

# Naval Facilities Engineering Command Ergonomic Risk Assessment for Branch Medical Clinics

Patient Services – Medical Records Management

## INTRODUCTION

This report summarizes the ergonomic risk assessment conducted at two Branch Medical Clinics July 2002. Recommendations can be easily adapted to any hospital or branch clinic. A Certified Professional Ergonomist based this assessment upon a walk-through and interviews with workers, supervisors, an industrial hygienist, and safety personnel.

The medical records areas present the opportunity to reduce the risk of Work-related Musculoskeletal Disorders (WMSDs). Recommendations to the command to reduce the probability of injury include considering equipment purchase<sup>1</sup>, redesigning processes, and implementing administrative controls<sup>2</sup>. Alterations to the workstation or work methods may require specific quality control and or safety practices to conform to the variety of regulating agencies.

Musculoskeletal Disorders (MSDs) are injuries and illnesses that affect muscles, nerves, tendons, ligaments, joints, spinal discs, skin, subcutaneous tissues, blood vessels, and bones. Work-related Musculoskeletal Disorders (WMSDs) are:

- Musculoskeletal disorders to which the work environment and the performance of work contribute significantly, or
- Musculoskeletal disorders that are aggravated or prolonged by work conditions.

Representative vendor information<sup>3</sup> is included in the recommendations to assist in the evaluation of products and services. Recommendations to the command include gathering input from the workers, safety specialists, occupational health professionals, and other personnel to evaluate equipment before purchasing. This process will increase product acceptance, test product usability, and durability, and take advantage of worker experience.

The command may request additional funds from the Chief of Naval Operations (CNO) Hazard Abatement (HA) Program to abate the risk of injury. Naval Facilities Engineering Command (NAVFACENGCOM) manages the CNO Hazard Abatement Program, which is a centrally managed fund to correct safety and health deficiencies beyond the funding capabilities of the activity. Information about the HA program can be found on the Naval Facilities Engineering Command web site [www.navfac.navy.mil/safety](http://www.navfac.navy.mil/safety) and in OPNAVINST 5100.23F. Ch 12 Hazard Abatement.

## **MEDICAL RECORDS**

### **Purpose of the Operation**

Employees in medical records review and file records, receive telephone calls, enter information into the computer and assist patients.

### **Population**

Civilians and active-duty personnel work eight hours a day, 40 hours a week.

### **Injury Data**

None available

### **Observations**

Employees in medical records retrieve, review, and file records in the filing area, discussed below. They also assist patients and medical staff via the telephone, and perform data management (photos 1 & 2). Employees reported spending approximately 40% of their day at computer workstations.

As seen in photos 1 and 2, the current desk design does not accommodate the computer equipment, records, and reference materials on the desk. The greatest ergonomic stressors in this area are awkward postures and contact stress. Because of the desk depth, the monitors are positioned off center. The workers are required to twist their neck or torso to view the monitor.

