

# The challenge of providing cost-effective wound care

## KEY WORDS

- » Cost-effectiveness
- » Decision making
- » Health economics
- » Tissue viability
- » Wound dressings/management

With increasing health service cutbacks, cost-effectiveness is a central issue in many wound care decisions. Community nurses face expanding case-loads and earlier patient discharge into the community, with a range of conditions, which means that cost-effective, practical, clinically-effective solutions are at a premium. Clinicians are frequently required to justify clinical decision making in terms of health benefits obtained and the cost to health service providers. However, few clinicians have the skills to accurately interpret cost in more than local health economic terms, and the disjointed structures that exist in healthcare provision mean that even those who monitor health expenditure have little concept of the global cost of care provision. This article focuses on the pressures placed on healthcare providers to achieve cost-effectiveness in care, specifically in relation to wound care.

As a frontline service, nurses often find themselves bearing the brunt of wide-ranging changes in the NHS. Recent developments in government policy place the patient at the centre of care and are focusing resources in preventative community care (Department of Health [DH], 2008; NHS England, 2013; DH, 2014). Community staff encounter a range of presenting conditions that require interventions, and they pride themselves on being generalist practitioners. The increasing numbers and complexity of care packages provided in the community has not always been matched by a corresponding increase in staff. Additionally, in most community teams there has been a move towards the integration of teams to encourage multidisciplinary working, maximise the numbers of staff available to care and reduce inefficiencies/waste.

Community practitioners in 2016 have to balance time to care, and are challenged with ensuring structured patient assessment (*Figure 1*) of any underlying conditions and implementing care to address environmental, systemic and local factors. In addition, they require the knowledge and skills to enable them to assess the impact of these on the quality of life of the patient in order to establish the priorities of care and gain concordance of the patient with the proposed treatment plan. Furthermore, they need to be able

to determine the influence that one condition may have on another, e.g. patients with diabetes need care for this condition as a priority as failure to do so will impact on other systems and will lead to an increased risk of wound development and or delay or cessation of healing (*Figure 2*).

## CURRENT CHALLENGES

It is becoming increasingly challenging to provide health care in a time of economic recession, reduced funding and lessening of expenditure by healthcare providers. In many countries, this is compounded by an ageing population, which increases the demand for healthcare resources while reducing the revenue available through taxation (Phillips, 2005). Even before the current economic situation, concern was raised about the escalating cost of health care and the urgent need to focus on cost-effectiveness (Norman, 2003; Jones and San Miguel, 2006). Current changes in the world economy have directed focus on the cost of care provision and the need to provide robust models for its delivery. Wound care is not immune to this change.

In wound care, the plethora of dressing technologies available means that there is a potential for a variety of dressings to be used on a single wound (Lee et al, 2009) especially when a patient is being visited by a number of

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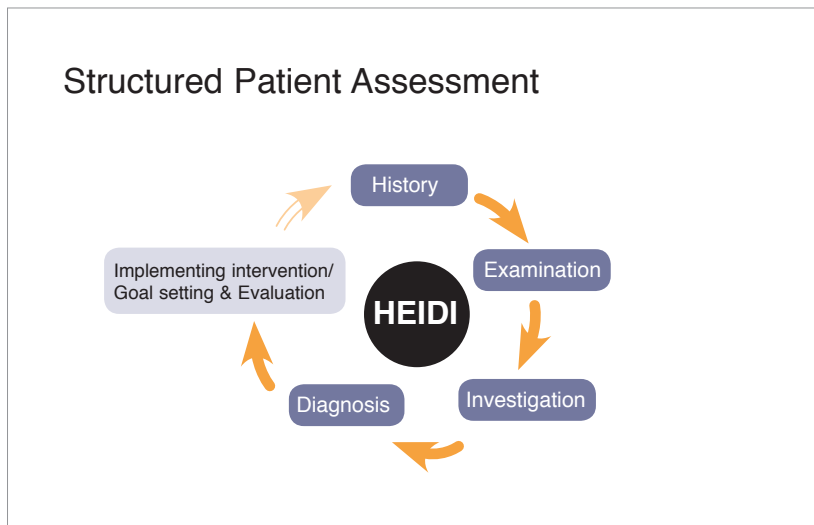


Figure 1. Structured patient assessment (adapted from Harding et al, 2007)

staff. The new direction of health care in the UK demands that patient needs are paramount. Thus, clinicians must ensure that they establish an accurate diagnosis and ensure that the treatment plan addresses all of the identified factors, most notably in chronic wounds the treatment plan must seek to address underlying pathophysiology. Conversely, interventions for the management of acute wounds should centre on reducing potential wound-related complications such as surgical site infection. Part of this process is the selection of a dressing to cover the wound, most are designed to address local factors, e.g. absorb exudate, donate fluid, and or reduce bioburden. Dressings help us to manage the symptoms of the wound and manipulate the environment in which healing takes place. Optimisation of the wound

environment can improve patient outcomes and address patient-related concerns. Unfortunately, there is very little robust evidence to support clinician choice in relation to the healing potential of one dressing over another, where it does exist it is often limited to non-comparative case studies/ series that report the benefits of use and effect on patients' daily activities.

