CLINICAL

How Bradshaw Bed Features and Functions Support Patient Care

A clinically advanced bed range featuring safety, comfort and design benefits; the Bradshaw range has been developed for home care, nursing and residential care environments. This range of four section electrically profiling beds with adjustable head, foot and knee sections support effective resident care offering multiple profiling and positioning benefits, which can also reduce other potential complications of immobility.

The Bradshaw bed is a four sectioned electric profiling bed...
BENEFITS

Profiling beds are also known as variable posture bed. Profiling beds can be adjusted manually or electrically while the person is on the bed.

Types of electric profiling beds Profiling beds have sectioned platforms that allow them to profile into different positions.

- **Two sectioned** electric profiling beds, the back section only can be raised making it possible to sit up to read or watch TV.
- **Three sectioned** electric profiling beds - In addition to the back rest, there is a break at the knee, which helps to prevent migration down the bed.
- **Four-sectioned** electric profiling beds that have adjustable head, foot and knee sections. Providing additional support to the sacral area.

Four section profiling beds have a number of additional benefits for patients which can also reduce other potential complications of immobility; and have a beneficial effect on major body systems;[1]

- Improved lung function
- Earlier upright positioning and mobilisation helps reduce the risk of pressure ulcer development
- 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

Well-designed EPBs offer many advantages, including[2]:

- reduced risk of injury to staff and bed occupants
- increased patient/service user independence
- faster recovery from illness
- improved cost-effectiveness

How Electric profiling beds...
BENEFIT STAFF

The Health and Social Care sector is one of the highest risk areas for back injury with around 50% of all accidents reported in the sector attributed to helping people whose mobility is reduced by disability and chronic illness (HSE).[3]

Stresses and strains can also occur when adopting awkward, static postures for treatment of patients. Manual handling accidents in the health services are significantly associated with manually moving patients in the bed and transferring patients off the bed.[4]

A study by D'Orso et.al (2007)[5] reviewed the number of occupational accidents in a hospital before and eighteen months after the introduction of EPBs. The results indicated that there was a significant reduction in the number of accidents related to the handling of patients in the wards where the beds were introduced.

These benefits include:

- Reducing the amount of manual handling undertaken by carers.
- Increasing the independence of users.
- Potential to reduce the frequency/ number of staff required to assist users to reposition.
- Bed height can be raised high enough such that a carer's posture is closer to neutral.
- Bed adjustments are quick and easy to make.
- Potential benefit of use with heavier and more immobile users.
- Transfers from the bed to a chair made easier for the care givers.

Providing EPBs must be considered under the Manual Handling Operations Regulations 1992 (as amended 2002)

Examples of moving and handling tasks where the risk of injury is significantly reduced by using EPBs include:

- adjusting backrests;
- assisting patients to sit up in bed;
- adjusting bed height so that staff can provide care to the patient, use moving and handling equipment at the bedside or make the bed without stooping or overreaching;
- helping the patient to stand up from sitting on the bed, as the bed can be adjusted to an appropriate height for the patient.[6]

Examples of tasks that were improved by using an electric profiling bed source:

HSE 'RR764 Research Report Health and Safety Executive Electric profiling beds in residential and nursing homes Manual handling and service user benefits' 2010[3]

CLINICAL

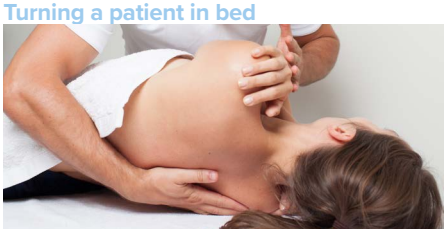
Back rest: Assisting a patient out of bed

The Bradshaw bed height/backrest can be adjusted to meet the needs of the care giver and/or patient. With the bed height raised the patient may be able to stand up off the bed with no assistance. Without the facility to adjust the height the patient may require more assistance /equipment to stand up from a lower bed.

Auto contour function: Sitting a patient up

The Bradshaw bed backrest and knee break can be simultaneously electrically profiled with the auto contour handset button to allow a user to sit up or lie down so the carer may not need to undertake any manual handling. The knee break can be used to prevent the user from sliding down the bed. In this case, a single carer may be required to attend the patient or patients may be able to perform this task themselves.
In the case of a standard divan type bed carers pull the patient up directly from the prone position to sitting upright. To lay the patient down, the carer would need to support the weight of the patient whilst removing the backrest before laying them down. This would normally require two carers to perform this task.

Height Adjustable: Turning a patient in bed



The Bradshaw bed height can be adjusted to meet the needs of the carer, which could limit the degree of bending. With a standard divan the carer was observed to bend further to reach the patient to turn them manually.

How Electric profiling beds... BENEFIT PATIENTS

Promote Comfort Individuals are assisted and able to find a more comfortable sleeping position.

Improved Circulation Frequent movement and repositioning will improve the circulation of blood around the body and increase respiratory functions.[7]

Interaction Benefits Beds can be quickly and easily raised and lowered, thus placing the user in a better position for interacting with other people, and to eat comfortably and with dignity.

Foot Down Tilt position function additionally profiles the patient to maintain a socially interactive sitting position in the bed.

Relieves Care Giver Caring for a family member at home can put a substantial amount of pressure on the care giver. An electric profiling bed can reduce some of this stress, particularly when moving the patient. The bed can efficiently move the patient into another position, limiting the risk of the care provider injuring themselves in the process.[8]

Improve Positioning Electrically operated profiling beds make it much easier for patients to be moved, limiting the amount of interface pressure placed on one area of their body.

