Accora FloorBed® technology in Lutheran Nursing Home

Case Study

Falls and injury prevention in care settings

Unintentional falls are a considerable challenge as they are the most common cause of fatal and non-fatal injuries in people over 65 in the US. [1,2]

Falls occur more frequently in nursing homes with 50–75% of residents falling each year[3], and while most are not serious, 10-25% result in hospital admission, fractures, or both.[4]

Many factors contribute to this heightened risk, such as physical inactivity, the presence of longterm conditions, cognitive disorders, medication, the unfamiliarity of new surroundings and environmental hazards.[5, 6, 7, 8, 9, 10]

The associated consequences of falls are costly, often significantly impacting a person's functional ability and mental wellbeing.[8, 9, 10, 11, 12]

For facilities too, falls can cause staff morale to be undermined, lead to higher demands on resources, and result in suboptimal performance against quality measures. [13]

Falling is not an inevitable part of aging and is largely avoidable through comprehensive assessment, actioning appropriate interventions to modify identified risk factors, and implementation of a falls prevention program.[6, 8, 9, 12] One such environmental risk factor is bed height. [7, 14]

The impact force of a fall from a bed at 3.9 inches is 50% lower than at 8 inches[14], and when a bed is raised above 24 inches from the ground, the risk of a serious fall-related head injury increases by 50%.[15] A possible mitigation is to deploy a bed capable of being lowered to the floor.

Objective and methodology

To evaluate the effect of adding a floor-level bed to a package of measures intended to reduce the number and severity of falls occurring within residents' bedrooms and, in particular, falls from the bed.

Twelve residents, known to have a recent history of falls and/or considered to be at high risk, were allocated a FloorBed. The bed was positioned at its lowest height when in use (2.7 inches), the handset locked to prevent accidental height adjustment and a protective floor-mat retained if previously allocated.

Using a pre-post intervention design, fall outcomes were monitored prospectively (mean 11 weeks, range 4-17 weeks) and data compared to a three month pre-evaluation period.

50-75% of nursing home residents fall each year.

Results

Falls within the bedroom were reduced by **80%** and all falls from the bed were eliminated.

The number and frequency of resident falls almost halved, and no serious injuries occurred.

80%	100%	100%
Reduction in falls.	**Reduction** in bed falls.	**Reduction** in notable injuries.

Conclusion

Falls from the bed and their associated injuries are a safety concern in every care environment and a preventable harm.[6, 8, 12, 16]

Although the risk of falling can never be removed completely, prevention programs can help reduce their likelihood of occurring and lessen the potential for adverse outcomes.[6, 8, 16] However, any prevention strategy must balance this risk against compromising a person's capacity for independence.[10, 16]

Falls generally occur as a result of a combination of intrinsic and extrinsic risk factors[7, 9,] and these tend to increase with age[6, 8;] research has also shown that fall risk increases as the number of factors multiplies.[7, 12]

Environmental hazards, such as beds and bed height, can contribute to an individual's risk and have been implicated in several studies relating to falls injuries.[5, 7, 14] Additionally, it has been shown that there is a direct relationship between bed height and severity of injury.[5, 7, 14, 15]

One study demonstrated a marked difference in impact force between traditional height adjustable beds, low beds that go lower than this but not to the floor, and those that lower to floor level; the floor-level bed reduced fall velocity, and therefore impact force, suggesting the nature and extent of any falls injuries, should they occur, would be likely to be less serious than those sustained from a bed at a higher height.[14]

Improvement activities are designed to support and advance care, and the strategic use of equipment such as the FloorBed may be a clinically efficient and cost-effective intervention.

The possible benefits of such a device in the management of falls prevention and falls injuries have been illustrated in this pilot evaluation.

Evaluation facility

The evaluation site is a non-profit Senior Living Community in Illinois, which includes short-term rehabilitation, assisted living, memory care and residential healthcare options. Senior staff chose to evaluate the FloorBed as it offered both floor-level height and additional safety features the team felt were essential, including handset lock and auto-safety stop.

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