Establishing the benefits of digital consultation pathways in wound care

Abstract: Telehealth technology is a 21st Century patient-centred approach to the delivery of healthcare services by health professionals. It is beneficial, where distance is a critical factor, as it uses technology-enabled devices to provide secure data and information sharing. The rapid evolution of technology and the COVID-19 pandemic have seen exponential growth of telehealth as a means to deliver healthcare services by alternative methods, while keeping patients and health professionals safe. Video conferencing and similar television systems can be used to provide remote consultations, exercise programmes and to help facilitate self-care. In addition, for services that cover multiple sites it also can be used to address workforce challenges and facilitate safety huddles and remote meetings, reducing the need to travel between sites to attend a face-to-face meeting. This article explores the use of telehealth solutions used by a tissue viability service pre-pandemic and discusses some of the common features and potential future uses.

Wound management and the associated cost represent a major burden to the NHS and wider economy. Chronic wounds affect approximately 2 in 1000 people and the projections for the future suggest an increasing prevalence (Guest, et al 2020). Contributing factors include increasing age of the population; in the EU over the next 20 years, the median age is set to increase by 4.5 years (Ageing Europe, 2020). The population over 85 years is expected to double in the same time span (Eurostat statistics explained, 2020). In the UK alone, two thirds of adults over 65 are expected to be living with multi-morbidity by 2035 (Kingston et al, 2018). Age and multi-morbidity are already taking a toll on healthcare and the increase rate of both will make this issue even more pressing in the future. This will impact on patients with wounds, as both are prevalent factors in acute and chronic wounds alike (Hall et al, 2014; Guest et al, 2017; Guest et al, 2020).

Similarly, the financial impact of wound care has been described with an estimated 3.8 million patients receiving care at a projected annual cost of £8.3 billion, of which £2.7 billion and £5.6 billion were associated with managing healed and unhealed wounds, respectively (Guest et al, 2020). Guest et al (2020) reported 81% of the total annual NHS cost was incurred in the community.

TISSUE VIABILITY WORKFORCE
The largest expenditure is nursing staff costs, the scarcity in human capital and expertise within the NHS is known, especially for tissue viability, a multidisciplinary domain bridging community care, primary care, and secondary care, where the challenges are increased. Wound care accounts for around 50% of the community nursing workload, often relating to home visits and long travel times (Schofield, 2021). On 11 March 2021, the 1-year mark of the declaration of the COVID-19 pandemic, there were 46 open positions for tissue viability in the NHS (from a total workforce of approximately 1,500) compared with 87 open positions for intensive care unit (ICU) nurses, which has a workforce of many thousands.

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Given that the ICU setting employs many more nursing staff nationally, the vacancy factor for tissue viability is worrying (NHS Jobs, 2021). Coupled with an ageing district nurse workforce and reduced numbers of qualified district nurses a report in 2019 published by the QNI and RCN suggests that the NHS has lost over 4 in 10 district nurse positions in the last 10 years (Fanning, 2019). The impact of which is yet to be seen.

Impact of the COVID-19 pandemic

When the first national lockdown in the UK came in effect, normal activity was put on hold within tissue viability. The narrative of the NHS under pressure was taken to heart by the population, despite calls in April 2020 for patients to seek care as usual (Northumbria Healthcare NHS Foundation Trust, 2020a). A recent survey showed that approximately 40% of the population did not access healthcare at all during the pandemic, with that percentage being higher in the age group of 50+ (Visiba Care, 2021). Disruptions to community health and social care services were widespread: a quarter of those reporting that they needed to speak to a GP did not; almost three-quarters of those reporting that they needed community health and social care services did not use these (English Longitudinal Study of Ageing, 2020).

On average, a trust like Northumbria Healthcare NHS Foundation Trust carries out 2,800 outpatient appointments per day; within the first 2 weeks of the pandemic and before the national lockdown, this dropped to 1,500 appointments (Northumbria Healthcare NHS Foundation Trust, 2020b). Non-urgent planned operations and routine outpatient appointments were cancelled and restricted hospital visiting initiated. All face-to-face activity was rearranged to telephone or online consultations and patients who could and expressed a wish to do so were encouraged to self-care or move towards a shared care paradigm.

The resultant effect a little over a year later are the burgeoning NHS waiting lists, reported by the Royal College of Surgeons England (2020). In addition there have been 4 million fewer referrals to hospital, with more patients managed by their GP or in the community since March to December 2020 when compared with the previous year (Kings Fund, 2020). No study has yet specifically examined the impact on the prevalence of wounds during the COVID-19 pandemic, but it is not unreasonable to expect an increase in the number of chronic wounds, given that wound duration at presentation is linked to poorer patient outcomes (Atkin et al, 2019).