Promote Independence Assisting patients with mobility problems/muscle weakness - by making it easier to get in and out of bed. Electrically controlled rising backrests reduce handling requirements compared with standard beds as the hips remain in the same place and there is no need to adjust the patient up the bed. Where EPBs were in use, patients were observed moving themselves independently into comfortable positions, therefore negating the need to call for assistance.[9]

Assessment and Provision of Electric Profiling Beds within Social Care Settings: The Need for a Consistent Approach

A Report by the Welsh Local Government Association's Manual Handling Forum April 2010[10] found benefits to the Service User included:

- Likely reduction in manual handling needs
- Reduced risk of tissue damage due to pressure or shear forces
- Improved or prolonged independence
- Increased comfort levels and better postures
- Possible reduction in likely falls
- Less likelihood of hospital admission due to secondary health issues

AUTO-REGRESSION FUNCTION as ANTI SHEAR MANAGEMENT offers improved functionality and increased comfort. When the backrest is raised from 0 to 70 degrees, the backrest base reverses, increasing the space in the sacral area therefore minimising shear and friction forces.

The result is a reduction in pressure and shear forces, significant contributors to pressure ulcers.

Designed for optimum comfort while the patient is seated in bed, **auto regression** helps to reduce shear forces and friction

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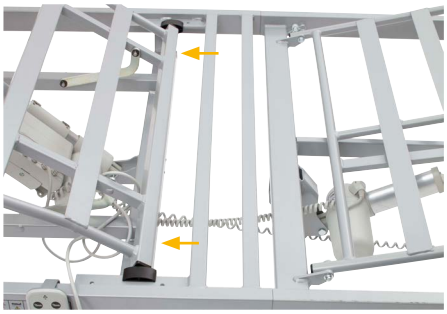
during profiling and movement. According to anthropometrical measurements, the optimised dimensions of the backrest meets the body size of a wider number of patients and reduces shear and friction.

Anthropometry is the scientific measurement and collection of data about human physical characteristics and the application (engineering anthropometry) of these data in the design and evaluation of systems, equipment, manufactured products, human-made environments, and facilities.

In the UK the average height of a male is currently 176.8cm. The requirements for longer beds are increasing as average height of UK males has been increasing since the turn of the century. In the 1940's the average height for a UK male was 173.9cm.

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 difficulities 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.

AUTO-REGRESSION FUNCTION additional benefits



Optimal auto regression combined with advanced profiling

The sections of the profiling bed both raise and regress away from each other at the pivot point of the backrest and thigh section closer to the client's natural pivot point (their hip joint) mimicking the way tissue stretches as they move from a lying to sitting position reducing abdominal compression while seated.

This offers major benefits over conventional profiling beds:

Benefits of Auto Regression

- **Reduces applied pressure to the lower back**

  A study of smart bed technology highlighted that auto regression where the back section (of the bed) is moved towards the headboard when lifted reduces applied pressure to the lower back.[11]

- **Reduces Torso Compression**

  Bed design significantly impacts the amount of migration during head-of-bed articulations. Migration, cumulative movement, and torso compression were higher on beds with simple head section pivot designs that lack the ability to elongate and slide backward. Increased migration may increase the risk of PUs for patients and increase the risk of low back injuries for caregivers. Torso compression may impact patient comfort.[12]

....Studies have shown that bed design and bed movement had a significant effect on most of the dependent variables. Bed design influenced;[13]

- cumulative movement by up to 115%
- net displacement by up to 70%
- torso compression by about 20%.
- Bed movement (e.g., knee elevation) reduced cumulative migration by up to 35%.

Auto Contour and BACKREST ELEVATION

There are benefits and risks for the use of both lower and higher backrest elevations.

Higher backrest elevations have been shown to reduce aspiration risk, enhance oxygenation and ventilation.[14]

45 degree backrest

Lower backrest elevations may reduce pressure ulcer formation risk, facilitate side-to-side changes of position by nurses, and facilitate overall nursing care.

30 degree backrest

Pressure

Use of **higher backrest elevation** may increase pressure, especially in the sacral, ischial, and trochanter areas because higher backrest elevation places greater weight in those areas. It is important to monitor the skin and assess which degree of backrest elevation meets individual patient needs.

Friction and Shear

As backrest **elevation increases** and patients slide down the bed or are repeatedly pulled back up, the forces of friction and shear are introduced.

A solution is to use **auto contour** which is a pre-programmed profiling position to raise/lower the backrest and knee break sections simultaneously. This promotes comfort and prevents the patient slipping down the bed to minimise shear and friction.

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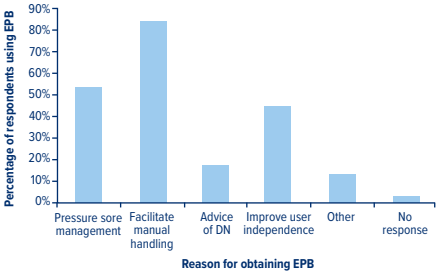
The Bradshaw is fully compliant with the EN60601-2-52:2010-A1:2015 bed standards which have been developed to ensure that beds are designed to be safe for both patients and carers ensuring safety in use.

HSE 'Electric profiling beds in health care' Published by the Health and Safety Executive (rev1) 04/11[15]

A report by HSE 'RR764 Research Report Health and Safety Executive Electric profiling beds in residential and nursing homes Manual handling and service user benefits' 2010 found that the reasons for using profiling beds were as below;[3]



Findings; The main reasons given for using EPBs were to facilitate manual handling (88%), pressure sore management (53%) and to improve patient's independence (44%). Of those who stated they purchased EPBs for manual handling reasons 20% did so based on risk management/good practice.

This suggested that beds are purchased to both support clinicians and improve patient's health and wellbeing and the report found that EPBs are a valuable piece of assistive equipment, which provide benefits to both carers and users. They form part of a range of manual handling equipment that can be used to reduce the risk of injury to carers.

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