

Employing e-health in the palliative care setting to manage pressure ulcers

KEY WORDS

- ▶ E-health
- ▶ Palliative care
- ▶ Pressure ulcers
- ▶ Skin failure
- ▶ Telemedicine

Palliative care patients are at high risk of pressure ulcers because of the complexity of care required, therefore wound care should not be deprioritised; instead, a care pathway should be made and followed by the patient, family and clinicians. Here, an e-health system was used to provide a care pathway for end-of-life patients within 24 hours. Nursing staff accessed a secure members' area and completed an online patient assessment using a modified SSKIN model and comprehensive wound assessment; they then uploaded a digital photograph of the patient's wound. The expert reviewed this and provided an evidence-based pathway of care. The results of two patient case studies are reported in full. The care pathway and e-health system enable the hospice team to deliver the highest standard of care and ensure comfort and dignity at the end of life. Hospice patients now receive safe, effective care promptly, and this has led to good patient experiences.

The prevalence and incidence of skin breakdown is expected to continue to increase. In recent years, the need for palliative care has continued to grow within the United Kingdom due to the number of older adults who have chronic, debilitating illnesses. Finding ways to prevent the development of skin breakdown and to treat it more effectively if it does occur will create huge economic benefits by reducing the need for expensive treatment and equipment. Recognising and managing skin lesions at an early stage to avoid them turning into pressure ulcers (PUs) will be essential (White et al, 2009). The prevention of PUs has been set as a target for the Commissioning for Quality and Innovation payments framework (NHS England, 2014), and the Department of Health (2012) and NHS Midlands and East (2012) has recently focused on reducing the number of hospital-acquired PUs.

PRESSURE ULCER DEVELOPMENT IN PALLIATIVE CARE

PUs are the most common wounds in the chronically ill elderly (Graves and Sun, 2013). Palliative care is a high-risk setting for PU development as it often involves individuals at the end of life who experience organ failure (National

Pressure Ulcer Advisory Panel [NPUAP] et al, 2014). Alvarez et al (2007) demonstrated that approximately 68% of wounds in the palliative care setting were PUs. Their prevalence in the palliative care setting is between 13 and 17% (Langemo, 2006).

Maida et al (2012), in a prospective study, reported that 18.9% of patients had category I/grade 1 PUs, and 10.4% patients had category II/grade 2 PUs that achieved complete healing before death. Only 4% of patients with category III/grade 3 PUs achieved complete healing, however, and none of the patients with category IV/grade 4 PUs healed at all. While healing of PUs is unlikely in individuals receiving palliative care, it should not be assumed that no PUs will heal. Maida et al (2012) have demonstrated that complete wound healing is possible in patients with advanced illnesses.

End-of-life patient care presents a variety of wound care challenges. Most wound care healing practices focus on the outcome of healing, which may not be expected or desired at the end of life (Graves and Sun, 2013), when patients need to be made as comfortable as possible. Currently the demands on tissue viability services are very high, and some organisations and trusts do not have such services, which can lead to delays in consultations.

LINDA RAFTER
*Honorary Professor in Nursing,
 De Montfort University,
 Leicester; Tissue Viability Nurse
 Consultant, Wound
 Care Solutions*

This is where an e-health system is vital, allowing advice to be given within 24 hours, reducing costly delays in treatment.

SKIN FAILURE

The skin is largest organ of the body and is subject to failure like any organ when the body is dying. Skin failure is an acute episode when the subcutaneous tissue becomes necrotic due to hypoperfusion that occurs concurrently with severe organ failure (Langemo, 2006; Alvarez et al, 2007). In patients diagnosed with skin failure near the end of life, even attentive care may not prevent skin breakdown (Sibbald et al, 2010).

Palliative care patients are at high risk of PUs because of the complexity of care required, therefore wound care should not be deprioritised (Langemo, 2006); instead, a care pathway should be made and followed by the patient, family and clinicians. A holistic patient assessment can identify the symptoms that affect the patient's quality of life (Rogers Hebert, 2015).

E-HEALTH

The World Health Organization has defined telemedicine as 'the practice of health care using interactive audio, visual/or data communications' (Braun et al, 2005). This includes healthcare delivery, diagnosis, consultation and treatment as well as education and the transfer of data. This type of care is particularly valuable for developing countries as it provides an opportunity for cheaper networking in difficult-to-treat cases and where wound care specialists are scarce (Chanussot-Deprez and Contreras-Ruiz, 2008).

