Ergonomics for EVS: An Injury Prevention Approach

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Find Resources at www.hcergo.org

What’s New

The American Nurses Association (ANA) is leading a broad-based effort to develop national standards to guide hospitals and other health care facilities in their implementation of policies and equipment to safely lift and move patients. OCHIE member Lynda Enos is a member of the ANA’s specialist workgroup assisting ANA to develop the standards. Click here for more information about this project.

Go to the Events page to view upcoming ergonomics-related conferences and courses.

Formed in 2003, the OCHIE is a working partnership between healthcare industry groups and professional associations, academic, labor, workers’ compensation insurance, and Oregon OSHA.
What are Musculoskeletal Disorders (MSDs)?
(Cumulative Trauma Disorder, Repetitive Strain Injury, Overexertion or Overuse Injury)

Acute:
A sudden or one-time traumatic event or incident, e.g., slip, trip, fall or car wreck

Chronic or Cumulative:
Injuries that occur over a period of time months/years) & are caused by a combination of risk factors

MSDs affect ligaments, muscles, tendons, cartilage, blood vessels & nerves & spinal discs

Some Common MSDs

- Sprains & Strains
- Lateral (or Medial) Epicondylitis (Tennis Elbow/Golfer’s elbow)
- Trapezius Myalgia (tension neck syndrome)
- Tendonitis & Tenosynovitis
- Dequervain’s disease (Tendonitis of the thumb)
- Trigger finger
- Rotator Cuff Tear (shoulder)
- Bursitis (shoulder or knees) Bricklayer’s/Pitcher’s Shoulder; Housemaid’s knee)
- Low Back Pain/Bulging or Herniated Spinal Discs
- Carpal Tunnel Syndrome ◦ (not associated with keyboard use)
- Plantar Fasciitis (Foot)
Risk Factors that can Contribute to the Development of MSDs

**Primary Risk Factors that can contribute to work related MSDs**

- Awkward, Static & Poor Postures
- Force (Lift, Push, Pull, Carry, Grip)
- Repetition
- Duration (Time)

**Additional Factors:**
- Contact Stress
- Vibration
- Environmental e.g., Cold/Heat/Noise/Light
- Psychosocial Factors e.g., perceived stress & low control of work environment

= MSDs

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The Cumulative Effect

**Duration** – the length of exposure to a risk factor

Can be all at one time or cumulative over the day, months or even years of exposure to ergonomic risk factors before it becomes a concern.

**Affected by:**

- Working through breaks
- Overtime
- Task variability

When the musculoskeletal system is exposed to a combination of these risk factors (too quickly, too often and for too long) without sufficient recovery or rest time, damage occurs.
Using Ergonomics to Prevent MSDs

Designing Tasks, Equipment, Work Environments & Systems to be compatible with the Users’ Physical & Cognitive Capabilities and Psychosocial Characteristics

Fitting the Task to the User

Preventing User Injury & Error; Improving Comfort & Efficiency/Quality

Ergonomics Programs - Preventing MSDS

Hierarchy of Controls

Primary Controls:
1. Eliminate the risk factor(s) through design
   - Engineering of the:
     ▪ Task
     ▪ Tools
     ▪ Equipment
     ▪ Facilities

Secondary Controls:
2. Work Practice changes
3. Administrative - Reduce exposure of person to the job
4. Warnings
5. Training
6. Personal Protective equipment
7. Wellness & Fitness

Most Effective

Least Effective
Components of Successful Ergonomics Programs – Preventing MSDs

Culture (Behavior) Change & Program Sustainability

- Management Commitment (visible program champion)
- Employee Involvement (inc. labor)
- A Business Plan (strategic & tactical)
- Program Management (program facilitator)
- Worksite Analysis
- Hazard Prevention & Control (equipment, safe work practices, proactive design)
- Education & Training (inc. ongoing coaching)
- Disability Management ('after action' review)

Multifaceted programs are more effective than any single intervention

Environmental Services (EVS)

- “Perform a variety of general cleaning tasks to maintain patient rooms, offices, hallways, and other assigned areas of the hospital.”
- “Move, remove, and relocate furniture, furnishings, equipment, etc.”
- “Considerable reaching, stooping, bending, kneeling, crouching, moderate to heavy physical effort (lift/carry/push up to 50 lbs.).”
- “Prolonged, extensive, or considerable standing/walking.”

(Providence Health and Services, 2018)
Injury rates for Janitors and Cleaners

- Incidence rates per 10,000 FTE
- Nonfatal occupational injuries and illnesses
- Days away from work

<table>
<thead>
<tr>
<th></th>
<th>All occupations</th>
<th>Janitors and Cleaners, except Maids and Housekeeping Cleaners (code 372011)</th>
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<tr>
<td></td>
<td>2016</td>
<td>2016</td>
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<tr>
<td>All Injuries &amp; Illnesses</td>
<td>91.7</td>
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<td>Musculoskeletal disorders</td>
<td>29.4</td>
<td>58.8</td>
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<tr>
<td>Overexertion and bodily reaction</td>
<td>30.9</td>
<td>61.2</td>
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</tbody>
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Injuries, illnesses, and days away

Occupations with high numbers of nonfatal injuries and illnesses requiring days away from work, 2015

- Laborers, freight, stock, and material movers
- Heavy and tractor-trailer truck drivers
- Janitors and cleaners
- Nursing assistants
- Maintenance and repair workers, general

