

How a mattress selection matrix helped to sustain pressure ulcer prevention and also cut costs

KEY WORDS

- ▶ Dynamic mattresses/cushions
- ▶ Pressure ulcer
- ▶ Pressure relieving equipment

In 2012, University Hospitals Bristol invested in training, education and pressure redistributing equipment and made a 50% reduction in the occurrence of pressure ulcers. The results came at a high financial cost because of the increase in mattress rentals. In 2014 the trust began using the SSKIN tool to identify patients at risk of pressure ulceration and began using a mattress matrix that ensured that appropriate mattresses were being provided. The results saw a drop in mattress rentals within one month as well as a sustained reduction in pressure ulcer incidence.

The eradication of avoidable pressure ulcers is high on the agenda within the NHS (National Patient Safety Agency, 2010). Stop The Pressure, a now national campaign that was introduced by NHS Midlands and East, estimated that 700,000 people in the UK are affected by pressure ulcers each year. Of those, 186,617 are patients who develop pressure ulcers in hospital. Each hospital-acquired pressure ulcer brings with it an estimated additional cost of £4,000 per patient due to longer stays, treatment costs and increased intervention (NHS Midlands and East, 2012). There has also been an increase in litigation against healthcare providers. Reports by Lawtel (2014) suggest while many cases are settled out of court for £20–30,000, more cases are showing much higher settlements of up to £1 million, and in extreme cases £3 million. Even greater consideration must also be given to the individuals affected, as pressure ulcers are well documented to have both emotional and physical adverse effects including pain, infection, depression and social isolation (Spilsbury et al, 2007).

Avoidable pressure ulcers are a key indicator of the quality of nursing care. A predicted 80–95% are avoidable (NHS Midlands and East, 2012) and guidelines from the National Institute for Health and Care Excellence (NICE) recognise that all care providers should reduce the incidence of avoidable pressure ulcers (NICE, 2014). This all needs to be delivered while considering budgetary constraints.

REDUCING THE INCIDENCE OF PRESSURE ULCERS

In August 2012, University Hospitals Bristol Trust commissioned an independent panel to review tissue viability care and make recommendations to the trust on how to reduce pressure ulcer incidence. Following this review the trust launched an initiative to increase awareness of pressure ulcers. Leaflets were developed for patients and visitors, and pressure ulcer risk tools and care plans were updated for staff. Access to pressure redistributing mattresses and cushions was expanded and pressure care was subject to new documentation including wound assessment charts and pressure ulcer prevention care plans. Additional training and education was provided on how to use these new tools.

Over the next 18 months, the sustained work on pressure ulcer prevention saw the number of hospital-acquired category 2, 3 and 4 pressure ulcers in the 900 inpatient beds at the trust fall from an average of 30–40 a month to 10–20 a month (*Figure 1*). These results were impressive and they were also sustained but the cost to the trust of renting pressure redistributing mattresses nearly tripled. The average rental of dynamic air mattresses had increased from 5,400 days in April 2012 to more than 13,000 days in February 2014 (*Figure 2*).

DYNAMIC MATTRESS USAGE: A REVIEW

In January 2014, the trust entered a tendering process for a new dynamic mattress contract and the tissue viability service reviewed the trust's use of

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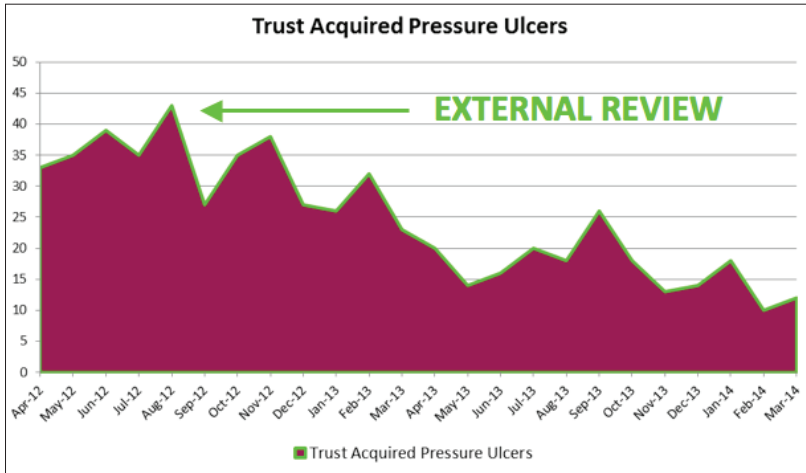


Figure 1. Trust-acquired pressure ulcers before and after the external review.