Telemedicine combines medical and nursing expertise with communication technology and at its simplest can be described as 'medicine practised at a distance' (Wootton, 1998). Telemedicine has been used in a diverse range of specialities, including dermatology, pathology and cardiology. Several studies have reported patient and nurse acceptance of this technology (Bangs et al, 2002; Chanussot-Deprez and Contreras-Ruiz, 2008; Clegg et al, 2011). Telemedicine has been employed in a variety of settings, particularly in remote areas. It increases access to healthcare professionals and offers effective, improved communication to strengthen service provision (Sperring, 2013).

An e-health online consultation with digital images and a care pathway from an expert can provide quick and effective assessment and reassessment of PUs. Nursing staff can use photographs to compare wounds and create an effective care pathway. This not only improves communication and strengthens service provision but also drives down wound care costs by using a standardised approach. The advantages for the patient include:

- ▶▶ Quicker access to an expert who delivers high-quality care in the patient's own environment
- ▶▶ Avoidance of unnecessary admission to hospital and long ambulance trips
- ▶▶ Good clinical patient experience, outcomes and health gain
- ▶▶ Implementation of best practice, which helps to avoid prolonged healing times
- ▶▶ Avoidance of wound infections
- ▶▶ Provision of the most up-to-date evidence-based treatment available.

This e-health system can be completed online, allowing it to be used in the community setting. E-health can provide a strong partnership with support staff and provide expert care within a very short time frame for patients (Sperring, 2013).

WOUND CARE SOLUTIONS E-HEALTH SYSTEM

A new e-health system was built and introduced 18 months ago. Nursing staff at the hospice were trained in how to use the modified SSKIN e-health system and attended a full study day on the prevention of PUs and wound management. Hospice nursing staff were given access to a generic email for their organisation to allow the care pathway to be retrieved easily. This is important as the nurse who submits the request may be off duty when the care plan is emailed and all members of staff can access the advice straight away.

Nursing staff refer to the E-health system on behalf of their patients and advice is given within 24 hours. The service is available every day of the year. The e-health system employs a modified SSKIN model (Healthcare Improvement Scotland, 2011), see *Box 1*. Nursing staff access a secure members' area and complete an online patient assessment. Once a case is loaded, a unique case

Box 1. The SSKIN bundle (adapted from Healthcare Improvement Scotland, 2011).

- ▶▶ S: Skin inspection
- ▶▶ S: Support surface
- ▶▶ K: Keep moving
- ▶▶ I: Incontinence assessment
- ▶▶ N: Nutrition

number is generated that needs to be noted by the referral organisation (in this instance, the hospice nurse). Initially, general information is entered, e.g. age, the patient’s mental state, whether the patient has mental capacity and whether he/she is compliant with nursing care.

The ‘skin assessment’ section requests the patient’s date of admission to the organisation, and whether his/her skin was intact on admission. The patient’s Waterlow score (Waterlow, 2005) is entered, and whether it was measured within 6 hours of admission. Whether there was a PU on admission and the date when the PU was first noticed are also noted. The system then asks whether the patient has had a full skin assessment using PULSE (Rafter, 2012), see Box 2. Finally, the e-health system asks whether there is any redness or skin discolouration.

The ‘surface’ section records whether the patient is bed-bound or can sit in a chair. The type of pressure-relieving mattress used is recorded, as is the date when the patient was placed on the equipment. There is also a section on what equipment is used for seating.

The ‘keep moving’ section investigates the mobility of the patient, e.g. whether the patient is able to turn or he/she requires assistance, and the duration for which the patient sits out of bed.

The ‘incontinence’ section helps to identify whether the patient has any continence problems or a moisture lesion. It asks questions such as:

- ▶▶ Is the skin moist?
- ▶▶ Is the patient sweating?
- ▶▶ Is there a high level of exudate?
- ▶▶ Is the patient incontinent of urine or do they have a urinary catheter?
- ▶▶ Is the patient incontinent of faeces?
- ▶▶ Does the patient wear pads and pants?

The ‘nutrition’ section provides information on dietary intake. On adding his/her weight and

Box 2. The PULSE process (Rafter, 2012).

