Safe patient handling for occupational therapy students and practitioners: a course development plan

Katelin M. Rudolph
The University of Toledo

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Safe Patient Handling for Occupational Therapy Students and Practitioners:

A Course Development Plan

Katelin Rudolph

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Occupational Therapy Doctorate Program

Occupational Therapy Program

May 2012

Note: This document describes a capstone dissemination project reflecting an individually planned experience conducted under faculty and site mentorship. The goal of the capstone experience is to provide the occupational therapy doctoral student with a unique experience whereby he/she can demonstrate leadership and autonomous decision-making in preparation for enhanced future practice as an occupational therapist.
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Philosophy of Education and Philosophy of the Occupational Therapy Doctorate Program at

The University of Toledo
Not only does a philosophy of education include one’s educational values, but it also is representative of one’s life philosophy. These two notions are strongly linked because a philosophy of education is built upon past life experiences which have shaped the learner. In the teaching and learning process of adults, an instructor must show awareness and capitalize on the past experiences of students. The transformative learning process emphasizes context, critical reflection of themes, and reason assessment for adult learning processes (Mezirow, 1997). The Introduction to Safe Patient Handling course will employ opportunities which capitalize on the ideas, opinions, and experiences of students for enrichment and overall learning.

I believe the intrinsic motivation of students is a key component to education. The natural inquiry of students guides true learning experiences. Tyler (1949) states that the education of students is an active process. I agree with Tyler’s assertion that education cannot be a passive experience. To truly understand material, a student must be actively engaged in the learning process. The unique interaction of teacher and student as well as effective teaching methods leads to productive learning.

The intrinsic motivation of the learner and the active process of education go hand in hand. The ability to learn a concept via hands-on learning is a method well suited for many learning environments. For example, Hartman, Miller, and Nelson (1993) found that recall on a volcano building task was much higher in a group which had the hands-on experience of building a volcano, compared with a group who observed a demonstration. The experience of hands-on learning is one that is unique and not easily forgotten. We can see from the above study that simply watching someone else carry out a task is not an efficient method for learning a skill or process. While a majority of the course will be conducted in an online format via
Blackboard, there will be three lecture and laboratory components. These sessions will provide the hands-on learning that is important for retention of information and skill maintenance.

Tyler (1949) asserts that teachers should provide students with opportunities to be involved with topics that they are genuinely interested in and deeply involved. Teachers should challenge students with abilities to show mastery through unique opportunities which are challenging and engaging for the student.

Building upon the theory that students are intrinsically motivated, one can assume that students will seek autonomy in many aspects of their education. From my past experience, I can assert that when given a certain degree of independence, I was able to be engaged more readily and complete a task with more eagerness. I believe that freedom of choice in subject area, project design, or even project evaluation can lead to a more meaningful and purposeful experience for the student. The Philosophical Base of Occupational Therapy (AOTA, 1979) notes that purposeful occupation has a great influence on the development of a person. In the same way, I believe purposeful occupations for the student can produce a self-directed, aptly challenged, and enthusiastic learner.

Bloom (1956) asserts that a classification system of learning objectives in the cognitive, affective, and psychomotor domains can provide guidance for the creation of objectives and teaching and learning experiences. When developing course, module, and laboratory objectives, this model will be used to select language and outcome measures for learning.

The cognitive domain consists of knowledge, comprehension, application, analysis, synthesis, and evaluation. Learning objectives for this course vary from low level demonstration of knowledge, such as the ability recall a fact or a term, to the highest level of the taxonomy,
evaluation, which requires the learner to make evaluate and make judgments using a variety of sources of knowledge.

In the affective learning domain, the learner emotionally deepens their awareness and attitudes toward a particular topic area. In terms of this course, the goal is to produce a “characterizing” skill, in which the learner attaches both meaning and purpose to a topic and exhibits behavior associated with it. For example, the learner will value the use of safe patient handling equipment and techniques at a level where they will integrate the use into current or future therapeutic practice.

The psychomotor domain aims to have the learner be skilled in the manipulation of a tool or piece of equipment. In the case of this course, the learner will most likely be unfamiliar with the equipment and tools used in safe patient handling practices. As the learner gains more skill, they will develop motor responses that enable him or her to employ the technique skillfully and efficiently. The highest level of this domain, origination, will be reached when the learner is able to assess a patient’s needs, create a plan and then subsequently implement and/or modify an action plan to increase the mobility of that patient using the handling equipment.

This course’s relationship to the philosophy and mission of the Occupational Therapy Program at The University of Toledo hinges on three key points. The first is an inherent belief in the value of occupation as a method of improving health and well-being. Students will learn how the use of safe patient handling strategies and equipment can improve occupational performance and meet patient goals. The second is the application of evidence-based practice and theory into clinical practice. The knowledge base of the course includes evidence-based practice research and textbooks from a variety of allied healthcare fields. The third point addresses a clinician’s ability to
effectively advocate for safety and well-being of patients, occupational therapy practitioners, and other caregivers while handling and moving patients.

This course development deeply corresponds to the PARADM (Practice, Advocacy, Research, and Autonomous Decision Making) curriculum design of the Occupational Therapy Program at The University of Toledo. Practice is incorporated because the moving and handling of patients in a safe way is a critical skill for practitioners. In terms of research, keen understanding of the broad base of scientific literature will support the student’s ability to advocate for safety and wellness of healthcare practitioners and patients alike. As autonomous decision makers, students will have the opportunity to employ clinical reasoning skills in selecting and using patient handling strategies and equipment.
References


Introduction to Safe Patient Handling and Movement Syllabus
Judith Herb College of Education, Health Science and Human Service
Course Syllabus

Program: Occupational Therapy  
Course Name: Introduction to Safe Patient Handling and Movement  
Course Number:  
Credits: 2 semester hours  
Contact Hours: 1 lecture, 2 lab  
Level Course Offered: Graduate, Continuing Education  
Semester(s) Course Offered: Varies

Catalog Description:  
A comprehensive introduction to safe patient handling and movement, with a specific emphasis on implications for rehabilitation professionals. Familiarizes a health care student or practitioner with scientific evidence supporting the use of patient handling equipment and programming.

Prerequisite(s): None

Instructor(s) Name: Martin S. Rice, Ph.D., OTR/L, Professor

Office Location: Health Science and Human Services Building, Room # 2018
Office Hours: By appointment
Campus Phone: (419) 530-6694
Campus E-mail: martin.rice@utoledo.edu

Required Textbook(s) and Materials:

2. Course Handouts

Required Readings from Electronic Reserve:


**Suggested Textbooks:** None

**Course Relationship to Curricular Foundations:**
**Relationship to the Program’s Philosophy and Mission:**
This course’s relationship to program philosophy and mission hinges on three key points. The first is an inherent belief in the value of occupation as a method of improving health and well-being. The second is the application of evidence-based practice and theory into clinical practice. The third addresses a clinician’s ability to effectively advocate for safety and well-being of patients, occupational therapy practitioners, and other caregivers while handling and moving patients.

**Relationship to the Program’s Curriculum Design:**
This course will aid in preparation for practice in several ways, corresponding to the PARADM curriculum design. Moving and handling of patients in a safe way is a critical skill for practitioners. Keen understanding of the broad base of scientific literature will support the student’s ability to advocate for safety and wellness of healthcare practitioners and patients alike. As autonomous decision makers, students will have the opportunity to employ clinical reasoning skills in selecting and using patient handling strategies and equipment.

**Program Goals and Related Curricular Objectives:**
Program Goal II: Advocacy – A, B, F,
Program Goal III: Research – A, B, C, D, F, H, I
Program Goal IV: Autonomous Decision Making – A, B, C, D, E, F, G, H, K

**Course Corresponds to the following 2011 ACOTE Standards:**
B.1.1, 1.5, 1.7, 1.8
B.2.9, 2.10
B.4.1, 4.4
B.5.1, 5.2, 5.3, 5.6, 5.7, 5.9, 5.11, 5.12, 5.13, 5.20, 5.21, 5.23, 5.24,
B.6.2, 6.4, 6.5, 6.6
B.7.11
B.8.2, 8.3, 8.4, 8.5
B. 9.7
Teaching/Learning Experiences:
A variety of learning experiences and teaching techniques will be utilized. Experiences include, but are not limited to, online modules using Blackboard, independent assignments, discussion boards, and hands-on learning with safe patient handling equipment.

