interview participants did not use some platforms and all their functions specifically because of security concerns. For example, not using a facility within the software for recording and storing data in medical records (e.g., photographs and verbatim recordings). Instead, professionals stated that they took notes and added those into the system manually. There was a lack of clarity around how consent was obtained about what information could be retained and recorded and how. As stated by one participant:

the concern that I would have is around data protection, and making sure that, for example, I'm not seeing documents or videoing, or having things online that I shouldn't have. (SC05)

Widely discussed in the literature[18,24,32] was access to a reliable internet connection with enough bandwidth to support video and sound quality. In the interviews, this lack of reliable infrastructure was considered the biggest challenge affecting what could be discussed, and the ability to focus on the reason for meetings. One social care professional described:

It's the breakdown of the connection... that's the main one... it's people not being able to hear it and sometimes having to have the volume up so loud. (SC01)

This had consequences for the involvement of family members as well.

If you're in a bad signal area then, again, it can make it really difficult, because of frustration. And not even just with the assessments, but if you've got a poor signal and a family member is desperate to see their loved one and you're trying to navigate them to talk to each other, then it can be quite upsetting if they can't hear, or the signal is cutting out. (SC02)

Domain 3: the value proposition

This domain refers to the technology's business case and its perceived value to the end user and implementing organisation. The review suggested that users were generally satisfied with their experience of technology[7,19,20,24] and would use it again[25] but emphasised the implementation challenges and need for consistent access to reliable online services. The inability to do physical examinations was a concern but argued to be possible with help from staff[8]. The interview findings supported the scoping review findings and the usefulness of video over telephone consultations to enable clinical decision-making. The key difference was participants were surprised at what was achievable and rapid uptake.

What I didn't realise before COVID, is you can do a huge amount of video that I never thought you could do... In terms of examining people... you can do most things over video by if you've got someone else there to press or prod or move things, you can do the majority of the examinations...And that's one thing I've been really impressed by, and I never thought you could manage as much as you could with video. (HC04)

However, they recognised that more intimate examinations would always require an in-person visit.

The recurring message in the review and from the professionals was the technology's cost-effectiveness. The review reported that money[27] and time[20,23] were saved by not travelling[17,19,20,27], enabling more people to be seen in a day. Another benefit relating to the pandemic was remote contact supported infection prevention strategies[31]. It was not possible to establish if the online calls were more or less frequent than face-to-face. Professionals did not know how much staff time was needed for meeting preparations. The interview participants acknowledged time could be wasted because of poor internet connections and audio.

But then when we take the iPad around the different people, that's when the sound doesn't come through, or we cut out and then we start again...then the efficiencies become less because you end up just spending quite a lot of time trying to sort that out, so there are pros and cons. (HC05)

Many studies in the review argued that remote consultation improved residents' access to services[8,17,19,22,26,28,30,31], avoiding unnecessary admissions[8,17]. Few studies discussed the appropriateness or limitations of video consultations[8,26]. In contrast, a recurring concern raised in the interviews was the suitability of video consultation for having difficult conversations, gathering sensitive information, creating rapport with residents, and the possibility of unfamiliar technology distressing residents. For those working in social care addressing safeguarding issues, the inability to see the wider environment made their work more difficult. Similarly, assessing a resident's mental capacity or cognition was an issue in care homes as a social care professional discussed:

we're not giving that person the best chance to pass the assessment, and to be deemed having capacity (SC01)

Domain 4: the adopter system

The review recognised the potential burden on care home staff workload[31,32] and limited resources (especially time[7,17,27,28,31])[24]. Care home staff involvement was crucial as they played a central role in arranging, preparing, and facilitating the consultation with residents. One study described how including care home staff in decisions about when and how to use the technology helped to avoid conflicts with care-related priorities, acknowledging the challenges of additional work without recognition or financial reward[32]. Other studies highlighted advantages for care home staff with increased access to professional support[22], self-efficacy to manage demands in challenging situations[30], and greater job satisfaction[26].

Care home staff involvement was also mentioned as a crucial component to using this technology in the interviews. Scheduling calls with care homes could be difficult, a social care professional described:

there's like a little finite window between about, I'd say about ten, half ten to about eleven, half eleven, and then from two to about half three where we can contact the carers on the unit saying, right, have you got the time to... And even if we book a time to say, look, I'll call you at half-past ten,...if there's a concern with a resident, then that can be cancelled at the time of the call, because, obviously, they need to meet the safety and the needs of the resident. It's them finding time to actually speak to us; it is quite difficult for them to do that. (SC01)

Interviewees discussed how the planning of video consultations and setup time must be taken into consideration. Using this technology seems to demand a more collaborative approach[14,28]. One study in the review reported how clinicians had to adopt a team approach[18]. Interview participants identified examples of how the process and using this technology in partnership with them encouraged care home staff to have increased confidence in their decision-making and skills in resident assessment.

