

Stryker Prime Series® Electric Stretcher Reduces the Risk of Lower Back Disorder (LBD) to 1% When Repositioning a Patient



Medical

Situation

The healthcare profession continues to be a career that puts the physical health of the caregiver at risk due to its daily activities. Healthcare professionals (HCPs) perform an array of physically demanding tasks, many of which contribute to work-related musculoskeletal disorders and even potentially the termination of career.¹ The New York Nurses Association reports that nurses lift an equivalent of 1.8 tons per shift.² This rigorous manual lifting results in a HCP being 4.5 times more likely to sustain a back injury due to over-exertion when compared to other professions.³

Rationale

Understanding that nursing remains a profession where the risk of injury is high, Stryker developed its Prime Series electric stretcher with powered Lift Assist® backrest and knee gatch. The electric Lift Assist backrest empowers patients to adjust to their own level of comfort while helping to protect the caregiver from interruptions, stress and lifting. Design features which minimize cumulative spinal loading may reduce the risk of injury and in turn may reduce the burden rate of healthcare organizations.⁴

Methodology

To determine how the design of a stretcher affects the risk of musculoskeletal disorder on a HCP when repositioning a patient, an independent study asked participants to raise and lower a backrest and knee gatch on stretchers of varying design each loaded with 300 lbs. To track spinal compression and shear, participants were affixed with an ErgoPark and Lumbar Motion Monitor (LMM).

Results

Scientific assessment of the participants determined that individuals using Prime Series electric stretcher with Zoom Motorized Drive System (Stretcher 1) had the lowest LBD risk with a 1% risk rate. Prime Series stretcher with 5th wheel (Stretcher 2) both equipped with Lift Assist backrest saw LBD risk levels of 8.1%.

Table 2: Study Results

Stretcher	Compression (L4/L5) (lb)	Shear (L4/L5) (lb)	LBD Risk (%)	RPE Response (Range 6-20)
Stretcher 1	152.9 (54.3)	26.6 (14.8)	1.0% (<0.1%)	6.1 (0.3)
Stretcher 2	272.4 (58.2)	19.2 (8.1)	8.1% (3.1%)	6.8 (2.7)

Conclusion

Stretcher design has a significant impact on the well-being of HCPs when the backrest and litter are raised and lowered to reposition a patient. Implementing Stryker's Prime Series stretcher with Electric Backrest can help reduce the risk of lower back disorder to 1% for a HCP when repositioning a patient.

Stryker Prime Series Stretcher with Zoom® Motorized Drive System and Electric Features



Table 1: Stretcher Models

Stretcher 1	Stryker Prime Series Stretcher with Zoom Motorized Drive System and Electric Backrest
Stretcher 2	Stryker Prime Series Stretcher with 5th Wheel and Lift Assist Backrest

References

- Hudson, A. "A History and Vision for Work-Injured Nurses' Group USA. In Back Injury among Healthcare Workers: Causes, Solutions, & Impacts." 2005
- Genovese, Mark. "HHC Nurses File 100 EEOC Complaints." 2008
- U.S. Department of Labor, Bureau of Labor Statistics. 2000
- McGill, Stuart M. "The Biomechanics of Low Back Injury: Implications on Current Practice in Industry and the Clinic." 1997.