Reducing avoidable pressure ulcers

KEY WORDS
- Care bundles
- Pressure ulcers
- Risk assessment

Risk assessment scales for pressure ulcers have been in use for over 50 years but there is no evidence that such scales reduce pressure ulcer incidence. Pressure ulcer interventions have been shown to be effective, sometimes alongside risk assessment scales. Care bundles are an example of multifaceted approaches that have been successfully used in a variety of clinical areas including for pressure ulcers. Pressure ulcers were monitored before and after implementation of a new scheme based on an existing care bundle. Avoidable pressure ulcers were significantly reduced following implementation of the scheme.

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Pressure ulcers are a serious event in hospital. As well as patient suffering, there are financial implications as patients with pressure ulcers spend longer in hospital (Anthony, 2004). The cost (Dealey et al, 2012) in the UK for treatment is from £1,214 (grade 1) to £14,108 (grade 4). Thus ,any intervention that may reduce the incidence of avoidable pressure ulcers will reduce hospital stay, patient suffering and cost.

Risk assessment of pressure ulcers have been used for over half a century. The first risk assessment scale was that of Norton (Norton et al, 1962) and since then, many others have been devised including the Waterlow and Braden scales. Over 10 years ago, there were over 40 pressure ulcer risk assessment scales (Thompson, 2005). However, there is no evidence that using such scales reduces pressure ulcer incidence (Moore and Cowman, 2014). There are few studies available and there are methodological problems with these, including inadequate sample sizes. Balzer et al (2013) suggest that sample sizes to detect a meaningful difference will be too large to be feasible, instead proposing weaker but more plausible designs employing evidence linkage.

There have been several evaluations of pressure ulcer interventions, some of which employ risk assessment scales. In one US hospital (Bales and Padwojski, 2009), prevalence was reduced following a programme to eradicate nosocomial pressure ulcers, and another US study demonstrated that a new strategic plan with multiple actions reduced pressure ulcers in a hospital setting (Hiser et al, 2006). Other US studies have showed reductions in all pressure ulcers and, in particular, heel ulcers (McInerney, 2008) following an assortment of interventions and a reduction in paediatric ulcers after implementation of a care bundle (Schindler et al, 2013). In one study in the US, heel ulcers were reduced following a quality improvement process that included education, and use of heel protection devices (Lyman, 2009) incorporating a risk scale (Braden) with pressure-reducing devices was also effective (Walsh and Plonczynski, 2007). However, another US study failed to reduce heel ulcers after adopting the Braden scale (McElhinny and Hooper, 2008) with lack of evidence-based protocols cited as a possible reason for lack of effect. The use of a decision algorithm showed significant reductions in pressure ulcers compared with a control group (Shannon et al, 2012). In an Australian study, pressure ulcers were reduced following an evidence-based prevention programme (Barker et al, 2013). Finally, a systematic review of 26 implementation studies showed that integration of several core components, such as education and training of staff, documentation of wounds and use of risk assessment scales, as well as improved processes of care, reduced pressure ulcers (Sullivan and Schoelles, 2013).

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CARE BUNDLES

In the UK over a decade ago, the Institute for Healthcare Improvement developed the concept of 'bundles' to help healthcare providers more reliably deliver the best possible care for patients undergoing particular treatments with inherent risks. A bundle is a structured way of improving the processes of care and patient outcomes: a small, straightforward set of evidence-based practices, usually three to five actions that, when collectively and reliably performed, have been proven to improve patient outcomes (McCarron, 2011).

The implementation of a care bundle approach to delivering fundamental care in practice is a recognised and effective way of translating research into practice, offering consistent care with resulting positive outcomes for the patient.

The theory behind the implementation of a 'bundle' approach is that the whole is likely to be more effective than the sum of the parts; therefore, reliably delivering all elements of the care bundle together will improve the care that a person receives and will have impact on improving care outcomes (McCarron, 2011).

In the case of pressure area care, the SSKIN (Surface, Skin inspection, Keep moving, Incontinence and moisture, Nutrition and hydration) care bundle was initially developed in 2009, by Abertawe Bro Morgannwg University Health Board (Abertawe Bro Morgannwg University Health Board, 2009), this was further refined by Quality Improvement Scotland (2011). NHS Greater Glasgow and Clyde added a sixth element to incorporate self-management:

- Skin — inspect skin for pressure damage
- Surface — ensure patient is being nursed on appropriate surface to reduce risk
- Keep moving — ensure frequent changes of position
- Incontinence — manage continence issues
- Nutrition — optimise nutrition and hydration
- Self-management — encouraging self-care, involving carers.

The SSKINS care bundle was well established in NHS Greater Glasgow and Clyde, but despite this, a reduction in avoidable hospital-acquired pressure damage was not being achieved (AQ4: what year was this?). In an attempt to address this, the tissue viability team, supported by the Scottish patient safety programme manager, developed a tool that incorporated a risk assessment, pressure-relieving intervention guidance and patient-centred care planning, all underpinned by the principles of the SSKINS care bundle.