The dynamics of the consultation were affected by using remote technology. Interview participants talked about having to rely on the care home staff to collect important information, take measurements, or act as the go-between with the resident. This represented for some professionals a shift in the organisation of the consultation with concerns that examinations were constrained by care home staff not being clinically trained. Health and social care professionals wondered if the residents were less likely to disclose important or sensitive information without being able to establish a rapport in-person. One healthcare professional reflected how a lack of touch made it more difficult to build trust and as a way of providing reassurance and embodying interest and concern:

the human touch is quite powerful. And that's one of the big things that I've noticed, is it takes a long time to build rapport over video (HC01)

Domain 5: the organisation(s)

In previous studies, professionals were apprehensive about employing this technology with care homes[17]. To address this, some had a comprehensive implementation plan or recommended one be developed[18,26]. These plans comprised administrative and technical support[21,23], leaders

or champions to encourage engagement[17,18,30–32], regular meetings[18], consideration for the setting-specific challenges and needs[17,31], and training[18,20,25,26,29,32]. Contrary to the review findings, health and social care professionals interviewed reported being able to implement video consultation rapidly. Very little need for preparation or planning was discussed in the interviews. Instead, organisations and practitioners responded to the policy expectation that they should be rapidly delivering services remotely. A key enabler within the rollout of video consultations was having a member of staff who could assist the conversation (e.g., repeat or reframe the questions being asked) and help with the technology at the care home.

most useful is having a facilitator that knows the patients, and that knows, to be honest, you want someone that knows everything about them (HC02)

Nine times out of ten, it is better to have someone there with them, especially if there is a few cognitive issues because they can pick up things that have not been said, and they can provide a little bit more background information and things (SC01)

Also changing how the consultations were conducted, a recurring issue was how the discussion and linked decisions were documented. From the review, only one study discussed this in relation to data and information gathering and recommended the integration of data and records between organisations[17]. However, the interviews highlighted this was not considered ahead of the initiative. How data and information gathering and sharing (e.g., monitoring blood pressure and care home records) was organised between the care homes and health and social care professionals reflected patterns of working from face-to-face meetings. The absence of shared records or access to data sharing to support remote services for both health and social care were a problem, slowing down the interactions and resulting in duplicate record keeping.

as we go through we record on our system - the GP system -what we're doing, and the care home managers ...will record what we've said in the patient's notes as well. So it's recorded in two places' (HC04)

Systems were not in place to allow care homes into health and social care records and vice versa. A healthcare professional stated that:

we've always sort of wished that care homes had access to the notes in the same way we do.
(HC02)

The pandemic meant that professionals were unable to access care home records before or as part of their consultation. These paper records were often only available via an in-person visit.

Domain 6: the wider system and context

The review findings did not address wider system and contextual influences on uptake and use of remote consultations and how skilled participants were in using technology prior to the innovation. Although prior relationships and history of interactions could influence uptake, it was the quality of the relationships between GPs and residential care facilities that predicted and encouraged the use of video communication and whether care home staff felt they were colleagues with healthcare staff and not professionally isolated[30]. This was more important than access to detailed guidance[32].

Interviews gave the picture of a fragile operating infrastructure in terms of the consistency of support for procuring, replacing and changing software, equipment, and accessing internet services. Participants valued the NHS provision of iPads to the care homes to support the use of video consultations but highlighted the lack of a clear procedure for replacing equipment. One healthcare professional discussed when an iPad was stolen from a care home.

we've been scratching around, and we don't have any money to buy more iPads, ... And there isn't just going to be another one coming if they lose, or have stolen the iPad... (HC03)

In the context of the pandemic, some interview participants discussed how their relationships with care homes had developed or improved. One participant discussed a sense of 'camaraderie' and shared experiences of using the technology (e.g., video freezing or unplanned interruptions) during a pressured time.

this camaraderie...It always felt like nice and positive, friendly, mutual working together for the good of the patients kind of relationship. Yeah, that was positive, for sure... And I think our relationship is better having - using video. We've sort of had hilarious moments about how ridiculous technology is... (HC02)

How the technology is used to build and sustain relationships between care homes and health and social care professionals may therefore be an important factor in the ongoing use of this technology.

Domain 7: adaptation and embedding over time

It was not clear from the literature or the interviews how this technology should be embedded. There was a tendency to make generic statements about the need for the technology to be responsive[26,32] and that healthcare providers should develop processes to deal with problems[28] and novel solutions were needed to address the challenges in providing services via this technology[26]. It was not clear what these challenges may be and how to address them suggesting an awareness of future unspecified challenges.