Student Learning Outcomes:
The learner will:
- Summarize the epidemiology of musculoskeletal injury to healthcare workers.
- Identify risk factors for work related injuries secondary to manual handling of patients.
- Apply ergonomic principles and assessments to estimate personal manual handling risk.
- Outline safe patient handling in terms of local, national, and international trends.
- Discuss multi-pronged strategies for addressing work-related musculoskeletal injuries, including: risk assessment, policy, equipment, and training.
- Evaluate and utilize several low technology and high technology pieces of safe patient handling equipment.
- Apply safe patient handling knowledge to special populations, including persons with specific orthopedic concerns and obesity.
- Analyze safe patient handling evidence-based practice research from a variety of healthcare fields, including nursing, physical therapy, and occupational therapy.
- Create, demonstrate, and explain the use of safe patient handling equipment in a therapeutic situation to meet patient goals.
Description of Course Assignments:

**Article Review**
Students select, critique, and analyze a piece of evidence-based literature in the safe patient handling and movement field. They then summarize and share the main points of this article with their classmates via Blackboard Discussion.

**Ergonomic Assessments**
Students perform two ergonomic assessments which evaluate risk for healthcare providers, the Utah Estimation of Back Compressive Force and the Rapid Entire Body Assessment. Experiences and impressions are discussed via Blackboard Discussion.

**Treatment Plan**
Students create a hypothetical patient and create long and short term goals. They then devise a treatment plan incorporating the use of safe patient handling equipment. A Blackboard Discussion and brief (<5 minute) presentation will highlight the equipment and treatment methods they select.

Assignments and Grading Procedure:
Learning outcomes will be determined through:

<table>
<thead>
<tr>
<th>Category</th>
<th>Title</th>
<th>Point Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments:</td>
<td>Article Review</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Ergonomic Assessments</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Treatment Plan</td>
<td>75</td>
</tr>
<tr>
<td>Discussions:</td>
<td>Article Review Discussion</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Ergonomics Assessments Discussion</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Treatment Plan Discussion/Presentation</td>
<td>20</td>
</tr>
<tr>
<td>Quizzes:</td>
<td>Quiz #1</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Quiz #2</td>
<td>25</td>
</tr>
<tr>
<td>Competency Checks:</td>
<td>Check #1 (Week 6)</td>
<td>75</td>
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<tr>
<td></td>
<td>Check #2 (Week 8)</td>
<td>50</td>
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<tr>
<td>Lab A2P2:</td>
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<td>10</td>
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</tbody>
</table>

Total Points Possible: 400
Detailed outlines and grading rubrics are found on Black Board for the above assignments. The rubrics outline the criteria for each of the assignments. All assignments must be submitted through Black Board unless otherwise indicated by instructor.

A²P²: Attendance, Attitude, Participation and Preparation
This portion of the class aids in your professional development. Consistent, regular contributions to class discussions are expected. Disrespect for classmates, clinical populations, or colleagues will not be tolerated. Grave problems of participation and/or attitude will be brought to the student’s attention in order to maximize potential for correction within the time span of the course.

A²P² will be graded on the following scale:
- 0: an unexcused lab absence has occurred
- 1: recurrent unexcused tardiness, observable inattention or poor attitude
- 2: lack of participation and preparation
- 3: reluctant participation and/or lack of preparation
- 4: regular active participation, evidence of preparation
- 5: consistent active participation, consistent preparation, and evident attitude of self-advocacy

Grading Scale:
- A  100 - 93.33
- A-  90 - <93.33
- B+  86.67 - <90
- B   83.33 - <86.67
- B-  80 - <83.33
- C+  76.67 - <80
- C   73.33 - <76.67
- C-  70 - <73.33
- D+  66.67 - <70
- D   63.33 - <66.67
- D-  60 - <63.33
- F   below 60

Attendance:
Attendance to the three lecture and lab portions of the class are mandatory. If you cannot attend, please contact the instructor in a timely manner. Regular participation in Blackboard discussions is also mandatory.

Classroom Courtesy:
- No cellular phones will be allowed in class.
- Demonstrate self-respect and respect for others.

Policy for Make-up Tests/Assignments:
All assignments are due at the time scheduled in the course schedule. Acceptance of late assignments and make-up tests are at the discretion of the instructor.
Criteria for Written Assignments:
APA format is required, including 12 point font, double spacing, and at least 1 inch margins. Proper spelling and grammar are required for full credit for each written assignment.

Academic Support Services:
Academic support services are available through the
- Learning Enhancement Center: http://www.utoledo.edu/centers/lec/index.html
- The Writing Center: http://www.utoledo.edu/centers/writingcenter/

Student Code of Ethics:
The instructor holds a student registered in this course to The University of Toledo Health Science Campus Standards of Conduct and will follow the stated procedures and sanctions outlined therein. The student is encouraged to review the Code at http://hsc.utoledo.edu/grad/hsc_handbook/Student_Code_of_Ethics.html

ADA Statement:
If you require special accommodations because of a condition that meets the requirements of the Americans with Disabilities Act, please see the instructor. Special accommodations are made only with documented need and with institutional approval. Please see the instructor or Department Chair for more information. Faculty expect and encourage students to inform them at the beginning of the semester of any individual learning needs related to classroom participation and performance evaluations (i.e. exams, presentations, demonstrations). Accommodation of individual requests will be based upon appropriate documentation in keeping with the Americans with Disabilities Act, and institutional policies.

FERPA and Confidentiality:
For more information on FERPA, Cheating and Plagiarism, Assessment of Student Learning Outcomes and Student Code of Conduct, please refer to the appropriate section of the University of Toledo website:
http://www.utoledo.edu/offices/registrar/main_campus/ferpa_confident.html

Note:
The instructor reserves the right to amend this syllabus as deemed necessary and will communicate such amendment to the students in the course.
# Course Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Learning Activities</th>
<th>Readings</th>
<th>Due</th>
</tr>
</thead>
</table>
| 1    | Intro to SPHM A&P Mechanism of injury | Modules | Marras et al., 1999  
Waters, 2007 | Welcome Discussion |
| 2    | Epidemiology Legislation U.S./Global Perspective | Modules | Nelson & Baptise, 2006  
HOP Chp. 8  
Selected Article for Review | Article Review  
Article Review Discussion |
| 3    | Risk Management | Modules | HOP Chp. 2  
HOP Chp. 3 | Ergonomic Assessments |
| 4    | Manual transfers Low-tech SPHM equipment | Lab | HOP Chp. 10 | Quiz #1  
Midterm course evaluation |
| 5    | Programming Rehabilitation and SPHM | Modules | Arnold et al., 2011  
Waters & Rockefeller, 2011 | Ergonomic Assessment Discussion |
| 6    | Floor-based, sit to stand, and ceiling lifts | Lab | HOP Chp. 11 | Treatment Plan  
Competency Check #1 |
| 7    | Special populations | Modules | VA Bariatric Toolkit  
HOP Chp. 12 | Treatment Plan Discussion |
| 8    | Continued practice w/ equipment | Lab | | Quiz #2  
Treatment Presentations  
Competency Check #2  
Final course evaluation |
Relationship between Course Objectives, Weekly Objectives, and Learning Experiences
<table>
<thead>
<tr>
<th>Course Objective</th>
<th>Related Weekly Learning Objectives</th>
<th>Related Learning Experiences</th>
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</thead>
<tbody>
<tr>
<td>Summarize the epidemiology of musculoskeletal injury to healthcare workers.</td>
<td>Identify the key terms such as epidemiology, prevalence, and incidence.</td>
<td>Week 2 Readings</td>
</tr>
<tr>
<td></td>
<td>Examine and evaluate the epidemiological research related to injury and illness in healthcare workers.</td>
<td>Week 2 Modules</td>
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<tr>
<td>Identify risk factors for work related injuries secondary to manual handling of patients.</td>
<td>Identify relevant anatomical and physiological structures that are at risk during manual handling.</td>
<td>Week 1 Readings</td>
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<tr>
<td></td>
<td>Review biomechanical principles related to manual handling.</td>
<td>Week 1 Modules</td>
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<tr>
<td></td>
<td>Describe the development of low back disorders.</td>
<td>Week 3 Modules</td>
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<td>Discuss key evidence describing the impacts of manual handling.</td>
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<td>Analyze the NIOSH Equation and its subsequent revisions.</td>
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<td>Apply ergonomic principles and assessments to estimate personal manual handling risk.</td>
<td>Discuss an ergonomic assessment that can estimate the amount of force of manual handling.</td>
<td>Week 1 Modules</td>
</tr>
<tr>
<td></td>
<td>Discuss an ergonomic assessment that quantifies amount of risk of a task.</td>
<td>Ergonomic Assessment Assignment</td>
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<td>Ergonomic Assessment Discussion</td>
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<tr>
<td>Outline safe patient handling in terms of local, national, and international trends.</td>
<td>Distinguish U.S. and European safe patient handling trends and regulations.</td>
<td>Week 2 Readings</td>
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<td>Week 2 Modules</td>
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<tr>
<td>Activity</td>
<td>Description</td>
<td>Week(s)</td>
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<tr>
<td>Appraise and compare Michigan’s proposed and Ohio’s current SPHM legislation</td>
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</tbody>
</table>
| Discuss multi-pronged strategies for addressing work-related musculoskeletal injuries, including: risk assessment, policy, equipment, and training. | Summarize the key steps to planning and implementing a safe patient handling and movement program. | Week 3 Readings
Week 3 Modules |
| | Review evidence supporting the implementation of a safe patient handling program to reduce worker injury and reduce costs. | Week 5 Readings
Week 5 Modules |
| | Outline the steps of a patient handling and movement risk assessment. | |
| | Summarize the components of patient mobility assessment. | |
| | Evaluate the importance of clinical reasoning in any patient handling situation | |
| Evaluate and utilize several low technology and high technology pieces of safe patient handling equipment. | Identify low technology safe patient handling equipment. | Week 4 Readings
Week 6 Readings |
| | Compare and contrast uses of safe patient handling equipment. | Laboratory Week 4
Laboratory Week 6
Laboratory Week 8 |
<p>| | Demonstrate a safe manual transfer. | |
| | Practice transfers with low technology safe patient handling equipment. | |
| | Identify high technology safe patient handling equipment. | Competency Check #1 |
| | Practice transfers with high technology safe patient handling equipment. | |</p>
<table>
<thead>
<tr>
<th>Activity</th>
<th>Week 1 Modules</th>
<th>Week 2 Modules</th>
<th>Week 7 Readings</th>
<th>Week 7 Modules</th>
<th>Competency Check #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply safe patient handling knowledge to special populations, including persons with specific orthopedic concerns and obesity.</td>
<td>Recruit key safe patient handling terminology.</td>
<td>Summarize the key organizations and relationships that drive the safe patient handling movement</td>
<td>Analyze safe patient handling evidence-based practice research from a variety of healthcare fields, including nursing, physical therapy, and occupational therapy.</td>
<td>Compare and contrast the professions of nursing, PT, and OT in regards to WMSDs and risk.</td>
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<td>Summarize the effects that WMSDs have on patient care and healthcare worker well-being.</td>
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<tr>
<td>Create, demonstrate, and explain the use of safe patient handling equipment in a therapeutic situation to meet patient goals</td>
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<td>Identify myths regarding safe patient handling and movement and rehabilitation.</td>
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<td>Review current literature which supports SPHM practices in rehabilitation.</td>
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<tr>
<td>Discuss examples of how safe patient handling equipment can be used in therapeutic practice.</td>
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<td>Week 5 Readings</td>
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<tr>
<td>Week 5 Modules</td>
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<tr>
<td>Treatment Plan Assignment</td>
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<td>Treatment Plan Presentation</td>
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<tr>
<td>Treatment Plan Discussion</td>
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</table>
Modules
Introduction to Safe Patient Handling Movement: Terminology & Key Players

