

# Stryker Prime Series® stretcher with Big Wheel® and electric lift reduces exertion when lifting the stretcher litter



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 (HCP) perform an array of physically demanding tasks, many of which contribute to work-related musculoskeletal disorders and, even potentially, the termination of career.<sup>1</sup> The New York Nurses Association reports that nurses lift an equivalent of 1.8 tons per shift.<sup>2</sup> This rigorous manual lifting results in a HCP being 4.5 times more likely to sustain a back injury due to overexertion when compared to other professions.<sup>3</sup>

## Rationale

Understanding that nursing remains a profession where the risk of injury is high, Stryker developed its Prime Series stretcher with Big Wheel and electric lift. The electric lift is better for HCP safety as the stretcher litter is able to be raised with reduced manual exertion. Design features which minimize exertion may reduce the risk of injury and in turn may reduce the burden rate of healthcare organizations.<sup>4</sup>

## Methodology

In order to determine the workload that the HCP endures when lifting the litter of a stretcher, Stryker conducted a stretcher lift study which measured and compared the amount of force required to lift the stretcher. The stretchers that were used included a Prime Series stretcher with 5th wheel mobility and manual lift, a Hill-Rom P8000 with manual lift, and a Prime Series stretcher with Big Wheel advanced mobility and electric lift. The stretchers were tested with no weight and with patient weights of 250 lbs, 500 lbs and 700 lbs.

## Results

Lifting a manual stretcher from low height to its highest height takes approximately 26 pumps. This exercise results in an excessive amount of force required to lift a stretcher; upwards of a metric ton with patient weights over 500 lbs. In contrast, the study revealed that a Stryker Prime Series stretcher with Big Wheel and electric lift, which requires a single pump with a force of 50 lbs to reach its highest height, can reduce the total force required to lift a stretcher.

Stretcher Hydraulic Pump Pedal Forces in Lbs								
Stretcher Model	Patient Weight – 0 lbs		Patient Weight – 250lbs		Patient Weight – 500lbs		Patient Weight – 700lbs	
	Force to pump stretcher one time	Total approximate lbs of force required to lift stretcher*	Force to pump stretcher one time	Total approximate lbs of force required to lift stretcher*	Force to pump stretcher one time	Total approximate lbs of force required to lift stretcher*	Force to pump stretcher one time	Total approximate lbs of force required to lift stretcher*
Prime Series Stretcher with 5th Wheel and Manual Lift	37 lbs	962 lbs	60 lbs	1560 lbs	83 lbs	2158 lbs	102 lbs	2652 lbs
Hill-Rom P8000 with Manual Lift	40 lbs	1040 lbs	61 lbs	1586 lbs	96 lbs	2496 lbs	114 lbs	2964 lbs
Prime Series Stretcher with Big Wheel and Electric Lift	50 lbs	50 lbs						

\*Approximately 26 pumps are required to lift a stretcher litter from its lowest height to its highest height

## Conclusion

Stretcher functionality has a significant impact on the well-being of caregivers. Implementing Stryker's Prime Series stretcher with Big Wheel and with electric lift can help reduce the forces and amount of exertion required of HCPs.

## Prime Series Stretcher with Big Wheel and Electric Features



## Prime Series Stretcher with Big Wheel and Electric Features



## References

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Testing completed by Stryker Medical.