The interview participants felt that using this technology was the 'new normal' and they were developing innovative and creative ways of working, for example using multiple methods of communication, having care home staff perform examinations, and gathering information from various sources. This often required more preparatory work by both staff groups before the online meeting and was an example of learning through doing:

You have to be a bit more creative and a bit more discerning, and probably spend a bit more time gathering information from different places, possibly as a result of working more remotely. But it hasn't - so the only impact it has, hopefully, is on the worker, having to do a bit more and not on the individual. (SC03)

Participants anticipated they would continue to use these technologies post-pandemic, they felt it would be a hybrid approach (combining in-person visits with video consultations) or to determine whether a visit was necessary based on an initial video consultation. This was detailed by a healthcare professional:

I think in the future it would maybe be more of a triage. So you can see - use it as a do an assessment to make a decision whether you need to visit in-person... purely just using it instead of visiting, or always visiting, so more of a triage... A lot of things that you can probably do on a video that we wouldn't have thought before, ... So then you can still visit if you need to, but you could have already done a lot of the assessment beforehand. (HC01)

Technology was not seen as a complete substitute for in-person encounters and care.

Discussion

We undertook a scoping review and interviews to identify the enablers, barriers and contextual factors related to the use of video consultation technology by health and social care professionals working with care homes during the COVID-19 pandemic. The findings were synthesised using the NASSS framework which is designed to enable complex thinking about technological innovations in health and social care. The scoping review found mostly positive perceptions and experiences of professionals using this technology with care homes. Interviewees suggested that future use of this technology should be determined by residents' preferences and capacity, considerations of privacy and sensitivity, and the provision of appropriate technical support and carer assistance. Technology would be unlikely to be able to completely replace in-person visits. This would suggest there is value in developing criteria for choosing a in-person or remote consultation linked to the Enhanced Health Care in Care Homes frameworks' recommendations for how primary care networks work with care homes.

Recent papers have explored the use of video consultations during the pandemic in general practice[39] and secondary services[40,41]. Their findings resonate with ours but explored the experiences of healthcare providers and patients. Issues for social care professionals in this study were whether the technology enabled decision-making about residents' capacity and safeguarding. Arguably, these issues are more contentious and sensitive than the clinical assessments in consultations described in the literature and by healthcare professionals.

Our review findings acknowledged the importance of considering the needs and difficulties of the care home setting[17,25,31] but did not specify how. The interviews demonstrated more was possible than previously suggested but many practical challenges of rapid adoption of technology due to COVID-19 were left unresolved—for example, agreed methods for data gathering and sharing between organisations[42] and knowing when remote consultation might be inappropriate or require a different level of pre-meeting preparation. It also reinforced the need for activities that build trusting relationships between health and social care professionals with care home staff[43,44]. Unexplored in the literature and these interviews was what kind of extra support and resources care home staff need to exploit the potential of video consultations and develop the necessary skills to improve residents' access to care without increasing their work[12]. Recognition that there may be unintended consequences and how they might be mitigated needs ongoing review by all involved[45].

An unanticipated finding was the use of multiple platforms to communicate with care home staff, residents and their families depending on the purpose of the meeting, their needs, complexity, reliability, and available support. Some platforms were specifically designed for healthcare settings (e.g., AccuRx[34] and Attend Anywhere[33]), and others were commercially available software and technology. This raises questions about data protection and security. This was more of a concern for social care professionals who had less access to official platforms. How the use of this technology is adapted and sustained when COVID-19 restrictions are lifted needs further study[46].

Implications for practice

Remote consultations for assessment and care are likely to become routine. A key priority is that the appropriate infrastructure is in place. Equitable access and support for video consultation that is fit-for-purpose are needed by health and social care professionals supporting care homes. The use of video consultations needs to align with residents' preferences and capacity, considering accessibility, privacy, and sensitivity. Providing appropriate technical support and carer assistance needs to enable a resident to participate that interferes with confidential consultations and residents' confidence to raise issues of concern.

Strengths and limitations

We reviewed the evidence on the use of video consultation with care homes and compared it to the experiences of health and social care professionals during the pandemic. By doing this, the key factors of implementing this technology with care homes from previous literature and observed during the rapid and widespread adoption were recognised. The NASSS framework enabled us to consider the multiple levels of influence and relationships pointing to what supports effective implementation[14].

The scoping review search was conducted in July 2020 and updated in October 2021; a rerun of the searches suggests that we did not miss any key papers relevant to the UK. This is, however, a rapidly changing literature. Recent research in Wales has found that care homes were positive about using video consulting as it reduced the risk of COVID-19 and social isolation[47]. We only interviewed a small sample of health and social care professionals (no care home staff and residents). It is a major limitation that reflects some of the difficulties of engaging with care home staff who are working under pressure. A complementary study with care home staff is underway. Care home staff and resident perspectives will need to be considered as part of any future planning for the ongoing use of this technology. Interview findings are not generalizable beyond the sample recruited in this study where there was organisational support for the use of technology.