Remote digital consultations

If patients are signposted to the correct intervention and pathways, remote digital consultation has been shown to reduce costs and has the potential to improve healing rates and reduce waiting times (Summerhayes et al, 2012). Most studies examining the impact on wound care services have been from European colleagues and span over a decade (Clemenson et al 2005; Dobke et al 2008; Henneberg, 2014; Jelnes, 2014; Wickström et al, 2018). Digital technology in the form of apps and video conferencing also support cross-sector communication and collaboration between community care and secondary care. They also provide access to patients in remote areas, reducing the need to travel long distances and increase patient and workforce satisfaction (Dobke et al, 2011; Flodgren et al, 2015). Despite this evidence, the UK had not widely adopted this practice until the global pandemic saw an acceleration of the use of digital technology (Nuffield Trust, 2020).

REMOTE CONSULTATIONS IN NORTHUMBRIA HEALTHCARE NHS FOUNDATION TRUST

This article explores the use of digital health and online consultations as an effective intervention for patients with wounds that was implemented before the COVID-19 pandemic. In addition it will explore additional elements of digital systems not currently in use that may offer benefit to services in the future.

Background

Northumbria Healthcare NHS Foundation Trust serves a wide geographical area of 1942 square miles spanning Northumberland and North Tyneside and serves a patient population of over 500,000. The tissue viability service is based in the central urban area, journeys from base to outlying areas vary from as little as 10 minutes travel time to over an hour travel on country roads. The service aims to respond

to all referrals as per our key performance indicators *(Box 1)*. If a patient is referred on a Friday this review can take 3 or 4 days as the Service only operates Monday to Friday. In addition, if staff have a long journey time from base to a patient and there is only one patient in a remote location the visit can take up half a day of nurse time. Hence, virtual consultations were a strong intervention option even before the COVID-19 pandemic.

In line with delivering optimal value and clinical practice excellence, new innovative technologies have demonstrated the following benefits (Gethin, et al, 2020):

▸ Reduction in did not attend (DNA) rates
▸ Reduction in the spread of infectious disease
▸ Increase in the number of patients seeing the right clinician at the right time
▸ Staff can work flexibly from a location that suits all

Box 1. Referral criteria

Patients will be triaged according to clinical need. The daily cut off for referrals is 15.30 hours. Any referrals received after this time will be triaged on the next working day:

▸ **RED:** (urgent referrals) the referrer will be contacted within 1 working day and seen in both acute and community within 3 working days.

▸ **AMBER:** the referrer will be contacted within 2 working days and seen within 5 working days (acute) and 10 working days (community).

▸ **GREEN:** the referring ward/team will receive telephone advice within 2 working days of the referral being received by the team

▸ **CLINIC REFERRALS:** Patients with chronic oedema/lymphoedema/leg ulcers will be provided an appointment within 6 weeks of the accepted referral for the complex wound clinic.

▸ **Pressure ulcers:** a datix for a patient with a hospital- or community-acquired category 2, 3, 4, ungradeable pressure damage or deep tissue injury (DTI) or patients admitted with multiple category 2 or an ungradeable/DTI or category 3 or 4 from their own home or social or nursing care this will also trigger a review from tissue viability

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▸ Faster implementation of the appropriate therapy for patients
▸ Reduced administration — patients can request prescriptions, sick notes, test results though a virtual consultation solution
▸ Cost savings
▸ Wider cost benefits to the county economy such as reduced staff absenteeism

Visiba Cares virtual clinic platform

In 2018 the tissue viability service entered into an agreement to trial Visiba Cares. The virtual clinic was developed for use in Europe and adapted to suit the needs of the service. The software deployed is branded under the Northumbria NHS Foundation Trust Logo, this means that end users have confidence that it is used by the Trust and meets information governance standards. The initial trial was piloted by two wards in two community hospitals in the west of Northumberland at venues over an hour away from the tissue viability base. Functionalities of the software include video consultations with up to 10 participants, appointments bookable by the staff and patients, asynchronous (before or after the time of the teleconsultation) messaging, customisable forms, administrative tools, reporting on the virtual clinic activity, multiple service receptions under a single-entry point, and customisable digital pathways.