Objectives
- Recognize key safe patient handling terminology.
- Summarize the key organizations and relationships that drive the safe patient handling movement.

Lecture Overview
- Common terminology
- Key players
  - Organizational level in the U.S.

What is Safe Patient Handling?
Manual patient handling
- "The transporting or supporting of a patient by hand or bodily force, including pushing, pulling, carrying, holding, and supporting of the patient or a body part." (Nelson & Baptiste, 2006)

Safe patient handling
- Evidence-based approach to reducing risk. Includes risk assessment, use of equipment, patient assessment, algorithms, peer safety leaders, and after-action reviews.
Common Terminology

- **Work-related musculoskeletal disorders**
  - WMSDs
    - Injuries to muscles, nerves, tendons, joints, cartilage, and intervertebral discs
  - Work environment
    - Contributed to the condition
    - Condition made worse or precipitated by work conditions

- **Ergonomics**
  - The “fit” between job demands and the worker

- **Risk factors**
  - Repetitive
  - Forceful
  - Prolonged

---

**National Institute for Occupational Safety and Health (NIOSH)**

- **NIOSH**
  - Division of CDC
    - Safe Lifting and Movement for Nursing Home Residents
OSHA

- Division of U.S. Department of Labor
  - Act of 1970
    - Develop guidelines that protect workers
    - Recommend minimizing manual lifting and eliminating when possible
  - Develop tools
    - Programalog
    - Videos
      - [http://www.youtube.com/watch?v=Kj2JfJljKlQ](http://www.youtube.com/watch?v=Kj2JfJljKlQ)
    - Modules

Department of Veteran's Affairs

- VA
  - Objectives
    - Develop and test innovations to decrease risks related to patient handling and movement.
    - VESN B
      - Patient Safety Center of Inquiry
  - Annual Safe Patient Handling Conferences (West & East)

American Nurse's Association

- ANA
  - Proponents of safety in the workplace
  - Handle with Care campaign
  - Nursing school curriculum toolkit
  - Support of federal legislation

American Physical Therapy Association

OSHA

OSHA Alliance

APTA

American Physical Therapy Association
American Occupational Therapy Association

- AOTA
  - Underrepresentation
    - Nonformal position paper
  - Some research in SPHM
    - The University of Toledo
    - The Ohio State University
    - Sacred Heart University

The Big Picture

References


**Anatomy, Physiology and Biomechanics**

**Lecture Overview**
- Relevant anatomy
  - Spine
  - Force
- Pathophysiology
  - Injury mechanisms
- Epidemiology

**Objectives**
- Identify relevant anatomical and physiological structures that are at risk during manual handling.
- Review biomechanical principles related to manual handling.
- Describe the development of low back disorders.

**The Spine**
- Cervical
- Thoracic
- Lumbar
Vertebral Structures
- Vertebral body
- Intervertebral disc
  - Nucleus pulposus
  - Annulus fibrosus
- Ligaments
- Joints

Musculature
- Erector spinae
- Latissimus dorsi
- Abdominal muscles
  - Rectus abdominis
  - Internal/External obliques

Force & How It’s Measured
- Force (Newton)
  - Unit of force
  - Applied force
  - Inertial force
  - Gravitational force
- Effect of movement
  - Produce
  - Prevent
  - Change

Laws of Motion
1. Objects remain at rest as long as net forces = 0
2. Acceleration is proportional to the net force acting upon it.
3. For every action, there is an equal and opposite reaction.
**Center of Gravity**
- Anterior to the sacrum
- Depends on several factors:
  - Body size
  - Musclemass
  - Fat distribution
  - Gender
- Moves with position of body
  - Indicates stability

**Friction**
- Force that resists movement
  - Adds to inertial force
  - Responsible for deceleration
- Key concept in SPHM

**Stress and Strain**
- Stress – force within a material
- Strain – the effect of stress

**Hooke's law**: When force is applied to an object, amount of deformation is proportional to the force applied to deform it.

**Types of Force on the Spine**
- Compressive
- Shear
INTRO TO SAFE PATIENT HANDLING COURSE

Pathophysiology

- Injuries
  - Vertebrae
  - Discs
    - Neck damage
  - Muscles
    - Strain
  - Ligaments
  - Osteoarthritis

Development of Low Back Disorders

- Nerve Root Compression
- Intervertebral Disc Herniation
- Posterior Facet Subluxation
- Instability
- Degeneration
- Degenerative Arthritis

References


Learning objectives
- Discuss key evidence describing the impacts of manual handling.
- Analyse the NIOSH Equation and its subsequent revisions.
- Discuss an ergonomic assessment that can estimate the amount of force of manual handling.
- Discuss an ergonomic assessment that quantifies amount of risk of a task.

Terminology
- Transfer – movement of a patient from one place to another
- Vertical
- Lateral

Transfers
- Marras et al., 1999
- Identified transfers as riskiest patient handling task
- 1 person vs. 2 person techniques
  - Hip
  - Hook and toss
  - Gut belt
Transfer Techniques
- 1 person hug
- 2 person hook and toss
- 2 person gait belt.

Repositioning Techniques

Spine Force Limits
- Compression: 360-6400 N limit
- Anterior/Posterior (A/P) Shear: 1000 N limit
- Lateral Shear: 1000 N limit

Spine Compression as a Function of Transfer Task
NIOSH Equation

- Formulated in 1981
- Revised in 1994
- Industrial workers
- Not applicable to patient care

NIOSH Lifting Equation

- Waters (2007) proposes equation should be used under certain circumstances
- Cooperative patient
- Estimation of weight to be lifted (no more than 35 lbs.)
- "Smooth and slow" motion
- Unlikely that patient will change position
Comparison of Industries

Industrial Lift

Patient Transfer

Utah Estimation of Back Compressive Force

Components
- Caregiver weight (kg)
- Load (kg)
- Distance from L5/S1 to hands (m)
- Back posture (angle in degrees)

Results
- Amount of compressive force in Newtons.

