

# AN EVALUATION OF LATERAL PATIENT TRANSFER WITH THE SPRINT 200 USING DIFFERENT TRANSFER TOOLS



## BACKGROUND

Musculoskeletal disorders (MSD) associated with lateral patient movement is the most common type of MSD in nursing practice (Waters TR, 2007). The risk of developing MSD may be significantly higher depending on the patient's weight, the number of caregivers involved in the procedure, the physical dispositions of the caregivers, and the lack of appropriate tools for the transfer. Because it involves moving a patient from one surface to another, it is connected with heavy lifting and pulling. MSDs impact negatively not only the wellbeing of the caregiver, but also the management and sustainability of the Healthcare System, especially with the number of caregivers decreasing every year (USASH, 2021). Considering the demographic changes around the world and the general shortness of staff, technology may have a vital role to play in transforming demanding and difficult tasks into simpler ones which may be performed by a single staff member and reduce the risk of possible injury.

## CONCLUSION

In conclusion, the Sprint 200 reduces the force and the necessary number of caregivers needed for lateral patient transfer when compared to a standard stretcher.

Around the world, we can identify several disparities in the equipment available to support nurses and other healthcare professionals when caring for their patients. Considering these disparities, several other measurements were performed, and, in conclusion, we can highlight that the least suitable tool to support healthcare professionals moving a patient is a cotton sheet.

Furthermore, the tubular slide sheet and slide board were revealed to be important assets in reducing the number of caregivers needed to complete a safe patient transfer without increasing the risk of injury to healthcare professionals. When using the Sprint 200, this reduction is even higher (Table 1).

# The Principles of Safe Lateral Patient Transfer

Patient lateral transfer is a daily activity in the emergency department. The transfer of a patient from one surface to another happens at least three times before discharge, or before the patient is transferred to another department.

**One caregiver should pull max. 16 kg (35 lbs) of patient weight.**

(Waters T, 2011)

The AORN determined that a caregiver should not pull more than 16 kg (35 lbs) of patient mass (supine position) with two hands (Waters T, 2011). Considering this information, the number of caregivers involved in moving a patient should be assessed and stipulated case by case. Furthermore, if the patient is unconscious, two extra caregivers would be



necessary to support the patient's head and feet in order to achieve the highest safety standards for both patient and caregivers (Waters T, 2011). Finally, variants such as the equipment used, and the characteristics of the surfaces involved in the transfer may have an impact on the force required to move a patient.

As part of the development of the emergency stretcher, we have equipped the Sprint 200 with special siderails that fold under the mattress to reduce the gap between the Sprint 200 and a second surface. To evaluate this gap reduction effect, we tested the force required to pull people with different weights using the most commonly available transfer tools from a standard stretcher and from the Sprint 200.

## Evaluation the Sprint 200 with Different Transfer Tools

**The Sprint 200 reduces the force and the necessary number of caregivers needed for lateral patient transfer.**

(LINET lab testing)

On a daily basis, nurses and other non-medical staff use several alternatives to reduce the force necessary to pull a patient, either by increasing the number of caregivers involved in a transfer, or by using extra equipment to facilitate that same transfer. To measure those forces, a more thorough evaluation was performed at the LINET lab.

## Testing in the Linet Lab

**Stretchers:** Standard stretcher and the Sprint 200 with a cotton sheet

**Transfer tools:** Tubular slide sheet, Slide board, and Cotton sheet

**Subject:** Mannequin simulating an immobile patient with different weights

We compared the results obtained with the AORN recommendation for one caregiver (maximum of 16kg / 35 lbs) and, as a result, we calculated how many people are needed to pull a patient considering their weight. These results are interpreted for each tool for a standard stretcher (Table 1) and for the Sprint 200 (Table 2).

## Results of Linet Testing

**TABLE 1 | Standard stretcher results for number of caregivers**

Patient weight on standard stretcher	80kg (176 lbs)	100 kg (220 lbs)	120 kg (264 lbs)	150 kg (330 lbs)
Tubular slide sheet	0.9	1.5	1.8	2.0
Slide board	1.1	1.7	18	2.3
Cotton sheet*	NA	NA	NA	NA

\*Patient needed to be lifted, pulling wasn't possible.

**TABLE 2 | Sprint 200 results for number of caregivers**

Patient weight on Sprint 200	80kg (176 lbs)	100 kg (220 lbs)	120 kg (264 lbs)	150 kg (330 lbs)
Tubular slide sheet	0.5	0.9	1.1	1.2
Slide board	1.1	1.4	1.6	2.0
Cotton sheet	2.6	3.2	3.8	4.8

Legend

1 caregiver	2 caregivers	3 caregivers	4 caregivers	5 caregivers
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Considering the stretcher and the individual tools used to complete the patient transfer, Table 3 shows the interesting results we obtained. During the measurements, we found that it is not possible to measure the force for pulling a patient on a cotton sheet from a standard stretcher; the patient must be lifted in order to pass the gap, otherwise the patient could be harmed.

**TABLE 3 | Pulling force using the Sprint 200 versus standard stretcher was reduced with different pads**

	Tubular slide sheet	Slide board	Cotton sheet
<b>Force reduction</b>	39.5 %	10.8 %	N/A

# References

**USASH. 2021.** The 2021 American Nursing Shortage: A Data Study. University of St. Augustine for Health Science. [Online] 2021. <https://www.usa.edu/blog/nursing-shortage/>.

**Waters T, Baptiste A, Short M, Plante-Mallon L, Nelson A. 2011.** AORN ERGONOMIC TOOL 1: LATERAL TRANSFER OF A PATIENT FROM A STRETCHER TO AN OR BED. AORN J. [Online] 2011. <https://pubmed.ncbi.nlm.nih.gov/21353805/>.

**Waters TR, Nelson A, Proctor C. 2007.** PATIENT HANDLING TASKS WITH HIGH RISK FOR MUSCULOSKELETAL DISORDERS IN CRITICAL CARE. Crit Care Nurs Clin North Am. [Online] 2007. <https://pubmed.ncbi.nlm.nih.gov/17512469/>.



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