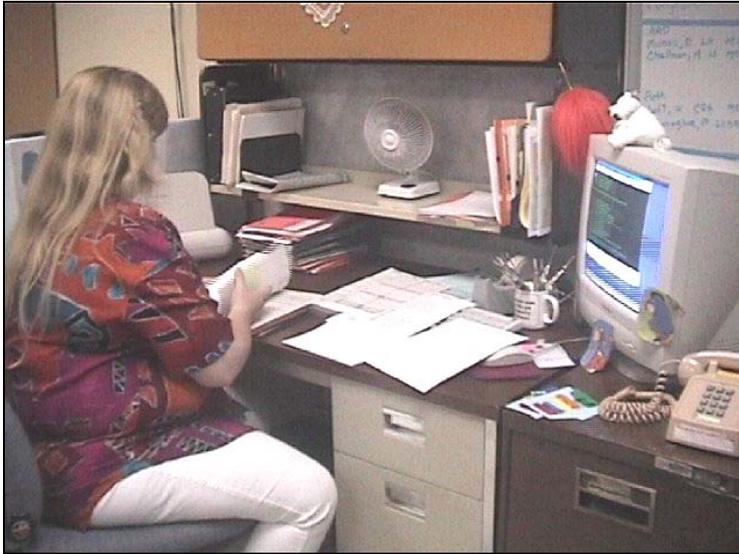


Photo 3: Awkward body posture

Storage of the CPU beneath the desk reduces leg clearance, the workers were observed twisting their torsos or positioning one knee outside the desk's leg area, as seen in photo 3, to position their body close enough to reach the keyboard and mouse. Workers also rest their forearms on the edge of the desk when typing because the workstation encourages a non-neutral wrist posture. Resting forearms on the edge of a desk causes contact stress.

### **Ergonomic Issue Description:**

The greatest ergonomic stressors in the administrative area are awkward postures and contact stress. The combination of two physical risk factors and frequency of exposure induces the risk of WMSDs.

*Awkward Postures:* Workers spend a large percentage of their time with the neck and or torso twisted. These postures are examples of awkward postures. Repeatedly performing tasks in such positions imposes increased stress on the joints and/or spinal discs.

*Contact Stress:* The workstation design is the cause of the contact stress. Workers are resting palms and forearms on the sharp desk edge. Sustained contact stress may lead to a number of WMSDs due to tendon irritation and reduction in nerve conduction.

### **Recommendations:**

- Provide separate computer workstation or a larger overall workstation to accommodate the computer and support equipment.
  - An optimally designed computer workstation would be a height adjustable desk so the keyboard is positioned at the workers seated elbow height. Module furniture can be adjusted one time to accommodate a large proportion of the work force.
  - The workstation should be of adequate size to accommodate equipment (telephone, monitor) and materials (documents).
  - A sit/stand adjustability feature allows the worker to change postures throughout the day, from sitting to standing. Changing posture reduces fatigue by allowing the muscles of the back to rest while standing, and the muscles of the legs to rest while seated

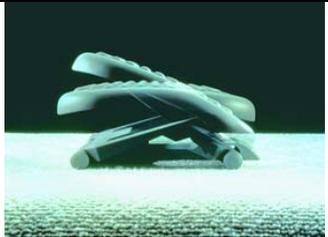
- An alternative to providing new equipment:  
The workstation should be adjusted such that the keyboard and mouse heights are equivalent to the worker's seated (or standing) elbow height with the upper arms perpendicular and forearms parallel to the floor and wrist straight. The keyboard and monitor are directly in front of the worker.
- Clear space beneath desk and remove center drawer. Provide a smaller task chair to allow the workers to position themselves close to the desk edge. Elevate or lower desk to the worker's seated elbow height. Provide a monitor arm so workers can position the monitor directly in front of the keyboard without twisting their torsos or bending forward. An alternative is a flat screen.
- Refer to The Department of Defense Information Guide for Supervisors and Users "Creating the Ideal Computer Workstation: A Step-By-Step Guide" at <http://chppm-www.apgea.army.mil/ergopgm/ergohome.htm>
- Most vendors have trial periods for products. Many local office supply stores have input devices on display that employees can be encouraged to visit.
- A mouse bridge can be placed over the numeric keypad to position the mouse closer to the worker.
- A trackball and glide pad are options that uses less space than a conventional mouse. Thumb-operated trackballs are typically not recommended. There are many different input devices and accessories. No one device is the best solution or can be learned by everyone; therefore, employees should be allowed to try different devices.
- Provide a headset for the telephone. The workers use the telephone and computer at the same time, which can result in angling their head to one side while elevating the shoulder to hold the phone between his shoulder and ear. This awkward posture quickly results in muscle fatigue.
- Copy stands and read/write stands allow the employee to angle reference materials and medical records towards themselves to avoid neck and back flexion. These stands decrease the amount of repetitive neck motion associated with looking from a document on a flat surface to a computer monitor. Stands should ideally be located as close to the monitor as possible (possibly in front). Copy stands are used when documents are solely being typed from. Read/write stands are for when documents are being typed from and written on. Heavy reference books require a heavy-duty document holder like the Atlas available from Atlas Ergonomic Book and Copy Holder (1-800-GET-ATLAS) for \$99.
- Certain ergonomic office products can improve productivity as well as employee comfort. Suggested products include automatic staplers and hole punches, ergonomic staple removers, and wide-body pens.