Rapid Entire Body Assessment

REBA
- Developed for healthcare
- Whole body assessment tool
  - Observation
  - Video
  - Photos
- Data
  - Body posture
  - Force
  - Type of movement
  - Repetition
  - Coupling

Rapid Entire Body Assessment

Evaluate risks
- Dynamic
- Static

Risk/Action Levels
- 0: negligible risk, no action
- 1: low risk, possible action
- 2: medium risk, necessary action
- 3: high risk, soon necessary action
- 4: very high risk, action now
References


Marras, W., Dam, K., Kiering, B., and Bertholet, P. (1999). A comprehensive analysis of low-back disorder risk and spinal loading during the transferring and repositioning of patients using different techniques. Ergonomics, 42(s), 904–926.


Objectives

- Identify the key terms such as epidemiology, prevalence, and incidence.
- Examine and evaluate the epidemiological research related to injury and illness in healthcare workers.
- Compare and contrast the professions of nursing, PT, and OT in regards to WMSDs and risk.
- Summarize the effects that WMSDs have on patient care and healthcare worker well-being.

Epidemiology of WMSDs in Healthcare Professions

Kate琳 Reynolds

Key Terminology

- **Epidemiology**
  - Study of health events

- **Incidence**
  - Number of new cases in a given time period
  - 11,000 cases of X disease in 2017

- **Prevalence**
  - Total number of cases in a population, divided by all individuals
  - A "snapshot"
  - 14.7% of Americans have disease X

Epidemiology

- Rate of nonfatal occupational injuries and illnesses in 2010:
  - Service providing hospitals
    - 6.9 per 100 FTE
  - Service providing nursing and residential care facilities
    - 11.9 per 100 FTE
**Occupational Illnesses and Injuries Requiring Days Away from Work: 2010**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Days Away from Work</th>
<th>Incidence Rate per 10,000 FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing aides, orderlies, attendants</td>
<td>53,036</td>
<td>489.4</td>
</tr>
<tr>
<td>Labourers – freight, stock, and material movers</td>
<td>43,040</td>
<td>430.4</td>
</tr>
<tr>
<td>Truck drivers – heavy and tractor trailer</td>
<td>43,040</td>
<td>318.5</td>
</tr>
<tr>
<td>Janitors and cleaners</td>
<td>48,378</td>
<td>318.5</td>
</tr>
</tbody>
</table>

**Other Evidence**

- Evidence of musculoskeletal disorders beginning when a future healthcare provider is in school and aggravated in 1st year of practice
- Overexertion of personnel in nursing and personal care facilities contributed to injury rates 4x the average across all industries
- Incidence rate of WMSDs in healthcare workers requiring days away from work
  - Increased by 4% from 2009 to 2010
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OT & PT Injury Rates

- In 2006, per 100 FTE
  - OT = 165
  - PT = 163
  - Not significantly different from each other

- Injuries to the back
  - OT = 31%
  - PT = 30%

Survey of Occupational Therapists in Ohio

- Injury rates:
  - 5% regardless of clinical setting
  - 19% in facilities where manual handling is required by OT practitioners

- Location of injury
  - Low back: 31.9%
  - Shoulder/neck: 10.2%
  - Upper back: 6.4%

High – Risk Patient Care Tasks

- VA
  - Transfer to and from bed or chair ("perch" to "perch")
  - Lateral transfer to and from bed or trolley
  - Reposition up in bed
  - Reposition in wheelchair or recliner
  - Transfer patients up from floor
  - Tasks requiring holding of limbs
  - Transportation of bariatric patients
  - Bariatric toileting tasks

Factors which increase risk:

- Frequency
- Duration
- Patient
  - Size
  - Cooperation
  - Unpredictability
- Distance
- Awkward positions
- Space
- Technology availability
Impact on care?

- Limited data
- Anecdotal stories
  - Pain
  - Adverse events
- Decreased mobilization
  - Resulting complications

Impact on the professional?

- Holistic view of a worker
  - Mind, body, spirit
- Occupational performance & engagement

Health Problems Impacting Productivity of Healthcare Workers:

- Fatigue
- Depression
- Back/neck pain
- Sleeping problems
- Other chronic pain
- Arthritis
- Hypertension
- Anxiety
- High cholesterol

Impact on the professional?

- Presenteeism
  - Work through pain/self-treat
  - After treatment
- Absenteeism/Turnover
  - Retention is key!
  - Off work with back pain and long-term disability
    - 1st weekly
    - 20% in 4 – 6 weeks
    - 50% after 6 months
  - Altered work
  - Transitional work
References

References
Learning Objectives

- Distinguish U.S. and European safe patient handling trends and regulations.
- Appraise and compare Michigan’s proposed and Ohio’s current SPHM legislation.

Key Terminology

- No lift, zero-lift, or minimal lift policy.
  - A policy which prohibits or minimizes manual lifting by instituting a patient handling and movement program.
- Culture of safety.
  - Collective belief of those within a work environment that safety is a shared responsibility, integral to staff and patient safety.

Trends in Europe

- European Union
  - Regulations since 1992
- Royal College of Nursing (RCN)
  - “lift free” hospitals
  - Back Care Advisors (BCAs)
  - Focus on prevention
Trends in Europe

- Barriers
  - Lack of
    - Compliance
    - Resources
    - Training
  - Peer pressure

Trends in the United States

- Approaches to SPHP have included
  - Body mechanics classes
  - Special training
  - Back-belts
  - Lift teams

  “No evidence that body mechanics alone can protect caregivers from musculoskeletal disorders that result from lifting, repositioning, and moving patients.”

(Reichert, 2003)

Curricular Trends in the U.S.

- Nursing
  - Safe Patient Handling Curriculum by NIOSH
    - Limit or widespread implementation

- Occupational Therapy
  - Lectures/labs with gait belts
  - Stress good body mechanics

- Physical Therapy
  - Lectures/labs with gait belts
  - Stress good body mechanics

Federal Safe Patient Handling Legislation

- Nurse and Health Care Worker Protection Act of 2009
  - H.R. 2391 / S. 1788

- Worksite prevention through mechanical lifts and elimination of manual lifting

- Federal grants for safe patient handling equipment and training

- Referred to committee May 2010

- Not enacted
States with Current Legislation

<table>
<thead>
<tr>
<th>Comprehensive Program</th>
<th>Demonstration Project</th>
<th>Other</th>
</tr>
</thead>
</table>

Ohio’s SPH Legislation

- House Bill 67
  - Effective 3/21/2005
  - Supportive of SPH
  - Bureau of Worker’s Compensation
    - Long term care loan fund program
  - Interest free loans to nursing homes
  - Purchase, improve, or install lifts
  - Education and training of staff

Michigan

- Introduced March 2007
- Not enacted

Key points:
- SPPM Committee
- SPPM Program
- “Right to refusal” policy
Other States

- Texas
  - Bill mandates a policy for safe patient handling by hospitals and nursing homes

- New York
  - Two year demonstration only to collect data on injuries to determine best practices

- Washington
  - State law to mandate provision of lift equipment by hospitals as a component of a policy for safe patient handling and to offer financial incentive through tax credits and reduced workers' compensation premiums

- Hawaii
  - Resolution to mandate support of AHS. Handle with care campaign and allow nurses to refuse to manually handle a patient if the task places the nurse or patient at risk

- Rhode Island
  - State law requiring hospitals and nursing facilities to reduce manual lifting, transferring and repositioning of patients and vendors except in exceptional circumstances

- Other states
  - Safe patient handling legislation

References


Risk Perception, Assessment & Management

Katrina Rudolph

Learning Objectives
- Outline the steps of a patient handling and movement risk assessment.
- Summarize the components of patient mobility assessment.
- Evaluate the importance of clinical reasoning in any patient handling situation.

Key Terminology
- Risk: the possibility that something unpleasant or unwelcome will happen.
- Risk management: the culture, processes and structures that are directed towards realizing potential opportunities, while also managing adverse effects.
- Load: a discrete, moveable object. In healthcare, often times describes the patient.

