Objectives

- Describe factors that increase risk for musculoskeletal disorders (MSDs)
- Identify the process for developing proactive controls to reduce occupational injury
- Develop and implement ergonomic safety and health program

Risk Factors

- Weight to be lifted
- Force - the amount of physical effort required to perform a task
- Duration
- Repetition
- Awkward postures
  - Reaching above shoulder height
  - Kneeling, squatting
  - Leaning over a bed
  - Twisting the torso while lifting
Musculoskeletal Disorders

Types of disorders
- Low back pain
- Shoulder (rotator cuff) injuries
- Epicondylitis (elbow)
- Carpal tunnel syndrome

Early Warning Signs:
- Persistent pain
- Restriction of joint movement
- Soft tissue swelling

High Risk Activities

- Transfers:
  - in or out of bed
  - from a bed to a wheelchair
  - wheelchair to a toilet
  - from a bed to and from a shower chair
  - Repositioning while in bed

Other High Risk Activities

- Lifting food trays above shoulder level or below knee level
- Collecting waste
- Pushing heavy carts
- Bending to remove items from a deep cart
- Lifting and carrying when receiving and stocking supplies
- Bending and manually cranking an adjustable bed
- Removing laundry from washing machines and dryers
How much is too much?

National Institute for Occupational Safety and Health (NIOSH) lifting recommendations at neutral body posture:

- Males: 51 lbs maximum
- Females: 46 lbs maximum

Note: Weight (not improper body mechanics) is responsible for most strains and sprains among healthcare workers

Starting Point

- Recommend that manual lifting of residents be minimized in all cases and eliminated when feasible.
- Develop a process for systematically addressing ergonomics issues tailored to each facility
- Implement a program to recognize and prevent occupational safety and health hazards

Benefits to Safe Lifting

Benefits for Employers
- Reduced number and severity of staff injuries
- Improved resident safety
- Reduced cost:
  - Workers' compensation medical and indemnity costs
  - Overtime or contract worker
  - Recruitment and Training

Benefits for Caregivers
- Reduced risk of injury
- More energy at the end of the work shift
- Less pain and muscle fatigue on a daily basis

Benefits for Residents
- Improved quality of care
- Improved resident safety and comfort
- Reduced risk of falls, dropping, friction burns, dislocated shoulders
- Reduced skin tears and bruises
Process for Protecting Workers
- Provide Management Support
- Involve Employees
- Identify Problems
- Implement Solutions
- Address Reports of Injuries
- Provide Training
- Evaluate Ergonomics Efforts

Active Management Support
- Employers develop clear goals
- Assign responsibilities and authority to designated staff members to achieve those goals
- Provide necessary resources
- Ensure that assigned responsibilities are fulfilled
- Sustained effort

Employee Involvement
- Adds problem-solving capabilities and hazard identification assistance
- Enhances worker motivation and job satisfaction
- Leads to greater acceptance when changes are made in the workplace
Employees Involvement (continued)

Employees can:
- Submit suggestions or concerns
- Discuss the workplace and work methods
- Participate in the design of work, equipment, procedures, and training
- Evaluate equipment
- Respond to employee surveys
- Participate in task groups with responsibility for ergonomics
- Participate in developing the facility’s ergonomics process
- Help promote or organize employee wellness program

Identify Problems

Where to look:
- OSHA 300 and 301 injury and illness information
- Reports of workers’ compensation claims
- Accident and near-miss investigation reports
- Insurance company reports
- Employee interviews surveys, and reviews
- Observations of workplace conditions

Implement Solutions

Effective solutions usually involve:
- Workplace modifications that eliminate hazards and improve the work environment
- Use of equipment
- Work practices
- Choosing methods for lifting and repositioning residents, consider resident’s individual needs:
  - Resident’s rehabilitation plan
  - Need to restore the resident’s functional abilities
  - Medical contraindications
  - Emergency situations
  - Resident dignity and rights.
Reporting of Injuries
Employers and employees can benefit:
- Early reporting of MSDs when first symptoms appear
- Early diagnosis and intervention, including alternative duty programs to:
  - limit the severity of injury
  - improve the effectiveness of treatment
  - minimize the likelihood of disability or permanent damage
  - reduce the amount of associated workers’ compensation claims and costs.

Provide Training
- Policies and Procedures
- How to identify potential ergonomics issues in the workplace
- Understand measures that are available to minimize the risk of injury
- Incident and injury reporting

Evaluate Ergonomics Efforts
- Follow-up on unresolved problems
- Evaluation helps sustain the effort to reduce injuries and illnesses
- Track whether or not ergonomic solutions are working
- Identify new problems
- Show areas where further improvement is needed
- Track data from
  - Injury and Illness Logs (OSHA 300 and 301)
  - Workers’ compensation reports
  - Periodic employee surveys
Evaluation and follow-up are central to continuous improvement and long-term success.
Roles and Responsibilities