Clinical staff were heavily involved in the testing and refining of the tool, and there were eleven test sites across the Board, representing various specialties. The tool underwent seven tests of change using the Plan-Do-Study-Act model for improvement (Langley, 1996; Taylor et al, 2013). The tool was named the Pressure Ulcer Daily Risk Assessment (PUDRA) and was built around the SSKINS care bundle.

Education sessions regarding the new risk assessment tool were run throughout the board in the lead-up to implementation. Tissue viability provided initial supplies of the document and removed the Waterlow scale from all areas to prevent confusion.

METHODS

NHS Greater Glasgow and Clyde is a health board in West Central Scotland. The board decided to stop using the Waterlow scale and replaced it with PUDRA to identify patients who were at risk of developing pressure damage. PUDRA was rolled out in batches across the board between January and May 2016. Prior to implementation of PUDRA, all pressure ulcers were assessed as being avoidable or not. Avoidable ulcers included those where:

- Evaluation of the patient's condition and pressure ulcer risk factors was not undertaken
- Planning and implementation consistent with goals and recognised standards of care were not undertaken
- Monitoring and evaluation of the impact of interventions or revision of interventions was not undertaken.

It is acknowledged that some pressure ulcers are not avoidable, for example, during end-of-life care where the patient cannot tolerate position change or where a patient refuses or is unable to adhere to prevention strategies.

All grade 2–4 pressure ulcers were required to be reported to the Tissue Viability Service. A review consisting of 19 items considered necessary to

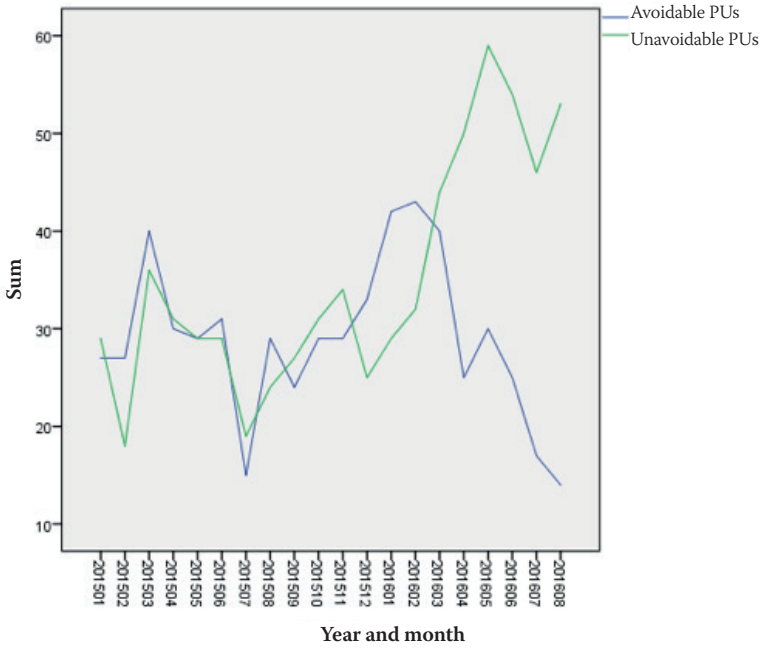

Figure 1. Graph of unavoidable and avoidable pressure ulcers by month

prevent a pressure ulcer (e.g. was a pressure ulcer risk assessment carried out?) was conducted. If any item was marked 'no', then the ulcer was considered to have been avoidable. These reviews started in autumn of 2014. To allow for potential data collection problems at the commencement of reviews, the analysis started from January 2015. All patients with a pressure ulcer (excluding grade 1) were reviewed and the ulcer was assessed as avoidable or not. Data were split into pre- and post-PUDRA implementation and chi square was used to test if there was any significant change in avoidable pressure ulcers.

RESULTS

Prior to PUDRA, the percentage of avoidable pressure ulcers was over half (50.9%) and after was about a third (35.3%). This reduction was statistically significant ($p<0.001$). You can see the effect in *Figure 1* where the reduction in avoidable pressure ulcers continues up to the end-of-the-census period in August. Also, while the raw number of pressure ulcers is variable, the numbers of avoidable and unavoidable ulcers mirror each other until the implementation of PUDRA, when they increasingly diverge as the tool is rolled out over different units.

DISCUSSION

In 2015, there were 854 grade 2–4 pressure ulcers reported, of which 48.4% were assessed as avoidable. If PUDRA had been in place (and had the same avoidable percentage as in the post-implementation phase), then we could expect over 150 pressure ulcers would have been avoided. If all pressure ulcers had been the cheapest to treat (grade 2), then the cost saving (using figures from Dealey et al, 2012) from employing PUDRA for the board (providing health care to 1.2 million people) could be estimated at about £180K per annum at 2012 prices. If a similar improvement was made across Scotland, the estimated cost-saving would be about £800K.

CONCLUSION

Other health boards are interested in adopting PUDRA both in Scotland and Trusts in other parts of the UK. Future plans include undertaking peer review of the tissue viability assessments to ensure inter-rater reliability. The hope is that in time clinical staff will be able to undertake the reviews themselves without the requirement of a specialist tissue viability nurse. Also, the intention is to use the same approach to address moisture lesions. WUK

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