Industrial Hand Injuries
Region X VPPPA Conference
May 21-23, 2013    Spokane

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Overview

• Current Statistics
• How injury impacts worker
• New look at prevention
• Return to work
Injuries

• Every 32 seconds there is a hand injury in the workplace. (NRSC.com)

• Types of accidental injuries
  • Crush injuries
  • Fractures
  • Cuts
  • Sprains/ Strains and Tears
  • Burns (Chemical and Thermal)
Strains involve Tendons and muscles.

- Tendon injury affects movement, flexing and extending of the fingers, etc.

- Complicated treatment/recovery depending if it’s a partial tear, complete tear
Thumb Strains/Sprains

• Sprains: Jammed into something, being bent in an extreme position. Swelling and very painful to move.

• In a fall, it depends on how you land, its natural reflex to extend your arms to reduce the impact from hitting the ground.

• Tears incomplete/complete

(OrthoInfo)
Impact of injury

• “When a person experiences a tendon injury in the hand that affects the ability to flex or extend the hand properly and in a safe way, he or she likely will have a difficult time completing everyday tasks, such as bathing, dressing, grooming, eating, using the bathroom, driving and attending to chores at home and at work.

• Every person's injury is different and the rate of recovery depends on the severity of the injury.”

AOTA “Hand Injury”
MSD: Musculo-Skeletal Disorders AKA Ergonomic injuries

Account for 33% of all workplace injuries, and illnesses requiring days away from work. That’s a rate of 39 cases per 10,000 F/T workers.

Almost any activity that involves your hands and wrists – even knitting and cutting hair - if performed forcefully enough and often enough can lead to disabling pain.

Many work risk factors: Repetitive work, force with insufficient recovery, sustained awkward postures. Injury develops over time.

(OSHA 2250 Principles of Ergonomics)
MSDs Risk Factors

Individual
- Poor work practice
- Poor physical fitness
- Poor health habits

Ergonomic
- High repetition
- Forceful exertions
- Sustained awkward postures
MSDs common problem

• MSDs cost companies in US over $20 billion/yr
• Cost of medical inflation is a problem $$
• Account for 30% of all recordable injuries
• Average costs are $14,567 per IW

• It’s important to recognize all risk factors in order to develop strategies to prevent MSDs.

(ErgonomicsPlus)
### Bureau of Labor Statistics

<table>
<thead>
<tr>
<th>Part of the Body</th>
<th>Total Incidence Rate</th>
<th>Incident rate</th>
<th>Median days</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Extremities</td>
<td>356,750</td>
<td>35.4</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>Shoulder</td>
<td>86,630</td>
<td></td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Arm</td>
<td>57,960</td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Wrist</td>
<td>47,550</td>
<td></td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Hand</td>
<td>140,460</td>
<td></td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

#### Source of Injury (Top 5)

1. Floors/walkways/surfaces: 193,610
2. Worker position/motion: 170,120
3. Containers: 126,160
4. Person, other than worker: 116,810
5. Vehicles: 114,240
## Selected Injury/All industries/Incidence Rate (IR) /Days Off

<table>
<thead>
<tr>
<th>Body part affected</th>
<th>Sprains/Strains</th>
<th>Bruises, contusion</th>
<th>Fractures</th>
<th>Soreness/Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Extremity</td>
<td>104,710 (10.4)</td>
<td>22,910 (2.3)</td>
<td>37,860 (3.8)</td>
<td>35,930 (3.6)</td>
</tr>
<tr>
<td>Shoulder</td>
<td>55,560 (5.5)</td>
<td>3,180 (0.3)</td>
<td>2,090 (0.2)</td>
<td>13,430 (1.3)</td>
</tr>
<tr>
<td>Arm</td>
<td>17,300 (1.70)</td>
<td>6,540 (0.6)</td>
<td>8,870 (0.9)</td>
<td>6,160 (0.6)</td>
</tr>
<tr>
<td>Wrist</td>
<td>14,550 (1.4)</td>
<td>1,600 (0.2)</td>
<td>9,500 (0.9)</td>
<td>4,100 (0.4)</td>
</tr>
<tr>
<td>Hand</td>
<td>9,620 (1.0)</td>
<td>9,800 (1.0)</td>
<td>16,340 (1.6)</td>
<td>6,370 (0.6)</td>
</tr>
</tbody>
</table>
## Event Leading to All Injuries

