Journal of Community Nursing
JCN
Supplement

www.jcn.co.uk

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Volume 32
Number 2
April/May
2018

The burden of wounds: start exploring the reality of wound healing

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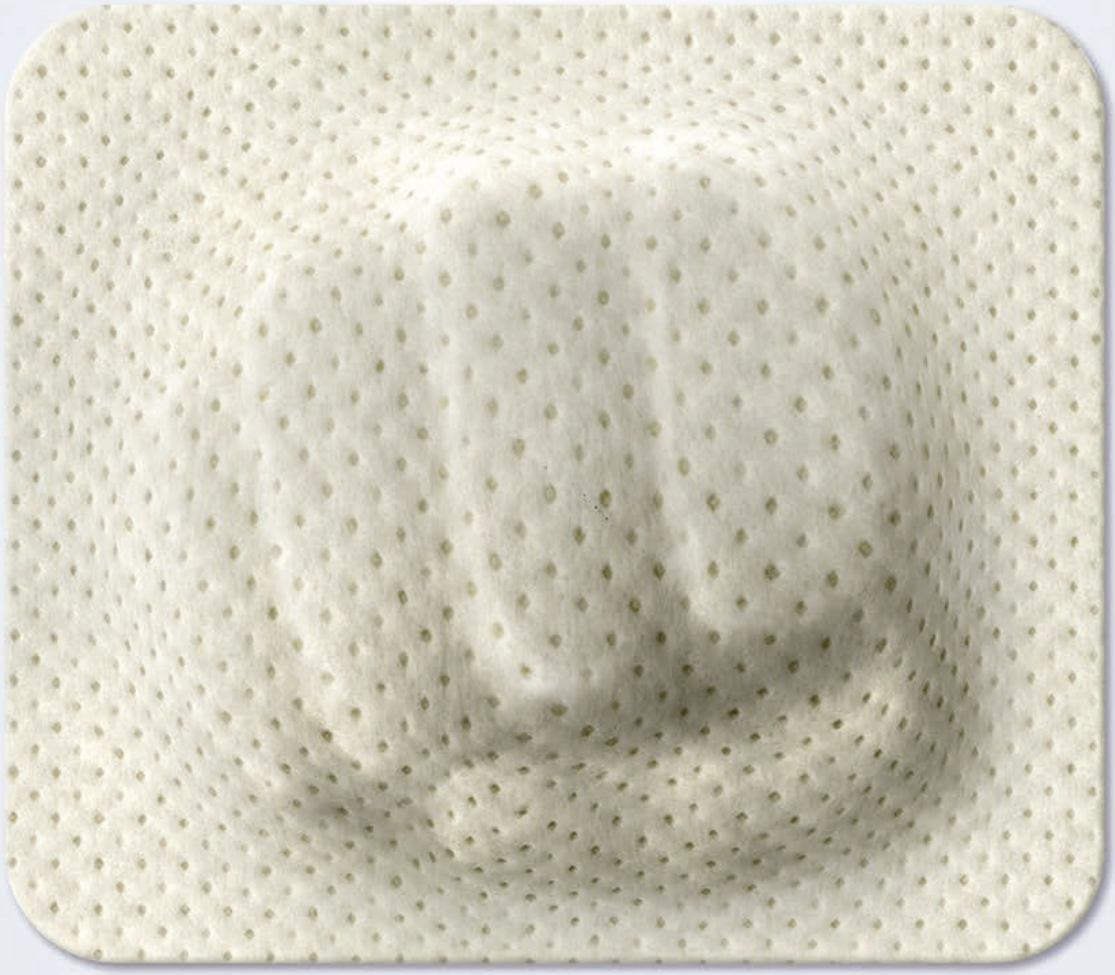

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Contents

Let's shift the focus to wound healing

I am delighted to introduce the JCN supplement, 'Start exploring the reality of wound healing', which focuses on the importance of providing patient-centred care based on thorough holistic assessment, and accompanies a series of JCN study days supported by Urgo Medical.

The prevalence of lower limb ulceration, lack of evidence-based care, and poor healing outcomes, as found in Guest et al's seminal study (2015), have highlighted the need for investment and focus in this area of care. Current challenges involve ensuring effective holistic assessment, diagnosis, treatment and prevention of wound care complications to improve outcomes and patient experience, while also minimising costs. For leg, diabetic foot, and pressure ulcers this necessitates acting early (i.e. from day one) to reduce healing times.

This supplement provides a clinical practice update on these issues. Leanne Atkin gives an overview of the findings from Guest et al (2015) and looks at why variations in practice need to be avoided both to reduce costs and to ensure optimal patient outcomes. Evidence-based practice, together with following clinical care pathways based on good quality evidence, are vital to ensure that care is standardised and of the best quality possible, as is shown in the papers on these topics. The supplement also looks at the introduction of the minimum dataset for wound assessment (introduced in 2017), and how one trust has audited initial findings in line with the Commissioning for Quality and Innovation (CQUIN) scheme.

I hope that you enjoy reading this supplement and find it both informative and useful in your day-to-day practice.

Lorraine Grothier, *head of clinical services, Urgo Medical*

Journal of Community Nursing JCN

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Journal of Community Nursing is indexed with CINAHL and British Nursing Index (BNI)

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Printed in England by Blackmore Ltd, Shaftesbury

IN BRIEF

- This article explores recent findings in relation to lower limb ulceration, and contextualises what these mean to healthcare professionals, services and patients.
- Management of wounds incurs significant costs to the NHS.
- Fundamental changes in wound care are needed.

KEYWORDS:

- Leg ulcers, diabetic foot ulcers, pressure ulcers
- Wound care
- Barriers to wound care
- Cost-effective wound care

Burden of wounds: are we causing harm to our patients?

Leanne Atkin

Management of patients with wounds, such as leg ulcers, pressure ulcers or diabetic foot ulcers, provides challenges for many healthcare professionals (Werdin et al, 2009; Frykberg and Banks, 2015). It is widely recognised that such wounds negatively impact patients' quality of life and that the cost related to managing patients with these wounds is substantial (Vowden, 2011; Guest et al, 2015). In 2015, the true economic burden that wounds impose on the National Health Service (NHS) within the United Kingdom (UK) was documented by Guest et al (2015). This paper acted as a catalyst for change and is becoming a seminal publication. Following this initial research, a number of additional papers have been published, highlighting not just the economic burden, but also:

- Inconstancies in management
- Lack of evidence-based care
- Poor healing rates
- Service impact of non-healing ulceration (Guest et al, 2015; 2017; 2018).

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THE BURDEN

The original burden of wound care study was a retrospective cohort analysis of records contained within 'The Health Improvement Network' (THIN) database (Guest et al, 2015). The THIN database contains over 11 million patient records from 562 general practices across the UK. These records have been shown to be representative of the UK population in terms of demographics and disease distribution (Guest et al, 2015). Data was systematically extracted from the anonymised electronic patient records from a randomly selected cohort of 1,000 patients who had a wound in 2012/2013, and this was compared to a control group of 1,000 matched patients. The information gained from this analysis was used to provide estimations of UK prevalence of wounds and associated treatment costs.

Key findings from the study were:

- The NHS treats more than 2.2 million wounds annually, equating to 4.5% of the adult population
- The total cost of managing these wounds and associated comorbidities is calculated to be £5.3 billion annually
- Wound care products accounted for only 14% of the overall cost of managing wounds
- Non-healing or delayed healing was a major factor in increasing costs
- Healing rates were much lower than expected, with only 47% of patients with venous leg ulceration healing within the one-year study period
- Lack of evidence-based care, treatment deviating from approved guidelines
- Change in healthcare providers: with an increasing number of patients being managed by general practice nurses (GPNs), rather than community nurses.

