

NAVAL MEDICAL CENTER, SAN DIEGO RESOLVES RISK OF LIFTING INJURIES IN PHARMACY COMPOUNDING STATION

Naval Medical Center San Diego (NMCS D), the United States military's largest health care facility, provides health care to active duty and retired military members and their families. NMCS D pharmacists, with the

assistance of pharmacy technicians, fill nearly 8,000 prescriptions every day.



Aerial view of Naval Medical Center San Diego

Pharmacy technicians who work at the lotion *compounding station* were once required to lift the heavy compounding mixture over shoulder height to transfer the mixture into a hopper for dispensing the lotion into individual prescription bottles. The technician also had to stand and balance on a stepstool while transferring the mixture in order to reach the lotion-dispensing hopper.

Carrying out a difficult maneuvering posture while lifting a heavy load may expose the worker to risk factors that overburden muscles, tendons, or ligaments of the shoulders, neck, wrists, arms, legs, or back. Frequent, repeated, or lengthy exposures to such risk factors may lead to a work-related musculoskeletal disorder, or WMSD, the designation given to a group of disabilities that usually involve weakness and discomfort. The discomfort associated with a WMSD often improves following medical treatment and after changing work habits to discontinue the activities that led to the symptoms.

The goal of the Navy's *Ergonomics Program* is to reduce the frequency and severity of WMSDs by redesigning work tasks or workstations through the introduction of procedures and tools that minimize risk factors. *Ergonomics* is the science of fitting the work to the worker, instead of requiring the worker to adapt to existing working conditions. Tasks, equipment, and tools that are designed with the user and task in mind help to reduce the risk



Pharmacy technicians used to lift heavy bowls full of lotion over shoulder height

of WMSDs and other work-related injuries by allowing the worker to avoid harmful repetitive motions, awkward or unnatural postures,



Hydraulic scissors lift table is permanently fastened to the floor with lotion dispenser mounted on top

stationary positions, and repeated forceful pressure on various parts of the body. Applying ergonomic principles in the workplace also increases productivity and efficiency, reduces errors and waste, increases worker satisfaction and workplace morale, and ultimately improves overall quality of work and products.

NMCS D participated in an Ergonomics Risk Assessment Project funded by the Chief of Naval Operations' Hazard Abatement and Mishap Prevention Program to improve occupational health and safety conditions by identifying ergonomic risk factors in the workplace and implementing suitable ergonomic solutions. At the request of the Naval Facilities Engineering Command (NAVFAC), a Certified Professional

Ergonomist (CPE) provided technical support to the project.

As part of the NMCS D Ergonomics Project, the CPE and NMCS D Safety Staff observed pharmacy staff during their work tasks, and interviewed pharmacy technicians, supervisors, and NMCS D industrial hygienists to help identify possible ergonomic risk factors.

The CPE also distributed Job Requirements and Physical Demand Surveys (JR/PD) to the pharmacy staff. The JR/PD is an occupational health survey that the military utilizes to identify risk and discomfort in work environments and to prioritize corrective actions. The results of the overall ergonomic assessment and JR/PD indicated the presence of ergonomic risk factors in the pharmacy's compounding station.



Full bowls of lotion are transported to the scissors lift table via a wheeled cart

At least once each day, a pharmacy technician is assigned to the compounding station to custom blend a lotion that is used to treat various skin conditions. The bowl in which the compound is mixed typically weighs about 25 pounds when full of the lotion. After making up the lotion, a technician used to manually lift the 25-pound bowl and raise it above shoulder height to fill the lotion dispensing hopper, as shown in the photo above. While holding the full container, the technician had to climb up onto a laboratory stepstool to transfer the lotion from the container into the dispensing hopper as shown at right.



Technician stood on stepstool to reach dispensing hopper

Lifting the compounding mixture above shoulder height and scraping the bowl with a spatula burdened technicians' backs and

shoulders, putting the technicians at risk of developing a WMSD. In addition, climbing and standing on a stepstool during the transfer put technicians at risk of falling.



Hydraulic *scissors lift table* can be lowered for transfer of lotion into the hopper

The ergonomist analyzed the lotion compounding process and work station and teamed with the safety department and pharmacy staff to determine the suitability of commercially available products to reduce the lifting and fall hazards in the NMCS D pharmacy. The pharmacy staff decided against adding an intermediate step of transferring the lotion into smaller containers before pouring it into the hopper. They cited the unacceptability of increasing the time spent, waste, spillage, and additional equipment needed for the transfer task. The team decided instead on a

hydraulic *scissors lift table* that would lower the hopper for the transfer task, and then raise the hopper for dispensing. The *scissors lift table* is adjustable to allow the technician to function in a neutral working posture, regardless of his or her height or reach.

The Chief of Naval Operations' Hazard Abatement and Mishap Prevention Program approved and purchased the hydraulic *scissors lift table* to assist the pharmacy technicians in dispensing lotion into the hopper. The lift table is permanently fastened to the floor with the lotion dispenser firmly mounted on top of it. A pharmacy technician now transfers a full bowl of lotion by sliding it from the mixing table onto a wheeled cart, then pushing the cart to the *lift table*. A hydraulic piston lowers the hopper to the height of the cart so that the technician easily transfers the lotion into the hopper at waist height instead of lifting and balancing the heavy load above shoulder height. After transferring the lotion into the dispenser hopper, the technician hydraulically adjusts the lift table to dispense lotion into individual four to eight-ounce containers at about chest height.

The *scissors lift table* substantially minimizes the risk of WMSDs among pharmacy technicians in the compounding station by removing the risks from their everyday tasks due to heavy lifting. The technicians are very pleased that they no longer need to lift the 25-pound lotion bowl above shoulder height to pour the lotion into the dispensing hopper. They have not experienced any WMSDs since the *scissor lift table* was installed. Because the lift table is adjustable to each technician's height, the laboratory stepstool is no longer needed for transferring lotion into the hopper. Removing the need to stand on a stepstool eliminates the risk of falls associated with that work task.



Technician dispenses lotion into individual containers.

The return on investment of this ergonomic and safety intervention over the projected ten-year life cycle of the *lift table* is estimated to be as much as \$149,000.00 through avoidance of costs associated with lost time injuries, including medical treatment and rehabilitation of injured pharmacy technicians and training of replacement technicians.

Point of Contact: Andrea Khul, Safety Specialist at NMC San Diego
Telephone: (619) 532-6021
Email: ARKuhl@nmcsd.med.navy.mil