Conclusion

The COVID-19 pandemic provided a unique context for the experiences of our participants and made barriers to technology such as a comprehensive implementation plan or motivational leaders less relevant. The technology could provide meaningful consultations, and, in some cases, it changed the dynamic creating a greater sense of collegiality between staff. To maximise the learning from the pandemic experience, the findings would suggest three areas for future work investigating how to reinforce and implement change based on what is already known from the evidence about what supports the uptake of new technologies, how to address infrastructure and governance challenges between health and social care, and how these technologies can facilitate social care and decision-making. Going forward, there is a need to develop ways of making sure this technology is individualised to the residents, protects and shares data, and considers the care home context.

Word count: 5029

Figure 1

PRISMA flow diagram depicting search and screening processes

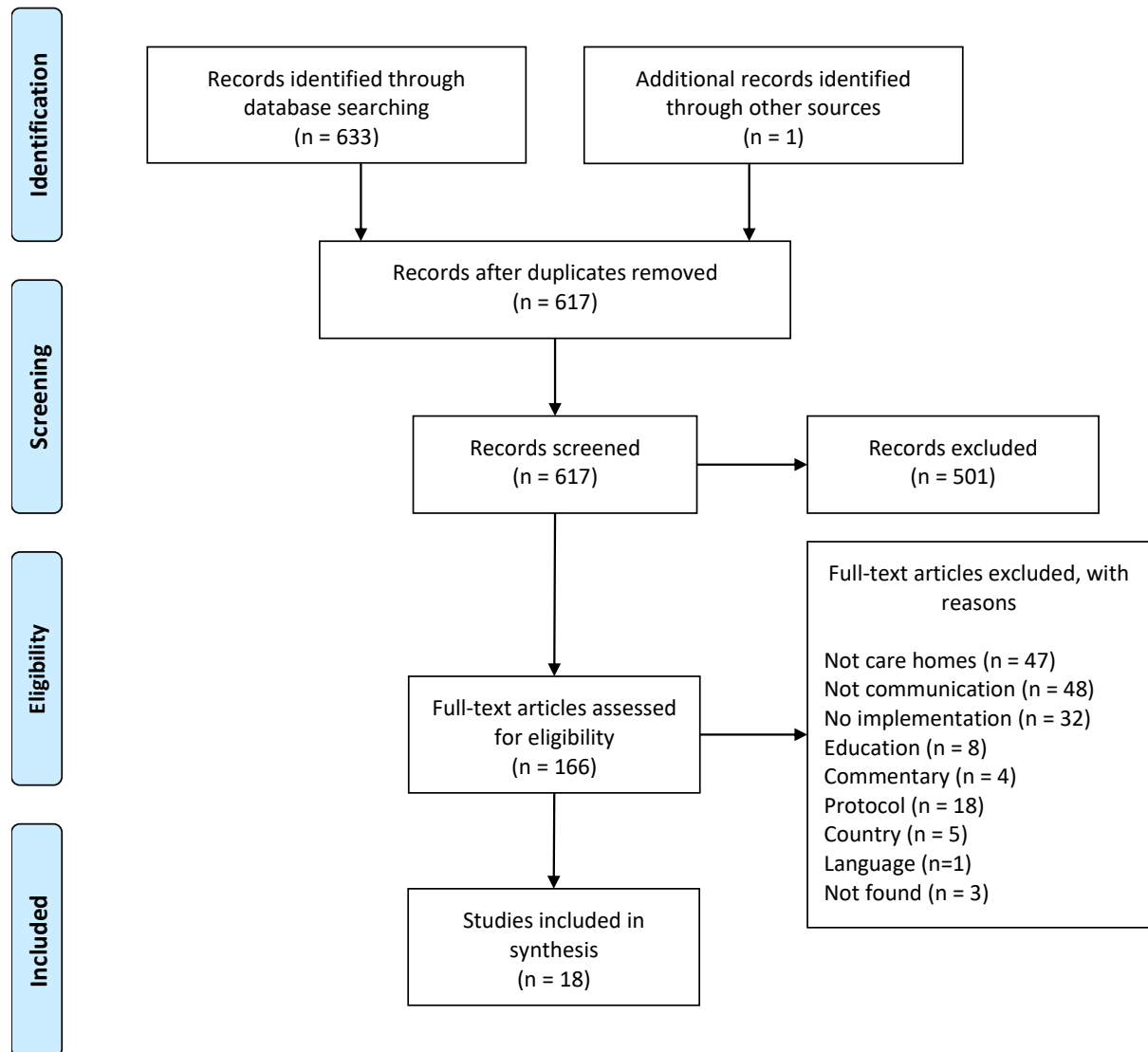


Table 1

Inclusion and exclusion criteria for scoping review

Criteria	Inclusion	Exclusion
Time period	2010 onwards	Before 2010
Language	English	Not English
Study type	Research of any design, including systematic reviews	Commentary and opinion papers, study, and review protocols
Actors	Health care provider communication with care homes, residential aged care facilities, long term care facilities, and nursing homes; consultations must involve a resident and/or care home staff.	Communication between residents and family members or friends and when between only health care providers (e.g. geriatrician and pharmacist) and neither a member of care home staff nor a resident is included
Country	International literature if considered relevant to UK setting	International literature if considered not relevant to UK setting
Technology purpose	2-way, real time audio-visual interactive communications (e.g. videoconferencing)	Training or educational purpose, communication between residents and family carers, monitoring devices
Implementation factors	Information relating to enablers and barriers to use, or issues related to the implementation of technology	Does not include information relating to enablers and barriers to use, or issues related to the implementation of technology (e.g. effectiveness on patient outcomes or service use)

Table 2

Characteristics of included studies

Authors	Country	Study type	Setting(s)	Participants	Intervention	Funding