In terms of optimising patient outcomes, one of the most concerning elements of this publication was the lack of diagnosis of the cause of the wound — 12% of all wounds were labelled as unspecified, and 18% were leg ulcers but of an unspecified nature. Without a clear diagnosis, there is a very real risk of an effective care pathway, such as compression therapy, not being implemented (Atkin and Tickle, 2016).

Over the last decade, the focus for many tissue viability services appears to have been fixed on the area of pressure ulcers, due to the requirement of many organisations to report their incidence and prevalence through the NHS Safety Thermometer (http://content.digital.nhs.uk/thermometer). However,

the numbers of patients with pressure ulceration (153,000) were substantially lower than those with lower limb ulceration (730,000) (Guest et al, 2015) — 34% of all wounds were on the lower leg and this figure excluded diabetic foot ulceration.

Furthermore, Guest et al (2015) also reported that only 16% of patients with a lower limb wound had their ankle brachial pressure index (ABPI) measured. The requirement for ABPI assessment and calculation is embedded within national leg ulcer guidance (Scottish Intercollegiate Guidelines Network [SIGN], 2010; Wounds UK, 2016), with this arterial assessment being linked to whether patients are treated with evidence-based compression therapy. Without such assessment, there is a substantial chance that proven treatments will not be utilised or that the patient will receive sub-optimal therapy (Harding, 2016). Thus, it is of no real surprise, that only 47% of venous ulcers healed within the one-year study period. This is a great deal lower than previous research studies, where above 70% of venous ulceration healed at 24 weeks (Moffatt et al, 2003; Franks et al, 2004; Ashby et al, 2014).

Therefore, in the author's clinical experience, it is important that patients are managed according to proven protocols to ensure that:

- Healing rates are optimised
- Unwanted variations in practice are eliminated
- The impact on patients' quality of life is minimised
- Vital resources are not wasted.

COST TO THE NHS

As said, the total annual cost to the NHS for the care of patients with wounds and associated comorbidities was reported to be £5.3 billion, which equates to 4% of the total expenditure within the UK on public health (Guest et al, 2015). Of this, £1.94 billion was attributed to resources required to manage patients with leg ulceration. Following on from the original research paper, further analysis was undertaken relating to the cost imposed to the NHS by different wound types (Guest et al, 2017). After removal of costs associated with comorbidities, the isolated costs to the NHS for managing wounds was estimated to be between £4.5 and £5.1 billion, with two-thirds of this cost occurring within primary care services.

Guest et al (2017) also highlighted that 39% of all wounds did not heal within the one-year study period, and the costs of managing the unhealed wounds was substantially greater (£3.2 billion) than the cost of managing healed wounds (£2.1 billion). The per-patient costs varied greatly, ranging from £698 to £3,998 per healed patient, and £1,719 to £5,976 for those who remained unhealed. This equates to the mean cost of the latter being around 2.5 times more than those who have healed. The legacy of only healing 61% of all wounds in the one-year period and only 41% of leg ulcers in the same time period, means that year-on-year, patient numbers will be nearly doubling. This questions the long-term sustainability of the current provision for wound care.

IMPACT ON PATIENTS

The impact to the individual patient of having a leg ulcer can be severe, and many studies have shown that leg ulceration affects many aspects of quality of life including activities of daily living, pain, mobility, anxiety and depression (Franks et al, 2003; Charles, 2004; Persoon et al, 2004; Jones et al, 2006; Green et al, 2014). Healthcare professionals and many of the clinical guidelines/pathways (e.g. SIGN, 2010; Wounds UK, 2016) recognise the need to focus on reducing the impact of pain and other quality of life issues, while also optimising healing. However, Meaume et al (2017) highlighted that health-related quality of life issues seem to receive inadequate attention during assessment and management planning.

The true impact of living with a leg ulcer was recently powerfully articulated by a patient, who published her own story, and provided clinicians with an insightful, emotional and at times distressing understanding of what living with a wound is truly like (Goodwin and Atkin, 2018). There are many published papers relating to the impact of ulceration on patients' self-esteem and quality of life, but reading how it personally affects an individual's self-worth, ability to work, married life, career, and to read a patient's own words —'I cry a lot: tears of frustration that the ulcer won't heal, tears of self-pity when people are sympathetic and, most of all, tears of sadness for the things that have been taken away from me' — provides a different level of insight and, in the author's clinical opinion, should prompt reflection for many healthcare professionals.

BARRIERS TO HIGH QUALITY CARE

The main barriers to high quality care can be described in three essential components:

- Workforce
- Budgets
- Training (White et al, 2017).

Workforce

The number of district nurses who are skilled in providing complex care to patients in their own homes is reducing (www.qni.org.uk/news-and-events/news/qni-responds-to-bbc-report/). Furthermore, there are issues around continuity of clinicians, with wound care commonly being provided by GPNs who have limitations in terms of time allocation and availability of equipment, such as ABPI machines (NHS England, 2017). Demands on primary care services are also increasing year-on-year, due to an ageing population with more complex needs, but these issues have not been reflected in the size of the nursing workforce (King's Fund, 2016a).

Budgets

When referring to the cost of wound care, both providers and payers focus on the cost of the actual dressing, but this has been found to be only 14% of the overall cost to the NHS (Guest et al, 2015). The majority of the costs actually come from healthcare professional visits, hospital admissions, out-patient appointments and drug prescriptions. When considering costs, it is important that decision-makers take into account the larger issues, as the cost burden associated with caring for

patients with non-healing wounds is substantial (Guest et al, 2015), with many of these costs being avoidable if appropriate care is provided at the right time (NHS England, 2017). Therefore, investment in tissue viability services can help reduce overall costs by ensuring patients are managed on the most appropriate clinical pathway. In addition, use of more expensive advanced dressings may be beneficial in reducing time to healing, and thus, in turn, have a positive impact on costs. There also needs to be a focus on waste reduction. Guest et al (2017) found evidence that the choice of dressings and bandages was inconsistent, and that the types used were continually being switched at dressing changes, leading to confusion and conflict within the treatment plan and ultimately waste.

Training

It is essential that healthcare professionals understand the link between the underlying disease pathology and the complexities of wound healing. They need to be competent and confident in wound assessment, dressing selection, ABPI measurement and compression therapy to optimise healing. Access to training is increasingly difficult due to workforce pressures, availability of opportunity and funding. However, healthcare organisations need to realise the importance in investing in education to improve patient outcomes (King's Fund, 2016b).

CONCLUSION

The burden of wound studies not only evidenced the cost to the NHS of managing patients with wounds, but also highlighted a number of shortcomings in the assessment and management of patients. These shortcomings can result in harm to the patient by denying them evidence-based care, resulting in avoidable delayed healing.

Thus, it is important to ensure, wherever possible, that wounds are prevented and that healthcare professionals have the ability to accurately assess wounds, reach an appropriate diagnosis, and formulate individual patient-focused treatment plans which are aligned with best practice. Healthcare systems need to aim to reduce the inconsistency within wound care, ensuring that all patients receive the 'right care at the right time' and are not harmed by poor management. By optimising patient outcomes, there is a real potential to reduce the financial and service burden, leading to clinical and economic benefits both for the patient and NHS. **JCN**

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IN BRIEF

- Utilising evidence-based practice helps us to provide the highest quality and most cost-effective care for patients.
- Patient values and preferences should form part of the enquiry when delivering evidence-based practice.
- Best evidence is identified through critical appraisal of the evidence as methodologically appropriate, rigorous and clinically relevant.