<table>
<thead>
<tr>
<th>Organizational Level</th>
<th>Role</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Administration</td>
<td>Support</td>
<td>Support with resources, staffing, policy support, enforcement</td>
</tr>
<tr>
<td>Unit Managers</td>
<td></td>
<td>• Drives program on unit • Holds staff accountable • Ensures sufficient equipment • Enforces policies</td>
</tr>
<tr>
<td>Front line staff</td>
<td></td>
<td>• Learn and use equipment • Ensure adequate supply • Report to coaches/managers when problems occur</td>
</tr>
<tr>
<td>Coaches</td>
<td></td>
<td>Unit champions</td>
</tr>
<tr>
<td>Marketing</td>
<td></td>
<td>Advocates to publish successes</td>
</tr>
</tbody>
</table>

Source: Margaret Arnold, PT, CEES, CSPHP, “Incorporating Patient and Employee Safety into patient care plans. Maximizing Quality through a culture of Safety”, October 15, 2013 (used with permission)

Administration

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Inaccessible</td>
<td>Know your numbers and how the program will help the ORGANIZATION</td>
</tr>
<tr>
<td>• Very little time to discuss initiatives</td>
<td>Stay up to date with other organizational initiatives</td>
</tr>
<tr>
<td>• Driven by multiple priorities</td>
<td>Show how your program will help achieve other key initiatives</td>
</tr>
<tr>
<td>• Motivated by success of the ORGANIZATION</td>
<td>Make the most of EVERY opportunity</td>
</tr>
</tbody>
</table>

Source: Margaret Arnold, PT, CEES, CSPHP, “Incorporating Patient and Employee Safety into patient care plans. Maximizing Quality through a culture of Safety”, October 15, 2013 (used with permission)

Unit Managers

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Multiple responsibilities</td>
<td>Understand how program helps the Manager to make their job easier</td>
</tr>
<tr>
<td>• Held accountable for unit performance</td>
<td>Know the time taken with injured nurses</td>
</tr>
<tr>
<td>• May see SPH as “Just one more ball they need to juggle”</td>
<td>Understand impact of decubitus ulcers, falls, pneumonias and how program</td>
</tr>
<tr>
<td>• Success or failure of program often decided by the value that Unit Managers place on the program</td>
<td>can impact</td>
</tr>
<tr>
<td>• Be supportive and helpful</td>
<td></td>
</tr>
</tbody>
</table>

Source: Margaret Arnold, PT, CEES, CSPHP, “Incorporating Patient and Employee Safety into patient care plans. Maximizing Quality through a culture of Safety”, October 15, 2013 (used with permission)
Front line staff

**BARRIERS**
- Busy / no time
- Habits
- Knowledge
- Competency
- Confidence and skill
- Value system

**SOLUTIONS**
- Motivated by patient care
- Point of service important
- Show how program can make their jobs easier
- Importance of support
- Being a liaison to management to help get their voices heard

Source: Margaret Arnold, PT, CEES, CSPH, “Incorporating Patient and Employee Safety into patient care plans. Maximizing Quality through a culture of Safety”, October 15, 2013 (used with permission)

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Coaches

**BARRIERS**
- Volunteered vs “volunTOLD”
- Challenging role
- Is role supported?
- Are incentives sufficient
- Need support for managing conflict

**SOLUTIONS**
- Find ways to support them
- Teach strategies to recognize and resolve resistance
- Teach conflict resolution skills
- Hear them and assist in resolving problems
- Manifest Pride in your Coaches

Source: Margaret Arnold, PT, CEES, CSPH, “Incorporating Patient and Employee Safety into patient care plans. Maximizing Quality through a culture of Safety”, October 15, 2013 (used with permission)

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Resident Assessment: Minimum Data Set

- Hearing/Speech/Vision/Dental
- Skin
- Bathing/Dressing/toileting/eating
- Control of bowel and bladder
- Nutrition
- Medication use
- Mood and behavior
- Health conditions
- Comprehension and thought
- Mental Health
- Rehab potential

Source: Margaret Arnold, PT, CEES, CSPH, “Incorporating Patient and Employee Safety into patient care plans. Maximizing Quality through a culture of Safety”, October 15, 2013 (used with permission)
**Examples of Algorithms**

Ref. "Safe Patient Handling and Movement Algorithms", Developed By: VISN 8 Patient Safety Center, Center Director: Audrey Nelson, PhD, RN, FAAN

**Using Lift Devices**
- Essential to reduce employee injury
- Consider new products
  - Improved quality and usability of lift devices
  - Different types of products
- Reduced risk of resident falls and skin tears
- Bariatric considerations
Purchasing Lift Devices
Considerations:
- User-friendly design
- Available
- Accessible
- Speed of operation
- Resident comfort
- Clean and Maintain
- Training required

Floor lifts: Total lifts

Sit/Stand Devices
- Transferring residents who have some weight-bearing capacity, are cooperative, can sit up on the edge of the bed with or without assistance, and are able to bend hips, knees, and ankles.
- Transfers from bed to chair, or chair to bed, or for bathing and toileting.
Floor lifts: Ambulatory lifts
- For residents who are weight bearing and cooperative and who need extra security and assistance when ambulating
- The device supports residents as they walk and push it along during ambulation.
- Ensure height adjustment is correct for resident before ambulation.
- Improved mobility during rehabilitation

Ceiling lifts
- Often only one caregiver is needed.
- Some residents can use the device without assistance.
- May be quicker to use than portable device.
- Motors can be fixed or portable (lightweight).
- Device can be operated by hand-held control attached to unit or by infrared remote control.