Archbald-Pannone et al (2020)	USA	Mixed methods	Post-acute and LTC facilities and hospital	Post-acute and LTC facilities residents Prevention arm: 35 facilities Response arm: 2 facilities with COVID-19	Geriatric Engagement and Resource Integration in Post-Acute and Long-Term Care Facilities (GERI-PaL) program	Not reported
Barbour et al (2016)	USA	Mixed methods	Hospital and continuous care facility	16 older adults with Parkinson's disease	Videoconferencing	Not reported
Cheng et al (2020)	Canada	Quantitative	LTC facilities	26 LTC facilities 32 LTC patients 27 telemedicine liaisons	Telemedicine musculoskeletal (TeleMSK) service	Partially funded by Community Innovation Award through the Canadian Orthopaedic Foundation
Farris et al (2017)	USA	Quantitative	Tertiary care medical center and post-acute care sites	907 patients transferred into post-acute sites	Extension for Community Healthcare Outcomes—Care Transitions (ECHO-CT)	Donald W. Reynolds Foundation and the Beth Israel Deaconess Care Organization
Gillespie et al (2019)	USA	Literature review and expert consultation	Nursing homes	Telemedicine and Technology workgroup experts	Telemedicine	Not funded
Hasselberg et al (2019)	USA	Mixed methods	LTC facilities	Project ECHO GEMH-LTC participants	Videoconferencing	Greater Rochester Health Foundation

Helmer-Smith et al (2020)	Canada	Mixed methods	LTC homes	34 physicians and 18 nurse practitioners in 18 LTC homes used service Focus groups- Ten PCPs, 4 administrators, and 1 nurse champion from 2 LTC homes	Building Access to Specialists through eConsultation (BASE)	Government of Ontario through the Ontario Centre for Learning, Research and Innovation in Long-Term Care hosted at Bruyère, Canadian Institutes of Health Research, and Bruyère Research Institute
Hofmeyer et al (2016)	USA	Mixed methods	LTC facilities	14 LTC sites	electronic LTC (eLTC)	Health Resources and Services Administration of the U.S. Department of Health and Human Services
Holder et al (2018)	UK	Case study	Care homes	48 care homes	Telehealth hub services	Not reported
Newbould et al (2017)a	UK	Quantitative	Care homes with and without nursing	124 care homes	Videoconferencing	Not reported
Newbould et al (2021)	UK	Qualitative	Nursing and residential care homes	3 Managers, 1 Deputy manager, 1 Team leader, 5 Senior care assistants, 4 Nurses, 6 Care assistants, 1 Activity coordinator, 4 relatives 2 residents from 3 Care homes	'Care hub' with videoconferencing	Abbeyfield research foundation
Newbould et al (2017)b	Studies from USA (12) China (5) UK (3) Australia (3) Korea (1)	Scoping review	Care homes, nursing homes, LTC facilities and homes for the aged	Not applicable	Videoconferencing	Abbeyfield research foundation and NIHR CLAHRC