KEYWORDS:

- Evidence-based practice
- Assessment
- Levels of evidence
- Advanced wound care products

Evidence-based practice in wound care

Caroline Dowsett

Wounds result in significant costs, not only to patients' wellbeing, but also to the health economy. In a recent study, the annual cost to the NHS of wound management and associated comorbidities was estimated at £5.3 billion per year (Guest et al, 2017). Certain types of wounds, such as leg ulcers and diabetic foot ulcers, often taken a long time to heal, resulting in a cycle of pain, anxiety and reduced quality of life for the individual patient (Dowsett, 2015). Delayed wound healing and wound complications incur further healthcare costs and are associated with longer and more intensive treatment, extended hospital stays, or readmission and specialist intervention (Dowsett, 2015).

Wounds, such as leg ulcers, pressure ulcers or diabetic foot ulcers, which develop in the community are more likely to require hospital referral for specialist assessment and, in some cases, admission for treatment, which further increases the cost of care. Strategies that focus on early recognition of those patients at risk of developing a hard-to-heal wound are essential to break the cycle of delayed healing and hospital admission as a result of wound complications (Dowsett, 2017). Accurate and timely assessment is essential to select the correct treatment and intervention for the patient. Interventions need to be based on the best available evidence to ensure the optimal outcome for the patient.

'Interventions need to be based on the best available evidence to ensure the optimal outcome for the patient.'

EVIDENCE-BASED PRACTICE

The advent of evidence-based practice has been traced to the mid-1800s when Florence Nightingale was credited with evaluating and making nursing decisions based on observed outcomes (Mackey and Bassendowski, 2016). Evidence-based medicine was formally introduced in a series of articles published by Cochrane in 1992 (Evidence-Based Medicine Working Group, 1992; Keller, 2012). These Cochrane publications inspired an ongoing trend of defining and improving what is now known as evidence-based practice.

Using evidence-based practice allows nurses to provide the highest quality and most cost-efficient patient care possible. It involves the use of current best evidence in conjunction with clinical expertise and patient values to guide healthcare decisions, i.e. the patient may have had a good experience of wound care treatment and bring that to the discussions about their care plan. One definition of evidence-based practice described it as 'the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research' (Sackett et al, 1996).

Evidence-based practice involves synthesising results from research studies, i.e. looking at the results of different studies and collating the findings to formulate a treatment plan for an individual patient, applying clinical expertise and considering individual patient preferences (Sackett et al, 2000; Melynk and Fineout-Overhold, 2015) (*Figure 1*).

The implementation of evidence-based practice begins with an understanding of the various types of evidence, along with their strengths and limitations. Deciding when and how to implement evidence can be challenging for nurses and this can be compounded by conflicts in expert opinion (Rice,

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Figure 1. *Components of evidence-based care (EBP=evidence-based practice).*

> **Practice point**
>
> The higher the level of evidence, the more robust the findings and the more relevant to the patient group.

2011), and results of systematic reviews that only take higher level evidence into consideration. An 'evidence hierarchy' illustrates the strength of the various types of evidence (Figure 2), which includes evidence from expert opinion, non-experimental studies such as qualitative and cohort studies, experimental investigations, including quasi-experimental studies, randomised controlled trials (RCTs) and systematic reviews of RCTs (Borgerson, 2009; LoBiondo-Wood and Haber, 2010).

LEVELS OF EVIDENCE

Various levels of evidence exist to guide nurses. Generally, the higher the level of the evidence, the less likelihood of bias in the results and the more rigorous the research. Where higher level evidence exists in wound care, this should be included in evidence-based treatment protocols.

Low-level evidence

These include expert opinions formed through the researcher's experience and observations, as well as case reports and case series (Guyatt et al, 2008). Because these kinds of evidence comprise reports of cases but do not feature control groups to compare outcomes, they have little statistical validity. In the absence of higher level evidence, case studies and expert opinion can be used by clinicians to determine the best wound care interventions, albeit with variable patient outcomes.

Moderate-level evidence

Non-experimental studies are regarded as more robust than expert opinion and can include longitudinal or cohort studies, which are typically observational in nature but lack any manipulation of variables, such as wound type, duration, and size (Dearholt and Dang, 2012). Cohort studies are not as reliable as RCTs, as the researchers observe without an intervention and the group are not matched, whereas in an RCT you have an intervention for one group of patients, but the patients in the non-intervention group are matched as in age, wound type, etc. However, cohort studies can complement RCTs in that it is helpful to look at what is happening in real life.

High-level evidence

The two types of evidence considered to be the most valid are systematic reviews and RCTs (Roecher, 2012). RCTs are carefully planned experiments that introduce a treatment, as in a type of dressing or bandage, to study its effect on real patients. They include methodologies that reduce the potential for bias (randomisation and blinding) and allow for comparison between intervention groups and control, or non-intervention groups. An RCT is a planned experiment and can provide sound evidence of cause and effect, but they can take considerable time and are costly.

Systematic reviews focus on a clinical topic and answer a specific question. An extensive literature search is conducted to identify studies that have a sound methodology. The studies are reviewed, assessed for quality, and the results summarised according to the predetermined criteria of the review question. A meta-analysis will thoroughly examine the studies identified in the literature search and mathematically combine the results using an accepted statistical methodology to report the results (Dissemond et al, 2017).

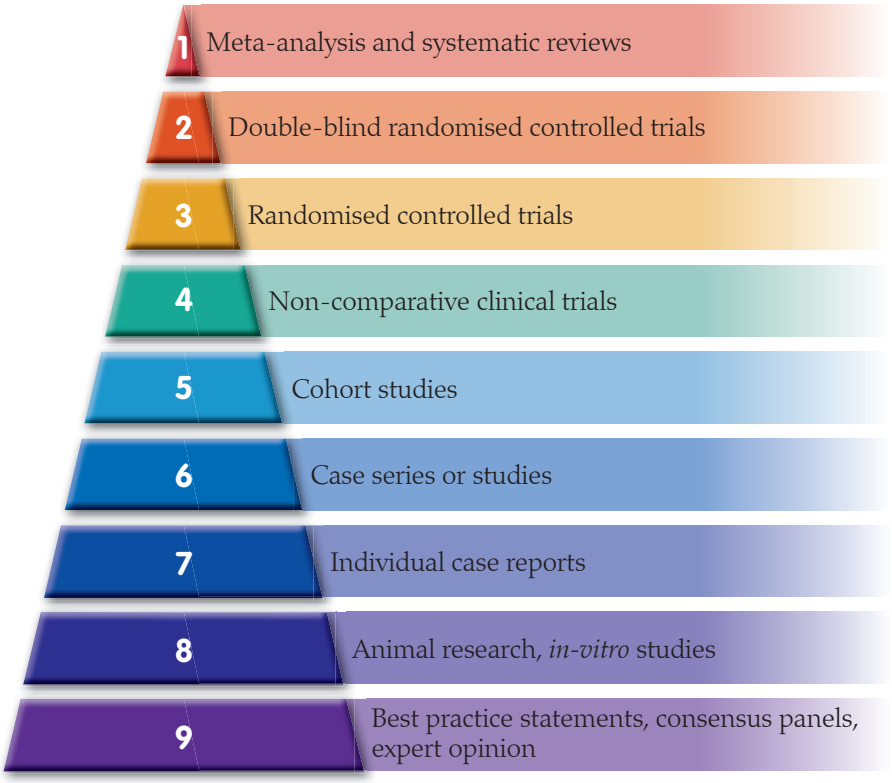

Figure 2. *Hierarchy of evidence.*

GRADING EVIDENCE

The grading and presentation of evidence for clinical implementation has developed in two directions:

- An extensive critical appraisal of all the published and presented information on a subject, but which only includes RCTs with clear definitions, blinding and randomisation, in any final study. An example is the Cochrane systematic review on compression for venous leg ulcers (Cullum et al, 2009, updated from 2001)
- An approach that focuses not only on level 1 evidence, such as RCTs, but includes all levels of evidence, for example guidance from the National Institute for Health and Care Excellence (NICE) (Leaper, 2009). An example in wound care includes the NICE (2008) study, 'Surgical site infection: prevention and treatment of surgical site infection'.

