

Electric profiling beds in health care

‘The wrong bed will waste scarce human resources and put them at risk’

Rabbi Julia Neuberger, former CE, The King’s Fund.¹

A bed is the one piece of equipment nearly everyone working in, or using health care services, will come into contact with. In the UK, many hospital and community beds are standard hydraulic, foot pump-operated with a flat base and pullout backrest (The King’s Fund drew up its specification over forty years ago).

The right bed can enhance the quality of life of those who use them. Poorly designed or inappropriately chosen beds can have a significant detrimental effect.^{2,3} The wrong bed can lead to loss of occupant independence, work-related pain for staff and informal carers and increased risk of pressure damage. Studies have shown that the manual handling of patients in or around their bed is responsible for one-third of nurses’ work-related musculoskeletal injuries.⁴

Moving and handling injuries and back pain

In healthcare, around 5000 manual handling injuries are reported each year. Manual handling injury accounts for 40% of all sickness absence and costs about £400 million each year.⁵

A Royal College of Nursing (RCN) study⁶ identified that 52% of manual handling accidents involve hospital beds. Typically, they happen while moving patients up or down the bed, helping them to sit up or turning them in bed.^{7,8}

Electric profiling beds

Unlike standard hydraulic beds, the bases of electric profiling beds (EPBs) are sectioned so the mattress can be profiled to achieve various positions, the height can also be adjusted. Movement is powered and controlled via a bedside handset by care staff, and if appropriate, the patient.

How the law applies

Regulation 4 of the Manual Handling Operations Regulations 1992 (as amended),⁹ requires employers, so far as is reasonably practicable, to avoid the need for employees to undertake any manual handling operations which involve a risk of them being injured.

Where this cannot be avoided, employers must make a suitable and sufficient assessment of the task and identify steps to reduce the risk to the lowest level reasonably practicable.

The concept of reasonably practicable is explained at www.hse.gov.uk/risk/theory/alarpglance.htm

The provision of suitable moving and handling aids and education in appropriate patient handling techniques reduces the risk. However, where patients are very dependent, and handling takes place frequently, the risk of injury remains. In such cases, a risk assessment will usually find that EPBs should be provided. Introducing suitable EPBs eliminates the need for care staff to manually adjust bed backrests and bed height, and reduces manual repositioning of patients in bed, substantially reducing manual handling risk. EPBs also reduce the risk of developing pressure ulcers and enhance the patient experience.¹⁰

The benefits

Ergonomic comparison between moving patients on standard beds and EPBs confirms the significant reduction in risk of injury to staff. For example, ergonomic assessment of adjusting backrests suggests a high risk of injury from using unmodified backrests.¹¹ This task is eliminated by providing EPBs.³ Also, being able to adjust bed height easily means staff are more likely to adjust the height of the bed for patient handling or making beds.

Some patients sitting in standard beds tend to slide down and can have difficulty readjusting their position without help. Being able to control the bed profile means EPBs reduce this risk and associated pressure damage. Patients are also able to reposition themselves more independently. Hence the number of patient handling tasks is reduced, further lowering the risk of injury.

Employers need to educate staff in using EPBs to maximise their benefits. For example, staff need to know how to use the knee break to prevent patients slipping down the bed.

In summary, EPBs eliminate many patient handling tasks and reduce the risks from those that remain.

When should you provide profiling beds?

Healthcare organisations should undertake individual patient and generic assessments of their manual handling activities. In hospital settings, these should be done on a ward-by-ward basis. Assessments should identify necessary handling aids and consider whether EPBs are required. Orthopaedic, care of the elderly, stroke rehabilitation and critical care wards will have dependent patients and are all examples of where EPBs are likely to be required. Under some circumstances it may not be appropriate to provide EPBs (eg acute mental health environments).

You do not need to provide EPBs where patients do not need help in bed. It is possible, for example, for a trust to provide EPBs in appropriate wards only, while retaining a number of standard beds. However, there may be practical difficulties, in ensuring that the right beds are available when and where required, which must be managed. Moving patients between beds introduces unnecessary transfers with associated risks.

