COVID-19 as a catalyst for change: virtual foot protection

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Key words

- COVID-19
- Podiatry
- Video consultations

Article points

- 1. Technology Enabled Care (TEC) requires to be fully integrated into wound care delivery pathways.
- 2. Patient and carer involvement can contribute positively to wound management outcomes.
- Virtual consultations can help standardise clinical discussions and support consistent clinical decision making via evidence based assessment algorithms.

Authors

Catherine Exposito is Advanced Podiatrist (Foot Protection), NHS Greater Glasgow & Clyde, Scotland; Fiona Allan is Specialist Podiatrist (Foot Protection), NHS Greater Glasgow & Clyde, Scotland; Nicola Greenwood is Practice Development Podiatrist, NHS Greater Glasgow & Clyde, Scotland; Pauline Johnston is Practice Development Podiatrist, NHS Greater Glasgow & Clyde, Scotland; David A Wylie is Head of Podiatry, NHS Greater Glasgow & Clyde, Scotland

Catherine Exposito, Fiona Allan, Nicola Greenwood, Pauline Johnston and David A Wylie

During the COVID-19 pandemic, there has been a rapid, global spread and scale up of opportunities to test and expand the utility of technology enabled health care. NHS Greater Glasgow and Clyde podiatry service continued to provide clinical services for all foot protection patients, however, those in shielding categories, care homes and wards presented a particular challenge due to the need for physical distancing and access limitations. This challenge provided a unique opportunity to identify and test new ways of working — specifically in testing the utility of video assisted consultations in the delivery of wound management. In NHS Scotland, the video consultation platform used is the Near Me application. This article provides an insight into the practical considerations of implementing virtual wound management interventions and provides an overview of the patient experience, governance, clinician wellbeing and cost considerations.

elemedicine uses variety of а telecommunication deliver means to elements of healthcare at a distance. Technology Enabled Care (TEC) is one element of telemedicine "where outcomes for individuals in home or community settings are improved through the application of technology as an integral part of quality, cost effective care and support". Two Cochrane Reviews support the utility of telemedicine and TEC in delivering improved health outcomes in long-term conditions, including glycaemic control in diabetes (Flodgren et al, 2015), and adherence in leg ulcer management (Weller et al, 2016). Further evidence for TEC also found high satisfaction among patients and clinicians; no difference in disease progression; no substantial difference in service use; and lower transaction costs compared with traditional clinic-based care (Greenhalgh, 2020).

Strategically, the Scottish Government's Digital Health & Care Strategy (Scottish Government, 2018) outlined the vision for expanding the use of TEC across NHS Scotland with the expectation that services should consider how they could utilise and implement it within each profession. Engagement with this strategic agenda was, however, relatively slow. As recently as February 2020, the volume of Near Me (NM) consultations carried out across NHS Scotland totalled 300 per week. Prior to the pandemic, from December 2019, the NHS Greater Glasgow and Clyde (NHSGG&C) podiatry service had piloted NM using board funding to provide podiatrists with additional computer screens and training to test the utility of video consultations in podiatry. The aim was to replace a proportion of clinic or domiciliary visits with video consultations using this test of change to influence service planning and development. Despite capacity being made available, and patients being offered virtual appointments, the uptake was incredibly low (5.2%) between December 2019 and March 22, 2020.

Impact of COVID-19 on Near Me consultations

The COVID-19 pandemic led to emergency measures being implemented across NHS Scotland from March 2020. These significantly impacted on faceto-face care delivery, in order to protect the health and safety of patients and NHS clinicians. NHSGG&C podiatry service moved to a temporary service delivery model focusing on patients with a higher degree of risk and clinical need:

- Active foot disease/ulceration
- Ingrown toe nails with secondary bacterial infection
- Patients at high risk of developing ulceration and/ or requiring hospital admission as result of not receiving treatment.

Face-to-face care delivery required to be limited in order to prioritise the health and safety of patients and NHS clinicians. This challenge offered the opportunity to maximise innovative use of a combination of face-to-face and telephone consultation to reduce the risk of the spread of COVID-19, whilst providing optimal patient care and assessment (Olwill et al, 2020). This led to an exponential increase in the implementation of TEC consultations across the whole NHS system.