**THE COST OF WOUND CARE**

Despite difficulties in accurately estimating the cost implications associated with the management of wounds that arises as a result of different wound care products, their cost, frequency of interventions, and costs associated with staff time and resources, it is believed that wound care has a significant effect on healthcare expenditure. This is particularly notable with regard to chronic wound management, where interventions may continue for months or even years. In 2006, the financial burden of wound care on the NHS was recognised, with more than 650,000 people requiring treatment costing around £3 billion (Thomas, 2006). It is estimated that one in 500 people in the UK has an ulcer (Posnett and Franks, 2008), with the occurrence of ulceration rising sharply with age (Graham et al, 2003). This increased prevalence linked to an ageing population means that the number of people with this condition is set to rise by 23% by 2036 (DH, 2011).

Meaume and Gemmen (2002) used a cost-effectiveness model to determine the costs associated with pressure and leg ulcer care protocols, and established that the most expensive element of care was clinician labour. Trends in the UK population, such as the ageing demographic and increased incidence of diabetes and obesity, are likely to lead to increased numbers of patients with chronic wounds (HM Government, 2009).

**COST-EFFECTIVENESS**

With increased focus on value for money in today's health and social care arena, cost-effectiveness of any product should be considered (Evans, 2014). As already mentioned, healthcare budgets are tight and equipment usage is heavily scrutinised as a way of driving down costs (Monitor, 2013). This is particularly relevant in wound care, where there are so many products available.

Local	Systemic	Environmental
Slough Necrosis Infection Maceration Desiccation	Tissue perfusion Age Nutrition Disease (e.g. diabetes) Obesity Smoking Poor nutrition Immune compromise Medication	Trauma Patient behaviours Temperature Contamination

Figure 2. Examples of factors that can contribute to non-healing

**TREATMENT GOALS**

The best way to demonstrate outcomes from any intervention is to establish treatment goals. In relation to wound care these may include:

- ▶▶ To decrease wound size — length, width and depth
- ▶▶ To stimulate healing in a previously non-healing wound
- ▶▶ To increase granulation tissue
- ▶▶ To manage symptoms/other patient-related factors
- ▶▶ To decrease/manage exudate
- ▶▶ To reduce or control bioburden.

Treatment goals should be reassessed weekly to ensure the prescribed treatment regime and product continues to be the most appropriate treatment. To achieve optimum outcomes, it is essential to ensure that all underlying pathophysiology is addressed in parallel. For example, offloading and glycaemic control in the diabetic foot or addressing venous hypertension with compression, addressing nutritional deficiencies and other identified patient risk factors.

**PREDICTING WOUND HEALING**

Being able to predict whether wounds will heal readily with conventional treatment, and deciding which patients are candidates for new, often expensive, treatments is important (Tallman et al, 1997; Kantor and Margolis, 2000). Predicting chronicity/failure to heal allows clinicians to consider alternative and sometimes more aggressive treatment strategies. Flanagan (2003) suggests that a percentage reduction in wound size of 30% or more after four weeks of treatment reliably predicts ulcer healing. The period of four weeks is a good guide to practitioners for how long to continue with a particular course of treatment provided no adverse changes occur. Simple length width and depth measurement is recommended and is accessible to any practitioner (Kantor and Margolis, 2000). In addition, Flanagan (2003) suggests that plotting wound size reduction measured against the initial wound area allows comparison to defined standards helps to inform clinical decision-making and reduces the likelihood of prolonged use of ineffective treatments. If the wound is failing to progress onward referral and specialist assessment investigation and intervention is warranted. Keast et al (2004) argue that

**Box 1. Cost equation for wound care.**

A: Cost of dressing/s or therapy  
 +  
 B: Cost of sundry items (dressing pack, scissors, tape etc)  
 +  
 C: Staff costs (which should include a percentage of salary that reflects the visit duration, travel costs)  
 +  
 D: Environment costs (e.g. the cost of in-patient care, outpatient, home for the time taken to do the dressing)  
 =  
 E: Cost of one intervention

**Overall cost** = E × number of interventions taken to achieve healing

regular reassessment is currently the only way of determining treatment effectiveness, quantifying and documenting progress, and that this objective parameter should be used to guide further treatment decisions.

As the wound heals, ingrowth of granulation tissue decreases the wound depth and volume, and new epithelium decreases wound area. Therefore measurement of size provides a direct indicator of healing (Schultz et al, 2005). Whilst it is acknowledged that wound size is invaluable, it alone does not answer the question: ‘Is this wound the same, better or worse than before?’ This question can only be answered by systematic and thorough wound documentation which facilitates accurate and timely monitoring and assessment of systemic, environmental, patient reported and local wound bed preparation related observations.

