

Electric profiling beds (EPBs) in hospitals: Case studies



Bro Morgannwg NHS Trust

Part of the current Abertawe Bro Morgannwg University Health Board since April 2009, the former Bro Morgannwg NHS Trust managed integrated hospital and community services for a resident population of approximately 300 000 in South Wales. The Trust had over 6300 staff and was made up of over 1300 beds across ten hospital sites.

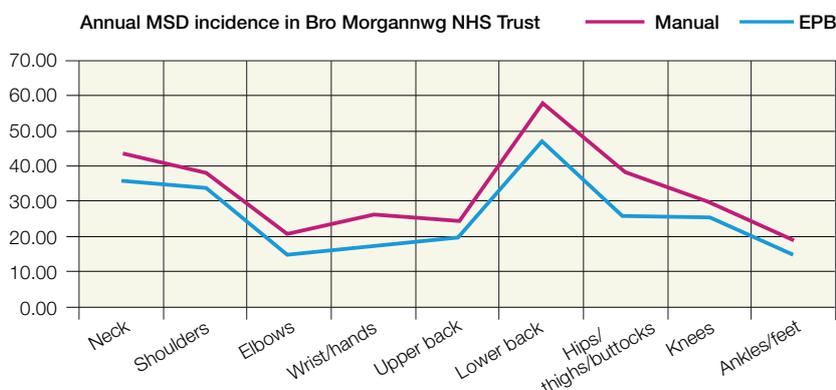
Two main hospitals were involved in this study: Neath Port Talbot Hospital opened in 2002 with 273 beds and Princess of Wales Hospital opened in 1986 with 570 beds.

Neath Port Talbot Hospital was fully equipped with EPBs while most beds in Princess of Wales Hospital were manual beds. This provided an opportunity to compare the effect of providing EPBs on manual handling operations.

The study demonstrated a 62% reduction in the number of manual handling operations carried out per patient through the provision of EPBs. Staff in Neath Port Talbot Hospital conducted on average 9 manual handling operations per patient, compared to 21 in Princess of Wales Hospital.

The study used the 'REBA' (rapid entire body assessment) ergonomics tool (Hignett and McAtamney 2002) to indicate the level of risk of musculoskeletal injury posed by the selected patient manual handling operations.

The reduction in nursing time taken up by manual handling operations was calculated at nearly 120 hours over the 7-day study period. Annually, the theoretical time saving was calculated to be 1619 nurse days.



A musculoskeletal questionnaire identified an increase in reported musculoskeletal discomfort in wards without profiling beds. The staff studied were at an increased risk of injury to the elbows (55% higher), hips/thighs/buttocks (100%) and knees (40%) in comparison to the normal female population. Where standard beds were provided, 58% of the population experienced lower back pain compared with 21% where profiling beds were used.

In April 2003, an HSE review of the management of manual handling risk identified a need for improvement across the Trust. As part of a risk control programme, the Trust invested £1.5 million in equipping the Trust with EPBs.

At the same time the Trust undertook a programme of manual handling training in accordance with the All Wales Manual Handling Training Passport and Information Scheme.

Over the 2-year period from April 2003 to March 2005 they achieved a 75% reduction in manual handling incidents across the Trust.

Surrey and Sussex Healthcare NHS Trust

Surrey and Sussex Healthcare NHS Trust is an 850 bed acute Trust and provides a range of clinical and non-clinical services across Surrey and Sussex.

The Senior Back Care Advisor (BCA) initiated a project which examined the risks in clinical areas associated with equipment. A working group consisting of the BCA, a Trust board member, finance manager, tissue viability nurse, nurse manager, infection control nurse and representatives from estates, therapies and portering was established.

The group conducted an audit looking at beds, trolleys, couches, mattresses, chairs, hoists and similar equipment. The audit identified that:

- equipment was often not suitable for the task;
- equipment was often in poor condition;
- there were issues of compatibility of equipment;
- rental costs for dynamic mattresses were overspent by £15–20 000 a month.

An audit of pressure ulcers carried out at the same time showed an incidence rate of 11%.

