

## **Patient Lifts Prevent Injuries and Workplace Musculoskeletal Disorders at National Naval Medical Center, Bethesda, MD**

National Naval Medical Center (NNMC) is a hospital in Bethesda, MD with an average of 120 to 140 inpatients on any given day. Lifting and transferring some of these patients into and out of their beds was a routine work task with a high risk for occupational back injury and the risk, to both patient and caregiver of falling. In the past, half of all occupational back injuries at NNMC Bethesda were



**Nursing staff member risking back injury by manually lifting patient**

related to lifting and transferring patients. A typical lifting task was the manual transfer of a patient from a bed to a chair, as shown in the photograph on the left. Caregivers who lifted patients manually often bent forward or twisted their upper bodies during the lift. In such an awkward position, a worker's back muscles had to apply considerably more force to hold that position while lifting and therefore became more vulnerable to injury. The same procedure was used for transferring a patient to a wheelchair. Some heavy or obese patients and those with certain medical and post-surgical conditions are unable to participate in controlling their lift, which could further complicate the lifting task. Although some

portable lifting equipment was available to the nursing staff, it was old and inadequate.

Tasks that require a worker to maintain an awkward posture can stress and fatigue the muscles and tissue that support and hold that awkward posture. This over-burdening may lead to a *work-related musculoskeletal disorder*, or WMSD, a group of disabilities that usually involves muscle weakness and discomfort. The discomfort often improves after discontinuing activities that weaken the affected muscles and getting medical treatment for the WMSD. WMSDs can be prevented through an ergonomics program.

Ergonomics is the science of fitting the work to the worker, instead of requiring the worker to adapt to existing working conditions. The goal of an ergonomics program is to reduce the frequency and severity of WMSDs by redesigning work tasks or workstations to minimize the risk of WMSDs. Ergonomically designed work tasks, equipment, and tools help to reduce the risk of WMSDs and injuries by allowing workers to avoid repetitive motions and awkward postures that increase those risks.

Naval Facilities Engineering Command (NAVFACENGCOM) assessed ergonomic risk factors at NNMC as part of the Chief of Naval Operations' Hazard Abatement Program pilot project to improve occupational safety and health through ergonomic improvements.



**Portable Patient Lift in hospital corridor**

A NAVFACENGCOM Hazard Abatement (HA) ergonomist assessed two NNMC areas, Inpatient Medicine and Inpatient Surgery, for occupational ergonomic stress factors. Detailed records of the types of back injuries occurring at NNMC have been kept and analyzed since 1995. Although at least one-half of the back injuries were related to patient lifts and transfers, no distinct trends indicate any inpatient departments or wards are more “at risk.” Therefore, Inpatient Medicine and Inpatient Surgery were chosen for the assessment because of their heavy and diverse patient loads, close proximity to one another,

and willingness of supervisors to participate in the equipment study.

The NAVFACENGCOM ergonomic assessment included interviews with supervisors, nurses, Navy Hospital Corpsmen, physical therapists and the professional safety staff. Work tasks were reviewed to identify opportunities for reducing the risk of work-related back injuries and WMSDs and for enhancing worker safety, health, and productivity. The NNMC ergonomics committee also prioritized ergonomic risk factors and recommended interventions.



**Patient transfer in Portable Lift prevents falls and lifting-related injuries**

The NAVFACENGCOM and NNMC studies found that the most significant ergonomic risk factors for the inpatient nursing staff were manual lifting, overexertion from lifting and transferring patients, and awkward postures due to improper body mechanics. Improper body mechanics include poor posture, improper lifting techniques, and poor lift planning. Recommendations included NNMC acquiring new, improved lifting equipment, implementing administrative controls, and training workers on alternatives to manual lifting to reduce their risk of back injuries.

NAVFACENGCOM asked the NNMC nursing staff to evaluate two varieties of



**Ceiling Lift supports patient's weight while caregiver controls lift without risk of back injury**

portable floor lift devices and one permanently installed ceiling lift. Based on the results of the study, fully upgraded Portable Floor Lifts were procured for the Inpatient Medicine, Inpatient Surgery, and Physical Therapy areas of the hospital. In addition, Inpatient Medicine received a permanently installed Ceiling Lift as a suitable alternative to manually lifting patients. Using the portable or mechanical ceiling lift, the caregiver wraps the heavy, obese, or otherwise difficult to move patient into a comfortable sling. The patient is secured by leg-clips that fasten between the patient's legs. The lift transfers the patient to a chair, wheelchair, or onto a gurney cart for transport to and from surgery and medical tests. Since the lift does the work of transferring the patient, the caregiver does not have to strain back muscles during the process.

As a permanent feature of the hospital room, the mechanical ceiling lift is especially suited to lift and support heavy or obese patients. In fact,

Inpatient Medicine supervisors now assign heavy or obese patients to the room with a permanently installed mechanical ceiling lift. The incidence and severity of back injuries among NNMC staff have continued to decrease since the portable floor lifts and the ceiling lift have been in use. The Navy's Bureau of Medicine and Surgery (BUMED) is evaluating the benefits of installing the ceiling lift.



**Training Nursing Department Staff on using Ceiling Lift to move patient**

Introducing ergonomic equipment requires appropriate training and supervision to reduce the risk of injury.

Otherwise, the incidence of injuries and WMSDs may actually increase. Nursing supervisors ensure that members of NNMC's nursing staff are trained and retrained yearly in preventing back injuries. Training includes safe lifting techniques, proper body mechanics, conditioning exercises, and training and information on the use of patient lifting and transfer equipment.

Since introduction of the portable and mechanical ceiling lifts at NNMC, there have been no reported severe disabilities and fall injuries among employees at risk of injury during patient transfers. Most of the patients accept the lift equipment and enjoy the “smooth ride.” Based on anecdotal evidence, workers find the new lifting equipment makes transferring obese and other special-needs patients much easier.



Says CDR Lefebvre, Physical Therapist, “The portable lift has been great for a patient we had with multiple fractures, who could not bear any weight. The lift was critical for getting him into a wheelchair and onto gurneys. The lift was easy, convenient, and the patient felt very safe being handled by the equipment.”

**Training Nursing Department Staff on transferring patient to bedside chair**

ENS Eborn, a nurse assigned to Inpatient Medicine commented, “The patient lift equipment has been a big help for staff safety and preventing injuries to patients.”

The NNMC Ergonomics Committee plans to utilize inpatient staff nurses and Physical Therapists on the committee to conduct further ergonomic evaluations that include lifting equipment. In the meantime, the portable and mechanical ceiling lifts are now part of NNMC’s Ergonomics Program. Each time the lifts are used, employee and patient safety is enhanced. Periodic training and staff utilization will continue to demonstrate the effectiveness of the new patient lifting equipment.

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