

Pressure ulcer prevention in the seated patient: Adopting theatre practices to protect skin integrity

Skin integrity, its assessment, management and prevention of deterioration is the responsibility of all healthcare workers. Maintenance of good skin integrity is everyone's business and we need to regroup and refocus if harm to patients' skin integrity is to be avoided (Bateman, 2013). This article will focus on the prevention of pressure ulcers within the seated patient, specifically in the lower extremities, highlighting the need to explore innovative ways of managing this patient group, and asking if we can adopt theatre surfaces in the patient journey.

KEY WORDS

- » Skin integrity
- » Pressure ulcer
- » Seated patient

Approximately 25% of heel and ankle pressure injuries begin in the operating theatre (Huber, 2013), which suggests that 75% of heel and ankle pressure damage occurs in other areas, such as wards, outpatients and the patient's home. Many theatre environments successfully utilise specialised pressure-distributing devices – such as gel and high density single patient foam products – to reduce pressure, shear and friction at times of immobility (Nixon et al, 1998; Bateman, 2012).

Outside of theatre, patients in the seated position are often unable to relieve pressure on their feet and legs, and can be viewed with their feet placed on the floor, bedside table bar or non-pressure-dispersing footstool. Having the weight directly upon the heel, rather than dispersed throughout the foot, increases the risk of pressure damage to the heel and lateral malleolus (Whittington and Briones, 2004). The correlation between being seated and the presence of pressure ulcers has been reported frequently since the large-scale study undertaken by Jordan and Clark (1977). They found that the bed-bound patient was at a lower risk (18%) than those in the seated position (24.8%), with the heels and ankles being the most vulnerable to lower grade damage.

Huber (2013) highlights the use of pressure-distributing foam products as a method of reducing pressure damage to the heel and lateral malleolus. These products cushion, protect and redistribute pressure without resulting in other immobility complications such as deep vein

thrombosis or tissue necrosis. Can this theatre practice be disseminated and replicated within other areas of care to protect the patient with lower limb immobility?

REDUCED SKIN INTEGRITY

Reduced skin integrity and the formation of pressure, friction or shear-related ulceration occurs when the skin is compressed between a bony prominence and a hard surface, such as a mattress, chair, wheelchair, floor or footstool. When external pressure exceeds the normal capillary pressure of 32mmHg, the patient is at an increased risk for impaired tissue perfusion and resulting ulceration (Walton-Geer, 2009). Bony prominences and areas of high risk have an increased risk of damage through factors such as age, disease, disability, immobility, moisture, friction and sheer (Bergstrom et al, (1987). The European Pressure Ulcer Advisory Panel and National Pressure Ulcer Advisory Panel's (2009) classification has been widely adopted to describe the extent or depth of tissue damage to aid communication through documentation of pressure ulcers.

Within healthcare organisations, pressure ulcer prevalence and incidence data are utilised to highlight the severity of reduced skin integrity and to demonstrate effective clinical practice across both primary and secondary care. Some organisations are utilising prevalence and incidence alongside clinical outcomes to triangulate both the 'snapshot photograph'

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of prevalence and the ongoing ‘moving film’ of incidence in regards to the occurrence of impaired skin integrity (Bateman, 2013).

A search of key literature demonstrates worrying figures. Bennett et al (2004) estimate that about 412000 individuals in the UK will present with a pressure ulcer annually, with one in five patients suffering some degree of tissue damage (Vanderwee et al, 2007), three in four pressure ulcers being hospital-acquired (Gallagher et al, 2008), and hospital incidence rates from 4–10% (Clark and Watts, 1994), depending upon the clinical specialty.

In the current NHS, quality within healthcare service provision requires a consistent focus. Serious consideration must be given to outcome measurement, standard setting, action planning, privacy and dignity, patient safety, and patient experience alongside sound clinical outcomes. Clinicians should not just be driving pressure ulcer awareness within their organisations through the undertaking of target-based prevalence or incidence audits.

Given the human and financial costs of pressure ulcers, and the fact that they are mainly avoidable, the current healthcare reforms in the UK are making skin integrity maintenance a key policy and professional target (Benbow and Bateman, 2012).

A zero tolerance approach to avoidable pressure ulcer formation is being implemented widely as a Quality of Care indicator (Wounds UK, 2013). This has major implications for everyone at all levels of healthcare provision.

THE FINANCIAL BURDEN

Despite an increased awareness through education, training and government promotion, skin impairment remains a widespread, serious, and potentially life-threatening problem across all age groups, medical and surgical specialties, and care settings (Benbow and Bateman, 2012). In the UK, managing pressure ulcers is estimated to cost up to £2.1 billion annually – 4% of the NHS budget (Bennett et al, 2004). Costs for the most severe cases range from £11,000 to £40,000 (Posnett and Franks, 2007). The expense of reduced skin integrity prevention, its management and its impact upon the patient

is inestimable (Posnett and Franks, 2007). Daily costs for a patient with reduced skin integrity are estimated to be between £38 and £196, with nursing resources accounting for almost 90% of this (Bennett et al, 2004).

It is no surprise then that the costs increase with the category of pressure ulcer, as the higher categories tend to affect individuals with pre-existing health problems, who usually have more complex care requirements (Bennett et al, 2004).