An example of an assessment is given in *Manual handling assessments in hospitals and the community: An RCN Guide*.¹²

Other benefits

Although not within HSE's remit, electric profiling beds also have a number of benefits for patients associated with the ability to alter the bed profile. Earlier upright positioning and mobilisation helps reduce the risk of pressure ulcer development.^{8,13}

It can also reduce other potential complications of immobility; and have a beneficial effect on major body systems,¹⁴ including:

- improved lung function;
- reduced cardiac workload and improved cardiac output;
- improved urinary drainage and reduced infection risk;
- improved gut mobility and nutrient absorption;
- reduced muscle wastage, while maintaining joint flexibility.

These clinical benefits can reduce length of patient stay and pharmacy costs. There is also evidence of a positive impact on patient satisfaction and staff morale.¹⁰

What to consider when introducing EPBs

Although EPBs bring clear benefits, you need to consider a number of issues when introducing them.

Moving profiling beds

EPBs are significantly heavier than standard non-profiling beds and can potentially increase risk from moving them.

While they should be relatively easy to manoeuvre on flat surfaces, locations with even shallow inclines may report some difficulty in moving the beds over any distance.

Some hospitals have purchased bed pullers to assist in transporting beds. This represents an additional cost, but can be included in any total equipment management arrangements.

Electrical issues at profiling beds

Hospital beds can be moved frequently – as the patient is moved, and during cleaning. In addition to trip hazards from trailing cables, this can result in damage to electric cables if they are not properly routed or the bed is removed while plugged in.

Where pressure-relieving mattresses are used there is a risk that the mattress power cable (particularly where it runs from the bottom of the mattress to the top of the bed) may become damaged as the bed is adjusted.

Where EPBs are provided, measures should be taken to reduce the likelihood and consequence of damage to the cables in line with manufacturers' instructions, eg routine examination of electrical cables, fitting residual current devices (RCDs), educating staff and reporting any issues to the supplier and the Medicines and Healthcare products Regulatory Agency (MHRA).

Organisations will need to ensure the electrical infrastructure can accommodate the additional load from EPBs. Additional power points may also be needed where beds are provided.

Bed rails

Integral bed rails provided with EPBs have a number of benefits – including the certainty that the rails are the correct ones for the bed and are properly fitted. There is also the additional benefit of not needing to find storage for unused bed rails. Bed rails are not suitable for all patients. Health care providers should ensure there are systems in place for assessment and safe use of bed rails, and that they are not used unnecessarily.¹⁵

If overlay mattresses are used you should check their suitability with the manufacturer. Replacing a mattress with one significantly thicker than that intended by the bed manufacturer, or the use of mattress overlays or airflow mattresses, may reduce the effectiveness of the bed rails in preventing falls because the height of the rail from the mattress is reduced. Users should check the compatibility information given in the instructions for use and also check whether the bed rails are high enough to take into account any increase in mattress thickness or additional overlay.

Entrapment risk at profiling beds

EPBs may present a risk of trapping or crushing, particularly if they have foot pedal controls which raise and lower the bed. A small number of fatal accidents have occurred where foot controls were activated accidentally.¹⁶ There is also potential for entrapment on other parts of the mechanism during transit, cleaning and maintenance.

Organisations using EPBs should consider the risk of entrapment, taking account of patient vulnerability, moving and handling operations, and the relationship to other equipment. Potential control measures could include leaving the mattress platform in its lowest position when the patient is unattended and disabling the foot controls (temporarily or permanently), which may be possible without affecting other functions.

Measures should prevent inadvertent activation during cleaning and maintenance. This may require trained staff deactivating the controls and recognising whether the beds are fitted with battery back-up (so disconnection from mains power alone may not be sufficient). Manufacturers' instructions for maintenance should be followed and further advice sought where necessary.

In conclusion

Beds are key items of equipment in hospital and community life yet the importance of providing the right bed for the patient is sometimes overlooked. An EPB can help overcome many of the difficulties associated with positioning and mobilisation of patients. Well-designed EPBs offer many advantages, including reduced risk of injury to staff and patients, increased patient independence, faster recovery from illness and improved cost-effectiveness.

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