Managing Ergonomics in the Workplace

Managing Ergonomic Risk Factors in Nursing Homes
Challenges

- The nursing home industry is one of America’s fastest growing industries.

- In 2000, approximately 1.9 million direct care workers provided care to 15 million Americans in approximately 21,000 long-term care settings.
Challenges

- Total number of Americans in need of long-term care is expected to rise from 15 million in 2000 to 27 million in 2050.

- The Bureau of Labor Statistics estimates by 2010, industry employment will rise to an estimated 2.7 million workers. This is an increase of roughly 45%.
Challenges

- Long-term care workers face strenuous physical demands and one of the highest rates of injury and illnesses among industries.

- In Minnesota the nursing home TCIR is 10.5 injuries per 100 full-time workers, for private sector sites, and 17.7 for public sector sites.

Overall industry average TCIR is 5.5 – MN rate
Challenges

- As a result, there is an on-going need to convince nursing homes of the importance of safety management, in recognizing and controlling risk factors associated with resident handling tasks.
Training Objectives

- Review elements of an effective approach to managing ergonomic hazards in LTC
- Provide cost data and success stories
- Encourage class participation
- Determine additional needs of the group
Defining Key Terms

**Ergonomics:**
- The art and science of designing a work station and work tasks to fit the capabilities of the workers.
- The science of fitting workplace conditions and job demands to the capabilities of the workforce, through proper job placement and ongoing education & training.

**Musculo-skeletal Disorder (MSD):**
- Injuries to the muscles, tendons, ligaments, joints, cartilage, spinal column.
- Not due to a sudden event but generally the result of chronic exposure to risk factors.
- Persistent signs & symptoms of discomfort.

**WMSD – work-related MSD**
- Made worse & longer-lasting by work conditions.
Key Management Elements

- Management Acknowledgement / Commitment
- Employee Involvement
- Hazard Identification
- Hazard Control

- Injury Reporting / Case Management
- Training & education
- Review Effectiveness of Management System
- On-going Evaluation and Planning
Management Acknowledges the Problem

- HIGH RATES OF INJURY AMONG NURSING STAFF – PARTICULARLY NA/R’s
<table>
<thead>
<tr>
<th>Industry</th>
<th>Total</th>
<th>DART</th>
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<tr>
<td>nursing and care</td>
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<td>6.3</td>
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<tr>
<td>logging</td>
<td>6.4</td>
<td>4.4</td>
</tr>
<tr>
<td>drywall and insulation</td>
<td>7.4</td>
<td>4.3</td>
</tr>
<tr>
<td>roofing contractors</td>
<td>8.7</td>
<td>5.6</td>
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<tr>
<td>animal slaughter</td>
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## 2003 US Cases
### Private Sector (BLS)

<table>
<thead>
<tr>
<th></th>
<th>All Cases</th>
<th>WMSD</th>
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<tr>
<td>All health care</td>
<td>14.3%</td>
<td>19.1%</td>
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<tr>
<td>Category</td>
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<tr>
<td>-------------------------------</td>
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<tr>
<td>nursing (private)</td>
<td>10.5</td>
<td>7.5</td>
</tr>
<tr>
<td>nursing (public)</td>
<td>17.7</td>
<td>11.8</td>
</tr>
<tr>
<td>all private industry</td>
<td>5.5</td>
<td>2.8</td>
</tr>
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</table>
percent of all indemnity cases in the nursing home industry classified as WMSD:

58 percent
Minnesota Cases
(Workers’ Compensation)

Estimated total cost (wages and medical) for WMSD indemnity cases closed in 2004 in the nursing home industry:

$20,000 per case
No wonder nurses are injured!

- In an 8-hour shift, the cumulative weight that nurses lift is equal to an average of 1.8 tons per day
Nursing is ranked 2\textsuperscript{nd} after industrial work for physical workload intensity.

Nurses have approximately 30\% more days off due to back pain as a percentage of all causes compared with 8\% for the general population.

