Clinical Analysis Shows Stryker's Lock-Rite™ Foot Section Helps Alleviate Risk of Caregiver Back Injury

Situation

Labor and delivery nursing professionals perform a wide array of physically demanding tasks. One common procedure involves removal and replacement of the foot section on a birthing bed. Unfortunately, the physical strain of maneuvering the foot section may contribute to caregiver back injury. Researchers have identified differences in body posture due to foot section design as a possible contributor.[1,2]

Rationale

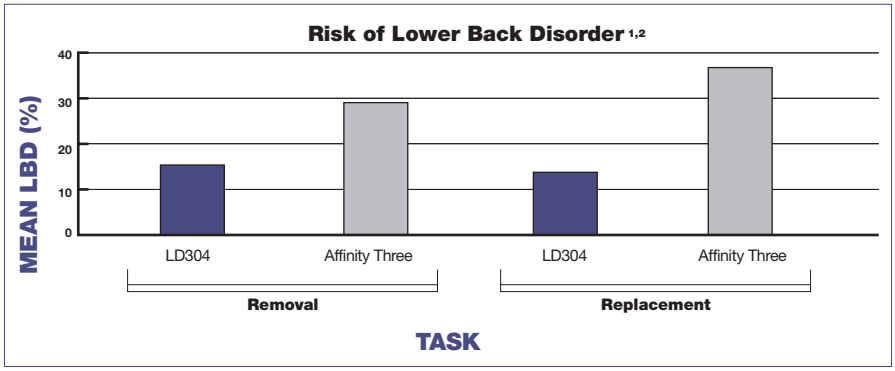
Stryker Medical recognized the opportunity to provide a birthing bed with features that could help alleviate the risk of injury to labor and delivery staff. Capitalizing on its expertise in designing innovative patient handling solutions, Stryker Medical applied advanced engineering practices and biomechanical science to develop the Lock-Rite foot section.

Methodology

Independent ergonomic experts studied labor and delivery nurses removing and replacing the foot section on both the Stryker LD304 and Hill-Rom Affinity® Three birthing beds. Four video cameras captured the posture of each subject, while a Lumbar Motion Monitor dynamically measured the three-dimensional trunk position and motion of the lumbar and thoracic sections of the back. Analyses using these objective measures quantified the risk of lower back disorder (LBD) for removing and replacing each of the two foot sections.

Results

The Stryker LD304 birthing bed with the patented Lock-Rite foot section was found to reduce the risk of LBD by 47 percent during removal and 63 percent during replacement as compared to the Hill-Rom Affinity Three with a lift-off foot section.[1] *(see graph below)*



Conclusion

Foot section removal and replacement on birthing beds may contribute to the risk of back injury. Independent research has found that the design of the foot section can significantly influence caregiver safety.[1,2] This testing substantiates the Lock-Rite foot section's ability to help alleviate that risk.

The Lumbar Motion Monitor measures back position as the caregiver manipulates the foot section on the LD304 – her back is in a neutral posture due to the ergonomic Lock-Rite design.

The Lumbar Motion Monitor measures back position as the caregiver manipulates the foot section on the Affinity Three – her back is in torso flexion due to the design.

[1]Fredericks, Tycho K., Steven E. Butt, Anil R. Kumar and Supreeta Amin, "Biomechanical Analyses of Nurses using the Foot Section of Birthing Beds of Different Designs,"

Proceedings of the 10th Annual International Conference on Industrial Engineering – Theory, Applications, and Practice (Forthcoming Dec. 4, 2005).

[2]Butt, Steven E., Tycho K. Fredericks, Anil R. Kumar and Supreeta Amin, "Postural and Error Analyses of Nurses using the Foot-Section of Birthing Beds of Different Designs,"

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