Overexertion leading cause of injury

Full cost of worker injuries

Direct Costs (Largely Workers Comp)
Indirect Costs (e.g. temp and permanent staff replacement costs)

• Operational Losses
  - Staff Turnover
  - Quality of Care/Service
  - Decreased Efficiency (Impact of Fatigue, Presenteeism, etc.)
• Cost of Compensating Actions (e.g. Training)
• “Human” Error & Accidents

Typical EVS Injuries

• Moving beds – “Moving bed and felt lower back pain”
• Lifting linen – “Lifted linen bag to drop in chute and injured wrists”
• Pushing carts – “Pushing and pulling housekeeping cart”
• Mopping – “Mopping a room and heard arm pop”
• Cleaning – “Cleaning patient room and felt neck and shoulder pain”
• Cumulative Trauma – “My back is really sore”, “Numbness and tingling in both hands”

(Providence Health and Services, 2018)
2017 EVS injuries by category

Solutions
Scrubbing and dusting

Challenges
- Extreme reach (overhead)
- Awkward posture (bending, kneeling, squatting)
- Bent wrists, repetitive motions and high grip forces

Solutions
- Long-handled tools
- Angled or pivoting heads
- Adjustable handle lengths, cleaning heads as light as possible (e.g. microfiber), battery-powered scrubbers (EU-OSHA, 2009)

Vacuuming

Challenges
- Repetitive motions (hand, arm)
- Grip force
- Pushing and pulling, lifting and lowering
- Bending wrist and back
- Noise (increasing stress and muscle tension)

Solutions
- Lighter weight canister
- Adjustable “Ergonomic” handles
- Self-propelled upright vacuums
- Long hoses
- Lower noise levels (EU-OSHA, 2009)
Vacuum technology

Challenges
- Awkward position
- Torque when starting transfers vibration to upper extremity
- Heavy lifting
- Slip/trip/fall risk

Solutions
- Self-propelled machine with walk-behind or ride-on option
- Reduced vibration via product design, consistent maintenance and servicing

Source: www.unoclean.com/

Buffing

Challenges
- Awkward position
- Torque when starting transfers vibration to upper extremity
- Heavy lifting
- Slip/trip/fall risk

Solutions
- Self-propelled machine with walk-behind or ride-on option
- Reduced vibration via product design, consistent maintenance and servicing
Mopping

Challenges
- Heavy, awkward lifting
- Bending
- Squatting to lift bucket from floor
- Wringing
- Lifting and carrying wet mop

Solutions
- Adjustable, light-weight equipment
- More ergonomic location of sinks/taps
- Improved work practices and work organization

EU-OSHA, 2009

Handling trash and linen

Challenges
- Lifting heavy trash and linen bags from bins
- Creating vacuum in cans, which increases force to remove (trash)
- Significant push-pull forces

Solutions
- Replace large trash bins with smaller, lighter bins
- Vent sides of trash cans
- Relocate dumpsters, compactors, and bins to be accessed from above or to safe operating height

EU-OSHA, 2009
Trash and linen risks

Moving furniture

**Challenges**
- Lifting, carrying, pushing, and pulling furniture
- Operating furniture (e.g. patient recliners)

**Solutions**
- Lighter furniture
- Wheeled furniture
- User-friendly furniture controls (EU-OSHA, 2009)
**Vancouver Island case study**

- Partnership between 471-bed regional hospital and Provincial Workers’ Comp Board
- Aimed to eliminate linen lifting injuries, reduce MSDs, injury costs, and BBFEs
- Reduced 4 time-loss claims/year to **Zero**
- 94% “good” or “excellent” on staff satisfaction survey
- $48,508 annual savings and initial $147,000 investment recouped in 4 years (Newlands et al, 2002)

**Mop and bucket study**

- Mop/bucket risks and challenges
- Flat-mop and backpack benefits
- Newer, lightweight application

(Brown, L., 2009)
Mop study findings

- Muscle contraction and heart rate monitoring
- 36% less forearm flexor effort
- 36% less erector spinae effort
- 35% less deltoid effort
- 23% less trapezius effort
- Overall heart output was 50% less with new system

(Brown, L., 2009)

Vacuum backpack study

- Challenges of upright vacuums
  - Only forward-back motion
  - Pushing weight of entire machine each stroke
  - Upright vacuum handles position caregiver closer to floor

(Standley, S., Murray, C., & Woellner, R., 2004)
Vacuum pack benefits

- Upright body position
- Greater range of vacuum movement/coverage
- Decreased energy output and twice the cleaning rate
- Reduced weight
  - Traditional uprights = 20-30lbs
  - New backpack technology = 10lbs.
- Neutral position – Two-handed operation, elbows locked at side, which limits extreme reach
- Custom fit

[Standley, S., Murray, C., & Woollner, R., 2004]

Provider processes

- Collaboration among Workers’ Compensation, Injury Prevention & Ergonomics, Safety, Caregiver Health, Executive Leadership, and Unit/Department Leadership
- Return-to-work/Transitional duty
- Employer-at-Injury Program (EAIP)
Worksite and risk assessments

- Individual caregivers
- Departmental risk assessments
- Training, in-servicing

Potential Program Funding Sources

- Employee at Injury Fund (EAIP) ($5000 per injured worker while on transitional duty - in Oregon

- Preferred Worker Program – to $50,000 (Oregon)

http://wcd.oregon.gov/rtw/Pages/index.aspx
Resources

Questions & Discussion