Technology enabled options

When considering TEC, it is important to consider the role of the telephone as a first-line, viable and cost effective option. Greenhalgh et al (2020) suggest that video should supplement telephone interventions rather than replace them. While there is evidence that video conferencing offers some advantages in improving diagnostic accuracy, reducing readmission rates and improving communication through visual clues, rapport and reassurance, there is little evidence of differing patient outcomes between the two modalities (Rush et al, 2018, Donaghy et al, 2019). Boggan et al (2020) also evaluated the effects of remote triage systems on healthcare utilisation, case resolution, and patient safety outcomes and found that telephone triage produced high call resolution and appeared to be a safe method of TEC.

Referrals were initially telephone triaged by foot protection podiatrists to identify individuals willing to attend an NM consultation.

The rapid spread and scale up of virtual consultations required clinicians to embrace new learning and ways of working quickly. Effective use of TEC requires cognisance to be given to the quality of the consultation, as well as the introduction of the technology itself. Greenhalgh et al (2020) suggest that by utilising a quality improvement approach, the implementation of TEC can be enhanced. Learning and education activities included effective communications skills, guidance for patients and supporting documentation for clinicians (Hazel, 2020). NHSGG&C, therefore, produced a 'Near Me Guidance' document to support clinicians in both the practical use of the system and the clinical decision making process. The document included training on the use of the system and wider education on; Information Governance (GDPR), use of photography, communication infographics, decisionmaking flowcharts (*Figures 1–3*) and documentation and record keeping advice. The guidance document was hosted in the Microsoft Teams application, enabling clinicians to generate collaborative updates and changes in real time as their practice matured and evolved.

Uptake of virtual consultations

By June 2020, over 16,000 NM consultations were being delivered each week across NHS Scotland, a staggering 5,000% increase within 4 months (Technology Enabled Care, 2020). This national picture was consistent with the findings in NHSGG&C podiatry. Prior to COVID-19, although some NM consultations were taking place, none of these were for foot wounds.

By contrast to a pre-COVID-19 uptake rate of 5.2% for patients offered a NM consultation, around 68% of patients offered a NM consultation during lockdown accepted the appointment (*Table* 1). These findings are consistent with those reported by other services, with GP TEC appointments increasing to 48% in May 2020 compared to just 14% in February 2020 (NHS Digital, 2020). The shift in clinicians' approach to carrying out these consultations was, therefore, significant.

Patients required support during this change too. Not all individuals feel comfortable with, or have access to, highly functional technology, and care in this area requires to be taken to ensure that the health inequalities divide is not accentuated further (Helsper, 2017), particularly in light of significant, well-documented health inequalities within the population who have a diabetes related foot ulcer (Hurst et al, 2019).

Other challenges for video consultations described in the literature include technical issues, such as the quality of the phone line, individuals not fluent in the English language, those with a cognitive impairment and those with hearing deficits (Olwill et al, 2020). Patients in any of these categories and those unable to access video technology were offered a face-to-face consultation if required.

The average number of referrals to the service per month pre-COVID-19 was 3,486, of which around 3.5% were new foot wounds. By May 29, 2020, 6 days after the lockdown, 33% of referrals were for new foot wounds.





Initial evaluation and learning

Although the improvements noted were encouraging, it was also important to identify any potential barriers that may negatively impact on uptake, and a qualitative

exercise was completed to explore these (*Figure 4*). Patients cited fears and concerns over the use of TEC, including issues of safety and security. There were some concerns that TEC may not be as safe and secure as a face-to-face appointment. As a result of these concerns, the initial cohort of patients given NM interventions was limited to wounds that were stable, static or recently healed.

Clinicians initially expressed low levels of confidence in booking patients into NM clinics due to concerns about technology and patient safety. As clinical activity increased, and clinicians' remote consulting skills improved, their confidence and assurance in NM increased. This enabled them to manage high-risk patients safely, while providing the same quality of care as face-to-face consultations. It also allowed them to respond appropriately to the fluctuating nature of patients' foot conditions and any changes in their own ability to self-care.