Risk Assessment
- Easy and straightforward
  - Identify hazard
  - Identify who could potentially be harmed
  - Evaluate the risk level
  - Develop a plan
  - Put the plan into action
Manual Handling Risk Assessment

Task
- Individual capability
- Load (person)
- Environment

Task Analysis Examples

<table>
<thead>
<tr>
<th>Task</th>
<th>Example in Healthcare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large distance from trunk</td>
<td>Holding a leg during a surgical procedure</td>
</tr>
<tr>
<td>Twisting</td>
<td>A manual stand-pivot transfer</td>
</tr>
<tr>
<td>stooping</td>
<td>Support sick walking</td>
</tr>
<tr>
<td>Reaching upward</td>
<td>Lifting a item from equipment</td>
</tr>
<tr>
<td>Reaching carrying</td>
<td>Lifting a person from the floor</td>
</tr>
<tr>
<td>Reaching carrying</td>
<td>Supporting a person’s body weight as they walk</td>
</tr>
<tr>
<td>Repeated pushing or pulling</td>
<td>Pushing a person in a wheelchair on an incline</td>
</tr>
<tr>
<td>Risk of sudden movement</td>
<td>Fall during a transfer</td>
</tr>
<tr>
<td>Prolonged effort</td>
<td>Supporting a person as they perform ODI's</td>
</tr>
<tr>
<td>No ein recovery</td>
<td>Moving several patients on moving routine</td>
</tr>
<tr>
<td>High rate of work</td>
<td>Staff storage, highshuffle</td>
</tr>
<tr>
<td>Exceptional circumstances</td>
<td>Equipment failure</td>
</tr>
</tbody>
</table>

Task
- What is the task?
  - Does it include:
    - Large distance from trunk
    - Twisting
    - stooping
    - Reaching upward
    - Reaching carrying
    - Repeated pushing or pulling
    - Risk of sudden movement
    - Prolonged physical effort
    - No return movement
    - High rate of work
    - Exceptional circumstances

Individual Capability
- Factors:
  - Unusual strength
  - Height
  - Create hazards for medically compromised / pregnant workers
  - Person not familiar with handling
  - Requires special training
Individual Capacity Analysis Examples

<table>
<thead>
<tr>
<th>Factor</th>
<th>Example in Healthcare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unusual strength</td>
<td>“Stronger” worker undertaking larger patients</td>
</tr>
<tr>
<td>Height</td>
<td>A large height difference between patient/resizer</td>
</tr>
<tr>
<td>Headed to medically compromised/end stage</td>
<td>Risk to someone who already has a low problem or lifting limitations</td>
</tr>
<tr>
<td>Draws by unfamiliar people</td>
<td>Undertaken by a speech therapist</td>
</tr>
<tr>
<td>Special information/training</td>
<td>Special skill competency requirement</td>
</tr>
</tbody>
</table>

Load (Patient)

1. **3rd step**
   - Extensive factors to consider
   - More complicated than a load as an object

- 45 lbs, handles
- 120 lbs, net handles, rain, fall history, etc.

Load (Patient) Factors

- Method encourages independence
- Weight-bearing ability
- Assistance level needed
- Patient’s expectations/wishes
- Ability to communicate
- Predictability
- Child or a vulnerable adult

Load (Patient) Factors Continued

- Pain/medication
- Behavior
- Cultural barriers
- Comfort
- Body shape
- Height/weight
- Fall history
Environment

- 4th step
- Factors
  - Space constraints
  - Floors
  - Temperature
  - Indoors/outdoors
  - Lighting
  - Equipment

Other Factors

- Final step
  - Catchall
- Examples of factors
  - Clothing/footwear
  - Legal factors
  - Personal factors

The LAD Mobility Assessment

- LAD
  - Look
  - Ask
  - Demonstrate
LAD Explained

- Look
  - Head control
  - Trunk control
  - Bilateral differences
  - Estimate height/weight
  - Obvious signs of weakness

LAD Explained

- Ask
  - Ask open questions:
    - Ask "How far can you walk?"
    - Instead of "Can you walk?"
  - Do they respond verbally?
  - Can they provide initial evaluation information?

LAD Explained

- Demonstrate
  - Ask the person to demonstrate tasks:
    - Building blocks of mobility
    - Ask mobility
    - Range of joint
    - UE strength testing

LAD Assessment
Clinical Reasoning

“Clinical reasoning: students don’t know it exists, therapists don’t know they’re doing it. This seems to be such a battle.” Lisa Mender, 2003

References


Learning Objectives

- Summarize the key steps to planning and implementing a safe patient handling and movement program.
- Review evidence supporting the implementation of a safe patient handling program to reduce worker injury and reduce costs.

Key Terminology

- Patient handling and movement program — A program for reducing ergonomic risk for caregivers and patients from patient handling activities. Include support structures and change management strategies to facilitate use of patient handling equipment and foster a culture of safety.
- Also known as a PHAMP.
- Peer leader — Caregivers who represent their clinical unit or area as a SPHM champion or expert. They are informal leaders who have specialized training in SPHM.

Does Programming Save Money?

- Lifting equipment and training costs can be recovered in 2-3 years.
- Resident lifting programs:
  - Reduce worker’s compensation by 61%.
  - Lost workday rates by 60%.
- One hospital had a significant decrease (50%) in work injury after installation of lift/training.
Does Programming Reduce Injuries?
- Evidence related to injury rates
  - A New York Hospital
    - Significant decrease in injuries
      - 30 to 71.5
  - Across all health systems in Australia
    - 24% decrease in injuries
- A hospital in Ohio
  - Reduction in injuries
  - Reduction in associated costs

Getting Started
- Promote to leadership
  - Explain benefits to upper management:
    - Improved safety
    - Decreased costs of patient handling injuries
    - Improved recruitment
    - Staff satisfaction
    - Staff retention
    - Evolution of culture of safety

Identify Leaders
- SPHM Champion
  - PT facility coordinator
  - Clinical background
  - Familiar with patient handling in practice
- Peer Leaders
  - Take responsibility for a clinical area or unit

Roles of SPHM Champion
- Roles
  - Conduct ergonomic evaluations for clinical areas
  - Facilitate equipment purchases
  - Act as resource person for institution
  - Train/Educate peer leaders and other staff
  - Act as a liaison between
    - Staff and management
    - Facility and other organizations
  - Track equipment maintenance
  - Review/identify trends in SPHM literature
Institute a SPHM Committee
- Roles
  - Implement the program
  - Develop policy
  - Ensure incidents/injuries are investigated
  - Facilitate equipment purchase
  - Develop ST and LT strategic plans
  - Drive program with goals and objectives

Promote Unity
- Teamwork!
  - Environment of care team
  - Safety/Occupational Health Department
  - Education staff
  - Facilities management
  - Housekeeping
  - Laundry
  - Infection prevention staff
  - Union

Implementing a Program
- Not an exact science

- Should involve a strategic plan
  - ST and LT goals

- Example:
  - Reduction in number of lost workers due to resident handling tasks by ___% within [timeframe]

Facilitate Acceptance
- Stakeholders need to know
  - Why program is being implemented
  - What it includes
  - What will be used
  - How it will be implemented

- Coach, not boss mentality
Foster Knowledge

- Education
- Management
- Staff
- Peer leaders

Training
- Peer leaders
- Staff
- Patients/Families

Marketing

- “Feed the plants, not the weeds”
  -SPHM program experts: Hanneke Kaibbe and Nico Kaibbe
- Skills fair
- Write up in hospital-wide newsletter
- Promotional items
- Unit “open house” after equipment arrives
- Competitive games between units
- Posters/bulletinboards

Program Evaluation

- Effectiveness
- Acceptance
- Cost/savings
- Outcome measures
- Staff
- Patient

Example of data collection tool:

- Chapter 11

References

References


Learning Objectives

- Identify myths regarding safe patient handling and movement and rehabilitation.
- Review current literature which supports SPHM practices in rehabilitation.
- Discuss examples of how safe patient handling equipment can be used in therapeutic practice.

SPHM and Rehabilitation

Myths

- Use of SPHM equipment increases dependency
- Therapists don't injure themselves very often
- Equipment cannot be therapeutic

Facts

- In one study, SPHM did not reduce FIM scores
- Therapists injure themselves at rates higher than most laborers
- Equipment increases safety and provides creative treatment

SPHM & Rehabilitation

Therapeutic Handling/Transfers

- Different than other transfers
  - Increased time
  - Less "smooth"
  - Static postures
- Resulting possible risks
  - "Creep"
  - Loading on hands and spine
Importance of Mobility

- Immobility
  - Loss of 1.3 – 3% of muscle strength/day
  - Contributes to readmissions

- Early Mobility
  - Improves
    - Lung function
    - Tissue perfusion
    - Circulation
    - Strength
    - Functional mobility
  - Reduced critical care/hospital LOS

Barriers to Mobility

- Fear
  - Adverse events
  - Safety
  - Failure

- Physical/Temporal
  - Space constraints
  - Environmental challenges
  - Equipment use is time consuming

Barriers to Mobility (Continued)

- Cultural
  - Away from tradition/past education
  - “Anti-rehab”

- Educational
  - Unfamiliar with equipment
  - Assumption equipment doesn’t fit need

FIM Scores and SPHM (Arnold et al., 2011)

- CVA patients (n=14)
  - 47 pre-SPHM program
  - 47 post-SPHM program

- FIM tasks
  - Transfers
    - Bed
    - Toilet
    - Tub
  - Ambulation
  - Stairs
Ideas for Therapeutic Practice

- Arnold & Rich, 2012
- Eser-skills
- Goal training
- ADL/IADL
- Leisure

Patient Handling Devices and the Mobility Continuum

- Independent Active
- Cuing & Training
- Walkers
- Cane
- Friction-reducing Devices
- No Device, No assist
- Crutches
- Gait-Assist/Fall Arrest Systems
- Dependent/Pasive Lifts
- Dependent

FIM Ratings at Admission & Discharge

- Arnold & Rich, 2012
The Case for SPHM Use in Rehabilitation

References


Special Populations: Bariatric & Orthopaedic

Learning Objectives

- Define the bariatric population and its unique considerations for safe patient handling.
- Define the orthopedic population and its unique considerations for safe patient handling.
- Explore safe patient handling equipment and techniques particular to both the bariatric and orthopaedic populations.

