

Innovation in hospital bed technology

Michael Clancy looks at how innovation in hospital bed technology can help to meet the needs of a transforming patient population and clinical workforce to promote enhanced care and drive operational efficiency.

The UK population is transforming. Thanks to medical advancements and better public awareness of the lifestyle factors that contribute to shorter life expectancies, we are living longer lives. While this is of course to be celebrated, from a social perspective, it undoubtedly presents increasing challenges relating to patient care and experience. Talk surrounding the creation of a seven-day NHS serves as proof that public and politician demand for an efficient, functioning and futureproof NHS has arguably never been higher up the Government's agenda.

Although multifaceted, the transforming population is essentially one single issue threatening the success and stability of the NHS. A drastically reduced financial budget is another. In times of continued economic austerity, the need to work smarter and harder, and to do more with less – without compromising patient care or putting unnecessary stress on staff, is a priority for every single Trust across the country.

Hospital beds may seem far removed from the coal face of patient care, but the role innovative bed technology is playing, and has the potential to play, for some of the Health Service's most vulnerable patients, in eradicating preventable harm, promoting patient safety and experience, while reducing cost, is not to be underestimated.

The evolution of the hospital bed

The 'King's Fund Bed' was the only bed available to the NHS Between 1967 and 1997. Its demise was brought about due to its failure to adapt to the changing demands of the NHS. In this period, electronics and software revolutionised bed functionality and a range of specialist beds were developed, for example birthing beds, ICU beds and bariatric beds, complete with integrated specialist therapeutic surfaces. As with advances in other technologies, like mobile phones and personal computers moving to smart phones and tablets, so bed technologies have developed to produce a refined classification of beds fit for 21st century applications.

A hospital bed is the most common and



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frequently used medical device in use in a hospital. In addition to the Medical Device Regulations, the bed and mattress must meet the requirements of patients and professionals including tissue viability, manual handling, infection control, health and safety, porters, facilities, procurement and finance. The bed must remain comfortable, safe and, along with the mattress, assist in providing pressure area care for patients, while performing a myriad of functions including raising to safe working heights for carers and descending to the lowest possible height to minimise potential for injury for those at risk of climbing or falling out of bed.

A bed must be able to tilt into a Trendelenburg/reverse Trendelenburg position (head or foot down tilt) and position the patient slowly and smoothly into a range of contoured seating positions while being able to go flat from any position in less than 10 seconds in order for clinicians to perform CPR, should the need arise. The bed and mattress must be able to withstand daily cleaning with high concentration chlorine, while remaining safe for contact with

vulnerable skin. The bed must deliver these and other hydraulic and electronic functions and still be lightweight enough for easy transportation and remain fit for purpose 24/7 for an expected life of 15 years. Finally, the hospital bed must do all of these things for a price equivalent to a middle-of-the-range bike from Halfords.

Prioritising patients, protecting carers

Today's electric profiling beds play an important role in patient and carer safety. They achieve this in a number of ways. Firstly, they can help minimise falls around the bed space. Falls and fractures are a common and serious problem affecting older patients, with over 250,000 falls and more than 1,000 fractures reported each year from hospitals in England and Wales alone. Indeed, inpatient falls are now the most commonly reported patient safety incident, with around 22% of falls occurring from and around the bed. The use of low beds has been demonstrated to reduce the occurrence of falls and injuries from falls when they are used in the ratio of at least one low bed to ►

three standard beds. In addition, features such as split side rails to assist safe mobilisation and the ability to programme a custom height for each patient can also assist in falls management.

Secondly, electric hospital beds can assist with pressure area care. The use of specialist hospital beds can help to reduce shear and friction on a patient's back and prevent the patient from sliding down the bed, which protects the patient's heels. The ability to auto-contour using one button can also assist patient comfort and reduce shear and friction on skin. With obesity rates rising in the UK, it is more important than ever that hospitals consider a patient's weight, height and general shape before allocating an appropriate bed. Often a patient may be within the maximum stated patient weight for a bed but their size and shape may mean that there is insufficient space for turning, or their skin may be damaged if it is pressing against side rails. Specialist bariatric beds should always be selected in cases where either situation occurs, despite their 'weight'.

Innovative beds help support better patient care in a number of ways, including offering correct patient positioning that aids pulmonary function and improves recovery. They also help to safeguard the physical wellbeing of clinical staff, removing the need for care givers to bend or twist to view angle indicators, thanks to auto-pause technology that positions the bed at the most clinically beneficial backrest angle. More than this, innovative beds help to reduce the risk of manual handling-related injuries for carers and porting staff.

This is of particular importance when considering the fact that each year in the UK alone, over 80,000 nurses injure their backs at work and 3,600 healthcare workers are forced to retire early as a result. Creating safe working environments for any healthcare organisation's greatest and most valuable asset (its people) of course needs to be a priority. Yet, with handling injuries accounting for over a quarter of all reported injuries to employees across the healthcare sector, the additional cost to the UK's NHS in



sickness, absence and wasted training is estimated to be in the region of £400 million. These combined factors can both be addressed by opting for hospital beds that can be positioned at the appropriate height for nursing care for even the tallest of carers to prevent back strain. Similarly, new intelligent castor, brake and steer design can greatly reduce the force required to move beds around the hospital or care environment, which again supports a reduction in carer injury.

The final point in relation to the role innovative hospital beds play in improving patient care and experience is in tackling patient immobility, a common starting point that can leave patients wide open to a host of diseases and additional problems. Patients who are chronically ill, aged or disabled are particularly susceptible to the adverse effects of prolonged bed rest. It is well documented that early rehabilitation and out-of-bed activity will improve patients' outcomes. In contrast, complications of immobility are known to significantly increase a patient's length of stay in hospital, with large associated costs to healthcare commissioners. Patients who are immobile can quickly develop complications

like pneumonia or UTI, impacting negatively on both length of stay in hospital and overall outcome.