Perri et al (2020)	Sweden (1) France (1) Canada	Mixed methods	or in residential care. Long term care home	61 residents	Videoconferencing	Yorkshire and Humber Not reported
Rabinowitz et al (2010)	USA	Case study (Cost-effectiveness)	Nursing homes	106 residents	Videoconferencing	Fletcher Alen Health Care / University of Vermont Telemedicine program
Ramos-Tios et al (2012)	Not stated	Literature review	Not specified	N/A	Videoconferencing	Galician Ministry of Health and the CHUS University Hospital
Shulver et al (2016)	Australia	Qualitative	Rehabilitation and allied health, residential aged care, and palliative care RACF	44 healthcare workers (with and without telehealth experience)	Telehealth	Australian Government
Tynan et al (2018)	Australia	Mixed methods comparative study	RACF	Audit: 6 RAF and 3 multi-purpose health services with residential aged care beds Survey: 27 residents. Focus group and interviews: 13 nurses	Tele-dentistry	Toowoomba Hospital Foundation Research Scholarship Grant
Wade et al (2015)	Australia	Mixed methods	RACF and GPs	3 pairs of GPs + RACF Interviews: 7 RACF staff, 4 GPs, 3 patients	Videoconferencing	Australian Government Medicare Locals programme

Note. LTC- long term care; RACF- residential aged care facilities; GPs- General Practices

Table 3

Themes from the scoping review and interviews to illustrate domains in the non-adoption, abandonment, scale-up, spread, and sustainability (NASSS) framework

NASS domain	Themes	Interview quote example	Scoping review example
Condition(s): the clinical and sociocultural aspects of an individual's health condition and associated comorbidities as it can determine the appropriateness of the use of technology	Sensory impairment	'some of the patients, particularly if they were hard of hearing, really struggled with it' (HC01)	Visual impairment [23,24] and hearing impairment[24]
	Cognitive impairment and dementia	'You get - so especially people that have got, I would say, mental health or cognitive impairment, sometimes if they're already hallucinating and hearing voices, and all of a sudden someone's started talking out of the computer at them... It can unsettle them for a period of time' (SC01)	People with dementia may have problems verbalising symptoms[8]; Family present to support cognitive impairment[23]
	Complex and multiple conditions	'If it was to be much more complicated, I think it would be tricky.' (HC01)	Resident complexity[17]; telehealth not seen as legitimate for patients with complex issues[26]
	Language	'obviously where English isn't the first language, sometimes on, like on my phone I've got... Again, having an interpreter on a video conference, there would be a big delay in me saying it, and the interpreter.'(SC01)	

Technology: the equipment, features, knowledge, and supply model of the technology	Internet capacity and quality	‘I mean, the biggest gripe is technology if it doesn't work, so if the technology works and the picture is good, that's better.’ (HC02)	IT capacity and technical issues (bandwidth and video quality)[18,24] ; Technical infrastructure unreliable[32]
	Data security and protection	‘the concern that I would have is around data protection, and making sure that, for example, I'm not seeing documents or videoing, or having things online that I shouldn't have.’ (SC05)	VPN and data encryption[20]
	Equipment needed	‘being able to roll the iPads out to the care homes really helped; because you could see a lot more on the iPad than on people's phones’ (HC03)	Procurement of equipment[27]
	Use of different programmes	‘And we try, where possible, to use video generally through Teams at the moment. We've also used AccuRx in my previous role, and we sometimes use WhatsApp, as a last resort, when somehow the wi-fi often, well, not often, but not irregularly, we have issues with connection. So we end up just using our mobiles for WhatsApp, and we're not supposed to do that, I don't think, but that often is backup.’ (HC05) ‘I'm doing the MS Teams or video stuff for professional, with professionals, I'm finding that very useful... And then I think the video stuff is quite handy for, obviously, relatives that aren't able to see their loved ones that are in hospital or in the care home, so they can use FaceTime and things like that.’ (SC02)	
Value proposition:	Seeing the resident	‘So the advantage of video over phone, is you can actually eyeball the patient. You can look at their wounds, you can look at whether the patient is in distress, those kinds of	

whether or not the technology is worth implementing for clinicians, patients, and suppliers

things. And you can also pick up problems with infection control from the care home staff as well.’ (HC03)

Cost-effectiveness

‘So the GPs will sit in a central referral hub, and GPs are kind of an expensive resource and putting them with every team on the ground, we don't have enough money to do that, basically. And so if you put the GPs centrally, and you enable them to do a video consult with any team on the ground, it makes best use of that kind of scarce resource.’ (HC03)

economical and easy to organise when users are in one place[24]; no transport or extra staffing costs[27]; Considered useful and saves time[19,20]; expensive equipment[20]; financial commitment[8,21] ; cost[23]

Infection control

‘I guess that's also another benefit, is that we were not putting patients at risk. And people going in and out is going to be more risky with Covid, thinking about the future, about flu. And the more people that are visiting these areas, the more, the higher the risk of bringing things in. Thinking about norovirus and, actually, if you can do it over the video it's safer for them.’ (HC01)

Meeting to discuss facility-specific infection control concerns[31]

Less travel

‘we spent a lot of time travelling, faffing, parking and getting into a care home. I mean, obviously, it feels more efficient to be doing the rounds remotely, and you can review more patients in the same amount of time that we would do on the ground.’ (HC02)