Aims

The main aim of the pilot was to enable the delivery of effective and quality wound care via online consultations. To do so the design of appropriate digital pathways is critical. The functionalities of the virtual clinic software need to be able to accommodate the digital pathways identified by the healthcare provider as a minimum requirement. Other minimum requirements on the software should include stability, interoperability and ease-of-use (Moore et al, 2015). The primary focus needed to be on designing pathways that address the needs of wound care rather than the technical functionality, which is a follow-up requirement that fulfils the primary focus. This preliminary approach ensures that the digital pathways have secure adoption and longevity, which will improve population outcomes in the long term.

The Visiba Cares system allows care givers

to complete a referral form when booking the appointment. Forms are used to standardise and facilitate the triage of the incoming patient cases. They are attached to a free text asynchronous message. The form guides the caregiver through the first level of wound assessment. This standardises the assessment to a degree; the designed form offers a mix of single-choice answers and is designed to be easy and intuitive to complete.

The wound assessment form includes the minimum data set required (Coleman et al 2017):

- Demographic information: age, patient location and gender
- Wound type: acute/chronic, trauma, burn, tear, leg ulcer, pressure ulcer, diabetic foot ulcer
- Wound location
- Wound duration
- Assessments of:
  - Wound and patient temperature
  - Periwound swelling/oedema
  - Wound size
  - Wound odour
  - Wound pain
  - Wound tissue type colour change
  - Presence of exudate
  - Level of exudate
  - Bone exposure.

A subsequent form based on the type of wound can be used to collect additional information:

- Allergies
- Treatment received
- Type of dressing used
- Last change of dressing
- Doppler APBI assessment performed, date and results if appropriate
- Use of pressure redistributing devices.

The assessment pathway can also be completed with visual information. The caregiver with patient consent can upload a photograph of the wound with the device being used. This image and data are stored securely within the platform, and can also be uploaded to the patient's electronic record as a baseline. For patients with multiple wounds, multiple images can be uploaded and labelled, or a series of images from one wound can be uploaded to monitor progress.

Results

The platform enabled end-to-end connection between the nurses on the pilot wards and tissue viability. The nurses could schedule a patient appointment with the Tissue Viability Nurses at a mutually agreeable time. Tissue viability would offer clinic appointment slots that could be booked by the ward staff. As a backup prompt, an initial phone call was also required to prompt the tissue viability team that a patient appointment had been booked. This was to ensure that no appointments were missed while staff were getting used to using the platform. This was not needed in the longer term as the platform became embedded and used more commonly.

Use of the platform reduced the average visit to 30 minutes including documentation, as opposed to 3 hours 30 minutes (including travel time), a saving of 3 hours of nurse time per consultation. Other benefits/outcomes included:

- Improved specialist tissue viability nursing time efficiency
- Reducing patient waiting times
- Higher satisfaction from tissue viability team and ward teams
- Faster implementation of the appropriate therapy for patients who are suitable for virtual consultations
- Allowed patients to receive a high-quality care with clinicians they are familiar with
- Ward staff received more wound care knowledge from the tissue viability team
- More consistent care and messaging provided by the ward staff supported by the tissue viability team.

Challenges using the platform

The hardest part of initiating the use of the platform was enabling staff access via the firewalls in a process known as whitelisting. The company had to provide all used URLs to digital services who approved them and allowed Trust security-enabled hardware to reliably connect to the site. Caldicott and Information Governance permission was also sought and approved the technology as meeting Trust IG standards.

The degree of realisation of any pathway is dependent on structural variables that influence the resources available and the subsequent level of

▸ Check past medical history prior to the consultation.

▸ Confirm the patient's identity and location in case you need to send help; they may not be at their home address.

▸ Check that they can see and hear you; when you are talking, look at the camera.

▸ Explain the nature and extent of the examination and seek verbal consent.

▸ When listening continue to look at the camera and patient on screen.

▸ Ask what the patient wants or needs out of the consultation.

▸ Demonstrate active listening and check the pace of the consultation with the patient to ensure it doesn't feel rushed.

▸ Assess the patient, this will involve breaking eye contact. Signpost what you are doing when you need to look away to avoid looking uninterested.

▸ Check for signs of deterioration (symptoms, signs and function).

▸ Be clear and direct with questions and be explicit about concerns.

▸ Share written information with the patient on the screen only if the font and display enable the patient to read it.

care the patients can be triaged to. For maximum efficiency, patients entering this pathway should have access to integrated health services — or within the NHS, an Integrated Care System (Gethin et al, 2020). This way, the patient can be efficiently triaged to primary care services, specialist services, or directly to the clinician responsible for treatment, if the patient is already receiving care.