Lateral transfer devices
- Transferring a partial- or non-weight bearing resident between 2 horizontal surfaces such as a bed to a stretcher or gurney while lying on their back or when repositioning resident in bed
- More than one caregiver is needed to perform this type of transfer or repositioning. Additional assistance may be needed depending upon resident status, e.g., for heavier or non-cooperative residents.
Bathing systems

- Key features include:
  - Height adjustability
  - Easy access for resident

Bath boards

- Bathing residents who are partially weight bearing, have good sitting balance, can use upper extremities (have upper body strength), are cooperative, and can follow instructions.
- Independent residents can also use these devices.
- To reduce friction and possible skin tears, use clothing or material between the resident’s skin and the board.

Does it Make a Difference?

The next few slides represent cases and data collected by Ohio Bureau of Worker’s Compensation 1998-2003.
Case Studies:
Total Cost Savings – 120 Facilities

- Total Spent $4,834,832
- Cost savings (injury prevention) $ 2,219,871 per year
- Cost savings (turnover reduction) $2,310,000 per year
- Total cost savings $4,529,871 per year ($36,239 per employer)
- Return on Investment (years):
  - ROI (years) = Total spent/ Cost Savings per year
  - ROI (years) = $4,834,832 / $4,529,871 per year
  - ROI (years) = 1.1 years

Case Study 1 – Bowling Green, OH

Situation: High risk resident transfers affecting 80 employees
Solution: Purchase of six lifts
Results:
- Equipment cost $25,347.30.
- The direct care staff has not experienced any work-related back injuries since the introduction of the lifts.
- The injury rate fell from 29.6 per 200,000 hours worked (before the intervention) to 15.5 per 200,000 hours worked (at one year after the intervention).
- Direct care staff turnover rate decreased from 58 percent before the intervention to 35 percent after the intervention.

Source: Ohio Bureau of Workers' Compensation, Ergonomics Best Practices for Extended Care Facilities

Case Study 2 – Ottawa, OH

Situation: Back injuries due to heavy lifting stress and strain related to patient transfers while turning, positioning and providing daily care to residents.
Solution: The facility implemented a zero lift system. Purchased 20 Ultra Care electric beds, an Apollo Bath System and the two lift-n-weigh assists.
Results (after 18 months):
- Total purchase price was $13,053.
- It was noted that the workers really like the new equipment.
- Workers have a decreased exposure to risk factors — patient handling risk factor scores decreased from 35 to 28.
- Incidence rates fell from 22 to 14 incidents per 200,000 hours worked.
- Restricted-days rate decreased from 121 to 44 days per 200,000 hours worked.
- Turnover rate went from 55 percent to 32 percent.

Source: Ohio Bureau of Workers' Compensation, Ergonomics Best Practices for Extended Care Facilities
Case Study 3 – 4 Ohio facilities

**Situation:** laundry bins require deep bending and awkward postures to retrieve heavy clothing and linens.

**Solution:** Use of spring-loaded laundry bins (purchased bins with spring-loaded bottoms or retrofit existing bins) to reduce the amount of trunk bending when pulling laundry from bins.

**Result:**
The average risk factor score for laundry handling tasks in four facilities that used modified laundry bins was 34.75 before using the bins and 24 after using the bins (40 percent improvement).

Source: Ohio Bureau of Workers’ Compensation, Ergonomics Best Practices for Extended Care Facilities

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**Bottom Line**
- Investment and cost benefit
- Employee and resident satisfaction
  - Reduced turnover
  - Fewer injuries
  - Improved quality of care
- Improved resident care
- Overall Organizational benefit

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**Additional Resources**
OSHA Guidelines for Nursing Home Ergonomics for the Prevention of Musculoskeletal Disorders U.S. Department of Labor, Occupational Safety and Health Administration OSHA 1312, 2001 (Revised March 2009)


NIOSH Safe Patient Handling Webpage:
http://www.cdc.gov/niosh/topics/patient/

NIOSH Safe Lifting and Movement of Nursing Home Residents (Publication Number 2006-117, February, 2006):

Oregon OSHA, “Safe Patient Handling and Movement Algorithms”, Developed By: VISN 8 Patient Safety Center, Center Director: Audrey Nelson, PhD, RN, FAAN
orosha.org/grants/resident_handling/docs/VeteransAffairsDocuments/SPHMovementAlgorithms.pdf
Review

- Describe factors that increase risk for musculoskeletal disorders (MSDs)
- Identify the process for developing proactive controls to reduce occupational injury
- Develop and implement ergonomic safety and health program

Any Questions?