The group went on to specify equipment performance criteria and to trial equipment before drawing up a tender specification. A number of critical indicators were included:

- equipment placement within 2 hours of request;
- faulty equipment replaced or repaired within 4 hours;
- 6-monthly mattress and annual equipment audits;
- monthly equipment breakdown and maintenance reports.

Following the approval and tender processes, the Trust bought 500 EPBs plus mattresses, a range of chairs and other equipment. One year on from implementation the identified benefits were:

- 69% saving in nursing time assisting or moving patients equating to 16 741 days or £1.4 million. This money cannot be identified as a cost saving, but the time can be used for other aspects of nursing care;
- musculoskeletal injuries fell from 28 to 4;
- pressure ulcer incidence fell from 11% to 3%.

Cardiff and Vale NHS Trust

Part of the Cardiff and Vale University Health Board since October 2009, the former Cardiff and Vale NHS Trust was one of the largest trusts in Wales and one of the largest in the UK. As an integrated teaching trust, it provided a full range of services to the local community and more specialist services to South Wales and beyond.

In 2006/07 the Trust's total income was £576 million and it employed approximately 13 500 staff.

In 1997, Cardiff and Vale NHS Trust conducted an audit of its bed stock. The Trust had no programme for bed replacement and an audit found that it had 1000 condemned beds and the situation was worsening. An examination of the spend on ad hoc hiring of mattresses and pressure-relieving surfaces identified an annual spend of £600 000 in the University Hospital Wales alone.

Pressure ulcer incidence within the Trust was 15% at the time.

The Trust had insufficient resource to buy new beds. So it entered into a managed equipment contract with a bed manufacturer.

The contract required no capital outlay but a revenue outlay of £582 000 (less than the annual spend on mattresses). For this, the Trust received 2300 new EPBs, including a mattress replacement programme and an on-site engineer, with a commitment to a 2-hour replacement of equipment.

In addition to reducing the number of manual handling injuries as a result of the contract, the Trust had better quality beds and pressure ulcer incidence decreased to 7%.

NHS Lothian

Part of the current NHS Lothian, the former Lothian University Hospitals NHS Trust (April 1999–December 2003) provided a comprehensive acute adult and paediatric service to the population of Edinburgh with about 1700 beds. It employed 11 000 staff with approximately 7000 nursing and allied health professional staff. Its specialist services included clinical neurosciences, liver and kidney transplantation, neo-natal intensive care, cancer services and complex surgery.

In 1999 the Board of the former Trust carried out a bed evaluation and in 2000 set up a bed project group to carry out an audit. The results identified that out of the 1639 beds, 81% were more than 10 years old and 57% were more than 15 years old. All paediatric beds were of fixed height which was contrary to the Paediatric Clinical Practice Council's statement in 2002 that all patients should be nursed on electric profiling beds (EPBs).

A paper outlining the risk and costs associated with manual handling injuries and pressure ulcers was presented to the Board in 2002. This demonstrated that 38% of its manual handling incidents in 2001 involved bed-related activities. Pressure ulcer prevalence was 14% and pressure ulcer incidence was 8%. Three options were outlined:

- Option 1 – Do nothing. Maintaining the status quo would cost £335 000.
- Option 2 – Replace all beds that were over 20 years old or more at a cost of £548 000.
- Option 3 - Implementation of total bed management at a cost of around £450 000 for:
 - 1704 electric bed frames;
 - 2000 foam mattresses; and
 - 41 862 therapy bed days.

Based on the evidence showing the potential for reduced manual handling risks to staff, improved infection control management, pressure ulcer prevention and relative costs, the Board decided on Option 3, a total bed management programme providing electric profiling beds. A multi-disciplinary project team was set up in 2002 for the specification and procurement of the beds to ensure that the beds and contract chosen best met the needs of the service.

Since the introduction of EPBs and the total managed equipment project which commenced in 2003, NHS Lothian has seen real benefits:

- a continued reduction in hospital-associated pressure ulcers from 11% in 2003 to 4% in 2007;
- a steady reduction in bed-related manual handling incidents from 40+ in 1999 to 15 in 2007, despite the overall number of beds in the hospital increasing;
- a reduction in bed-related manual handling litigation costs by 43% and a reduction in potential exposure from bed-related incidents by 90%.