Another variable that impacts the effectiveness of this pathway is interoperability:
a) of the virtual clinic software with the Electronic Patient Record (EPR)
b) of the EPRs of different care providers.

For example, Sweden has a unified journal system where patient data are accessible to any clinician managing said patient and certain information can be obtained without a form, thus minimising the time to treatment and improving healing rates at a maximum remote level (Wickström, 2018).

KEY PRINCIPLES LEARNT FOR SAFELY ASSESSING PATIENTS USING VIDEO CONSULTATION

The education of staff is essential to the success of telemedicine. A clinician's approach to using video consultation, is the same as for face-to-face interactions and uses current skills and clinical acumen, boundaries and thresholds. Consultations should not be recorded and written records should be made in the patient's medical records, as in a standard consultation.

Clinicians should be mindful whether remote assessment is likely to elicit enough information to enable clinical judgement, or whether more extensive assessment and investigation is indicated. The clinician should consider whether the patient feels comfortable with a remote assessment, including whether they have access to a space in their home should they wish to have the assessment privately away from other family members. Obtaining a good history and functional assessment are vital, but were these impacted by the use of the remote system — for example it is not possible to touch the patient. It is also important to consider the context of any symptoms, for example are these new symptoms, or are they linked to an established long-term health condition. Clinicians must consider trends and look for signs of improvement or deterioration.

Telemedicine and the tools embedded within systems can assist in decision-making but must not overshadow a holistic assessment of the patient. Clinical users must remain professionally curious and vigilant. If there are safety concerns, a remote consultation should be converted to a face-to-face assessment.

Remote examinations that are intimate or may be perceived as intimate must be approached with caution. If the patient is unable to consent to a virtual consultation they can be done in the patient's best interest; however, a family member is not a suitable chaperone. If one is needed they should be an appropriately trained staff member, they should be introduced and be visible to the patient (Royal College of General Practitioners, 2020).

Explicit 'safety netting' is essential whether speaking to patients, family members or carers; it is paramount to ensure that there is a mutual understanding of the outcome of the consultation and any follow-up actions needed are understood and carried out in the timeframe discussed, along with how and when to be concerned, and initiation, if required, of remote monitoring. In addition participants should be signposted to relevant patient information to support self-management and safety netting.

As with face-to-face assessments methods, colleagues should be used for support at the multidisciplinary team (MDT) to discuss clinical issues and peer-review decision making. Clinicians should seek feedback from patients and staff to improve the service. Some digital platforms offer this as a standard feature to enable data gathering and analysis. A suggested list of what should be covered as a minimum in a consultation is provided in *Box 2.*

CONSIDERATIONS USING PATIENT-INITIATED DIGITAL PATHWAYS

The use of patient-initiated digital pathways, while not a common practice in community tissue viability or district nursing, is fully aligned with person-centred care by increasing patient satisfaction, increasing involvement in proactive self-care, and supports prevention, which is critical in wound care (Gethin et al, 2020). It has the potential to increase patient access to specialist wound care reviews by TVNs, as well as community nursing-led wound assessment consultations.

Allowing patients to complete a form, partially assess their wound via prompts and upload it when booking an appointment will simultaneously enable maximum triage control to the healthcare organisation. To do so the following standardised pathways must be allowed by any system used.

Asynchronous messaging

Patients who have observed deterioration in their wounds may access the pathway to seek earlier intervention than is planned. Patients known to the system can state the issue they are seeking care for in free text when booking an appointment.

Delegating part of the wound assessment to a capable, supported patient with guided, evidence-based questions can free up the time and resources spent by the clinician asking the same questions or conducting a visual assessment in person, e.g. travel time, mileage costs, and emissions when this assessment is performed at a home visit.

Image upload

The patient-initiated assessment pathway can be completed with visual information. The patient can upload a photo of the present state of the wound. Patients with a larger level of involvement in their care or patients who have been advised to keep a photographic journal of their wound for review at the next appointment can do so in the system.

Embedded web links

Using web links to information provides easy access to knowledge and creates a digital educational hub via the same portal. Using these, patients can educate themselves from referenced sources and take a more active and effective role in their self-care.

Multi-party video consultations for support groups

Particularly in chronic conditions, such as diabetes, group-based education interventions have proven to be more effective than individual education at improving clinical and psychological outcomes (Gethin et al, 2020). Thus, offering the opportunity for patients to attend supervised digital support groups via video consultations may also have a significant impact on an individual's education, increased participation in care, and ultimately progression of the wounds.