Bariatrics

- Who is a “bariatric patient”?
  - Overweight by > 150 lbs.
  - Body mass index > 40
  - Total weight > 300 lbs.

- Special considerations
  - Safety of HCW & patient
  - Dignity
  - Respect
  - Comfort
  - Privacy

Dignity

- Equipment
  - Ensure proper equipment is available
  - Labeling
  - EC = Extended capacity
  - Avoid derogatory language
  - A “Biggie” or “EL”

- Materials for bariatric patients
  - Gowns
  - Slippers
  - Bed pans
**Types of equipment**

**Bariatric lifts**

---

**Strategies Available**

- Safe Bariatric Patient Handling Toolkit
  - Available free at VA website
  - Algorithms for most transfers

- AALTDs
  - No weight limit, only girth

---

**General considerations**

Patient Assessment for SPI Equipment
Orthopedic Patients

- Orthopedic
  - Conditions involving musculoskeletal system
  - Trauma
  - Degenerative diseases

- National Association of Orthopedic Nurses
  - Collaboration with SPOSH/Va
  - Orthopedic Algorithms

Orthopedic

- High-risk specific orthopedic concerns
  - Postoperative total hip replacement
  - Cast/strap on extremity
  - Orthopedic equipment (CPM)
  - Halo vests
  - Plate and external fixators

- General concerns
  - Catheters
  - IVs
  - Medications
  - Effect of anesthesia
  - Fatigue
**Orthopedic**

- Considerations
  - Total hip replacement
  - Maintain precautions
  - Pain level
  - Cast/splint of an extremity & pelvic external fixation
    - Weight
    - Jekkyard positions
    - Pushing, pulling, twisting
    - Pain level

**Importance of Therapeutic Occupations**

- Reduce post-operative complications
- Practice in acute/subacute settings
  - Use of assistive device
    - Cane
    - Walker
    - Crutches
  - Altered weight bearing technique

**Ambulation of a Partially Dependent Orthopedic Patient**

Without SPHM Equipment  |  With SPHM Equipment

*Pictures from Raitos, Hess, Gonzalez, Vener, & Dittman 2009*

**Consider Orthopedic Precautions**

- Lifts and slings
  - Positional precautions
  - Immobilized limbs
  - External fixators
- Fall risk
  - High if newly post-op
References


Assignments
Article Review Assignment

The purpose of this assignment is to familiarize yourself with important literature in the area of safe patient handling. You will have the opportunity to read, critically analyze, and share your opinions and ideas about literature within the field via discussion with your classmates.

Instructions: Choose one of the articles below. After reading, answer the questions on the following page. Some will require only a few words or a sentence. For all the questions, please include rationale for your answer. Following completion of this assignment, there will be an online discussion related to your findings.

Review format: Less than 3 pages double spaced. Bulleted or written in paragraph form. Due XX/XX/XXXX


Article Review Questions

Introduction and literature review

1) What is the purpose of the study?
2) What is the research hypothesis (if any)?
3) Does the introduction document the theoretical significance of the study in a convincing way?

Methods

4) What is the design of the study? (pre –experimental, experimental, quasi-experimental, etc.)
5) Is it clear that the general research strategy matches up well to the theoretical issues under study?
6) What threats to validity are present from the design?
7) What is (are) the independent variable(s)?
8) What is (are) the dependent variable(s)?
9) What is the level of measurement for the dependent variable(s)?
10) What did the investigators do to insure reliability?
11) Are statistical hypotheses stated?

Results

12) Is the sample described (descriptive statistics)?
13) Are the results from the research hypothesis clearly given?
14) Are tables and figures accurate?

Discussion

15) Are the results discussed in terms of theoretical significance and the state of literature in the field?
16) Is each statistical hypothesis discussed?
17) Does the discussion relate to the purpose of the study and the extant literature?
18) Are unwarranted or biased interpretations made of the data?
19) Is future research identified in a probing way?

Conclusions

20) Based upon the design, the sample, the protocol and the findings, are the conclusions warranted?
21) Are the limitations of the study identified? Are there any additional limitations that should have been mentioned?
22) What implications does this article have for healthcare? Specifically, nursing, occupational and physical therapy?
### Article Review Assignment Rubric

<table>
<thead>
<tr>
<th>Item</th>
<th>Met</th>
<th>Not Met</th>
<th>Incomplete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selects and reads article (2 pts)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reviews intro/literature review adequately (5 pts)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reviews methods adequately (5 pts)</td>
<td></td>
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</tr>
<tr>
<td>Reviews results adequately (5 pts)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reviews discussion adequately (7.5 pts)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Reviews conclusions adequately (7.5 pts)</td>
<td></td>
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<tr>
<td>Correct length/format (3 pts)</td>
<td></td>
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</tr>
</tbody>
</table>

Total Points out of 30:

Comments:
Ergonomic Assessments Assignment/Discussion

The purpose of this assignment is to integrate research into practice, deepening your understanding of their interconnectedness. You will complete two ergonomic assessments on yourself as you simulate a transfer. These assessments are estimations, meaning there is a large margin of error and meant only to be used as a guide. No need to actually complete the transfer, just position your body in preparation to complete it.

This assignment includes a component in which you will turn into Blackboard as well as a discussion section once you have completed the main portion. Be sure to follow directions carefully and e-mail with any questions or concerns.

Things you will need:
- A good understanding of the Utah Estimation of Back Compressive Force Assessment and the Rapid Entire Body Assessment. Please refer to class materials.
- A good understanding of a Newton.
- 2 friends
  - One willing to be photographed with you
  - One willing to photograph/take measurements
- A tape measure
- A goniometer (if you do not have access, make your best estimation of angles)
- Estimation of your weight (in kg.)
- Estimation of 25%, 50%, and 75% of your friend’s weight (in kg.)
- The Utah Estimation of Back Compressive Force Excel Worksheet and the REBA Worksheet (available from Blackboard)

Directions:
- Simulate a patient handling task with one of your friends
  - Options include:
    - Vertical transfer (e.g., bed to chair)
    - Lateral transfer (e.g., bed to stretcher)
  - Make your best guess as how you would prepare to manually move that person. Try to integrate material from prior courses and general knowledge, but don’t overthink it.
- Have your 2nd friend take a picture of your simulation.
- Have your 2nd friend take a measurement (in meters) from your L5/S1 to your hands.
- Complete the chart on the next page. You will have to complete the calculation 3 times (Changing only the percentage of your friend’s weight → 25%, 50%, 75%).
- E-mail me your chart and your picture. The week after this is due we will complete the discussion.
- Using the picture you have taken, complete the REBA Assessment and e-mail me the report

Charts and pictures are due by: XX/XX/XX  XX:XX pm
REBA is due by: XX/XX/XX  XX:XX pm
Utah Estimation of Back Compressive Force Calculation Results

<table>
<thead>
<tr>
<th>Your body weight (kg.)</th>
<th>Friend #1 (Load in kg.)</th>
<th>Horizontal Distance (meters)</th>
<th>Back Posture (Angle from Vertical)</th>
<th>Estimated Compressive Force (Newton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% =</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50% =</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75% =</td>
<td></td>
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</tr>
</tbody>
</table>

Rapid Entire Body Assessment Results

Rapid Entire Body Assessment Score: __________
Ergonomic Assessments Rubric

<table>
<thead>
<tr>
<th>Item</th>
<th>Met</th>
<th>Not Met</th>
<th>Incomplete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correctly completes Utah BCF (20 pts)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correctly completes REBA (20 pts)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uploads photo of Utah BCF to Blackboard (10 pts)</td>
<td></td>
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</tr>
</tbody>
</table>

Total Points out of 50:

Comments:
Treatment Plan Assignment

The purpose of this assignment is to design a treatment plan incorporating safe patient handling equipment in your therapeutic sessions. An example of the “case” and goals are provided below.

Directions:

- Create a patient that you will be providing therapy services. Be sure to include:
  - Setting (choose from acute, home, or SNF)
  - Age
  - Sex
  - Diagnosis
  - Weight bearing capabilities
  - UE strength
  - Cognitive status

- Formulate two short term goals and one long term goal for your patient.

- Plan one treatment session that you will incorporate safe patient handling equipment in a therapeutic manner. Your plan should include at least one piece of equipment and work towards the goals that you have set.

- You will present your treatment plan during week 8 lab. Presentations should be <5 minutes and a classmate will act as your “patient.”