**JUSTIFYING TREATMENT DECISIONS**

Increasingly, clinicians are required to justify clinical decision making to non-clinical managers and support it with robust evidence (Gerrish et al, 2007). However, reviews of wound healing modalities and treatments have highlighted a paucity of evidence identifying optimal treatment in terms of defined clinical endpoints such as complete healing (Vermeulen et al, 2004, 2007; Adderley and Smith, 2007; Jull et al, 2008). In the absence of clear evidence, the clinician is faced with justifying many decisions on anecdotal and experiential evidence which, while it might persuade clinicians, may not be sufficiently robust to convince decision makers who are

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remote from the patient. In such cases, counter-arguments based on financial considerations can be difficult to refute, and the clinician can be put under pressure to select products and therapies that have a seemingly low financial effect because of the low unit cost of the product (Hamilton, 2008). Determining the overall cost of a typical wound care intervention from wound inception to complete healing or resolution of symptoms is fraught with difficulties. A relatively simplistic method of calculation is shown in *Box 1*.

To obtain overall expenditure, emphasis is currently placed on the speed at which healing occurs. Shortening the time taken to achieve healing, ends the need for ongoing intervention and expenditure in relation to the direct cost of the interventions used to achieve this. However, the quality of the healing is also important and faster healing should not result in more frequent recurrence. The financial constraints on the health service have resulted in ever-increasing pressure to accept the cheapest products, possibly to the detriment of clinical care provision and longer-term health-economic considerations (Hamilton, 2008).

It is also important to note that the above calculation does not address, prescription costs associated with analgesia to address wound related pain, or antibiotics to address a wound infection. Uncontrolled pain has been shown to lead to feelings of anxiety, anger and depression (Roth et al, 2004; Woo, 2010) which in turn impacts upon the overall cost of treatment. Furthermore, it fails to account for lost opportunity costs associated with inappropriate hospital admissions that result as a direct consequence of the selection of inappropriate treatments that fail to address the underlying pathophysiology. In addition, hidden costs within the system are difficult to quantify, e.g. the amount of dressings wasted that are prescribed on FP10 that are left unused and are discarded. This in part can be attributed to the fact that any prescribed products legally become the property of the patient once they are dispensed (Dimond, 2011). To safeguard against this, the National Prescribing Centre (NPC) advocates that the clinician undertakes a full and holistic assessment to determine dressing requirements and that the minimum amount of dressings should be prescribed (NPC, 2012). To circumvent this, some organisations have opted to supply dressings

via a non-prescription route, the advantages and disadvantages of this approach are discussed by Grothier (2013). Pharmacy and other supply chain costs are often overlooked as they are difficult to quantify in isolation. Moreover, patient-related factors such as inability to work/contribute to society as a direct result of the wound and the consequent impact of quality of life and mental health must not be underestimated (Heinen et al, 2004); along with patient alienation from friends, family and healthcare professionals (MacDonald and Leary, 2005). The calculation in box 1 assumes that all wounds achieve complete healing.

Newton (2010) highlights that wound-related interventions can have a significant effect on total healthcare expenditure. Her example describes the use of a topical antimicrobial dressing to control bioburden, which increased costs associated with dressing expenditure. However, an audit of the effects of this intervention demonstrated it achieved a reduction in the incidence and overall cost associated with the management of hospital-acquired bacteraemia. Therefore, although the initial cost appeared high, the overall effect was a cost saving. For patients in whom complete wound healing is an unachievable goal, e.g. in palliative care and in an estimated 20% of patients with ongoing chronic leg ulceration (Kantor and Margolis, 2000; Margolis et al, 2004), unseen costs have major significance because healthcare interventions may continue until the end of life.

## CONCLUSION

Estimating the true cost of healing a wound is challenging, especially since the diverse pattern of healthcare provision and funding results in discrete financial silos (Hamilton, 2008), such as those that exist between primary and secondary care budgets. Interventions initiated in one area may have a significant effect on another area, which in turn can have a negative effect on expenditure if poor decisions in one area are compounded by continued inappropriate treatment in the receiving area.

While the method highlighted is useful for retrospective analysis of treatment costs, it is clear that a workable prospective method that accurately identifies the individual components within the cost equation so that an estimate of the potential cost of treatment can be made. In addition, a system that

allowed comparison of treatment costs prior to implementation could be used to evaluate potential costs in an effort to favour regimes that reduce costs. Achieving this while trying to optimise patient outcomes is difficult, given that there will always be an element of human error and that clinicians have different levels of the knowledge and skills to make their decisions. Given the diverse population served by community nursing, this in itself represents a challenge. However, even a system that engages staff and provides increased understanding of the cost of individual elements within the cost equation would prove useful in justifying treatment decisions and could be linked to clinical pathways. It is clear that financial constraints in wound care are set to become ever increasingly stringent (Carter, 2016) and questioned as the world economy attempts to recover from the recession. The current financial pressures placed on health service providers require clinicians and managers to have a better understanding of the financial effect that clinical decision making has on local finances. Clinicians will be required to think about how to reduce the cost of care delivery, while maintaining standards and clinical outcomes. **WUK**

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