The second of these approaches involves interested clinicians and scientists who analyse the available evidence. The evidence is still graded for its level of excellence, but this approach allows experts to formulate clinical guidelines, particularly in the absence of high-level evidence. In a field such as wound care where the amount of level 1 evidence is small, guidelines supported by expert opinion are critical to support and improve wound care practice.

When all levels of evidence have been included in the review, they will usually be graded in terms of recommendations for practice, i.e. from A–D, with recommendation A being the highest (*Table 1*).

'Evidence is of little benefit to the patient unless it is implemented in practice. There are many challenges in the application of evidence to practice, including lack of knowledge, insufficient time to research the knowledge, and organisational barriers...'

BARRIERS TO IMPLEMENTING EVIDENCE IN PRACTICE

Evidence is of little benefit to the patient unless it is implemented in practice. There are many challenges in the application of evidence to practice, including:

- Lack of knowledge
- Insufficient time to research the knowledge
- Organisational barriers, such as management support for changing practice (see *practice point box*).

Table 1: Study design and level of evidence with grade of recommendation (Oxford Centre for Evidence-based medicine, 2001)

Grade of recommendation	Level of evidence	Type of study
A	1a	Systematic review of (homogeneous) randomised controlled trials (RCTs)
	1B	Individual RCTs (with narrow confidence intervals)
B	2a	Systematic review of (homogeneous) cohort studies of 'exposed' and 'unexposed' subjects
	2b	Individual cohort study/low-quality RCTs
	3a	Systematic review of (homogeneous) case control studies
	3b	Individual case control studies
C	4	Case series, low-quality cohort or case control studies
D	5	Expert opinion based on non-systematic reviews of results or mechanistic studies

Remember

In wound care, the amount of level 1 evidence is small due to the difficulty in comparisons as a result of the number of patient variables involved, such as underlying comorbidities, wound aetiologies, many of which require treatments of the underlying condition, e.g. offloading in patients with diabetic foot ulceration.

However, lack of knowledge is not an excuse for a nurse failing to provide the patient with the best possible wound care and, if a nurse was to be challenged about poor care, it would not provide a robust defence. Therefore, nurses treating wounds need to ensure that their knowledge and practice are based on the most up-to-date evidence. Where barriers exist, they need to be identified and raised as a concern or a patient safety issue.

The wound management literature includes a confusing array of tools, models, evidence-based protocols, guidelines and algorithms, which are all aimed at improving clinical decision-making (Flanagan, 2005). However, if these guidelines are to be practically applied, they need to appraised, made simple, and contextualised for practice. Local tissue viability specialists and link nurse support groups can make a valuable contribution to ensuring evidence-based practice becomes a reality and can provide a good source of knowledge for community nurses. Dressing manufacturers should also be able to supply a summary of available research for individual products; the nurse can then draw conclusions about the level of evidence presented using the hierarchy of evidence model (*Table 1*).

There are a number of strategies that can be used to support the implementation of research evidence into practice and effective models include the five-step process, which is often referred to as the 5As and is

Practice point

Barriers to implementing evidence-based practice, include:

- Lack of perceived value for research in practice
- Lack of knowledge
- Insufficient time to conduct research
- Difficulty in changing practice
- Too busy to appraise the evidence
- Lack of knowledgeable mentors
- Lack of education about the research process
- Complexity of research reports.

simple and easy to use (Sackett et al, 2000; *Figure 3*). This model can be particularly useful for wound care nurses who are developing wound care formularies and need to gather and appraise the evidence to support the use of a particular dressing product.

APPLICATION TO PRACTICE

The process of implementing evidence-based practice primarily focuses on assessing whether an intervention will solve a clinical issue, or posing a question such as, 'What is the best wound care treatment to heal the patient's wound?'. The nurse then has to access the relevant data and evidence available from a variety of sources. However, the reality in clinical practice is that nurses are faced with difficult treatment choices, including a vast array of products, and want to achieve the best outcomes for their patients. As mentioned above, wound care companies can often provide an evidence-based summary for their products and several best practice and consensus documents can be accessed freely online, for example the European Wound Management Association (EWMA) position document on hard-to-heal wounds and the World Union of Wound Healing Societies (WUWHS) consensus document on surgical wound dehiscence (EWMA, 2008; WUWHS, 2018).

There is often a paucity of evidence presented for a wound care intervention and the nurse may have to identify the best way forward through critical appraisal of the evidence that does exist to decide whether it is methodologically appropriate, rigorous and clinically relevant. Findings need to be applied to practice and the effectiveness of the intervention evaluated through reassessment.

There are many variables that will influence wound healing, for example, blood glucose control in patients with diabetic foot ulceration, and the nurse needs to take these into consideration as well as selecting an evidence-based wound dressing. It is also necessary to balance the recommendations contained in systematic reviews, RCTs and observational studies, with clinical expertise and feedback from colleagues and patients, all of which will support the nurse to make best practice decisions (Dowsett, 2017). When making treatment decisions for patients, it is important to:

- Address the underlying cause of the wound
- Treat underlying comorbidities
- Optimise the wound bed through debridement, exudate management, and infection prevention and control
- Provide the most appropriate, evidence-based treatment.

Ongoing reassessment and wound measurement will provide useful information on the effectiveness of the intervention, and measuring outcomes such as healing rates is critical to demonstrate the success of treatment.

Applying evidence to practice in wound care can result in reduced healing time, prevention of complications and reduced healthcare costs (Dowsett, 2015). Advances in wound care and new treatment options offer clinicians an opportunity to change the wound environment and improve healing. Looking at treatments which can effectively reduce healing time, clinicians should be aware of the clinical evidence for such products and be able to make an informed choice about their selection for treating patients. There is evidence that dressings directed at inhibiting matrix metalloproteinases (MMPs) can reduce healing time in a variety of wounds, and therefore improve patient outcomes.