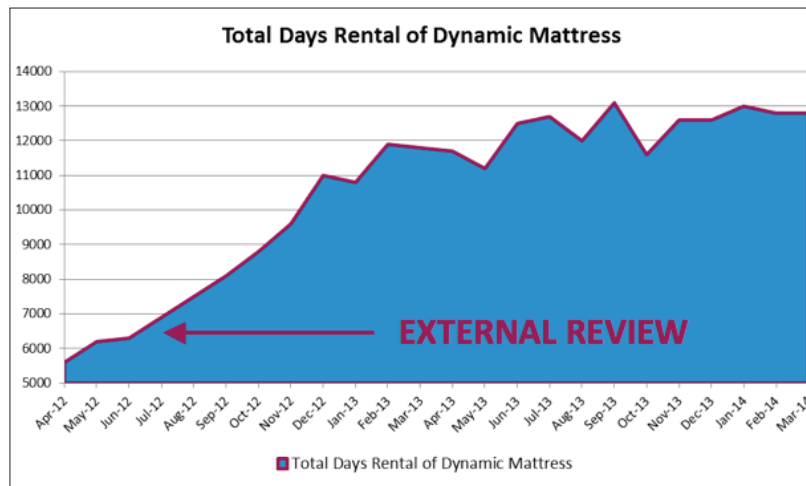


Figure 2. Total days rental for mattresses before and after the review.

dynamic mattresses focusing on:

- ▶ Who was requesting dynamic mattresses
- ▶ What type of patient was using the mattresses
- ▶ The clinical rationale for supplying a mattress
- ▶ How often this decision was reviewed.

The review was conducted over a two-week period. Quantitative data was collected from the current mattress provider regarding:

- ▶ Which clinical areas were ordering equipment
- ▶ The type of dynamic mattresses being ordered
- ▶ The volumes of equipment each of these clinical areas were routinely ordering
- ▶ Who was placing the requests.

Qualitative data was also obtained from doctors, nurses, physiotherapists, occupational therapists and ward/clinic administrators, who were asked for their opinion on:

- ▶ Why they would order a mattress

- ▶ What they felt it would do/how it would benefit the patient
- ▶ How they selected the type of mattress needed.

QUANTITATIVE DATA REVIEW

The results showed dynamic mattress rental had patterns within each of the clinical divisions with inpatient beds (women and children’s, surgery, head and neck, medicine and specialised services) within the trust. Rentals were infrequent in women and children’s services with mean hire time of about 9 days per patient. In the divisions of surgery head and neck, the overall monthly rental usages per bed space were all comparable, although the duration of each mattress rental and frequency of new requests and cancellations varied significantly. The division of surgery head and neck had a high rental turnover and a short mean rental period per product of 6 days, as opposed to the division of medicine which had a lower frequency of mattress hire, but mean rental duration of 17 days. The division of specialised services incorporates both surgical and medical patients. On reviewing their data, there were no clear dynamic mattress trends, which could reflect the variation of their patients.

When reviewing the data obtained, it was identified that the role of the staff member requesting the dynamic mattress was not captured, merely their name. It was felt that to identify clinical roles of the staff ordering mattresses, and observe ordering trends among clinicians would be too time consuming and may not generate any meaningful data. Further, it was felt that the person ordering the mattress may not be the clinician who identified the need for a dynamic mattress initially; rather it could be the ward clerk ordering on behalf of a nurse. For these reasons no analysis of the ordering trends from the different health professionals in the trust was performed.

QUALITATIVE DATA REVIEW

Opinion in the trust was that nurses made the decisions on the need for pressure redistributing aids and dynamic air mattresses, and ward clerks and administrative staff would order the equipment at the nurse’s request. The incidence of doctors or other allied health professionals requesting this equipment was low. Of the nurses

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spoken to, many felt that any patient at risk of pressure damage should be automatically given a dynamic air mattress. Many also felt that the trust's pressure ulcer assessment tool suggested that any patient with a moderate-to-high-risk score based on an adapted Braden score (Braden and Maklebust, 2005) should be placed on a dynamic mattress regardless of their individual needs.

Other feedback was more about the possibility of punitive action, with staff worrying that if they did not order a dynamic air mattress it would be directly linked to a failure to recognise patient needs if they developed a pressure ulcer.