The medical records main access door opens into an already crowded area. The workers discussed the likelihood of a person being struck by a door. Improvements include: door with a window or a subtle warning signal.

**Administrative Workstation Resources**

- The Occupational Safety and Health Administration’s Ergonomics Program Standard Regulatory Text 2000 Appendix D-2 to CFR 1910.900 contains a video display terminal workstation checklist. The standard can be found at <http://www.osha-slc.gov/ergonomics-standard/regulatory/regtext.html>
- The Department of Defense Information Guide for Supervisors and Users “Creating the Ideal Computer Workstation: A Step-By-Step Guide” can be found at <http://chppm-www.apgea.army.mil/ergopgm/ergohome.htm>
- Duke University’s ergonomics department contains a catalog of recommended products and vendor information<sup>2</sup> at <http://www.safety.duke.edu/Ergonomics/catalog/>
- Dr. Chris Grant’s web site at <http://www.office-ergo.com> contains office ergonomic articles and information sheets based on research literature.
- Naval Facilities Engineering Command Safety Web site contains office guidance information: [www.navfac.navy.mil/safety/site/ergo/policy.htm](http://www.navfac.navy.mil/safety/site/ergo/policy.htm) Guidance for Office Ergonomics

*Vendor Table 1: Data Management*

<b>Foot rests</b>			
Alimed <a href="http://www.alimed.com">www.alimed.com</a>	Comfort Tread Plus Footrest #JA73454	\$42.95	
North Coast Medical 1-800-277-6826	WorkMod Tall Foot Rest NC73650	\$34.95	

<p>ErgoSource 1-952-404-1969 <a href="http://www.ergosource.com">www.ergosource.com</a></p>	<p>Self-Adjusting Foot Rest SAF3 3" Deck Height</p>	<p>\$18.95</p>	
<p><b>Sit to stand workstations</b></p>			
<p>Alimed 1-800-225-2610</p> <p>Balt Inc. 1-800-749-2258 <a href="http://www.baltinc.com">www.baltinc.com</a></p> <p>Lab Safety 1-800-356-0783 <a href="http://www.labsafety.com">www.labsafety.com</a></p> <p>Anthro Adjustacart Monitor Lift Platform</p> <p>Ergo Science Ergosci.com</p> <p>ErgoCentrix .Ergocentrix.com</p>		<p>\$500-\$1,600 Prices vary with options</p>	
<p><b>Seating</b></p>			
<p>HAG</p> <p>HAG</p> <p>Steelecase</p> <p>Neutral Posture</p>	<p>5300 or 5400)</p> <p>Credo 3300</p> <p>Criterion</p> <p>Model 5500</p>	<p>GSA Pricing*: \$483-\$516</p> <p>GSA Pricing*: \$438</p> <p>GSA Pricing*: \$391.00</p> <p>GSA Pricing*: \$455-515</p>	

<b>Monitor Risers</b>			
Alimed 1-800-225-2610	VuRyser1	\$36	
	Monitor Master	\$204	
Local office supply stores Staples, Office Max, Office Depot			



Left, photo 4: Reading CHITS on the mobile before filing results in awkward neck postures  
 Center, photo 5: Retrieving a medical record from tightly packed shelves  
 Right, photo 6: Retrieving a medical record from below knee height while reading the CHITS

Employees spend 40-50% of their time managing patient records.

