

Fall injuries and entrapment

Solutions to the problem

The vast majority of all falls that take place in hospitals occur around the bed. Fall injuries are among the most serious problems in hospital care. Somewhere between 700,000 to 1,000,000 people suffer from fall injuries each year in the US alone¹, and observational studies show that 60–70% of all falls in hospital occur from the bed or bedside chair².

As means of protection, side rails are being more and more questioned. Both individual hospitals and governments have taken actions to legislate against their use, the single most important argument being the risk of entrapment. Between 1985 and 2013, the FDA received 901 incidents of patients caught, trapped, entangled, or strangled in hospital beds³. The psychological impact of side rails is also significant as they contribute to deprive patients of their dignity, and sometimes even worsen symptoms of anxiety and nervousness in patients suffering from dementia or other mental problems.

Increased patient surveillance is another way of attacking the problem, but this comes at very high costs while still not guaranteeing the security of the patients. To adequately monitor patients with fall risks means to increase staffing by significant numbers.

Crash mats offer a different approach by going from prevention to limiting the injuries inflicted by the fall. But crash mats introduce other problems, chiefly bigger risks of infections using mattresses on the floor right next to medical beds. A second problem concerns the ergonomics for the caregivers. A crash mat adds inconvenience for the staff since it has to be removed or leaned over when caring for the patient, as well as creating a trip hazard.

Using low level beds lessens, but does not eliminate the risk of injury. Patients who are at risk of falling are not protected from the impact of a fall if the bed only descends to a height of 20 cm (8 inches). That distance to the floor – although appearing to be small and harmless – can still lead to serious injuries.

To eliminate fall injuries you need to reduce the impact force of the fall. Starting from a height of only 10 cm (4 inches), if



you add 5 cm (2 inches) in height the impact force increases by 50 %. From 20 cm, the height of most so called low level beds, the result is a 100 % increase in the impact force compared to falling from 10 cm or floor level⁴.

A true floor level bed will avoid the hazardous drop distance, and eliminate the need for extra monitoring of patients resulting in increased safety and added savings. A true floor level of less than 10 cm from the ground lets the patient roll out of bed, if they are determined to do so.

In addition to functioning at a floor level, the floor level beds can also be raised up to 80 cm (31 inches) from the floor, creating an optimum working height that reduces the risk of back injuries for caregivers. Using height adjustable floor level beds improve the ergonomics for caregivers.

The cost of investing in a floor level bed is many times less than the average cost of treating one single fall injury in a hospital environment. A reduced number of fall injuries translate into significant cost savings, and the use of floor level beds greatly enhances both the dignity and quality of care for patients at risk of being exposed to fall injuries.

1) Source: learnnottofall, 2) Source: the medical journal of Australia / Oxford journals, 3) Source: FDA, US department of Health and Human Services. 4) Source: Study by Dr George Zaphir, Australia

This is the third article of a series of three related to entrapment and fall injuries produced by Human Care.