Reduces travel[17,19,20] ; often travel involves family[17]; care closer to home[8]; more efficient service, i.e. not needing to travel for expert advice[27]; reducing waiting lists and unnecessary travel[27]; less disruptive and no transport[27]; not leave familiar environment[21]

Better access to care and use of services

‘it makes everything more accessible, because it's easy just to slot in things over the phone, than having to navigate travel time for you and other people’ (SC02)

Allows for care without being onsite[31]; Avoids transfers/hospitalisations[8,17]; Ability to access to services[17,19,22]; Having real-time access to clinician[28];

			speed up access to care[8,30]; expand their services and provide better access to rural locations[26]; increased confidence in course of action[17]
	Rapport and trust building	‘the human touch is quite powerful. And that's one of the big things that I've noticed, is it takes a long time to build rapport over video’ (HC01)	Resident distrust[8]
	Limitations and appropriateness of use	‘The only things we've not really been able to do is obviously sort of intimate examinations, so anything that you wouldn't want to do in video, that obviously needs in-person’ (HC04) ‘it's not appropriate to do mental capacity assessments ... because we're not giving that person the best chance to pass the assessment, and to be deemed having capacity’ (SC01)	Cannot physically examine resident[8]; Clinician reservations about the safety and suitability/limitations of telehealth (e.g. assisting with adverse event like fall)[26]
Adopter(s): the role, identity, and input of all the different stakeholders of the new technology	Residents and their families	Lack of confidence and experience with technology ‘the older generation are not as au fait with using this technology’ (SC05) Confusion ‘I think sometimes there's sort of misinterpretation, miscommunication. Sometimes it sounds really silly, but they didn't actually realise I was a doctor.’ (HC01) Informing family members ‘I mean, especially at the moment with family members not being able to go into care homes, they're quite reliant on, well, did you speak to her? How was she? How did she look? So sometimes it can be used for that as well.’ (SC01)	Resident: acceptance and satisfaction of elderly users and their healthcare providers incl. people with dementia[24] Family/carers: education materials for residents and their family members[21]; family members agreed that they would prefer a videoconference if it meant that their loved one could be seen by specialist sooner, or more often[25]

Care home staff

Resident come first, other duties of care
'they need to meet the safety and the needs of the residents' (SC01)

'threat to 'good care'[8]

Empower, upskill and reassure
'Able to reassure care home staff quickly – e.g. if further care is needed, or when concerned about covid. And that gave them a lot of reassurance that they had been seen...' (HC03)

offering education and professional support[22]; staff saw as a new responsibility providing opportunities to learn and upskill and increase job satisfaction[26]; team stability & support encouraged psychological safety and innovation[30]; self-efficacy/confidence [30]

'I suppose it's helping the staff feel more empowered and supported' (SC01)

Increased workload

'I don't think they (Care home staff) like using it as well... I think they find it - it taxes their time' (SC01)

Extra work or beyond service: additional effort without organisational or financial reward[32]; data collection (e.g. vital signs) and consults are dictated by facility staffing and tasks (e.g. feeding, bathing)[31]; workflows[17]; high turnover of staff in care homes, meaning that numerous staff need to be trained on the processes and technologies involved[29]

Health and social care providers

Lack of control - Dr has less control
Rely on care home staff (e.g. care home staff to take BP and to act as go between)
'we've got a nurse on the end of the phone, and we can get a lot more information from them. Whereas our residential homes, understandably, they don't have any medical background, so it's a lot more difficult'. (HC04)

expectation that patients prefer in person[19]; Clinicians get used to a more team approach[18]; Satisfaction with tech[7,19,20] and would use again[25]

<p>Health/care organisation(s): the readiness, capability, and work needed to implement change in organisations</p>	<p>Champions and single point of contact</p>		<p>One person to coordinate[31]; clinical champions and care home delegates[17]; champions to support culture change[18]; highly trained staff as the first point of access[29]; uptake driven by small number of enthusiastic nurses[32] opinion leaders support [30]</p>
	<p>Training</p>	<p>‘I think the training was really important. So we deployed a lot of people to do training with all the professionals who were going to use it’ (HC03)</p>	<p>Facility staff trained on tech[20,29,32] ; education modules[18] ; short training exercise in the use of the telemedicine hardware and software[25] ; adequate training[26]</p>
	<p>Implementation planning (or lack of)</p>	<p>‘Whereas we just had to get on with it, with Covid. And, actually, we've just used it and it's worked, which is great!’ (HC03)</p>	<p>creation of an implementation plan with stakeholder review[18]; comprehensive implementation plan should include development of a service framework that explicitly defines the scope, position and use of telehealth within it; and it should be clearly communicated to healthcare workers expected to use it[26]</p>
	<p>Role of facilitator</p>	<p>‘most useful is having a facilitator that knows the patients, and that knows, to be honest, you want someone that knows everything about them’ (HC02)</p> <p>‘the staff to be able to facilitate that, because they would have to set it up’ (SC05)</p> <p>‘Nine times out of ten, it is better to have someone there with them, especially if there is a few cognitive issues, because they can pick up things that have not been said, and they can provide a little bit more background information and things’ (SC01)</p>	<p>Facilitator to collect data[21]</p>