A number of studies have demonstrated their efficacy in improving healing rates in leg ulcers, diabetic foot ulcers and pressure ulcers (Schmutz et al, 2008; Meaume et al, 2012; 2017). Diabetic foot ulcers are a particular challenge for patients and community practitioners and evidence to support any particular treatment has been poor. However, a recent randomised double-blind clinical

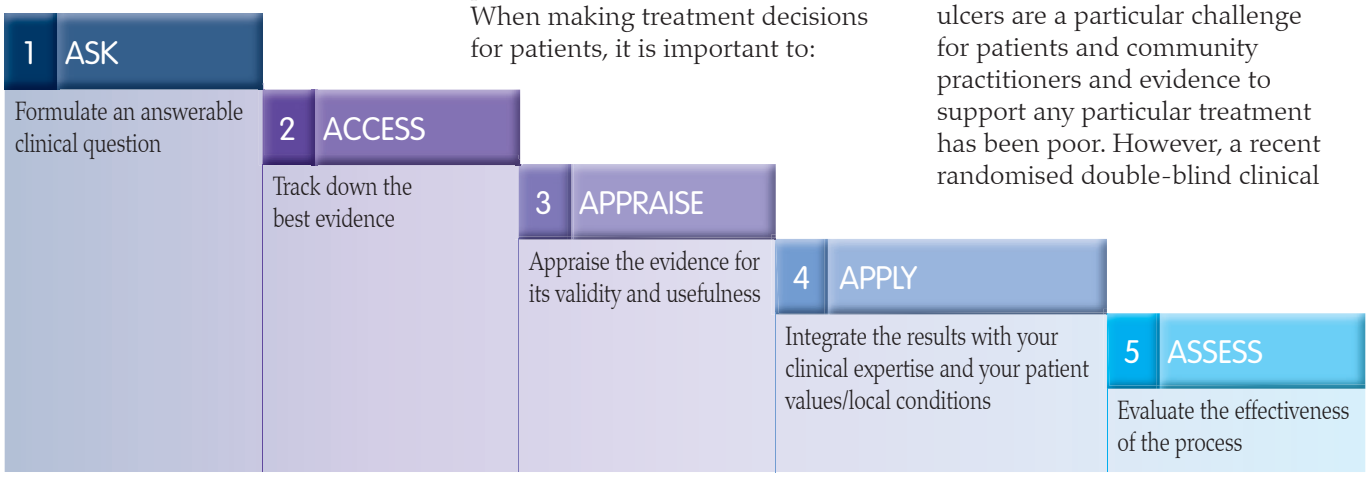

Figure 3. *The five-step evidence-based practice process.*

trial shows that the use of a sucrose octasulfate dressing improved rate of wound closure over 20 weeks in patients with neuroischaemic diabetic foot ulcers in comparison with use of a control dressing (48% in the treatment group vs 30% in the control group) (Edmonds et al, 2018). Given the level of evidence and the availability of the product for both venous leg ulcers and diabetic foot ulcers, this dressing could form an important part of the multidisciplinary management of this group of patients.

CONCLUSION

Evidence-based practice is essential to improving outcomes for patients. It keeps practice current and relevant and increases confidence in decision-making. Using the hierarchy of evidence table ensures that the clinician knows the robustness of the evidence for their practice.

For best practice in wound care, the best evidence should be followed in guidelines based on the scientifically produced and evaluated data available. Evidence from patient experience, values and preferences should also be considered, but clinicians should be able to present the evidence to the patients to ensure an informed decision can be made. Lack of knowledge is not an excuse for poor practice, and all clinicians have a professional duty to keep their practice and knowledge up to date. Modern wound dressings offer clinicians an opportunity to improve patient outcomes and selection of such products should be based on critical appraisal of the available evidence. **JCN**

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IN BRIEF

- The delivery of care related to wounds by the NHS has been subject to significant variation.
- Pathways of care help to standardise care delivery and patient outcomes.
- Good quality pathways are not always implemented across the whole system of care.

KEYWORDS:

- Wounds
- Pathway
- Variation
- Evidence
- Cost-effective wound care

What should a clinical care pathway look like in wound care?

Jacqui Fletcher

The use of clinical care pathways is not new, and although widely referred to in practice across many different countries including the UK, USA, Australia, Canada, Europe, and Asia (Rotter et al, 2010) and used within other specialist areas, for example asthma (Pound et al, 2017) and coronary artery bypass graft (Kebapci and Kanan, 2017), there appears to be little consensus about what a pathway is and how it is operationalised. Kebapci and Kanan (2017) suggested that a clinical care pathway is a multidisciplinary care plan, based on evidence and guidelines to provide consistent, quality care to patients and improve outcomes. However, Lawal et al (2016) suggested that while they may have a common goal — to improve patient outcomes, such as mortality rate and others, while containing costs and without compromising quality — confusion occurs as there is a lack of clarity about what is or is not a pathway, as they are frequently known by different names, including care maps, critical pathways, local protocols or algorithms.

Lawal et al (2016) suggested that to qualify as a pathway four key criteria need to be met, namely:

1. It is a structured multidisciplinary plan of care
2. It is used to translate guidelines or evidence into local structures
3. It details the steps in a course of treatment or care in a plan, pathway, algorithm, guideline, protocol or other 'inventory of actions' (i.e. it has timeframes or criteria-based progression)
4. It aims to standardise care for a specific population.

Therefore, a clinical pathway must be based on evidence (where it exists), multidisciplinary, and describe the essential steps needed in the care of a patient with a specific problem. As such, they are used to translate guidelines into local protocols or practice, considering the needs of local health economy systems and structures (Rotter et al, 2012).

Within the field of tissue viability, it seems that pathways exist for two key reasons:

- To encourage implementation of evidence into practice
- To provide simplicity/structure where there is too much choice.

A good example of implementing evidence into practice would be within the care of patients with venous leg ulcers, where the need to carry out good holistic assessment, exclude arterial disease and apply compression has been clearly evidenced since the seminal work of Moffatt et al in the early 1990s (Moffatt et al, 1992). Yet, it is clear that over 25 years later this is not consistently implemented in practice, as evidenced within the burden of wounds studies (Guest et al, 2018). As research in the field of compression identifies new ways of applying compression, such as hosiery, to be equally effective (Ashby et al, 2014), several algorithms or care pathways have been developed to standardise the approach to application of this work in practice (Jones, 2014; Atkin and Tickle, 2016). Atkin and Critchley (2017) went on to evaluate the impact of this pathway of care (Atkin and Tickle, 2016) within their local community after three months; demonstrating improvements in the quality of assessments undertaken, use of Doppler to determine ankle brachial pressure index (ABPI),

Top tip:

Remember: pathways should be based on good quality evidence where possible.

Jacqui Fletcher, independent nurse consultant

subsequent use of compression, and, most importantly, a significant improvement in healing rates. Alongside this, implementation of the pathway also resulted in a reduction in leg ulcer-related nursing visits, with a 43% decrease in activity, i.e. dressing changes.

Grothier and Ousey (2014) developed a pathway to simplify the management of patients with wounds at risk of infection following an audit of local practice, which identified that 10.83% of the spend in their dressings budget was on the use of antimicrobials. The audit also identified a lack of staff knowledge regarding identification and management of infection. They produced a simple, clearly structured, colour-coded pathway, which both identified a level of risk and proposed treatment guidelines. This was implemented in practice and then evaluated.

An audit undertaken by Grothier and Stephenson (2015) identified that the pathway developed by Grothier and Ousey (2014) was effective in preventing infection or critical colonisation over a four-week period in nearly 90% of high-risk patients.

Many other pathways exist that cover elements of tissue viability, for example, skin care (Lichterfeld et al, 2015), negative pressure wound therapy (NPWT) (Dunn et al, 2011), pressure ulcers (Hess 2013a, b, c; National Institute for Health and Care Excellence [NICE], 2017), device-related pressure ulcers (Campbell, 2016), wet legs (Morgan and Thomas, 2018), nutrition in wound healing (Thompson et al, 2014), diabetic foot ulceration (McBride et al, 2016,) wound care in the diabetic foot ulcer (Smith-Strøm et al, 2016), and skin tears (ISTAP, 2013). However, there is a lack of consistency in both how the papers are developed and also how they are presented and implemented.