Example:

Barbara Jones is a 68 year old who has sustained a total hip replacement. She is currently one day post-operation. She is 5 ft. 3 in. tall and weighs 200 lbs. She has adequate upper extremity strength and is able to weight bear (although she states her pain is 6/10). Thus far, Mrs. Jones has not been compliant with maintaining total hip precautions. Nursing staff notes that she is easily agitated. The physician wrote an order for her to be out of bed and begin ambulation 2x/day with assist.

LTG: Barbara will transfer from bed to bedside commode and complete toileting, including LE dressing and undressing and maintain hip precautions with less than 3 VC before discharge.

STG 1: Barbara will state and subsequently demonstrate post-THA hip precautions with less than 3 VC before discharge.

STG 2: Barbara will perform UE/LE dressing while maintaining hip precautions, sitting EOB with less than 3 VC before discharge.
## Treatment Plan Assignment Rubric

<table>
<thead>
<tr>
<th>Item</th>
<th>Met</th>
<th>Not Met</th>
<th>Incomplete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequately creates and describes patient (20 pts)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creates 1 long-term goal (10 pts)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creates 2 short-term goals (10 pts)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goals are specific, objective, and measurable (10 pts)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Thoroughly describes treatment session (10 pts)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Uses equipment functionally and creatively (15 pts)</td>
<td></td>
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</tbody>
</table>

Total Points out of 75:
Discussion Board Topics & Facilitation Questions

General Discussion Board Directions:
- Discussion board will be open from Monday 8 am to the following Sunday at 11 pm
- Post at least 3 times during the week
  - One original post
  - Respond to two other classmates
- 2 of the 3 posts must be at least one day apart from each other (e.g., you cannot post 3 posts on a Friday)
- Respond to one or more of the starter questions in your original post.
- Each discussion board will be worth 20 points towards your final course grade.

Welcome Discussion (Week 1)
- Introduce yourself, discipline, educational/vocational background, and anything else you would like to share with the group.
- What is your experience (if any?) with manual handling or safe patient handling
  - Negative?
  - Positive?
- What are your current perceptions of safe patient handling (if any)?
- Why are you taking this course?
- What do you hope to learn from this course?

Article Review Discussion (Week 2)
- What was your overall impression of the article?
- What were the author’s conclusions? Based on the literature review, methods, etc., do you agree?
- What is the take home message from your article?

Ergonomic Assessments Discussion (Week 5)
- Overall impression of the amount of force generated in the simulation
- Overall impression of the Rapid Entire Body Assessment
- How did this assignment alter your view of risk to healthcare workers?
- After viewing the slideshow of simulated transfers by your classmates, what conclusions can you reach about the standardization of transfer protocol?

Treatment Plan Discussion (Week 7)
- Would you incorporate your treatment plan into practice? Why or why not?
- What piece(s) of equipment are you planning to use during a session? How and why?
- What were the challenges when formulating your treatment plan?
Discussion Board Rubric

Name________________

### Article Review (Week 2)

<table>
<thead>
<tr>
<th>Item</th>
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</thead>
<tbody>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Responded to two classmates (5 pts)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Posts are thoughtful and thorough (5 pts)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posts respond to starter questions (3 pts)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Posts are more than 1 day apart (2 pts)</td>
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Total Points out of 20:

Comments:

### Ergonomic Assessments (Week 5)

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<tbody>
<tr>
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<td></td>
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</tr>
<tr>
<td>Responded to two classmates (5 pts)</td>
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<td></td>
</tr>
<tr>
<td>Posts are thoughtful and thorough (5 pts)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posts respond to starter questions (3 pts)</td>
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<tr>
<td>Posts are more than 1 day apart (2 pts)</td>
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</table>

Total Points out of 20:

Comments:

### Treatment Plan (Week 7)

<table>
<thead>
<tr>
<th>Item</th>
<th>Met</th>
<th>Not Met</th>
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</tr>
</thead>
<tbody>
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<td></td>
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</tr>
<tr>
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<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Posts are more than 1 day apart (2 pts)</td>
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</tbody>
</table>

Total Points out of 20:

Comments:
Laboratory Lesson Plans
Week 4 Lab Lesson Plan

Learning objectives:
- Identify low technology safe patient handling equipment.
- Compare and contrast uses of safe patient handling equipment.
- Demonstrate a safe manual transfer.
- Practice transfers with low technology safe patient handling equipment.

Schedule:
- Complete Quiz #1
- Introduce low technology SPHM equipment:
  - Gait belt
  - Transfer board
  - Smooth Mover
  - Pivot discs
  - Standing aid
  - Various slide sheets
- Demonstrate use of these types of equipment with student volunteers.
- Demonstrate manual transfer with a gait belt
  - Follows these guidelines
    - Weight to be lifted is <35 lbs.
    - Inform patient of direction of transfer, hand/foot placement, other directions
    - Place gait belt low on hips. Tighten and fasten.
    - Hands in lateral position
    - Wide base of support
    - Neutral spine
    - Smooth, slow, and controlled
    - Adjust patient after transfer if necessary
- Open Lab Time
  - Students in groups of 4
    - Practice manual transfers
    - Practice with each piece of equipment
- Complete midterm course evaluation
Week 6 Lab Lesson Plan

Learning objectives:
- Identify high technology safe patient handling equipment.
- Compare and contrast uses of safe patient handling equipment.
- Practice transfers with high technology safe patient handling equipment.
- Demonstrate proficiency using safe patient handling equipment through a competency check.

Schedule:

- Return Quiz #1
- Provide feedback about review of Midterm Evaluation

- Introduce high-technology SPHM equipment
  - Sit to stand lift
  - Floor-based lift
  - Ceiling-based lift
  - Air-assisted lateral transfer device

- Demonstrate lateral and vertical transfers with each piece of equipment
  - Include
    - Chair to chair
    - Bed to chair
    - Bed to commode
    - Wheelchair to commode
    - Bed to trolley
    - Floor to bed

- Review VA Algorithms
- Review “Assessment Criteria and Care Plan for Safe Patient Handling and Movement”
  - Review Algorithms 1-6

- Open Lab Time
  - Students in groups of 4
    - Practice high technology transfers
    - Practice with each piece of equipment
    - Lab Activity: SPHM Roulette Lab Occupation

- Competency Check #1
Assessment Criteria and Care Plan for Safe Patient Handling and Movement

I. Patient’s Level of Assistance:

_____ Independent— Patient performs task safely, with or without staff assistance, with or without assistive devices.

_____ Partial Assist—Patient requires no more help than standby, cueing, or coaxing, or caregiver is required to lift no more than 35 lbs of a patient’s weight.

_____ Dependent—Patient requires nurse to lift more than 35 lbs of the patient’s weight, or patient is unpredictable in the amount of assistance offered. In this case assistive devices should be used.

An assessment should be made prior to each task if the patient has varying level of ability to assist due to medical reasons, fatigue, medications, etc. When in doubt, assume the patient cannot assist with the transfer/repositioning.

II. Weight-Bearing Capability

III. Bilateral Upper-Extremity Strength

_____ Full

_____ Yes

_____ Partial

_____ No

_____ None

IV. Patient’s level of cooperation and comprehension:

_____ Cooperative— may need prompting; able to follow simple commands.

_____ Unpredictable or varies (patient whose behavior changes frequently should be considered as unpredictable), not cooperative, or unable to follow simple commands.

V. Weight: ___________ Height: ___________

Body Mass Index (BMI) [needed if patient’s weight is over 300 lbs]¹: ___________

If BMI exceeds 50, institute Bariatric Algorithms

The presence of the following conditions are likely to affect the transfer/repositioning process and should be considered when identifying equipment and technique needed to move the patient.

VI. Check applicable conditions likely to affect transfer/repositioning techniques.

_____ Hip/Knee/Shoulder Replacements

_____ History of Falls

_____ Paralysis/Paresis

_____ Unstable Spine

_____ Severe Edema

_____ Very Fragile Skin

_____ Respiratory/Cardiac Compromise

_____ Wounds Affecting Transfer/Positioning

_____ Amputation

_____ Urinary/Fecal Stoma

_____ Contractures/Spasms

_____ Tubes (IV, Chest, etc.)
Comments:__________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

VII. Appropriate Lift/Transfer Devices Needed:

Vertical Lift: __________________________________________________________

__________________________________________________________________________

Horizontal Lift: _________________________________________________________

__________________________________________________________________________

Other Patient Handling Devices Needed: _______________________________________

__________________________________________________________________________

Sling Type: Seated_____  Seated (Amputee)_____  Standing_____  Supine_____  Ambulation_____  Limb Support_____  

Sling Size: ____________

Signature: ____________________________  Date: __________________

¹If patient’s weight is over 300 lbs, the BMI is needed. For Online BMI table and calculator see: http://www.nhlbi.nih.gov/guidelines/obesity/bmi_tbl.htm
Start Here

Can patient bear weight?