A number of quality improvement measures were introduced during this period to improve the flow of the consultation and the decision making process. These included:

- Development of assessment tools for use during consultation (*Figures 1–3*)
- Inclusion of questions to support patient

CHI:	Mobile:				
Are you feeling well today?	Yes / No Systemic symptoms? Yes/No				
How are you feeling?	(Normalise their experience) Mobility: How active are you?				
Cause of wound? Site/duration of wound?	Trauma / footwear / pressure / Gout / Other / unknown Weeks / Months				
History of ulceration?	Yes / No: Site:				
Previous amputation?	Yes / No: Site:				
Other departments involved?	Vascular / Dermatology / Diabetes Review planned: Yes / No Do you use 'My Diabetes My Way' Yes / No				
Scans / tests:	MRI / Xray / Angio / Stenting etc Photography: Yes / No				
Xray of the area?	Yes / No Approximate date:				
Allergies / Sensitivities?	Yes / No				
Current antibiotics?	Yes / No Name / Dose: Pod / GP Remaining course:				
Removal of the dressing:	Wound Size: Malodour noted: Yes / No Colour of wound bed: Discharge present: Yes / No Discharge present: Yes / No Quantity: Consistency: Thin / Blood content				
Swelling to the foot/area?	Yes / No Colour difference to foot/toes: Yes / No				
Pain from the area? Management in place?	Yes / No Increasing / Rest pain / Nocturnal disturbance				
	Yes / No Onward referral required? Yes / No				
Do you feel it is improved?	Yes / No Deterioration: Yes / No				
View the wound:	Callous / Maceration / Slough / Necrosis / Erythema / Exposed bone Cellulitis: Yes / No (Mark with a pen) Wound bed condition:				
Change current dressing?	Yes / No To:				
Offloading in place?	Yes / No APB / Orthowedge / Globoped / Foot Safe / MAXX care / PRAFO				
Do you need more dressings?	Yes /No Podiatry / GP to arrange				
	· · ·				
SOS Advised?	Yes / No RMC contact number: 0141 347 8909				
SOS Advised? Review of patient:	Yes / No RMC contact number: 0141 347 8909 Weeks: Where: Date & Time:				

Figure 2: MSK/Orthopaedic virtual structured assessment.

psychological wellbeing

- Communication techniques to put patients at the centre of their care
- Algorithms for escalation for deteriorating wounds
- Solutions to common technical issues
- Training for patients in bandaging techniques.

Fail to attend (DNA) rates for virtual appointments has been found to be a common problem in primary care services (Casey et al, 2017, Edwards et al, 2017). This work demonstrated that between December 2019 and March 22, 2020 the DNA rate was as high as 80%, but this improved to around 18% from March 23, 2020, as virtual connectivity became more embedded into healthcare delivery.

Resource implications

There is little published evidence measuring the cost effectiveness of video consultations for individuals with diabetes-related foot wounds. Fasterholdt et al (2018) compared telemonitoring to standard care and found the cost to be \notin 2,039 less per patient, with amputation rates found to be similar.

In NHSGG&C, the median time taken for NM virtual consultations for patients in this study was 6 minutes 16 seconds (*Table 2*). Had these patients been appointed to face to face appointments, the consultation period allocated would have been 40 mins per patient. This represents a time saving of around 82% — not accounting for administrative elements of the consultation. By the time these were

Figure 3: MSK/Orthopaedic virtual appointment structure.

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How are you today (Exclude any red flags)	Example – Non mechanical/nocturnal pain weight loss, neurological symptoms History of malignancy
History – current problem	Example – When did it start? How did it start? Recurring problem?(if so previous treatment) Biopsychosocial drivers/beliefs. Goals/expectations
History – medical	Example – Co- morbidities BMI Medication
History - Surgical	Example – Previous operations Xrays/investigations
History – work and social	Example – employment Smoking Alcohol sleep family life
Assessment - Pain	Example – when it starts/ends What makes it better/worse VAS score 0-10 Description of pain (without leading) Impact of pain/coping
Assessment - physical	Example – Movement of foot/ankle through all planes Close up of area. Use a pen if necessary. Single/double heel raise Balance Gait (if possible) Bilateral
Management - Advice	Example – Self care → website. Talk through plan with patient
Management – referral	Example – Xray, GP for bloods, vascular, F2F tier 2/3, A&E.
Management - review	Example – follow up near me Face to face Discharge with advice
Finish - recap	Example – patient repeats back their understanding of the problem and the management plan