Safe Patient Handling Conference presentation – Audrey Nelson, Ph.D., RN, FAAN, Patient Safety Center of Inquiry, VAMC, Tampa, FL
Force exerted on low back
- Spinal compression -

- 2-person hook – 858-1477 lbs.
- 1-person hook – 2026 lbs.
- 2-person gait belt – 1034+ lbs.
- 1-person gait belt ~ 1030 lbs.
- 1-person hug lift – 1424 lbs.

safe limit – 764 lbs.

Safe Patient Handling Conference presentations – Audrey Nelson, Ph.D., RN, FAAN, Patient Safety Center of Inquiry, VAMC, Tampa, FL
William Marras, Ph.D., CPE, Institute of Ergonomics, OSU
Force exerted on low back
- Spinal compression -

- 2-person commode to chair ~ 1120 lbs.
- 1-person commode to chair ~ 1500 lbs.
- 2-person wheel chair to bed ~ 1050 lbs.
- 1-person wheel chair to bed ~ 1440 lbs.

- safe limit ~ 764 lbs.
High-risk work environment contributes to:

- high rate of injuries
- higher turnover / rates of absenteeism
- reduced employee morale
- negative affect on the level of care provided
  - familiarity between resident and nurse
  - greater chance of injury to resident during a difficult lift/transfer
  - resident dignity
Management understands the $$$ benefits...

Cost of lift / transfer / reposition aides

vs.

Cost of worker’s comp. / medical / lost time / re-training / administrative...
Wyandot Nursing Home

- reduced work comp. claims by 97%
- zero transfer injuries
- $55,000 payroll savings due to less turnover, OT, & absenteeism (2001)
- $116,000 investment vs. $400,000 annual return
Success Story...

- Overall philosophy of “teamwork”.
- Reduced worker’s compensation premiums.
Management Commitment

There needs to be a belief that the S&H efforts can be accomplished, staff are capable of implementing the necessary measures, and the efforts will be effective.
Safe resident handling becomes a high priority...

- Safe Resident Handling initiative:
  - value employees as much as residents
  - use of lift, transfer & repositioning aides becomes the norm
  - 2-person transfers and proper body mechanics will not prevent injuries
Action Plan

- What tasks need to be accomplished to reach the desired goal
  - assign task responsibilities
  - establish time-lines for completion
  - track progress
Change the Work Culture

- Change the “old” way of thinking and doing
  - value employees as much as residents

- Establish accountability
  - mid-managers & supervisors responsible for injuries, lost-time, & worker compensation losses
  - promote work practices that prevent injuries
Change the Work Culture

- Accountability most effective when a work environment is provided that encourages and allows for adherence to “best” practices
  - facility, equipment, and training resources provided

- Supervisory staff insist on compliance with established “safe-resident-handling” practices

- Employees accept the new way of performing the work
Management stresses the importance of an educational triangle between staff, patient and family.
Employee Involvement

- The process must allow for employee participation

- Change is more readily accepted when you have a say in and are aware of the decisions being made
Employee Involvement

- Staff that do the work can help to identify the injury risks

Injury risks: (specific to...)
- resident
- room/facility
- equipment
Employee Involvement

- hazard identification, prevention, & control
- change analysis
  - Equipment
  - Work policies
  - Facility / resident room
- safety committee
  - safe resident handling task group
Employee Involvement

- training co-workers
- feedback on training effectiveness
- safety / ergonomics program planning & effectiveness evaluation
Success Story...

- Active involvement by CNAs in resident lift/transfer assessment.