A good pathway of care should be based on the evidence, whether that be a single high level randomised control trial (RCT) (e.g. Atkin and Tickle, 2016), or a systematic review of the evidence (e.g. Lichterfeld et al, 2016). Where strong evidence does not exist, for example in determining which antimicrobial dressing should be used as first-line treatment (e.g. Grothier and Ousey, 2014), sound rationale should be provided for the decisions made.

Pathways should be clearly defined and easy to follow, giving straightforward guidance without offering too many options, as it then ceases to become a guiding principle and does not reduce variation in practice. Variance from the pathway is to be expected, but this should be minimal and to a large extent the reasons should be predictable, e.g. non-availability of an item, patient being allergic to a product. Where variations do occur, they should be recorded and the reason noted, with variance patterns being regularly reviewed and the pathway evaluated for appropriateness in practice. Reduction in variation reduces waste, improves outcomes, very often results in cost-savings, both patients and staff report higher levels of satisfaction, and organisational targets are frequently met (Grothier and Stephenson, 2015; Atkin and Critchley, 2017). However, this can only occur in an open and transparent learning environment, where changes in practice are welcomed and mistakes seen as an opportunity to learn. Approaches need to address the whole healthcare economy and be patient-focused and inclusive in recognition of the growing body of patients who wish to be actively involved in their own care.

Where pathways are developed, their impact on care should be evaluated against the stated aims of development — Rotter et al (2012) provide good guidance on how to do this in a robust way. There should also be evaluation of other measures the pathway may have impacted on, for example, if changing the dressing used has resulted in cost benefits, the effect on healing and complication rates, as well as the impact on the patient.

The variation in practice identified in the early Guest papers (Guest et al, 2015; 2017) cannot continue, not only because the NHS is so cost-constrained, but also because patients deserve to receive good quality care. Huge variance in treatment regimens with resulting differences in outcomes, both clinical and on quality of life, is no longer acceptable, as patients should be receiving high quality care wherever and by whomever that care is delivered. Changes to the workforce, e.g. increasing numbers of non-registered nurses delivering care, and to education, e.g. reduction in funding available for registered practitioners in England to access post-registration modules and courses (Ousey, 2017), make this a challenge, but also perhaps place more emphasis on the need to standardise care and follow evidence-based pathways with clear triggers for referral into specialist systems, such as the tissue viability team.

In England, there is a raft of activity driving forward change in the field, including the development of a minimum dataset for wound assessment (Adderley et al, 2017), a quality target for wound assessment in the community (NHS England, 2016), a core curriculum for pressure ulcers (Fletcher and Education Task and Finish Group, 2017), a pathway for lower limb ulceration (NHS England, 2017), and work from the NHS Improvement operational productivity team around wounds and dressing procurement (Fletcher and Ousey, 2018). Lessons need to be learned, as it is time to stop reinventing the wheel and to standardise and share good practice (Fletcher and Ousey, 2017). Well-

Practice point

Adopting standardised pathways, which are easy to follow and work not only across trusts, but also in all care sectors, will help to ensure that evidence-based treatment choices, which are suitable for the patient group, are followed.

Red Flag

Pathway development is not always standardised.

developed and evaluated pathways will be a crucial part of these changes in practice. **JCN**

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IN BRIEF

- Meeting the Commissioning for Quality and Innovation (CQUIN) targets aims to improve wound assessment and healing outcomes.
- Accurate diagnosis, based on holistic assessment, is a central tenet of care.
- Audit of minimum dataset findings can establish baseline data of wound assessment against which to measure improvements in the quality and consistency of care given.

KEYWORDS:

- Wound assessment
- Audit
- Minimum dataset for wound care
- Healing rates
- Target setting

Wound assessment CQUIN

Jeanette Milne

As already highlighted in this supplement, wound care costs account for approximately £5.3bn of UK healthcare expenditure per annum (Guest et al, 2015). Healing rate outcomes for patients with chronic wounds are reported to be as low as 50% (Guest et al, 2017). This has led to NHS England launching several campaigns to encourage organisational focus in this area (NHS England, 2016; Coleman et al, 2017; NHS England, 2017).

This article looks at the minimum dataset for wound care, which was introduced last year, and its accompanying wound assessment CQUIN (Commissioning for Quality and Innovation 2017–19; NHS England, 2016; Coleman et al, 2017). It gives an overview of the domains covered by the minimum dataset, initial findings from the author's trust's first audits, the challenges arising from its introduction, and identifies opportunities for practice development.

Jeanette Milne, lead nurse tissue viability, Northumbria Healthcare NHS Foundation Trust

The purpose of the minimum dataset for wound assessment was to establish a baseline set of metrics that should be documented for every patient that presents with a wound (Coleman et al, 2017). It has five domains:

- General health
- Wound baseline
- Wound assessment
- Wound symptoms
- Specialist referrals.

Each domain outlines parameters (sub-domains), which should be collected to ensure that patients receive comprehensive wound assessment.

Assessment is an essential cornerstone of care, and is perhaps the central principle on which all interventions should be based. It is pivotal to establishing an accurate diagnosis and to helping patients make informed treatment choices. It also facilitates the implementation of appropriate preventative strategies, including health and lifestyle factors, as it enables clinicians to provide the correct information that is meaningful to the patient receiving care. These all stem from initial, but importantly, accurate patient assessment. In the author's clinical experience, in wound care, as with other areas of clinical practice, there has long been the assumption that wound assessment is done well. The speciality is larger than the community nursing teams, including general practice nurses (GPNs), podiatry and other specialist services, such as vascular and tissue viability teams, which direct and influence care. That said, wound care represents a high percentage of the daily workload of community nursing teams (Guest et al, 2015). Thus, this is where the author's initial audit has been focused.

The CQUIN target seeks to establish if patients in care have a full wound assessment and if this informs logical treatment choices. Year one of the two-year wound assessment CQUIN centres on the collection of baseline audit data to establish how many patients had a full wound assessment within four weeks of presentation to community services with a wound. The timeline for year one is broken down into:

- Quarter one — devise audit tool
- Quarter two — complete the audit, analyse and present report

Top tip:

Remember, 'improving the assessment of wounds' has been specified as a key goal of the CQUIN scheme for 2017–2019 (NHS England, 2016).

What is CQUIN

CQUIN is an acronym for Commissioning for Quality and Improvement. This system aims to make a proportion of a healthcare provider's income dependent upon their demonstrating quality and improvement in an agreed area of care.

- Quarter three — establish targets for improvement and educate practitioners
- Quarter four — re-audit.

Year two targets will be set nationally based on the data submitted.

To establish baseline data at the author's trust, all wound care templates completed in the last year were collated by information services from April 2016 until March 2017. All patients who had a chronic wound (defined as one present for more than four weeks), including pressure, leg, and diabetic foot ulcers, or surgical dehisced wounds were included in the sample. To create a sample of 151 patients, they were collated into wound type, with percentages of each wound type being used to generate a representative sample. Based on this calculation, a random sample of each type was audited against the standards set out in the minimum dataset (random selection was based on the total number of wounds per category divided by the number of responses needed, which generated the frequency of selection from the list of patients) by the tissue viability team. Unfortunately, records had to be hand searched as SystmOne was used and not all the minimum dataset has associated read codes. This made creating a computer-generated report impossible. Data was gathered using a spreadsheet and a report generated from analysing that data.

DEMOGRAPHICS

The demographic analysis revealed slightly more female (78) than male (73) records. Before data analysis, the team had expected more female patients, as women have a higher life expectancy than men, however well matched. The age of patients ranged from 17–97, with the average age being 70 years old — a median age of 72 years, with 58% of the sample being over the age of 70 years (*Figure 1*). This was despite a backdrop of an average healthy life expectancy for patients living in the catchment area of 59.6 years, which is more than four years less than the national average (North Tyneside CCG, 2017).

