MSDs: why wholly technology-based solutions do not work

Nursing is strenuous work and in most European countries a high proportion of workers want to leave the profession. Physically demanding tasks are a major factor: manual handling of patients (getting them on their feet, moving them, transferring them, lifting and repositioning them) and having to maintain restrictive and uncomfortable positions while treating them are the main cause of musculoskeletal disorders (MSDs) among nursing staff. Technology alone will not improve the situation.

Marianne De Troyer
ETUI

The handling of patients is a significant risk factor for musculoskeletal problems among nursing staff.
Image: © Belga, AFP

To reduce accidents, absences due to incapacity for work and occupational illnesses related to musculoskeletal disorders, risk prevention staff recommend limiting exposure to risk during manual handling tasks by acquiring assistive technology and equipment and training staff to adopt the right movements and postures. Equipment of varying levels of sophistication has appeared on the market, including slide sheets, transfer boards, lifts, ceiling track hoists and electric beds.

Training, meanwhile, focuses on helping nursing staff to master the different techniques for different patient handling situations (manual transfers with one or more nursing staff; handling operations using 'small' equipment such as trapeze bars, ergonomic handling belts and rotating footboards; or those using 'large' equipment such as mechanical lifts and sit-to-stand hoists). Such training, which is very widespread in Europe and is followed by large numbers of workers, gives staff an understanding of the principles of safe manual handling, but it often bears little resemblance to 'real' working situations.

This biomechanical approach to tackling MSDs has shown its limits. Many studies suggest that working conditions in the hospital sector have deteriorated considerably, with barely any reduction in the physical workload borne by nursing staff, who continue to suffer from MSDs in large numbers. Evidently, patient handling equipment and assistive technology alone are not sufficient to solve this problem. An overall analysis of the working situation of nursing staff and the environment in which manual handling is performed, and in which such equipment is used, must be conducted in order to ensure that the equipment is properly integrated in the working process.

The need for testing

Before assistive technology is acquired, it must be tested. The participation of hospital staff in this testing is vital. Yet work equipment is still often bought from a catalogue with no account taken of the needs of nursing staff or patients, or of the architectural reality of the buildings, care units and wards. In Europe, the importance of designing ergonomic hospital structures is often neglected. Few hospital development or renovation projects make the effort to understand the specific working realities of the care units and technical departments and to design premises tailored to nursing staff's needs and expectations. To give just one example, many wards are so cramped that they hinder work, force staff to adopt unsuitable postures and cannot accommodate assistive technology.

It is vital that thought be given to the environment in which assistive technology will be used. More specifically, can the assistive technology be moved around freely within and between the floors and care units? Is there sufficient space around the patients in the wards to perform manual handling? Does the lift fit through the door? Can it be properly positioned at the patient's bedside? Do the baseplate and forked base fit under the bed? Does the floor covering influence the way the lift is used? As well as the size of the working equipment, difficulties in moving or pivoting it in the working environment may also be neglected.

Once the assistive technology has been purchased, a robust maintenance programme must be established for the equipment. Failure to maintain the assistive technology or to replace damaged technology when necessary increases the risks of repetitive strain and adoption of inappropriate positions.

In the care sector, the manual handling of patients accounts for a considerable proportion of nursing staff's work. There must be prior and continuous assessment of patients, which must take into account various criteria to determine the most appropriate handling technique: the nature of the transfer to be performed[1], the patient's medical condition, the patient's needs, his/her ability to understand and cooperate, his/her morphology (obese or large patients) and his/her degree of functional independence. If assistive technology is used, its compliance (choice of straps, etc.) must be assessed in relation to the specific characteristics of each patient. Such an assessment must be performed each time a new patient arrives in the department or whenever there are changes in the care workload. Manual handling by care staff in a hospital environment often turns out to be more complex than one might think.

In other words, each handling operation or transfer must be thought of as unique and be assessed beforehand to ensure that it is performed in the safest possible manner for both patients and nursing staff. The use of handling equipment must be integrated in daily care practice and must not be considered a waste of time, a delaying factor or, indeed, as a miracle solution that does not require any concomitant human investment.

1. There are many different kinds of transfers: bed-to-chair, bed-to-wheelchair, bed-to-bathroom, etc.

Often, work equipment is purchased from a catalogue, with no account taken of the needs of nursing staff.

Do not neglect interpersonal care

Ergonomic studies in hospitals have shown that the fragmentation of nursing staff's work and the many constraints they face tend to prevent them from cultivating a personal relationship with patients. The interpersonal aspects of nursing work are being increasingly neglected because they are deemed superfluous in a profit-centred world. Yet patients cannot be handled or moved around like crates of vegetables or parcels. The way in which nursing staff listen to, talk to and act with them can bring patients real comfort, whereas assistive technology may disconcert or even frighten them. Being suspended in the air in a harness or sling is not easy for patients. The interpersonal dimension is therefore one of the fundamental elements of care. Very recently, Japanese scientists designed a robot that can lift and move patients (Robear). The robot uses sensors to adjust the force it employs and the amplitude of its movements to suit the patient's morphology. At present, we do not know whether

patients will be satisfied by its reassuring appearance or appreciate being handled in this way. The Japanese authorities are supporting a number of robotics research programmes designed to make up for labour shortages in several sectors, including health.