Updates in the form of patient sheets (CHITS) are generated from physician visits. The CHITS are added to the patient record. Employees use various methods for filing, some pull all the records, insert updates, and then re-file. Others complete the updates one file at a time. Typically, the employee places the CHITS on tables in the records room. The employee reads the CHITS to locate the appropriate file. Reading the CHITS on the table can induce awkward neck postures, as shown in photo 4.

Record shelf heights range from 1" to 60" but can require reaches as far as 66" because of the density of the files. The tightly packed files in the shelves can require a forceful pinch grip by the workers. Workers were observed in wrist braces and discussed forearm and wrist pain. Workers also noted the difficulty retrieving and refilling records.

Photo 5 shows an employee reaching above shoulder height to access files on the top shelves. Photo 6 shows an employee in an awkward back and neck posture while pulling a file from the bottom shelf and reading the CHITS placed on the table. A rolling stool is available to stand or sit on when pulling files from the top and bottom shelves. In addition, workers noted back discomfort from reaching overhead, bending down to floor height, and reaching across the pull-out table to access folders.

### **Ergonomic Issue Description:**

The greatest ergonomic stressors in the records area are awkward postures.

*Awkward Postures:* When retrieving medical records, the workers are constantly reaching overhead, to floor level or at arm's length. Extended reaches are examples of

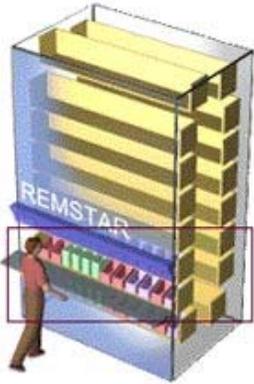
awkward postures that require the body to deviate from the neutral in the arms, shoulders, and back. Repeatedly performing tasks in such positions imposes increased stress on the joints and/or spinal discs. Injuries result when stressed muscles do not have adequate time to rest and recover.

Both major tasks performed by the workers in in-patient services, data and records management, expose the workers to awkward postures. The duration of the exposure and likelihood of an inadequate rest period greatly increased the risk of WMSDs.

Recommendations:

- The optimal solution for the medical records filing area is an automated retrieval system. This system would provide all records at a constant neutral height. An automated retrieval system would eliminate bending to reach low shelves and straining to reach high shelves.
- A number of reaching devices are available that should reduce some of the extended reaches and if powerful enough to extract the files. The devices turn the weaker pinch grip into a more powerful power grip thus decreasing the forces on the hand.
- Employees should have a stool with a backrest for reaching bottom shelves and a locking step stool for the top shelves.
- If the current filing shelves are not replaced, more should be obtained so the files are not packed as tightly. Also, provide storage for archived records.
- Encourage employees to take micro-breaks throughout the day and rotate tasks so they are not filing for extended periods of time.

Vendor Table 2: Records Management

Description	Vendor	Product	Est Cost	Figure
Automated retrieval System	Remstar (800) 639-5805	Vertical Carousel Retrieval System	Varies with number of modules, software and customization	
Reaching device	North Coast medical <a href="http://www.northcoa.com">www.northcoa</a>	Rainbow reacher Northcoa	\$15 - \$25	

Description	Vendor	Product	Est Cost	Figure
	<a href="http://stmedical.com">stmedical.com</a>  Alimed <a href="http://www.alimed.com">www.alimed.com</a>	st reacher		

**End Notes:**

1 Equipment purchase without proper and repeated training will not mitigate risk and may in fact increase hazards.

2 Administrative controls are management-controlled work practices and policies designed to reduce exposures to work-related musculoskeletal disorders (WMSDs) hazards by changing the way work is assigned or scheduled. Administrative controls reduce the exposure to ergonomic stressors and thus reduce the cumulative dose to any one worker. Examples of administrative controls that are used in the ergonomics context are employee rotation, employer-authorized changes in the pace of work and team lifting.

3 This report does not constitute an endorsement of any particular product. Rather, it is a recitation of how Navy personnel have addressed a particular work place safety issue. Neither the Navy nor its employees and agents, warrant any product described in this report for any use, either general or particular.