- Hand’s on orientation and training for lift-assist equipment.
Labor/Management Safety Committee

- Help determine and initiate actions towards implementing safe resident handling methods

- Make decisions that affect how work will be done
Labor/Management Safety Committee

- establish roles / responsibilities
- facilitator
- ground-rules
- agenda
- minutes

-- facilitator training --
Responsibilities

- Hazard identification & control:
  - injury / w.c. reporting
  - accident / incident investigation
  - QA
  - safe patient handling (ergonomics)
    - until issues are resolved
- Staff education/training
- Review proposed recommendations / changes
- Policy development
- Accident/injury investigation review
- Effectiveness review
Other Responsibilities

- Coordinate field-testing of proposed lift, transfer, & repositioning aides
- Obtain employee feedback on proposed changes
- Methods to promote safe resident handling initiative
- Track progress of efforts
  - Staff perception
  - Injury & worker comp. data
Hazard Identification

- Need to know specifically how the work is done vs. how it should be done:
  - lifts/transfers
  - repositioning tasks
  - other ADL’s...
  - physical hazards
Identify & prioritize high-risk tasks:

- Injury / illness data review
  - 300 log
  - 1st aid / nurse’s log
  - incidence rates
  - worker compensation case
  - 1st reports of injury
  - accident / incident reports
  - observations
Identify & prioritize high-risk tasks:

- Surveys
  - “Prioritizing High Risk Patient Handling Tasks”
  - facility-developed staff survey
- Direct feedback

-- focus on the current resident & staff needs --
Other Factors

Why would staff not follow care plan requirements

- equipment availability
- equipment maintenance
- perceived lack of time
- acceptance of safe resident handling methods
- accountability to follow “safe handling” practices
- ...other facility issues
Job-task Analysis

- Analyze tasks to identify the risk factors so that control measures can be considered
On-going Resident Assessments

- Ability to provide assistance
- Ability to bear weight
- Upper extremity strength
- Height / weight
- Ability to cooperate
- Medical conditions / physician’s orders
On-going Resident Assessments

- Care staff know what’s “normal”
- They must report changes promptly
- Assessments done as frequently as needed
- Communicate changes to all shifts
Hazard Control Options

Feasible engineering controls:

- equipment
- work environment
Feasible engineering controls

Lateral transfer aides
Feasible engineering controls

Lift assist
Feasible engineering controls

Adjustable beds/chair
Feasible engineering controls

Bathing / toileting
Feasible engineering controls

- Bathing
- Transport
- Turning/repositioning

bathing

transport

turning/repositioning
Equipment Selection

Considerations when choosing equipment and suppliers:  (from OSHA guide)

- technical service available
- parts availability
- storage requirements
- battery life / charging
- lift base height & width / adjustability
- requirements for operation
- sling types / sizes
- versatility......
Resource Allocation

- Adequate replacement batteries
- Sling sizes, types, number

- Quantity/type of lift aides

Repositioning aides
Safe Weight Limit

- Consider 30 lb. weight restriction for lifting
  - to coincide with NIOSH RWL

Aw Gwah Ching had staff lift a known weight to help them establish when a lift exceeded a prescribed limit.
Establish a team (safety committee / task group)

- Identify the products that could be used to accomplish tasks
- Review product literature www.patientsafetycenter.com
- Observe product in use
Selecting Equipment for Further Evaluation

- Best choice based on preliminary observations
- Upper & lower functionality extremes
- Most popular based on sales information
- Products that provide an innovative approach
Field Evaluation

- Allow staff to field-test equipment - provide adequate time for testing
  - compare responses with those not using the device

- Provide caregivers appropriate training on use of the equipment

- Compile data based on caregiver and patient comments

- **Negotiate $** - include a guarantee that use of the product will reduce injury occurrences
Equipment Considerations for Bariatric Patients

- BMI > 38 = possible need for specialized equipment

  www.kci1.com/body mass index calculator.html

- Bed width / length / capacity
Administrative Solutions

Work rules, policies, procedures:

- Patient handling grid
- Algorithms
- No lift policy
- Detailed care plans
  - accommodates all shifts
- staffing / scheduling
# Selecting Appropriate Patient Handling Aides