Over the last two decades, the approach taken by researchers and ergonomists to MSDs has changed. Such disorders are now examined in correlation with other risk factors such as psychological-organisational constraints, psychological-social factors, the intensification of work, and technical constraints. Among these factors, psychological-organisational constraints have a considerable impact on nursing staff's work. Such constraints include a lack of room for manoeuvre, insufficient breaks, disruption to schedules, urgent work, frequent interruptions to the task in hand (answering the telephone, colleagues asking for help, patients calling for assistance), a lack of regular recognition of their work by their management, stress, and failure to replace sick staff.

In hospitals, the intensification of work[2] is reflected not only in a shortening of patient stays, but also in the introduction of productivity requirements, the need to comply with a rising number of procedures, and an increase in administrative tasks due to computerisation (see article on p. 12). In such a context, it is difficult to improve the working conditions of hospital staff and, in particular, to implement effective and lasting solutions to reduce MSDs.

Possible avenues to explore

What actions could be reproduced on the ground to better protect the health of nursing staff? Various reviews of scientific literature on the manual handling of patients have shown that interventions based essentially on technique training of nursing staff have little impact on their working practices and injury rates. Conversely, multi-factorial interventions have proven to be the most appropriate for reducing rates of musculoskeletal injury. Two ergonomists from the University of Loughborough (UK)[3], Sue Hignett and Mike Fray, have identified seven strategies, which they have combined and integrated in a generic programme to improve the occupational health of nursing staff: equipment provision; initial and in-service training in manual handling techniques; evaluating staff's physical workload; examining the policies and procedures implemented in the hospital; a patient assessment system; analysing the design of the working environment; and analysing work organisation and working practices.

For several years, the European Panel on Patient Handling Ergonomics was involved in drafting an international technical report on the safe manual handling of patients in the healthcare sector[4]. This report presents an overall prevention strategy, based on an analysis of the risks involved in handling and transferring patients, and taking into account all the factors (organisational, structural and training-related) that might affect this aspect of nursing staff's work.

In order to measure the effectiveness of ergonomic measures on patient handling and transfer, Fray and Hignett also developed an overall evaluation tool[5]. Based on the examination of twelve individual dimensions, it establishes a single indicator for evaluating an intervention. The dimensions examined are: safety culture; musculoskeletal health measures for staff; an instrument for observing and assessing the techniques used by nursing staff for manual handling of patients; statistics on staff absences and the reasons for them; the quality of care provided; the number of patient handling accidents and incidents reported; the psychological well-being of nursing staff; patient condition; MSD exposure measures; patient injuries during handling (lacerations, tissue damage, etc.); and an estimate of the direct and indirect costs of MSDs among hospital workers.

In 2013-2014, the Swedish labour inspectorate[6] studied the health of female health workers involved in handling and transferring patients (in hospitals and social care), after the Swedish government tasked it with preventing the exclusion of women from the world of work due to factors related to the working environment. The inspectorate aimed to increase awareness of the risks associated with MSDs and knowledge of how to prevent and detect them. Across the 692 healthcare institutions visited, 75% of employers received one or more requests from the inspectorate with the aim of addressing shortcomings in MSD prevention!

The hardest aspect in the hospital sector is probably improving the working conditions of nursing staff in order to make their work tenable, while also preserving quality of care and patient comfort at a time when they are coming under pressure from new economic management criteria. ●

2. Raveyre M., Ughetto P. (2002) 'On est toujours dans l'urgence': surcroît ou défaut d'organisation dans le sentiment d'intensification du travail?, 'Organisation, intensité du travail, qualité du travail' symposium, Centre d'études de l'emploi, CEPREMAP and LATTS, Paris, 21-23 November 2002.

3. Hignett S., Fray M. (2010) Manual handling in healthcare. Proceedings of the 1st Conference of the Federation of the European Ergonomics Societies (FEES), Bruges, Belgium, 10-12 October 2010.

4. A summary of the technical report 'Ergonomics - Manual handling of people in the healthcare sector' (ISO TR 12296), published in 2012, is available on the internet.

5. Fray M., Hignett S. (2010), A tool to compare all patient handling interventions, Proceedings of the 1st International Conference on Human Factors and Ergonomics in Healthcare, 3rd International Conference on Applied Human Factors and Ergonomics, 17-20 July 2010, Miami, USA.

6. Swedish Work Environment Authority, Ergonomics in women's work environment-Inspections with focus on the risk assessment of patient transfer within the health care and social care sectors, Report 2014, 5, 32 p.

Patients cannot be moved around like crates of vegetables.