Table 1. Uptake of NearMe consultations pre and post COVID-19 in NHSGG&C Podiatry Service.								
	Uptake (%)	Attended (%)	Did not attend (%)	Discharged (%)	Rebooked for Near Me (%)			
Dec 2019 - 22 Mar 2020	5.2	18.8	81.3	6.3	12.5			
23 Mar - 29 May 2020	68.1	81.5	18.5	9.8	19.6			

added in, the cost saving is estimated to be around 50%, with the cost of 20 minute NM appointments estimated at around £805 for these 94 patients and the costs of a 40-minute face-to-face appointment around £1,610. Much of the time saved is due to the patient being ready for assessment immediately upon commencement of the virtual consultation,

rather than the time spent getting ready before and after the face-to-face clinic consultations.

Patient outcomes

Figure 5 shows an overview of key clinical outcomes for 57 patients. Clinicians were able to refer to other services, escalate care safely and prescribe

patients' homes.

antibiotics. Clinicians also reported improved confidence and noted that having visual contact improved diagnostic accuracy and help reduce admission rates.

Patient experience

COVID-19 offered an opportunity to change the way health services are delivered, and the opportunity to progress true collaborative working with patients. Prior to COVID-19, patients cited fear of technology as one of the main barriers to accepting Near Me virtual appointments. This is consistent with the findings of Lee et al (2019) who described concerns about connectivity and user friendliness, as well as the extant concerns relating to increasing inequalities due to more affluent patients being able to access TEC more readily.

Near Me case study 1: shielding patient

However, due to the risks presented by COVID-19, shielding patients sought support from family members or learned to use the technology themselves in order receive support whilst avoiding a face-toface consultation with its commensurate risks (Near Me case study 1).

Informal feedback gathered in April 2020 (Figure 6) found that patients were initially concerned that virtual care would be less effective than face-to-face. However, following their experience of Near Me consultations, this attitude changed to a positive and engaged set of behaviours (Near Me case study 1). Where patients have experienced technological difficulties they are now more likely to problem solve and persevere until they develop the skills to use the system effectively. Due to the nature of Near Me appointments, patients play a far more active role in their own wound care leading to more meaningful involvement in actively assessing their own wound(s) and forming an opinion on how they feel things are progressing. This has changed the dynamic of the patient-clinician conversations as patients bring their opinions and lived experiences to the consultation acting as active partners in their own care.

This is consistent with evidence suggesting that patients who are engaged are more likely to manage their long term condition effectively with improved health outcomes (Scottish Government, 2008). Video consultations have also been shown to improve outcomes where there is an established





Figure 5. Patient outcome data.

relationship (Greenhalgh et al, 2017, Shaw et al, 2018).

Near Me case study 2: care home patient

Residents of care homes internationally have

been disproportionately affected by COVID-19, with 19-72% of COVID-19 deaths occurring in care homes (Gordon et al, 2020). Healthcare professionals were unable to provide traditional models of care, but were able to offer Near Me consultations to provide an element of continuity of high-quality care for their foot protection patients. This required intentionally enhanced communication strategies with care home staff, who were keen to engage. Their support for Near Me consultations provided the positive outcomes described in the Near Me case study 2.

Feedback actively sought from care home staff (*Figure 6*) identified suggestions for improvement that included an increase in the number of late-morning appointments, a care home checklist to improve communication between clinicians, care home staff and patients.

Near Me case study 1.

Patient: Mrs B, 66-year-old female, shielding category

Medical History: Type 1 Diabetic, 6-year history of Charcot and foot ulceration. Elective surgery for calcaneal bone augmentation. Skin quality anhidrotic due to the length of time in bandages

Pre COVID-19 Plan: Twice weekly face-to-face appointments. Self-management plan put in place to support dressing changes at home.

Current Management: Real-time assessment through VC with a person-centred approach including treatment plan, antibiotic cover, frequency of dressings and onward referral.

Patient Involvement: Patient's husband keen to join the VC call and with guidance felt confident to change the



dressings twice weekly and apply daily emollient. This led to an improvement in tissue quality that may not have been achieved in a clinical setting. The patient has also has become familiar with their own wound and this has changed behaviours from 'clinical-led' to 'patient involved' discussions.