From a patient handling perspective, the manual handling team were involved in the tender and evaluation process, supporting the initial training of staff on the introduction of the new beds and changing existing manual handling courses to include operation of the beds. Post-implementation, they carried out an audit on the effects EPBs had on staff and patients.

Following the implementation of EPBs, a staff survey concluded:

- 81% of staff had seen a reduction in manual handling;
- 100% of staff found that it was easy to reposition patients in EPBs;
- 90% said that back rests on manual beds are difficult to adjust;
- 96% felt that EPBs contribute to the good overall management of the patient;
- 100% saw the implementation of EPBs as a positive move by NHS Lothian;
- 60% would actively seek to work in a hospital with EPBs;
- 41% said they would not work in a hospital without electric profiling beds.

A patient questionnaire concluded:

- 94% of patients said EPBs made their stay in hospital more comfortable;
- 98% used the electric profiling function twice or more a day;
- 100% saw that provision of EPBs as a positive action towards better patient care by NHS Lothian.

North Bristol NHS Trust

North Bristol NHS Trust is a 1200-bed acute trust founded in 1999. The Trust employs nearly 8500 staff and provides all hospital-based medical and surgical services to North Bristol, South Gloucestershire and North Somerset. It is a teaching trust with links to the University of Bristol and the University of the West of England.

The Trust was investigating ways of further improving its equipment management. Also, HSE made recommendations to further improve the control of manual handling risks to staff in connection with equipment and patient handling. The Trust set up a multi-professional project group in 2003 with the objective to explore the different options for replacing deteriorating beds and mattress stocks, against a challenging financial environment.

The Trust undertook a comprehensive tendering process to implement a managed equipment service and set clinical bed/mattress objectives as follows:

- Improve the quality of patient equipment.
- Address the issue of deteriorating bed stock.
- Improve working conditions for staff.
- Provide efficient auditable managed service.
- Reduce risk of infection.
- Improve safety by standardising equipment.

A survey carried out by the Trust in 2003/04 of staff sickness due to musculoskeletal problems showed 1885 nursing shifts lost, with 64.7% due to back pain.

Data extrapolated to 70 wards estimated the cost to the Trust of back pain in nursing staff to be at £410 012 per annum, including the cost of bank staff cover.

An internal bed audit carried out in 2004 identified that the Trust had 207 (15%) EPBs out of a total of 1407 beds and an annual spend of £600 000 on the rental of dynamic mattresses.

The remaining bed frames were hydraulic height-adjustable beds. A model of care was developed by the Trust from the audit data and this identified the percentages of patients who required EPBs and dynamic mattresses. The 'model of care' is an assessment tool for the prevention and management of pressure ulcers in patients. The model contains four levels of clinical need and supports clinical staff when making equipment choices. It was identified that patients at Level 2 or above would require an EPB or other specialist bed. This accounted for 60% of the patient volume.

The Trust entered into a contract for a managed service where the bed frames, dynamic mattresses and a rolling replacement of high-specification foam mattresses were leased and purchased.

Patients' needs are changing and yearly audits assist the Trust in identifying the clinical need of patients who require EPBs and dynamic mattresses. The volume of EPBs is currently 65% (2008).

Since the introduction of the additional EPBs, education, training and the commitment of the Trust's staff has played a large and fruitful part in reducing staff and patient injury. The Trust has seen a number of benefits:

- Patient handling incidents have steadily declined from 187 in 2003 to 110 in 2007.
- Reduction in the prevalence of pressure ulcers from 17% in 2004 to 10% in 2007.

In addition to reducing manual handling risks to staff and the risk of pressure ulcers in patients, the Trust's risk-based approach to the management of beds and mattresses has produced clear cost benefits.

The percentage of dynamic mattresses used by the Trust reduced with the introduction of EPBs of 'model of care'. The 'model of care' ensures that patients receive the appropriate equipment, including dynamic replacement mattresses. The Trust's financial model for bed frames, high-specification foam and dynamic mattress replacements has seen both clinical and financial benefits. The implementation of a managed service has seen the annual cost of previously rented products fall by up to £250 000 per annum.