### Top 3

<table>
<thead>
<tr>
<th>Event</th>
<th>Sprains</th>
<th>Bruises</th>
<th>Fractures</th>
<th>Soreness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overexertion/ Bodily Reaction:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sprains...</td>
<td>276,920</td>
<td>90</td>
<td>4,080</td>
<td>69,110</td>
</tr>
<tr>
<td><strong>Falls Trips Slips:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sprains...</td>
<td>103,600</td>
<td></td>
<td>48,030</td>
<td>39,050</td>
</tr>
<tr>
<td><strong>Violence/Other Injury by Persons/Animals:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sprains...</td>
<td>19,540</td>
<td>9,770</td>
<td>3,310</td>
<td>8,420</td>
</tr>
</tbody>
</table>
Human Factors Approach

1. Humans are fallible.
   – Perception, memory, decision-making and action
   – Knowledge-, rules- and skills-based errors
   – Heuristics and biases

2. All work takes place in a system (designed by humans, see #1).
Work System

Inputs

Feedback loop

Outputs
"Every system is perfectly designed to get the results it gets."

Donald Berwick, M.D., Institute of Healthcare Improvement
Source of Problems

Heinrich

- Unsafe conditions: 10%
- Unsafe acts: 88%
- Unpreventable: 2%

Deming

- Worker: 15%
- System: 85%
Human error should be a starting point for accident investigation, not an end point.
Sharp end:
- Active errors
- Accidents
- Worker injuries

Blunt end:
- Latent conditions
- Training
- Production schedules
- Job design
- Tool and equipment design

Management priorities

Organizational culture

Policies and procedures

Regulations

Supervisor expectations
Cause and Effect Diagram

Work area
- Methods

Equipment
- Training

Materials
- Communication

Maintenance
- People

Hand Injury
4 stages of information processing and performance

1. Perception
2. Memory
3. Decision making
4. Action
Task Performance

Less experienced

More experienced

Knowledge based

Rules based

Skills based
Performance Errors

Less experienced

Knowledge based errors
- Tried to remove jammed paper from copy machine and my fingers were electrocuted and burned.

Rules based errors
- Removing stuck piece of wood from right side head of planer. Locked out right side head, but not left side.

Skills based errors
- Hit index finger with a hammer while installing carpet.

More experienced

Repetitive use of pneumatic tools.
Heuristics

Mental shortcuts

= Bad

= Good
Heuristics that may affect safety planning and investigation

• Availability heuristic
• Hindsight bias
• System justification
• Confirmation bias
Heuristics that may lead to unsafe worker behavior

• Familiarity heuristic
• Acceptance heuristic
• Risk compensation
Bottom line

Individuals and organizations when faced with uncertainty will choose to behave in ways that have worked in the past.

– Cognitive inertia
– Active inertia
Small group activity

• Discuss this injury description:
  – “He was pouring liquid contents out of bucket, not aware liquid has acid in it, did not wear proper protective equipment, liquid got on hand.”

• Was this primarily a knowledge-, rules- or skills-based error?