- ▶▶ P: Press reddened skin to check for blanching
- ▶▶ U: Uncover the skin and remove thrombo embolic deterrent stockings (TEDS) and socks
- ▶▶ L: Lift and check heels with a mirror
- ▶▶ S: Search for redness on the sacrum
- ▶▶ E: Evaluate elbows for redness

height, the patient’s body mass index is calculated automatically. The malnutrition universal screening tool (MUST) score is entered along with whether the score was obtained within 12 hours of admission.

The patient’s medical conditions and medications are recorded. If the patient has cancer, there is an additional information section where nursing staff can add any comments that will be helpful to the tissue viability nurse consultant (TVNC).

The ‘wound assessment’ screen is completed noting the location of the wound, its length, width, depth and tracking. The following sections enquire as to the tissue colour, volume and colour of exudate, odour, and appearance of the surrounding tissue. After this, the system asks whether the wound is a European Pressure Ulcer Advisory Panel (EPUAP) grade of PU. The next sections allow input of the results of swabs, any signs of clinical infection and whether the patient is on antibiotics. The number of layers and the type of dressings currently used and the frequency of dressing change in hours are then noted. Any night pain is recorded using the universal pain scale (Wong and Baker, 1998) and analgesia use is noted. If the patient has a leg ulcer and if a Doppler has been performed, the result can be entered here as well. The next section asks whether the patient is able to elevate their lower legs. There is then an additional information box for staff comments. Finally, the nursing staff can upload a digital photograph of the patient’s wound. On completion, an email is sent to the TVNC that a case is waiting assessment.

The TVNC has 24 years’ experience in tissue viability and can offer expert advice on PUs, diabetic wounds, leg ulcers, lymphoedema and unusual complex wounds. She employs recognised methods and strategies for evaluating



Figure 1. Sacral pressure ulcer at admission



Figure 2. Spinal pressure ulcer at admission

wound healing and infection, and is able to use continuums to measure and monitor the healing progress of the wound. She also employs the most up-to-date evidence-based practice.

The TVNC provides a pathway of care based on the modified SSKIN bundle. The care pathway is relayed to the secure, generic email account that is accessible to hospice staff. The patient is identified via the unique patient number generated when the case was loaded. All EPUAP grade 2, 3 and 4 PUs were validated by the TVNC and she reviewed patients weekly.

EXAMPLE CASE STUDIES

Here two patient case studies that were submitted by the hospice staff using the e-health system.

Case study 1

A 63-year-old woman admitted for management of her condition. She is known to have pulmonary fibrosis, is on continual oxygen, is very anxious and has depression. She was admitted from her local hospital with two PUs, one EPUAP unclassified on her sacrum (*Figure 1*) and a EPUAP grade 2 (*Figure 2*) on her spine.

The care pathway for the sacrum called for the use of PolyMem MAX® and C-View dressings changed every 3 days, and the spine had PolyMem Shapes® changed every 3 days. *Figures 3* and *4* demonstrate the improvement at both sites after 3 weeks.

The care pathway from the tissue viability nurse consultant

'I advise to dress the sacrum and spine with PolyMem Max and C-View dressings and to

change these every 3 days. Surface — continue to nurse this lady on the alternating mattress and alternating recliner. Keep moving — please remind this lady to reposition every 2 hours during the day. Please offer an afternoon rest to relieve the pressure off her sacrum. The patient may have longer periods between repositioning (every 4 hours overnight) to allow for more rest. Incontinence — this lady has a urinary catheter and wears pads and pants for faecal incontinence. Nutrition — this lady's skin is starting to fail and her MUST score is 1. Please encourage her with dietary supplements and with anything she desires. Please ensure that all pressure areas are checked using the SSKIN and PULSE every time she is repositioned and chart any deterioration. Please send me an update in 7 days.'

Case study 2

A 74-year-old woman admitted from a local hospital for end-of-life care. She is known to have cancer of the thyroid with brain metastases. She has a hospital-acquired PU, EPUAP grade 3, on the sacrum with a moisture lesion (*Figure 5*).