Of the two different types of dynamic air mattresses available to rent within the trust, the figures showed a significant preference for one over the other — a split of 72% to 28%. Clinicians were asked how they selected the type of dynamic mattress and the comments ranged from: one mattress having a quieter pump, which was less disturbing for patients; one mattress feeling more comfortable to the nurse than the other; and ordering the more expensive mattress, which was believed to be a better product because of its cost. The pressure redistributing properties or mattress performance were not mentioned.

FINDINGS FROM THE REVIEW

Several key themes emerged from the initial review of dynamic mattress rental:

- ▶ Each clinical division had their own requirements for mattresses in terms of speed of access and duration of use per patient stay
- ▶ The trust had no clear rationale or pro forma to guide staff when assessing patient risk and need for a dynamic mattress
- ▶ Clinical decisions about a patient needing a dynamic mattress was often subjective
- ▶ There was little or no evidence on clinical need for the type of mattress ordered
- ▶ Routine pressure ulcer risk scores were performed on patients, but a routine review with improvement in patient risk score did not correlate with a step down of mattress use.

NEW CONTRACT

The trust considered these findings when tendering for a new dynamic mattress contract. It provided an opportunity to develop a new process and practice



Figure 3. The principles of the SSKIN bundle.

for assessing patient need, and benefits of a dynamic mattress for the individual. The new contract needed to include:

- ▶ Fast delivery of products to ensure those patients requiring a dynamic mattress would receive one within a suitable time frame
- ▶ 24-hour/7 days a week access
- ▶ Auditable clinical rationale to demonstrate patient need for a dynamic mattress
- ▶ Partnership working with the contract provider to ensure new processes are adhered to.

The tissue viability service wanted staff within the trust to recognise that the use of a dynamic mattress was only one element of providing good quality pressure care and that other factors alongside this would improve care and further reduce pressure ulceration incidence.

The trust wanted to embed the idea that the assessment of patient needs and risk is based on clinical judgement and must take into account all risk factors for the patients. It introduced the SSKIN tool (NHS Midlands and East, 2012) (Figure 3) requiring staff to look and think about all aspects of pressure ulcer risk, recognising and understanding that the surface in contact with a patient is only one aspect of care to consider alongside skin inspection, skin presentation and any existing tissue damage or wounds (Defloor et al, 2005). Other areas to consider are:

- ▶ Patient mobility (Stockton and Parker, 2002)
- ▶ Incontinence or moisture issues, which would increase skin deterioration (Gray et al, 2011)
- ▶ Nutritional status of the patient, considering high and low BMI and ways to achieve optimal nutrition (Langer and Fink, 2014).

It also wanted to be consistent across the trust to

ensure the safe standardisation of care in all areas.

In March 2014, a new mattress contract was commissioned. Alongside the change in product, the tissue viability service implemented a new process for ordering dynamic mattresses. Nurses requesting a mattress now needed to make contact with a dedicated call-centre to follow a mattress selection matrix (Figure 4), with the view to approve or decline a mattress based on the patient’s clinical need against a fixed criteria. The process was inspired by the SSKIN guidance tool and encouraged staff to think about their patient and their specific need as opposed to ordering a dynamic mattress as a matter of routine. It was also designed as a tool to support clinical staff to request a dynamic mattress for patients according to risk for pressure damage. This matrix was also implemented for dynamic chair cushions based on the same principles.

RESULTS

The result of the matrix implementation showed a significant reduction in the rental usage of dynamic mattresses from about 13,000 days per month to 7,000 days per month, while still maintaining the low numbers of trust-acquired pressure ulcers.

EVALUATION

Use of the SSKIN tool has improved overall pressure ulcer care for patients while making a large cost saving to the trust and better utilisation of equipment (Figure 5). Six months later the actual usage of dynamic mattresses has further fallen (Figure 6) while the trust is still providing good pressure ulcer prevention care and maintaining a low incidence of pressure ulceration.

The project is now being expanded with new risk assessment documentation and care planning for prevention of pressure ulceration using the SSKIN principles to develop individualised patient-centred care. This will also include structured reviews where needs and/or equipment are reviewed to ensure patient needs are being met at every stage.

Work is ongoing to develop a step down process where patients who no longer meet the criteria for a dynamic pressure-reducing mattress are stepped down to a high performance foam mattress. The aim is to recognise patient need and provide appropriate equipment and aid the patient journey in secondary health care through to the return home.

