

Flying through the hospital: efficiency and safety of an ergonomic solution

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Abstract. In hospitals many horizontal transfers (from stretcher to bed etc.) are performed from the moment a patient is admitted (f.e. with an ambulance) through examination departments all the way to the wards. These transfers can be very strenuous and solutions may be to use a special lifting device that accompanies the patient on this route: a stretcher sling. This is a specially designed disposable lifting sling for horizontal transfers and repositioning, the sling can easily be connected to a ceiling or mobile lift. The ambulance service, two hospitals and a manufacturer decided to study the effects. The stretcher sling travels with the patient. Does this provide an ergonomically sound solution and is this an effective and efficient solution? The results were positive, but a behavioral change was also necessary.

Keywords: occupational; productivity; back pain

1. Introduction

Occupational back pain among nurses still leads to high costs for health care facilities and personal suffering for nurses and ergonomic solutions remain necessary [1-4]. In hospitals many horizontal transfers (from stretcher to bed etc.) are performed from the moment a patient is admitted (f.e. with an ambulance) through examination departments all the way to the wards.

These transfers can be very strenuous and solutions may be to use a special lifting device that accompanies the patient on this route: a stretcher sling. This is a specially designed disposable lifting sling for horizontal transfers and repositioning, the sling can easily be connected to a ceiling or mobile lift. The sling is an individual device. Once the patient is on the sling no further manual handling needs to be performed. All activities can be performed with a lifter and/or very light manual assistance that is well within ergonomic guidelines in a country like the Netherlands.

2. Method

An ambulance service, two hospitals and a manufacturer decided to study the effects. The stretcher sling travels with the patient.

The main research question was; Does this provide an ergonomically sound solution and is this an effective and efficient solution? All transfers and activities were recorded on a so-called transfer-count-day along with patient characteristics and the location of the patient.

3. Results

A total of 213 transfers were recorded and analyzed. 87% of these transfers were considered heavy or very heavy according to the NIOSH Equation and Dutch National Guidelines for manual handling and lifting. Before the introduction of the stretcher slings 29,5% of the transfers was performed within safe

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limits. After the introduction this was increased to 83,6%. Also the number of nurses required was significantly reduced and patient outcome was positive.

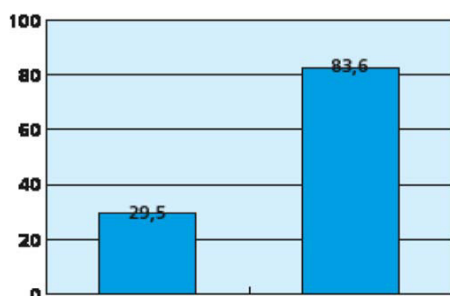
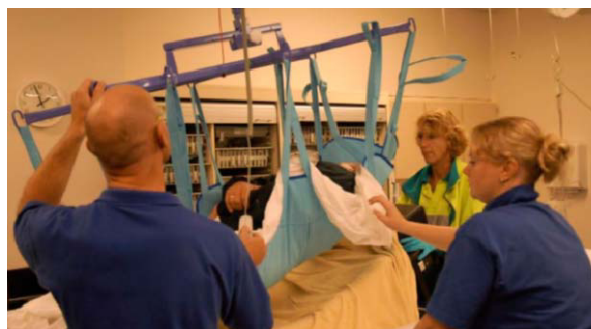


Figure 1. Percentage of safe transfers before and after the introduction of the stretcher sling



4. Conclusions

The results were positive, but there were also some lessons learned. The logistics of always having a stretcher sling available on the ambulances were more complicated than expected. Also nurses were so used to perform the transfers with two or more persons that it did require a behavioral change for them to know that it was also safe to perform them with only one nurse. To achieve the full benefit of the change a good follow up on all the departments is necessary. Breaking habits in spite of the availability of sound ergonomic solutions demanded more attention than expected beforehand.

References

- [1] Hignett, S., Crumpton, E., Ruzsala, S., Alexander, P., Fray, M., Fletcher, B. (2003). Evidence based patient handling: systematic review. *Nursing Standard*, 17 (33), 33-36.
- [2] Jansen, J., Morgenstern H., Burdorf, A. (2004). Dose-response relations between occupational exposures to physical and psychosocial factors and the risk of low back pain. *Occupational Environmental Medicine*, 61(12): 972-979.
- [3] Knibbe, J.J., Friele, R.D. (1999). The use of logs to assess exposure to manual handling of patients, illustrated in an intervention study in home care nursing. *International Journal of Industrial Ergonomics* 4 (24), 445-454.
- [4] Knibbe, J.J., Knibbe, N.E., Geuze, L. (2008). Een hap uit een gegroeide olifant, vierde nationale monitoring fysieke belasting, SOV&V, Den Haag (in Dutch). Fourth National Monitoring, Unions & Employers organizations, The Hague.