• Discuss possible “blunt end” root causes and fill in the fishbone diagram.
## Time Lines for Recovery

Duration of disability following common surgical procedures: Wrist and Hand

<table>
<thead>
<tr>
<th>Surgical Intervention</th>
<th>Average time off for RTW for clerical position</th>
<th>Average time off RTW for labor position</th>
<th>Average time off for RTW in heavy manual labor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carpal Tunnel Endoscopic release</td>
<td>28-42 days</td>
<td>28-42 days</td>
<td></td>
</tr>
<tr>
<td>Carpal Tunnel Open release</td>
<td>56 days</td>
<td>84 days</td>
<td>Indefinite</td>
</tr>
<tr>
<td>Trigger finger release</td>
<td>14 days</td>
<td>42 days</td>
<td></td>
</tr>
<tr>
<td>Open Reduction internal fixation finger frx</td>
<td>7 days</td>
<td>42 days</td>
<td>56 days</td>
</tr>
</tbody>
</table>
WMSDs  Expectations

• Many variables
• Best results with early detection and prevention
RTW Issues

• Strategies for successful RTW: “Working Together” program.*
  – Early Contact
  – Planning for the worker’s return
  – Implementing a successful RTW program
  – Creating a RTW-friendly workplace

* Institute for Work and Health: Ontario, Canada
Ideas to get a worker back sooner.

“Productivity Tool”

• Computer set-ups: alternative keyboards, speech recognition, rearrange work station, frequent breaks, seating options and supports, single hand keyboards, foot-mouse, articulating keyboard tray

• Stand/lean stool, anti-fatigue mats, vibration dampening shoe inserts

• Lightweight pneumatic power tools, ergonomic hand tools, tool balancers and positioners for stationary work.

• Headsets for phone use, angled writing surface and document holders

• Larger handles on items to avoid tight pinch and grasp.
Ideas

• Electric carts, carts in general, long handles and lightweight tools,
• Job sharing, rotations, split shifts, part-time, transitional schedule, job restructuring (trying to keep the worker within the JOI)
• Accessible common areas
• Many modifications/accommodations are low cost.
• Ask the worker/Involve the worker
  – Job Accommodation Network: askjan.org
  – Searchable Online Accommodations Resource (SOAR)
“Total Worker Health”  CDC

It’s also...

• Safety first attitude
• Attention
• State of mind
• Pacing yourself
• Distractions
  – "There is no work-life balance," says Janice Marturano. "We have one life. What's most important is that you be awake for it."
Falls

• Slips/trips and Falls as a whole are the 2\textsuperscript{nd} most common cause of lost workday injuries in hospitals. (NIOSH)

• Falls on the same level accounted for 33\% of fractures and another 22\% were the result of being struck by an object or equipment. (BLS 2011)

• It’s not only the mechanics of safety..... Knowing how to use equipment and tools, loose clothing, PPE, planning out the activity...

• BUT...
Mind Full, or Mindful?
MINDFULNESS:
AN ANTIDOTE TO WORKPLACE ADD
BY DANIEL GOLEMAN

The number one problem in the workplace today is attention. People are in a state of what's called "continuous partial attention" - your body is there but your mind is somewhere else. One of the most important things to learn in the workplace is how to focus. Mindfulness practices can help you strengthen your attention.
How to focus:

• It's not just the number of hours we sit at a desk in that determines the value we generate. It's the energy we bring to the hours we work. Human beings are designed to pulse rhythmically between spending and renewing energy. That's how we operate at our best. Maintaining a steady reservoir of energy -- physically, mentally, emotionally and even spiritually -- requires refueling it intermittently.
Resources

- Mindful Health & Safety
- Free Guided Meditations: [http://marc.ucla.edu/body.cfm?id=22](http://marc.ucla.edu/body.cfm?id=22)
- Injured back to work:
University of California Irvine Study

http://ucanr.org/sites/ucehs/Centers_of_Excellence/UC_Mindful_Safety/

“Developing a Mindful Safety training program, and researching the program’s impact on work-related injuries, errors, and university costs, among other factors. According to UCI’s injury investigations over 50% of their top injuries involve a subject who was inattentive/distracted. In our fast paced society where most employees have their ‘Mind full,” we believe there will be great value if they learn instead, to be “mindful”.
‘Recovery Breaks’ rather than Rest Breaks.