Near Me case study 2.

Patient: Mr P, 66-year-old male, home care patient

Medical History: Type 2 diabetes, dementia, Parkinson's disease, heart failure, stage 3 kidney disease, schizophrenia, cancer, COPD

Referral: New patient assessed via virtual clinic

Staff involvement: Intial referral from care home liaison nurse. Virtual appointment organised within a 48-hour window. Patient seen jointly with care home nursing staff and specialist podiatrist. Critical limb ischaemia identified. Rapid referral to on call vascular consultant and pain management discussed and nursing staff agreed to implement. Palliative wound care plan agreed until vascular assessment.

Outcome: Rapid access to vascular and pain management to keep patient comfortable.

Staff experience: Care home staff supported the implement pallitive management plan and pain management

Learning outcome: Increased confidence in care home identiying patient who require emergency care.

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Table 2. NHSGG&C Near Me foot protection consultant data February 6–June 9, 2020.					
Total Calls	94				
Minimun (seconds)	13	00:13			
Maximum	939	15:39			
Median	376	06:16			
Mean	425	07:05			
Calls under 6 minutes	41	43.6%			
Call over 6 minutes	13	13.8&			
Call over 7 minutes	7	7.4%			
Call over 8 minutes	8	8.5%			
Call over 9 minutes	5	5.3%			
Call over 10 minutes	2	2.1%			
Call over 11 minutes	3	3.2%			
Call over 12 minutes	7	7.4%			
Call over 13 minutes	5	5.3%			
Call over 14 minutes	2	2.1%			
Call over 15 minutes	1	1.1%			

Clinician experience

Clinicians highlighted a number of areas that may be a barrier to the use of TEC. These included safety, missing red flags, litigation, technical issues, information governance and the loss of direct patient to clinician relationship. These are broadly similar to those described by Olwill et al (2020) who cite diagnosing, confidentiality, prescribing and risk assessment as being more difficult using TEC.

Nonetheless, there evidence to demonstrate that TEC may be safe, effective and convenient (Klein, 2018), but that it is important to take cognisance of clinicians' and individuals' concerns in relation to risk. In addition to providing a consultation guidance document for clinicians, a peer TEC network was created using MS Teams channel to allow clinicians to share experiences and develop tools collaboratively. This peer support was beneficial in the early escalation phase. Shadowing opportunities were also arranged with social distancing measures in place. Clinicians reported that using TEC provided a feeling of safe guarding patients by having visual contact and the ability to respond quickly where escalation is required.

Clinician wellbeing should also be considered, including recognition of the cognitive load that is



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Figure 6: Near Me in care homes.

correct position" What were the benefits? Connectivity and signal Poor connection with iPad – phone works much better. The images are clearer with camera on phone. Time scale in the waiting room could be reduced. Time of appointment could be better suited around care home – e.g. mid-morning or late afternoon. As a carer, I would like a list of initial questions I may be asked for e.g. is the patient diabetic? When the dressing was last changed? Patients D.O.B?. I think some carers would panic and it is good to be prepared.



experienced during TEC consultations, MS Teams calls and writing electronic records (Ambrose, 2020). It is useful to factor in time for reflection as a safety measure in clinical decision making. Time is also required for follow-up administrative tasks such as clinical notes, GP letters, prescriptions and onward referral.

Risk mitigation included the provision of an escalation pathway to enable clinicians to contact senior members of staff for support while on a call. They were able to enter the consultation or provide support through MS teams in the background during the call. This provided clinicians with reassurance, particularly during the early phases of implementation.

Conclusions and recommendations

COVID-19 is likely to change how the NHS delivers care to patients, particularly those with chronic disease.

The introduction and expansion of Near Me video consultations has enabled vulnerable patients in shielding categories and care homes with foot wounds to receive ongoing care in a safe and supportive environment.

TEC is providing an opportunity for podiatry services to re-evaluate how care is delivered, and how to manage risk. By enabling clinicians to provide support and advice to patients with foot wounds remotely, there are efficiency gains to be realised by NHS podiatry services, and potentially by patients in terms of the 'burden' of attending frequent — potentially unnecessary — outpatient review appointments.