*(example: level 2 dependency)*

<table>
<thead>
<tr>
<th>Method of Transfer</th>
<th>Full Sling Lift</th>
<th>Stand Assist Lift</th>
<th>Lift Walkers</th>
<th>Stand Assist Aid</th>
<th>Gait Belt w/ Handles</th>
<th>Friction Reducing Aid</th>
<th>Unassisted</th>
<th>Manual Assist</th>
<th>Other (specify)</th>
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<tr>
<td>1) Bed to Chair Chair to Bed</td>
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<td>2) Chair to Chair Wheelchair to Toilet</td>
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<td>5) To Standing Position for Ambulation</td>
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<td>6) Repositioning in Bed</td>
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<td>X</td>
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<tr>
<td>7) Repositioning in Chair</td>
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<td>X</td>
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<tr>
<td>8) Lift from Floor</td>
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Assessment, Care Planning & Safe Patient Handling (example algorithm)

1. **Ability to bear weight**
   - **Full**
     - Caregiver assistance not needed; stand-by for safety as needed
   - **Partial**
   - **No**

2. **Is the patient cooperative**
   - **Yes**
     - Stand and pivot technique using a gait/transfer belt (1 caregiver) or powered standing assist lift (1 caregiver)
   - **No**

3. **Does the patient have upper body strength**
   - **Yes**
     - Use full body sling lift and 2 caregivers
   - **No**

Transfer to and from: Bed to Chair, Chair to Toilet, Chair to Chair, or Car to Chair.
Remember the Cost Benefits

- Wyandot Nursing Home:
  $116,000 initial investment vs. $400,000 annual return-on-investment

- Average Cost per WMSD Work Comp. case
  $20,000

- NSC average cost of work injury (2002)
  $30,000 – 33,000
THE HIDDEN COSTS OF INJURIES

DIRECT COST
- Compensation Payments
- Medical Cost

INDIRECT AND HIDDEN COSTS OF INJURIES
- Replacing Employees
- Investigation Time
- Supervision Time
- Training
- Staff Moral
- Possible Patient Injury
- Break-up Work Team
- Administrative Time
- Overtime Paid
- All Other Costs
You’re Ready to Implement the Hazard Controls

Based on:
- injury-risk priority
- current resident and staff needs
- field-testing results

-- NOW ENSURE THE USE --
Hold Staff Accountable

- Front-line supervisor (charge nurse) plays a key role:
  - recognize hazards
  - understand control methods
  - correct unsafe work practices
  - report & initiate correction of unsafe conditions
  - ensure compliance with medical restrictions
  - acknowledge safe work practice

-- Responsible for injuries in the department they supervise --
Hold Staff Accountable

- Accountability measures are most effective when a work environment is provided that allows & encourages workers to adhere to safe practices.

- If employees feel they can’t apply best practices, constant disciplinary action will only create negativity towards implementing a safe resident handling process.
Accountability…

- Develop a policy, “You will use equipment or you won’t work here.”
- Policy can help eliminate false claims.
- Reduce incidence and severity of injuries.
Eliminate Barriers for Equipment Use

- perceived time penalties
- can’t find or too far away
- someone else is using
- hard to use / move
- batteries worn down
- lack of adequate equipment
- maintenance issues (i.e. hair in wheels)
- no emphasis on use
Eliminate Barriers for Equipment Use

- narrow doorways
- cluttered hallways
- cluttered rooms
- carpeting, thresholds, inclines
- won’t go below bed
- slow beds / beds operate differently
Eliminate Barriers for Equipment Use

- perceived dignity issues
- fragile residents / skin issues
- resident resistance
- family member resistance
- storage
- confusion about use of devices, such as lateral transfer sheets
- lack of training
Companies where safety is effectively managed

What do employee’s say is one of their safety responsibilities:

Our responsibility is to look after each other...
Success Story...