PLACE OF RESIDENCE

Most patients were living in their own homes (139; 92%), with the remainder in residential care (12; 8%). Ninety-six (63.6%) patients received care in their normal place of residence, the remaining 55 (36.4%) in a community clinic setting. It can be assumed that the patients receiving care in clinics were less frail than the housebound patients and that they did not meet the organisation's criteria for home visits. However, no subset analysis of this patient group was made, and this represents a limitation of the data presented.

CHRONICITY FACTORS

A high number of patients presented with chronicity factors associated in the literature with delayed wound healing (Anderson and Hamm, 2012). One in five of the patients in the sample had been assessed by a SystmOne user as having vascular insufficiency, more specifically peripheral arterial disease (PAD). Only one-third of the patients had their smoking status assessed by the team caring for them. This can be linked to high rates of smoking-related admissions to hospital; the area sees almost 250,000 per year — this is 50% higher than the national average (North Tyneside CCG, 2017).

Of the sample, 14 patients had diabetes and 25 patients had entries in their record in relation to having at least one other chronic illness, such as multiple sclerosis or rheumatoid arthritis, which, when coupled with the diabetes responses, is over a quarter of the sample. Additionally, 37 of the patients had been screened for malnutrition and were considered to have assessment

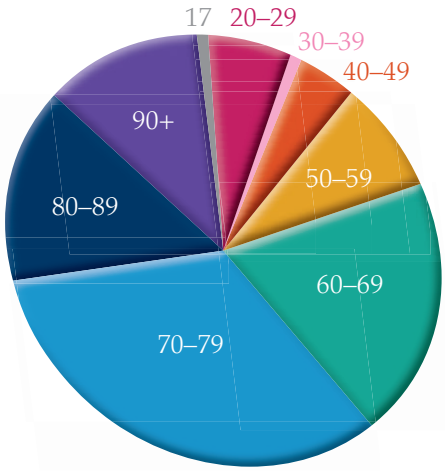

Figure 1. *Age distribution of patients.*

scores which warranted intervention or monitoring; and 17 patients in the sample were categorised as obese. A quarter of the sample had entries that related to immobility and incontinence, and a further 28 of the patients had been formally assessed for frailty, which represented a staggering 43% of the sample. Of the remaining patients, 11 were taking medications that affected healing and seven patients with diabetes were recorded as having neuropathy. A third of the patients in the sample had had a previous wound (range 1–8), the most common frequency being one previous wound.

Wound recurrence is also linked with chronicity and difficulties in achieving healing, and could be viewed as a failure to influence patient behaviours that affect recurrence, such as wearing hosiery in the leg ulcer group or offloading for the diabetic foot (Frykberg and Banks, 2015). Other patients in each wound type group had no entry of having been assessed for provision of hosiery or offloading, but absence of data cannot be assumed to mean that the condition had been assessed and was absent. The data was not present in the records.

PRACTICE POINT

CQUINs focus on three areas of quality where innovation should be seen:

- Safety
- Effectiveness
- Patient experience.

Top tip:

Remember, the hidden costs of having a wound, such as pain, depression, social isolation, and impact on wellbeing and the patient's family should also be considered during holistic assessment (Dowsett, 2009; Green et al, 2014; Miller and Kapp, 2015).

Cross-referencing data points to enable triangulation of patients with multiple chronicity factors, such as a previous wound, PAD, diabetes, etc, was not always undertaken, as this did not form part of the minimum dataset requirements. This, again, could be viewed as an oversight in the methodology, as this data could be cross-referenced with healing rates and perhaps be a learning point for future data analysis to better understand the data and complexity of patients receiving care. That said, it would not be possible to make inferences as to the impact these factors had on the sample outcomes reported, unless this data was triangulated with individual patient outcome data, which is not within the purpose of the audit. The rationale for the audit sits within improving wound care outcomes for patients. Guest et al (2017) argue that the healing rates of patients with a wound are less than 50% and hypothesise that this is linked to incomplete wound assessment.

REFERRAL SOURCE

Figure 2 shows the referral source. However, this was missing from the records of 62 patients, and a third (52) were referred to community teams by secondary care with a wound.

WOUND DURATION

The date of wound onset was missing from 56 records (37% of patients). Wound duration was assessed in weeks. The remaining patients had a wound for a total of 6,908 weeks, equating to an average duration of 49 weeks, the median duration was four weeks. Thirty-eight patients (30% of the sample) had had their wound for 52 weeks or more, with three having it for more than two years, four more than three years, four for four years, three for five years, nine patients for six years or longer, and others for exactly a year at the time of the audit.

WOUND LOCATION

The audit found that the lower limb was the most common location for wounds (n=50; 33%). Three patients' records had no location documented. SystmOne templates have a body map and 91 patients had the location of the wound drawn on the body map. The location of the wound drawn matched the description in 88 records, three however did not. There was no body map for 60 patients, but only four patients had no documentation of location when both variables were pooled.

WOUND TYPES

Wound types/diagnosis could be broken down into the following subcategories:

- Leg ulceration = 43 patients (28%):
  - Arterial leg ulcers = 6 patients
  - Venous leg ulcers = 25 patients
  - Mixed aetiology leg ulcers = 12
- Pressure ulcers (PU) = 32 (21%):
  - Category 1 = 5 patients
  - Category 2 = 10 patients
  - Category 3 = 12 patients
  - Category 4 = 5 patients
- Skin tears = 1 patient
- Surgical dehisced wounds = 56 (37%)
- Traumatic wounds = 11 patients
- Burns = 7 patients
- Diabetic foot ulcers = 1 patient.

Perhaps surprisingly, the highest prevalence of wound type was dehisced surgical wounds — the local tissue viability team had expected it to be wounds to the lower limb. It could be argued that patients with category 1 pressure ulcers should have been removed from the sample, as there is no actual wound present. However, patients with pressure ulcers were the highest reason for recurrent wounds. In addition, it was clear that there were inconsistencies in categorisation between assessors, along with differing descriptors for areas/locations of the body. Reverse categorisation was also seen, but this was less common.

Of the 56 wounds on the lower leg (including pressure ulcers to the heel), only five had a formal leg ulcer assessment (three arterial, one venous and one mixed ulceration). Only 14 of the patients with lower limb wounds had an ankle brachial pressure index (ABPI) recorded as being performed within the patient's SystmOne record. It must be noted that the trust leg ulcer assessment document is currently in paper format and is not always scanned onto the patient primary record. The team did look for scanned copies, but did not contact nursing teams individually to establish if the paper document was completed. This is a limitation of the results presented and was omitted due to time constraints set for data collection and report writing, but also capacity within the team.

Of those who had the procedure completed, one patient had no result, as they were unable to tolerate the procedure, 10 had unilateral results, indicating no assessment of the contralateral limb, two had no results from the procedure documented, and a bilateral result was seen in only one record. It was documented that one patient refused an ABPI measurement.

TREATMENT AIMS/ REASSESSMENT

While the treatment aim of most patients related to wound healing (67%), 13 related to symptom

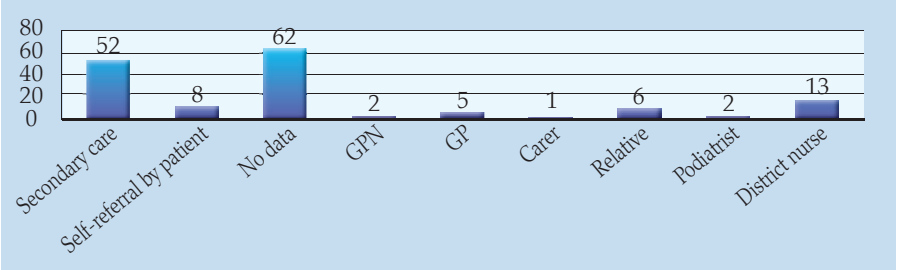

Figure 2. *Referral source.*

TIME...