Scheduling and time	‘so just take it as if you were going to visit and set it up so that it's a convenient time for the staff, and the service users. So avoiding meal times and medication times, and set it up like that’ (SC05)	Requires staff time and dedication[8,31]; time commitment[28]; staff limited time[17,27]; staff are already overburdened[24]
Space	‘And in the environment that they're in - if they're in a quiet room and they can hear and very like calm, like it's nice and calm, then it will work better. But so in a care home environment it's quite good, in the sense that they've got their own rooms’ (SC02)	Have a private room[19,20,23]; private, quite area with good lighting[22]; designated room (no setup)[21]; private, comfortable, quiet, well-lighted, uncluttered room[23]
Information gathering and sharing	<p>‘we've always sort of wished that care homes had access to the notes in the same way we do.’ (HC02)</p> <p>‘So as we go through we record on our system - the GP system -what we're doing, and the care home managers will record their...will record what we've said in the patient's notes as well. So it's recorded in two places’ (HC04)</p> <p>‘we're reliant on the carers either dictating to us, going to visit, if it's deemed necessary, after we've done risk assessments and it's deemed that a visit is necessary. So not being able to have a look at the care logs is quite - it's quite an important issue.’ (SC01)</p>	Integration with data and medical records[17]
Specific care home needs and challenges	‘there's not been great communication, actually, with this care home, and the manager has just changed over.... as a completely new care home, there were lots and lots of teething problems’ (HC02)	Considering each facilities’ needs and difficulties[31], understanding the LTC context and the setting-specific challenges(Helmer-Smith et al., 2020); facility-specific concerns (infection control, staffing, and ordering PPE from their standard suppliers[31]; noise[25])

Wider system and context: the political, regulatory, legal, and sociocultural aspects of technology implementation

COVID-19 threat and policy

‘For me, it is fantastic equipment, and we've got to use it and we haven't got a choice.’ (SC07)
‘But because of the Covid, and because of the situation that we are all in at the moment, we have no choice but to use other means.’ (SC04)

‘better than nothing’[26]

Meetings were transitioned to web-based teleconferencing as the pandemic threat emerged: developed and implemented prevention and response arms[31]

Working relationships with care homes

‘this camaraderie... It always felt like nice and positive, friendly, mutual working together for the good of the patients kind of relationship. Yeah, so that was positive, for sure’ (HC02)

Model of care between GPs and RACF not working well--dysfunctional relationship[32]; Unequal relationships (opportunity to reduce professional isolation) [30]

‘And I think our relationship is better having - using video. We've sort of had hilarious moments about how ridiculous technology is...’ (HC02)

Fragile infrastructure

Which is obviously really disappointing, because obviously bought all those iPads for the care home. And so, we've been scratting around, and we don't have any money to buy more iPads, but we've been scratting around trying to find an iPad for this care home... And there isn't just going to be another one coming if they lose, or have stolen the iPad... The NHS spent a lot of money on buying the iPads for them, and actually they should have been really careful with them and making sure they were locked away and everything like that. (HC03)

Embedding and adaptation over time: the scope for adaptation and organisational

Problem-solving and creative working

‘You have to be a bit more creative and a bit more discerning, and probably spend a bit more time gathering information from different places, possibly as a result of working more remotely. But it hasn't - so the only impact it has, hopefully, is on the worker, having to do a bit more and not on the individual’ (SC03)

assist health care providers to develop processes and deal with problems[32]; novel solutions needed to the risks and challenges in providing their services via telehealth[26]

resilience over
time

‘So we have to work within these times as much as we can, and we can be creative. And they have achieved good things for now’ (SC06)

‘New normal’

‘I do think that there is an acceptance that this is the norm; it’s the new norm, and it feels like normal to speak to people’ (SC05)

Mixed or triage approach in
future

‘I think in the future it would maybe be more of a triage. So you can see - use it as a do an assessment to make a decision whether you need to visit in person... purely just using it instead of visiting, or always visiting, so more of a triage, I think. A lot of things that you can probably do on a video that we wouldn’t have thought before, but now, having used it, I think it will be used more as, yeah, as a triage, I guess. So then you can still visit if you need to, but you could have already done a lot of the assessment beforehand.’ (HC01)

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