Sorbsan Ribbon and Advazorb® foam dressing, changed every 2 days, were proposed to dress the natal cleft. Her buttocks were to be cleansed with Senset foam every 4 hours, Sorbaderm® spray applied three times daily and Sorbaderm barrier cream every at least every 4 hours in between the Sorbaderm spray use. The use of TENA® pads and pants was to be continued to manage the patient's incontinence, and were changed every 2–4 hours.

Figure 6 shows the PU at 4 weeks. *Figure 7* shows the PU 6 weeks after the patient's details were submitted via the e-health system.



Figure 3. The sacral pressure ulcer 3 weeks after the care pathway was devised by the nurse consultant

The care pathway from the tissue viability nurse consultant

‘Skin inspection — this lady has a hospital-acquired pressure ulcer to her natal cleft, EPUAP grade 3, and the surrounding skin appears to be a moisture lesion below the pressure ulcer. On the left buttock there is a deep tissue injury, EPUAP grade 3. The pressure ulcer on the natal cleft should be dressed with Sorbsan Ribbon and Advazorb foam dressings changed every 2 days. Her buttocks should have Calvion/Sorbaderm spray 3 times daily and the Calvion/Sorbaderm barrier cream at least every 4 hours in between. Cleanse with Senset cleansing foam every 4 hours to prevent drying out the skin and to deliver additional moisture to the skin. This lady was incontinent of urine and faeces and had declined a urinary catheter. Tena pads and pants are used and changed every 2 to 4 hours. Surface – please continue to nurse this lady on the alternating mattress and alternating recliner and offer short use of the wheelchair. Keep moving – please



Figure 5. Hospital-acquired grade 3 pressure ulcer on the sacrum with moisture lesion at patient admission



Figure 4. The spinal pressure ulcer was significantly improved 3 weeks after the care pathway was initiated

remind this lady to reposition every 2 hours during the day. If she wishes to have longer periods of rest, reposition overnight every 4 hours. Incontinence — this lady has problems with incontinence so please manage as above. Nutrition — this lady’s skin is starting to fail and her MUST score is 2. Please encourage her dietary intake with anything she desires. Please ensure that all pressure areas are checked using the SSKIN and PULSE every time she is repositioned and chart any deterioration. Please send me an update in 7 days.’

RESULTS AND DISCUSSION

The care pathway from the e-health system allowed the hospice staff to deliver effective care for patients with EPUAP grade 2, 3 and 4 PUs, which has demonstrated good patient outcomes. There was some improvement in PUs despite the patients being near the end of their lives. All patients received their care pathways within 24 hours of referral on the e-health system. Twenty members of staff gave feedback that was very positive, noting they found the



Figure 6. Sacral pressure ulcer 4 weeks after starting the care pathway recommended via the e-health system



system very easy to use as it employed a standardised approach. They also commented that it enhanced their job satisfaction, as it resulted in effective care and good patient experiences.

This e-health system assists senior staff from the hospice with root cause analysis, as it is based on modified SSKIN care bundles. This allows a consistent approach that is standardised for every patient assessment and allows a holistic assessment in line with National Institute for Health and Care Excellence (2014) guidance and NPUAP et al (2014).

On completion of the patient consultation from the TVNC, the system allows for all EPUAP grade 2, 3 and 4 pressure ulcers to be validated and all moisture lesions are recorded separately as skin damage. The TVNC uses the information from the consultation to decide where the PU was acquired. This leads to increased validity of the number of PUs reported to the Care Quality Commission. The care pathways provided by the TVNC are also submitted to the Commission.

The e-health system can provide data on an organisation's PU incidence, as well as the number and type of wounds. Data can also be provided on the origins of PU development, e.g. whether a PU is community-acquired. It also plots an individual wound healing, showing a patient's progress.

Future plans

The e-health system could be employed more widely across the palliative care setting with contracted tissue viability consultation. It is conducive to the nursing home setting and could be used as triage system to help prevent PUs if assessments are sent to a nurse manager and then to the tissue viability service if required. The e-health system is available for tissue viability team to subscribe on monthly basis or to purchase with a one-off payment (Wound Care Solutions).

CONCLUSION

The e-health application employs modified SSKIN care bundles that enable best practice and a consistent approach to patient care. The modified SSKIN bundle and wound assessment screen mirrors the paper-based wound assessment form to make it easy for staff to document issues quickly and efficiently. The application enables the hospice team to deliver safe and effective, evidence-based care, leading to positive patient experiences at the end of life.

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