The monitoring and awareness of the true financial costs to organisations is, at best, a rough estimate with figures gleaned from work previously carried out by Bennett et al (2004). The NHS Productivity Calculator (Department of Health, 2010) is a freely accessible tool which aids organisations and commissioners in understanding the productivity and cost elements associated with treating patients with pressure ulcers. The tool has been developed using the results of research into the cost of pressure ulcers in the UK (using 2009 prices) and can assist in the long-term reduction of pressure ulcer incidences. It is used in some healthcare trusts alongside prevalence and incidence charts to add the associated cost to the organisation, which provides a more insightful motivational picture to both clinicians and trust administrators (Bateman, 2013). The tool is a spreadsheet which allows the clinician to submit the number of grades of pressure ulcers and a total cost is produced in an interactive table (Table 1).

It must be emphasised that neither clinical condition of the patient, age or ability be used to defend organisations’ incidence and prevalence rates, and the financial cost related to the harm occurring to patients (Bateman, 2013). It is not acceptable that an estimated 20% of hospitalised patients (approximately 20,000 inpatients at any

Table 1. Pressure ulcer productivity calculator, estimated cost per ulcer (Department of Health, 2010).

Grade	Central (£)	Lower range (£)	Higher range (£)
One	1000	1000	2000
Two	6000	5000	7000
Three	10000	8000	12000
Four	14000	12000	17000

“Transferable, fit-for-purpose devices will allow and encourage patients and their carers to manage skin integrity.”

one time) develop reduced skin integrity (Posnett and Franks, 2007) and at any one time 30,000 people in community and residential and care home settings will have pressure ulcers (National Patient Safety Agency, 2010).

OUR PATIENT OF THE FUTURE

It is imperative that we look to the future and recognise just who our patient is and the needs that our services will have to meet if we are to ensure that patients receive the optimum safe care. Currently the UK population is ageing, with an estimated 19 million pensioners in 2050 with 8 million being aged 80 or over (Age UK, 2012); and suffering from poor nutrition, with 61.3% of adults and 30% of children aged between 2 and 15 being overweight and obese (Department of Health, 2013). Increasingly patients are presenting with conditions that reduce skin integrity and which also increase disability and morbidity, such as vascular disease, leg ulcers (Adeyi et al, 2009), and diabetic foot ulcers (American Diabetes Association, 2004)

These issues will increase the need for high resource deployment in regards to clinical staffing levels, acute and community bed availability, and training and education, alongside strict skin management policy and programmes of care.

As skin care clinicians, it is vital that we act now and look outside the current care provision tool box and explore new and innovative pressure ulcer prevention strategies if we are to promote high standards of care delivery in a cost-effective manner.

ADAPTING GOOD PRACTICE FROM THE THEATRE ENVIRONMENT

A study conducted by Shelanski and Holley (2009) explored the pressure-distributing properties of four typical positioning products commonly used within the theatre environment, including foam, gel and basic operating surfaces. Subjects were asked to remain motionless in a supine position for 20 minutes and a digital pressure map was recorded. The results demonstrated that subjects who were placed upon a foam positioning device received superior results with respect to both total pressure redistribution and pressure levels that would interfere with tissue perfusion.

Benbow (2012) concurs, emphasising the need for the protection of bony prominences and other vulnerable areas such as the heel, which can be managed by the use of pressure redistribution devices.

This article proposes that positioning devices which offer pressure distribution properties within the theatre environment can be an innovative way forward in the protection of patients outside the theatre. These devices could protect patients who use the heel for stability and positioning while seated and protect both the heel and lateral malleolus while resting on non-pressure-distributing footstools.

Disposable, single patient devices, such as positional foams (Figure 1), which are utilised within one environment could be part of the patient’s package of care and travel with them throughout the various departments of any care setting. This would ensure that the skin protection is continuous, whether the patient is immobile or mobile, and that any surface which may put the lower extremities at risk, such as footstools, can be managed simply and cost-effectively. Transferable, fit-for-purpose devices will allow and encourage patients and their carers to manage skin integrity and participate actively with pressure reduction programmes because foam devices are light, non-slip and simple to



Clinical properties of the Covidien foam positioning pad range:

- ▶▶ Reduce interface pressure, friction and shear.
- ▶▶ Reduce the risk of pressure sores and nerve damage while maintaining proper circulation.
- ▶▶ Comprehensive positioning products range provides protection and support for all recognised pressure points including the sacrum and heels.
- ▶▶ Provide the ideal combination of exceptional stability and cushioning.
- ▶▶ Non-toxic, firm density foam.


Figure 1. Foam positioning utility pad (Covidien, 2012).

position from floor to footstool and vice versa, ensuring continued protection.

CONCLUSION

Skin integrity management is the responsibility of everyone, no matter the environment or specialty. It is clear that those seated patients who are at risk of developing reduced skin integrity on the heel and lateral malleolus require increased tissue protection through pressure redistribution if we are to reduce pressure ulcers in the lower extremities.

Economically, this could also reduce pressure ulcer incidence, improving the burden that reduced skin integrity currently has upon patient safety, care experience, clinical resources and the financial constraints affecting the NHS.

Before implementing change, the author suggests further audit and evaluation of equipment transference outside of theatre is required to provide robust evidence and ascertain clear clinical benefits within skin integrity management and pressure ulcer prevention. 

“He who cures a disease may be the skillfullest, but he who prevents it is the safest clinician”
–Thomas Fuller (1631)

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“Transferring effective tried and tested pressure relief practice from the theatre environment to other clinical areas ... could actively encourage a consistent approach to heel and lateral malleolus protection.”