TIME was developed by an international advisory board to offer a structured approach to wound assessment through certain key components of wound assessment:

- Tissue: non viable or deficient
- Infection: or inflammation
- Moisture: moisture imbalance
- Edge: non-advancing or undermined.

management, ranging from promoting venous return, managing infection, containing exudate, preventing breakdown, debridement, and managing pain. Importantly, chosen treatment matched the goal in 96 of the 151 patients. However, this was a subjective assessment of the patient record by the tissue viability nurse. As five team members participated in data collection, this could potentially be challenged on two counts. First, no prior agreement was reached in relation to what constituted an appropriate treatment choice and, second, judgement could only be made when the record was sufficiently complete.

Frequency of assessment was missing in 35 (23%) of the patients' records. It is important to point out that this does not mean that reassessments did not occur, only that a reassessment schedule was not explicit in the patient record. Frequency of reassessment ranged from daily, alternate days, three or two times per week. Sixty-eight (45%) of the assessed records had treatment changes that were clearly informed, and the rationale was linked to the reassessment data entered. In 62 cases, the treatment regimen remained the same in the four weeks studied, which shows a degree of consistency in the approach of caregivers.

WOUND SIZE/DESCRIPTIONS

Length, width and depth were recorded in 66, 62 and 25 records respectively, undermining was only recorded in the record of two patients and tunnelling in 10. The records of 85 patients had no dimensions documented and in 126 patients, which equates to 83% of the sample, the data was incomplete in relation to calculating wound volume. As such, no healing trajectory could be drawn from the records. Wound volume reduction is one of the only prognostic indicators of progress (Gethin, 2006), and lack of progress should be used to prompt referral to a specialist clinic (Guest et al, 2015; 2017).

However, the nurses caring for the cohort of patients were more consistent about describing the wound appearance. Ninety-seven patients had tissue types documented that added up to 100%, 54 had incomplete or assumed incorrect datasets (three patients added up to more than 100%), with 34 of these having no descriptors of the wound bed. This is despite frameworks like wound bed preparation and TIME and the wound healing continuum advocating this for over a decade (Falanga, 2000; Schultz et al, 2003; Gray et al, 2004). Only 13 patients had descriptions of healthy or normal wound margins, and data was missing in the remaining sample. The surrounding skin condition was documented in 121 of the 151 records, with the most common descriptors used being fragile, discoloured, macerated, excoriated, oedematous and healthy.

Exudate volume was not consistently documented, and descriptors used included no exudate, low, moderate and high volumes. Successful wound management would expect to see exudate volume reducing, as wound closure was achieved, or if signs and symptoms of infection were addressed. As such, the findings of inconsistency is not a criticism of the care received. However, the audit tool was not sophisticated enough to define if there was a trend either upwards or downwards, only if it was consistently described during the four-week period studied. One patient was receiving negative pressure wound therapy (NPWT) and the volume of exudate in the canister was referred to, but the amount in ml not recorded. The colour of exudate was documented in 46 of the records — descriptors ranged from brown, green, yellow, serous, red, blood, dark red and red. No records had the consistency of the exudate recorded.

WOUND INFECTION

Four wounds had local signs of infection noted and six documented no local signs. Interestingly, 132 had no entry in relation to local infection, be it present or not. Given the duration of some of the wounds, a higher number of patients with local signs of inflammation that may be attributed to infection/biofilm development might be expected (Percival et al, 2015). No systemic signs of infection were noted in six patients and three had signs of systemic infection. Five patients in the sample had wound swabs taken, but two had no results documented. One patient had one organism identified, one had a negative swab result, and one patient had no results documented, but the GP had prescribed antibiotics. It is important to point out that swab results can only be accessed in patients where the GP is also using SystmOne and has consented to record sharing with the district nurse teams.

WOUND PAIN

Assessment of wound pain in the sample was good as 123 patients had this recorded. This represents 81% of the sample. Seventy-nine patients had no pain and 45 patients had pain; 33 of these patients also had the frequency of pain documented (14 at dressing change, one at night, 11 persistent, seven intermittent). Twenty-six of these patients had the severity of their pain documented, 14 had low to moderate (visual analogue scale [VAS] 1–4, where one is low and 4 is moderate pain), 10 patients had moderate to high scores (VAS 4–10), and two patients were documented as hard to assess. Very few records documented interventions used to address wound pain or onward referrals, or any discussions with medical colleagues that resulted from the assessment.

WOUND ODOUR

One hundred and seven patients had odour documented, 84 had no odour, 23 had odour present, but the descriptors provided in the template were not consistently used to aid documentation or detailed

breakdown of the 23 accounts. No reference was made as to how odour was to be managed, or how it was affecting patients' activities of daily living.

SPECIALIST REFERRAL

Tissue viability had seen 7% of the patients, 3% had been seen by podiatry and 3% by their GP in relation to their wound. Three percent were seen by a vascular surgeon, one patient by a physiotherapist, and one patient was referred to plastic surgery (17% of the overall sample). None of the sample were referred to lymphoedema or dermatology services. Onward referrals were considered relevant when reviewed. However, the time to referral was not recorded in the audit, and, as such, no judgement on the timeliness can be drawn.

PATIENT AND CARER INVOLVEMENT/QUALITY OF LIFE

Patient and carer involvement in care/decision-making was noted in 45% of the case records, and an additional 12.5% of records mentioned carer involvement. Only one-third of patients' records referred to patient information/education in relation to the wound and/or factors that affect wound healing, such as nutrition, offloading, etc. Concordance issues were recorded in 14 (9%) of the records. Eleven records mentioned the impact that the wound was having on the patient's quality of life; three patients had reported low mood and two sleep deprivation.

CONCLUSION

A local action plan has been drawn up that details the key areas for improvement for nurses managing wounds in the author's trust. The team are focusing on making changes to the templates on SystmOne and educating staff about domains 2, 3 and 4 from the minimum dataset, to ensure that descriptions and measurements are made of the wound location, that local wound bed descriptors are completed accurately at least once a week, and that initial wound assessment provides an accurate baseline against which the wound's status and its impact on patients/carers can be measured.

Only 38 patients (25%) were considered to have had a complete wound assessment, and some of these were in the postoperative wound group. Interestingly, four patients deemed to have a complete wound assessment had initial assessments by a TVN (n=3) or podiatrist (n=1). The author and her team were unable to establish the outcome in 14 of the patients, as the records of some patients with open wounds stopped before wound closure. These patients probably moved care provider from district nurse to GPN, moved out of the area, or the wound healed, but it was not documented. One-off visits for suture, clip or steristrip removal or wound check post-surgery occurred in 20 patients (13% of the sample); these patients also had an additional wound. Outcomes for the remaining 90% of patients were as follows:

- 66% of wounds healed
- 23% were improving according to the written narrative in the records
- 11% were static and warranted onward referral.

Given that 17% of the patients had been referred to a specialist team, this gives reassurance that the current pathways in place do result in specialist access. It was not possible to determine if the referral was made in a contemporaneous manner, or if an earlier referral would have resulted in a different outcome, as this was a retrospective audit. JCN

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