The latest innovation in intelligent bed design offers the ability to exit the patient safely and easily from the foot end of the bed with only one carer. For patients for whom side mobilisation is impossible this offers significant benefits in terms of reduced carer intervention, earlier patient mobilisation and the potential for earlier discharge.

Understanding the options

Selecting the most appropriate bed type for any given patient, at the right time and in the most cost-effective manner paves the way for improved patient outcomes, reduced clinician risk and enhanced operational efficiency. With a wide range of innovative beds on offer on the market, selecting the most appropriate option can seem daunting. Ultimately, modern clinically-focused beds can be broken down into four core categories of need. These are: those appropriate for general wards, often referred to as 'Med-Surg' that offer all the positioning options and features that are required and are the most common hospital bed. The second category of bed are those designed for specialist wards or for patients with specific needs, for example specialist ITU beds or ultra-low beds to help manage falls. A number of specialist beds can now assist in a programme of early mobilisation, incorporating features such as Continuous Lateral Rotational Therapy and percussion and vibration to aid pulmonary function and help prevent nosocomial infections.

The third category of bed is applicable for care and nursing home environments and often incorporate wooden headboards and wood effect side rails to give those using the beds a less clinical feel to their surroundings. However, to provide the full range of care required they will still include many of the electric options seen on beds in acute environments. The final category of need is beds designed for patients with long-term



care needs, who are being looked after in their own homes. Often referred to as community beds, these require considerations such as access checks, room size evaluations and assessments of whether the bed will need to be moved upstairs. These beds will usually break-down into two pieces to allow easier access into the home. Particular considerations need to be made for bariatric patients.

The right bed, at the right time and at the right price

Although it may seem it at face value, choosing the right bed, the right supplier and the right contract type isn't straightforward. There are a number of common pitfalls to avoid and 'bigger picture' elements to consider. For instance, often procurement decisions are based on 'one-time' purchase costs. This sometimes means decisions are driven by price and not value, lifetime costing or by clinical benefit. Beds that offer fully supported 10-year warranties can offer significant cost benefits over the long term *versus* inferior quality beds that may be a little cheaper on initial purchase price alone. Another common mistake hospitals make when procuring beds is that the beds themselves are simply not fit for purpose. Hospital beds need to be strong, robust and be able to be cleaned appropriately to prevent infection. They must have large, robust castors that can withstand lots of moving, and they must be easy to push. Often purchasing decisions are made on price, without considering other factors. Similarly, the aesthetics of a bed can often be prioritised over its clinical function and benefits.

A less-common pitfall of hospital bed procurement and usage is that of beds being used inappropriately. Too often, specialist beds such as low beds will be procured, but staff may be unaware that they are specialist beds and choose to use them for patients who simply don't require that level of support. This puts other, more 'at risk' patients at greater risk of in-turn being assigned an inappropriate bed for their needs, which has the potential to contribute to increased instances of preventable harm and prolonged recoveries. Red tape surrounding procurement frameworks can also be a barrier to hospitals accessing the latest, most innovative and patient-centric products on the market. Often procurement frameworks can run for up to six years or more, restricting innovation and preventing new suppliers from accessing them. When it comes to beds, success follows research. Taking the time to understand the sometimes



subtle differences between products; understanding the bigger picture in terms of cost vs. value and obtaining expert, clinical guidance from prospective suppliers, are all steps in the right direction to selecting the right fit for the hospital, the right fit for staff, and the right fit for patients.

Once the most appropriate bed type has been determined, there are a number of other factors to consider. Do you buy your beds outright, lease over a number of years or do you rent? Do you service and maintain the beds in-house or do you outsource?

As with most things in life, there isn't a one-size-fits-all solution. If beds are being sourced as part of a high volume, long-term solution, such as new hospital builds, leasing is often the best solution. If specialist beds, such as ultra-low beds that help to minimise the risk of falls for vulnerable patients or bariatric beds designed to accommodate larger patients, are required – renting can often be the most efficient and cost-effective option for a number of reasons. A key reason to rent specialist beds is that they can be funded through a different revenue stream, which helps to avoid lengthy procurement decisions. Another reason is that the right product can be selected for a particular patient with a set of individual needs, where and when it is needed. Beds required in an emergency can be delivered in as little as one hour, with products guaranteed to be decontaminated, safety tested and in full working order. A final

benefit of a bed rental arrangement is the access to 24/7/365 support and clinical advice. If appropriate service contracts are in place with suppliers, important PPM and reactive maintenance can be carried out quickly and correctly.

The NHS is admired the world over and for good reason. It is something we can all be very proud of and something that should be protected, yet it is evolving. It is under increasing pressure to meet a plethora of new and existing targets, perform better, put the patient first, hold itself to account and operate within shrinking financial parameters. Innovative beds are one of the ways Trusts can address multiple challenges with a single solution: cut costs, improve patient care, empower clinicians, and in doing so, protect the future of a British institution – our National Health Service. **CSJ**

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Michael Clancy is non-exec director, Medstrom Healthcare. The company aims to help improve outcomes in the patient environment by providing products and a bespoke service, tailored to meet the needs of individual hospitals and healthcare providers. Independent from bed manufacturers, Medstrom sources beds, mattresses and other related medical furniture and provides a range of services including training, asset tracking, pressure ulcer incidence and other indicators – all designed to optimise product performance and assist carers and healthcare providers to deliver improved outcomes.

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