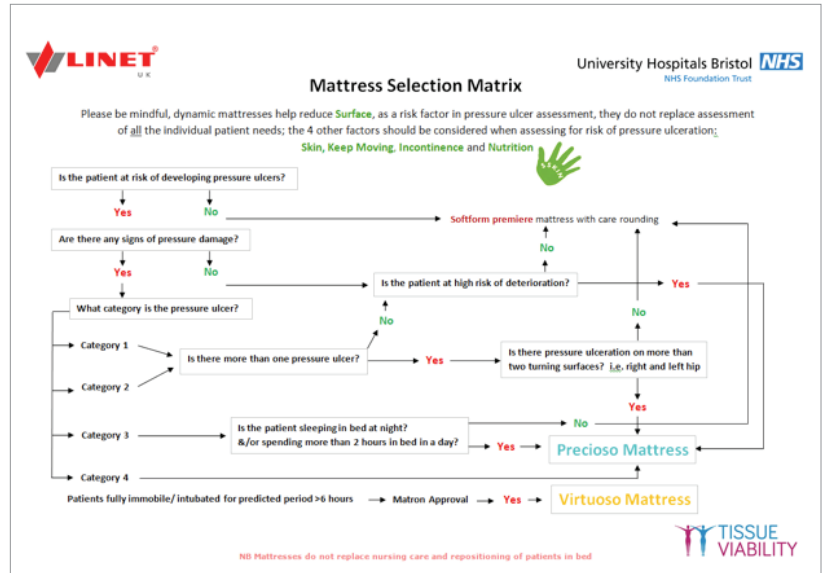


Figure 4. Mattress selection matrix.

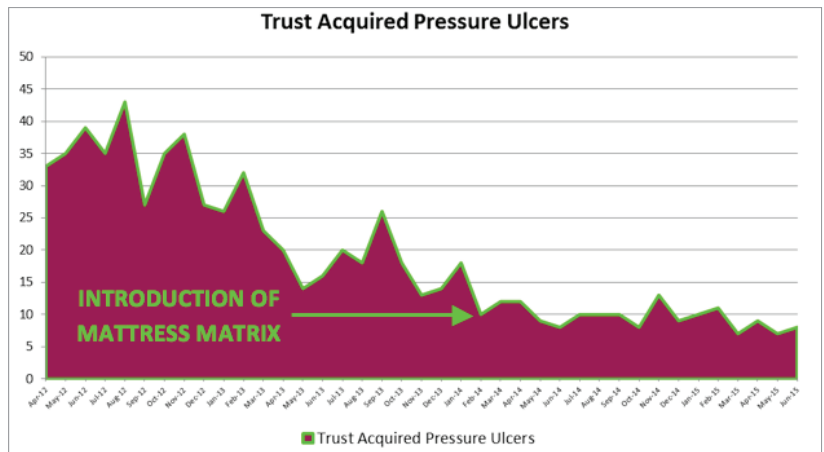


Figure 5. Trust-acquired pressure ulcers before and after introducing the mattress matrix.

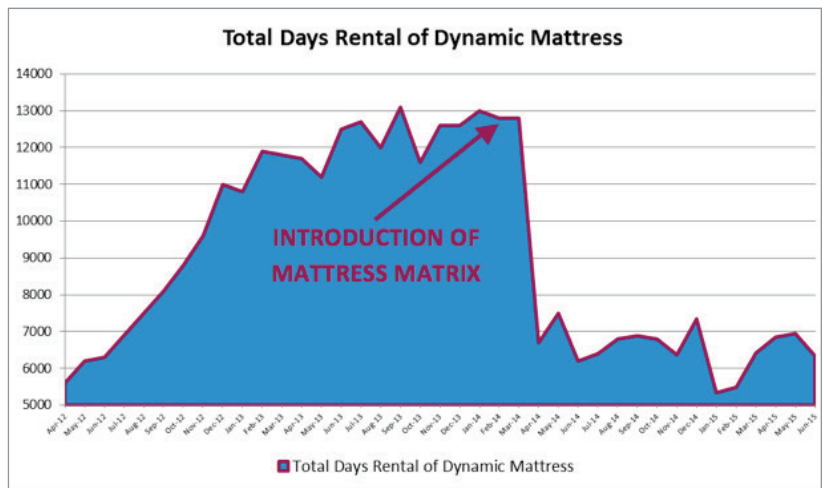


Figure 6. Total number of mattress rentals before and after the introduction of the mattress matrix.