CONSIDERATIONS USING HEALTHCARE-INITIATED PATHWAYS

Some systems now have care-to-care features that enable synchronised patient and multiple professional engagement at the same time. This can be used to bridge between healthcare and patients. For example, community care nurse with primary care physician, or secondary care consultant or specialist nurse/allied health professionals offering support in collaboration at the same time. This is also a prime opportunity to leverage the high level of knowledge of the healthcare professionals involved to increase efficiencies of digital tools.

Care-to-care digital pathways can also make use of the functionalities commonly available in virtual clinic software: synchronous (at the same time) and asynchronous (before or after) to facilitate communication; referrals; wound categorisation/top-level triage, using standardised forms completed at the point of referral by the referrer.

Single entry point for health professionals seeking assistance: facilitated triage for specialists

Depending on the customisability of the software in use, the level of accessibility to specialist knowledge can increase. Everyone using the same software platform-wide enables person-centred care as patients will become used to the platform. A 'single entry point' can facilitate patient-access and healthcare-access from within or outside the organisation according to registration permissions embedded in the portal. For example, a health professional in a remote location can access the referral details that corresponds to the case, this information can be used to triage to the appropriate professional, e.g. tissue viability reception and podiatry reception.

Remote asynchronous assessment

If a health professional is concerned during a visit/consultation they can access the platform, upload information and send the information for assessment by a specialist health professional. This assessment can be picked up real time if someone is free to take the call or can be viewed after the fact and care advised to the referring nurse. Much like the patient-initiated pathways, standardised forms are used to collect wound and

patient information and wound images, tailored to leverage the specialised knowledge of the health professional submitting the form. For patients who self-care, they can also send updates at regular intervals to the specialist.

Remote synchronous communication

Synchronous communication, including mostly video consultations, is the most versatile form of remote consultations and can apply to several approaches (i.e. care planning, integrated care, outpatient appointments). In cases of collaborative care and care planning, conducting appointments virtually with several participants saves time, mileage and administration. As the necessary interdisciplinary team members are present, this contributes to optimal treatment minimising the time span of planning, increasing collaboration, health professional satisfaction, and catering to the complex needs of wound care (Moore et al, 2014; Moore et al, 2015; Gethin et al, 2020)

A virtual drop-in room staffed by specialists is an another pathway to video consultations. It can accommodate review of acute cases and urgent assessment. Visiting nurses or ward personnel can instantly access resources from tissue viability for a direct assessment with a visual component. A drop-in room can be used by patients or health professionals to enable contact with a specialist service — or can be used to facilitate multidisciplinary conversations with a group of specialists, the local team and the patient.

Virtual clinic knowledge hub

A virtual clinic knowledge hub is a feature of some systems that provides a valuable tool in providing links to external resources that can aid community nurses with wound diagnostics, instructions on Doppler ABPI vascular assessment, and dressing guides. Related resources can be accessed during the time of clinical care and are complementary to specialised education. The increase in patient self-care seen during the pandemic has led to the development of materials to help educate patients (National Wound Care Strategy Programme, 2021). These resources can also be housed in the knowledge hub for patients and their caregivers to access.

CONCLUSION

Wound care is an under-addressed healthcare area, one that affects the quality of life of millions of people in the UK and uses a large number of resources from healthcare. With the predicted increase in comorbidities and average age, wound care is projected to become even more prevalent in our communities (Guest et al, 2020). The NWCSP (2021) has been commissioned by NHS England to improve care for patients with wounds and reduce variation in both outcomes and costs (Guest et al, 2018; Gray et al, 2018). These variations in care offer opportunities to improve the quality of care prevent harm, increase innovation, productivity and produce financial savings in line with the NHS Long Term Plan (NHS England, 2019).

To address both the present and future needs of wound care, digital transformation can be incredibly helpful. It can aid in transforming patient pathways, catering to both cross-disciplinary care and remote consultations, all of which have become a necessity during the COVID-19 pandemic.

There are a range of pathways and channels that can facilitate a reformed approach to wound care. A virtual clinic can act as a single-entry point for a patient with health professional from different specialities. Completing standardised forms and visual wound documentation at regular intervals enables proactive interventions to help prevent deterioration and promote healing. Providing patient-initiated synchronous and asynchronous pathways can increase patient involvement and facilitate person-centred care. Video consultations can increase collaboration and knowledge sharing among health professionals and promote timely interventions and optimal care plans.

The overall benefits of digitally transforming wound care pathways should be a spotlight topic on any present and future wound care planning towards the goals of increasing efficiencies and optimising patient outcomes. Wᴜᴋ

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