- “Peer pressure keeps level of care up. Care staff strive to do very well.
- Skin care is wonderful
- No back or transfer injuries in over three years...
Care staff:

- On-the-job training & orientation
- competency-based
- vendor assistance
- peer training (preceptors, care coaches...
Training / Education

Care staff:
- Proper use of equipment
- Application of work policies/procedures
- Reporting WMSD

Ergonomics: (as related to Safe Resident Handling)
- Risk factors that trigger MSD
- Signs/symptoms of MSD
- Reducing MSD risk
Training / Education

Supervisory staff:

- Understand the work policies implemented
- Recognizing MSD risk factors
- Signs/symptoms of MSD
- Methods implemented to reduce MSD risk
- System for reporting MSD
- Disciplinary system
- Acknowledging / rewarding safe practices
Training / Education

Management:

- General understanding of ergonomics and the risk factors associated with LTC
- An understanding that methods are available to reduce MSD risk

Remain informed of the facility’s progress in reducing MSD risk
Follow-up on Training

- Observations of work practices
  - proper application/use of lift/transfer/repositioning aides
- Direct feedback from care staff
  - level of compliance with “safe resident handling” practices
- Injury data
  - identify factors that prevent compliance
Management of MSD

- prompt reporting
- investigate cause of injury
- follow prescribed restrictions
- assess physical job demands

- physician knowledge of diagnosis and treatment for MSD
  - case management service
Injury Investigation

- What were the factors that contributed to the accident / injury or near miss?
  - Focus on safety management deficiencies that allowed the incident to occur.

- What happened to threaten the resident or staff safety?

- What should have happened?

- What caused the discrepancy?

- What corrective actions will be taken?

- What is the follow-up plan and who will take responsibility for implementing corrective actions?
Follow-up of Effectiveness

Are we getting the results we want?

- injury data (300 / 301 forms)
- worker compensation case data
- % compliance with SRH methods
- staff feed-back / perception of effectiveness
- quality of resident care
CNA’s say:
“I go home with less back aches and arm aches.”
and
“The lifts have saved my back. I have a deteriorating disk. I wouldn’t be working here anymore if we didn’t have lifts.”
and
“The lifts don’t just help the CNA’s, they help the residents too.”
Planning and Evaluation

- Analyze trends
  - injury/illness
  - hazard

- Cost analysis
  - days lost x salary + medical costs

- Analyze by:
  - department
  - work-shift
  - individual
  - type of task
Injury Trend Analysis

Calculations

TICR: (total injury case rate)

\[
\text{total # of injuries / area / year} \times \frac{200,000 \text{ hrs. worked / 100 FTEE}}{\text{number of hours worked / area / year}}
\]

Severity Rate:

\[
\text{# of WC lost days / area / year} \times \frac{200,000 \text{ hrs worked / 100 FTEE}}{\text{number of hours worked / area / year}}
\]
Cost Analysis Calculations

Cost Rate:

$$\frac{\text{spent}}{\text{area} / \text{year}} \times \frac{200,000 \text{ hrs. worked}}{100 \text{ FTEE}}$$

number of hrs. worked / area / year

CCR: (Compensation case rate)

$$\frac{\# \text{ of WC cases}}{\text{area} / \text{year}} \times \frac{200,000 \text{ hrs. worked}}{100 \text{ FTEE}}$$

number of hours worked / area / year
Costs / Benefits

Average cost of a disabling injury (NSC)
- $30,000 - 33,000

Average worker comp. claim cost - $20,000 (in MN)

Ergonomic interventions can reduce WMSD injuries up to 90% or more
Planning and Evaluation

Establish program goals
- based on current vs. past performance
- What activities will help accomplish the goals
  (action plan to accomplish objectives)

Periodically review program effectiveness
- Incidence rates
- MSD pain/discomfort
- Job satisfaction
- absenteeism
- adherence to policies
- cost benefits
References

- www.osha.gov
  - Nursing Home Guidelines
  - Safety and Health Program Management Guidelines
  - Nursing Home e-tool

- www.patientsafetycenter.com

- http://home.earthlink.net/~nolifting/

- MI OSHA – Reducing Risk in Long-term Care Facilities: Successful Implementation of No-Lift Policies

- Safety Management, Dan Peterson

- Safe Patient Handling Conference presentations
  - W. S. Marras, Ph.D., CPE; Audrey Nelson, Ph.D., RN, FAAN; Jay Bunke, Mayo Clinic

- Kodak’s Ergonomic Design for People at Work
The End!

applause

applause