This approach provides an opportunity to maximise workforce resource, and also to engage with patient preferences in terms of supporting them with wound self-care. Further support tools, such as a patient-held wound chart, require further development and evaluation to support patients assuming a more active role in their care.

Ambrose I (2020) Remote consulting: recognising the cognitive load. Br J Gen Pract 70(695): 295

- Boggan J, Shoup J, Whited J et al (2020) Effectiveness of acute care remote triage systems: a systematic review. J Gen Intern Med 35(7): 2136–45
- Casey M, Shaw S, Swinglehurst D (2017) Experiences with online consultation systems in primary care: case study of one early adopter site. Br J Gen Pract 67(664): e736–43
- Donaghy E, Atherton H, Hammersley V et al (2019) Acceptability, benefits and challenges of video consulting: a qualitative study in primary care. Br J Gen Pract 69(686): e586–94
- Edwards H et al (2017) Use of a primary care online consultation system, by whom, when and why: evaluation of a pilot observational study in 36 general practices in south west England. *BMJ Open* 7(11): e016901
- Fasterholdt I, Gerstrøm M, Schnack Brandt Rasmussen B et al (2018) Cost-effectiveness of telemonitoring of diabetic foot ulcer patients. *Health informatics J* 24(3): 245–58
- Flodgren G, Rachas A, Farmer AJ et al (2015) Interactive telemedicine: effects on professional practice and health care outcomes. Cochrane Database Syst Rev 2015(9): CD002098
- Greenhalgh T, Wherton J, Papoutsi C et al (2017) Beyond adoption: a new framework for theorizing and evaluating nonadoption, abandonment, and challenges to the scale-up, spread, and sustainability of health and care technologies. *J Med Internet Res* 19(11): e367
- Greenhalgh T Wherton J, Shaw S, Morrison C (2020) Video consultations for COVID-19. *BMJ* 368: m998
- Gordon AL, Goodman C, Achterberg W et al (2020) COVID-19 in care homes—challenges and dilemmas in healthcare delivery. *Age and Ageing* 49(5): 701–5
- Hazell T (2020) Top tips: phone triage and remote consultations. *Guidelines in Practice* 23(4): 22–4
- Helsper EJ (2017) The social relativity of digital exclusion: applying relative deprivation theory to digital inequalities. *Communication Theory* 27(3): 223–42
- Hurst JE, Barn R, Gibson L et al (2020) Geospatial mapping and data linkage uncovers variability in outcomes of foot disease according to multiple deprivation: a population cohort study of people with diabetes. *Diabetologia* 63: 659–67
- Lee JY, Chan CKY, Chua SS et al (2019) Using telemedicine to support care for people with type 2 diabetes mellitus: a qualitative analysis of patients' perspectives. *BMJ Open* 9: e026575
- Olwill C, McNally D, Douglas L (2020) Psychiatrist experience of remote consultations by telephone in an outpatient psychiatric department during the COVID-19 pandemic. Ir J Psychol Med 1–8 [Online ahead of print]
- Rush K, Howlett L, Munro A, Burton L (2018) Videoconference compared to telephone in healthcare delivery: a systematic review. Int J Med Inform 118: 44–53
- Scottish Government (2018) Scotland's Digital Health and Care Strategy: Enabling, Connecting and Empowering, Available at: https://bit.ly/2FHIoHM (accessed 18.09.2020)
 Scottish Government (2008) "Gaun Yersel" The Self Management
- Scottish Government (2008) "Gaun Yersel" The Self Management Strategy for Long Term Conditions in Scotland. Available at: https://bit.ly/35JpBXp (accessed 18.09.2020)
- Shaw S, Wherton J, Vijayaraghavan S et al (2018) Advantages and limitations of virtual online consultations in a NHS acute trust: the vocal mixed-methods study. *Health Services and Delivery Research* 6(21): (June 2018).
- Technology Enabled Care in Scotland (2020) Near Me in the "New Normal" Health and Care Service. Available at: https://bit. ly/3c5GbCa (accessed 17.09.2020)
- Weller CD, Buchbinder R, Johnston RV (2016) Interventions for helping people adhere to compression treatments for venous leg ulceration. Cochrane Database Syst Rev 2016 3(3): CD008378