Caregiver assistance not needed; Stand by for safety as needed.

Is the patient cooperative?

Stand-and-pivot technique using a gait/transfer belt (1 caregiver) or powered stand-assist lift (1 caregiver).

Use full-body sling lift and 2 caregivers.

Does the patient have upper-extremity strength?

Seated transfer aid; may use gait/transfer belt until the patient is proficient in completing transfer independently.

- For seated transfer aid, must have chair with arms that recess or are removable.
- For full body sling lift, select a lift that was specifically designed to access a patient from the car (if the car is the starting or ending destination).
- If patient has partial weight-bearing capacity, transfer toward stronger side.
- Toileting slings are available for toileting.
- Mesh slings are available for bathing.
- During any patient-transferring task, if any caregiver is required to lift more than 35 lbs of a patient's weight, then the patient should be considered to be fully dependent and assistive devices should be used for the transfer. (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107[8], 53-59.)
**Algorithm 2: Lateral Transfer To and From: Bed to Stretcher, Trolley**

*Last rev. 01/13/2009*

**Start Here**

- Partially Able or Not At All Able

  - **> 200 Pounds:** Use a ceiling lift with supine sling, a mechanical lateral transfer device or air-assisted device and 3 caregivers.

  - **< 200 Pounds:** Use a friction-reducing device and/or a lateral transfer board.

- Partially Able or Not At All Able

  - **Can patient assist?**

  - **Yes**

  - Caregiver assistance not needed; Stand by for safety as needed.

---

- Destination surface should be 1/2" lower for all lateral patient moves.
- For patients with Stage III or IV pressure ulcers, care must be taken to avoid shearing force.
- During any patient transferring task, if any caregiver is required to lift more than 35 lbs of a patient's weight, then the patient should be considered to be fully dependent and assistive devices should be used for the transfer. (Waters, T. [2007]. When is it safe to manually lift a patient? *American Journal of Nursing, 107*(8), 53-59.)
Algorithm 3: Transfer To and From: Chair to Stretcher or Chair to Exam Table
Last rev. 10/01/08

Start Here

Is the patient cooperative?

Yes

Can the patient bear weight?

Fully

Caregiver assistance not needed; Stand by for safety as needed.

Partially

If exam table/stretcher can be positioned to a low level, use non-powered stand-assist. If not, use a full-body sling lift.

No

Use floor-based lift and 2 or more caregivers.

No

Use floor-based lift and 2 or more caregivers.

- High/Low exam tables and stretchers would be ideal.
- During any patient transferring task, if any caregiver is required to lift more than 35 lbs of a patient's weight, then the patient should be considered to be fully dependent and assistive devices should be used for the transfer. (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107[8], 53-59.)
This is not a one person task: DO NOT PULL FROM HEAD OF BED.

- When pulling a patient up in bed, the bed should be flat or in a Trendelenburg position (when tolerated) to aid in gravity, with the side rail down.
- For patients with Stage III or IV pressure ulcers, care should be taken to avoid shearing force.
- The height of the bed should be appropriate for staff safety (at the elbows).
- If the patient can assist when repositioning "up in bed," ask the patient to flex the knees and push on the count of three.
- During any patient handling task, if the caregiver is required to lift more than 35 lbs of a patient’s weight, then the patient should be considered to be fully dependent and assistive devices should be used.

(Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107[8], 53-59.)
Algorithm 5: Reposition in Chair: Wheelchair and Dependency Chair

Start Here

---

Can patient assist?

- Fully able
  - Caregiver assistance not needed; Stand by for safety as needed.

- Partially able
  - If patient has upper-extremity strength in both arms, have patient lift up while caregiver pushes knees to reposition.
  - If patient lacks sensation, cues may be needed to remind patient to reposition.

Can the patient bear weight?

- Yes
  - Recline chair and use a seated repositioning device and 2 caregivers.

- No
  - Use floor-based lift or stand-assist aid and 1 to 2 caregivers.

Is patient cooperative?

- Yes
  - Use floor-based lift and 2 or more caregivers.

- No

---

- Take full advantage of chair functions, e.g., chair that reclines, or use arm rest of chair to facilitate repositioning.
- Make sure the chair wheels are locked.
- During any patient transferring task, if any caregiver is required to lift more than 35 lbs of a patient's weight, then the patient should be considered to be fully dependent and assistive devices should be used. (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107[8], 53-59.)
Algorithm 6: Transfer a Patient Up From the Floor
Last rev. 10/01/08

Start Here

Was the patient injured?

Yes

Was the injury minor?

Yes

Can patient assist?

Yes

Caregiver assistance not needed; Stand by for safety as needed.

No

No

No

No

Depends on type and severity of injury (follow Standard Operating Procedures).

Floor-based lift needed with 2 or more caregivers.

No

No

No

No

Can patient assist?

Yes

No

No

Is the patient injured?

Yes

Caregiver assistance not needed; Stand by for safety as needed.

No

No

No

No

During any patient transferring task, if any caregiver is required to lift more than 35 lbs of a patient's weight then the patient should be considered to be fully dependent and assistive devices should be used. (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107[8], 53-59.)
SPHM Roulette Lab Occupation

Cut out each square and place in piles. Piles should include: weight bearing, cooperation level, upper extremity strength, and transfer type.

Each student picks 1 card from each pile and completes a transfer using the VA Algorithms:

Weight bearing:

<table>
<thead>
<tr>
<th>Fully</th>
<th>Partially</th>
<th>No</th>
</tr>
</thead>
</table>

Cooperation:

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

Upper Extremity Strength:

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

Type of transfer:

<table>
<thead>
<tr>
<th>Bed to chair</th>
<th>Wheelchair to commode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor to bed</td>
<td>Reposition in bed</td>
</tr>
<tr>
<td>Bed to bed (supine)</td>
<td>Chair to exam table</td>
</tr>
</tbody>
</table>
Week 8 Lab Lesson Plan

Learning objectives:
- Compare and contrast uses of safe patient handling equipment.
- Practice transfers with low and high technology safe patient handling equipment.
- Evaluate safe patient handling techniques for special populations (orthopaedic and bariatric).
- Demonstrate proficiency using safe patient handling equipment through a competency check.

Schedule:
- Answer any questions/concerns from previous weeks
- Quiz #2
- Treatment Plan Presentations (less than 5 minutes, toward overall A2P2)
- Review VA Algorithms
  - Review “Assessment Criteria and Care Plan for Safe Patient Handling and Movement”
    - Review Bariatric and Orthopaedic Algorithms
- Open Lab Time
  - Students in groups of 4
    - Practice high technology transfers
    - Practice with each piece of equipment
    - Lab Activity: SPHM Roulette Lab Occupation – Bariatric & Orthopaedic
- Competency Check #2
- Final Course Evaluation
Bariatric Algorithm 1: Bariatric Transfer To and From: Bed/Chair, Chair/Toilet, or Chair/Chair

Start Here

- Can patient bear weight?
  - Fully: Stand by for safety as needed*
  - Partially or No
    - bariatric stand-assist lift (minimum of 2 caregivers)
    - Bariatric floor-based or ceiling lift (minimum of 3 caregivers)

- Is the patient cooperative?
  - Fully
    - (minimum of 2 caregivers)
  - Partially or No
    - Bariatric floor-based or ceiling lift (minimum of 3 caregivers)

- Does the patient have upper-extremity strength?
  - Fully
    - Use seated bariatric transfer aid; may use sliding board until the patient is proficient in completing transfer independently (minimum of 2 caregivers)
  - No
    - Bariatric stand-assist lift (minimum of 2 caregivers)
    - OR
      - Bariatric floor-based or ceiling lift (minimum of 2 caregivers)

* "Stand by for safety." In most cases, if a bariatric patient is about to fall, there is very little that the caregiver can do to prevent the fall. The caregiver should be prepared to move any items out of the way that could cause injury, try to protect the patient's head from striking any objects or the floor and seek assistance as needed once the person has fallen.

- For seated transfer aid, must have chair with arms that recess or are removable.
- Bariatric toileting slings are available for toileting.
- Bariatric bathing mesh slings are available for bathing.
- Note that a standard porcelain toilet typically has a weight limit of 350 pounds; the patient may need a bariatric commode chair or steel toilet.
- In older lifts, more effort is needed to place the sling under the patient, which may require a minimum of 3 caregivers.

- If patient has partial weight-bearing capability, transfer toward stronger side.
- Consider using an abdominal binder if the patient's abdomen impairs a patient-handling task.
- Assure equipment used meets weight requirements. Standard equipment is generally limited to 250-350 lbs. Facilities should apply a sticker to all bariatric equipment with "EC" (for expanded capacity) and a space for the manufacturer's rated weight capacity for that particular equipment model.
- Identify a leader when performing tasks with multiple caregivers. This will assure that the task is synchronized for increased safety of the health care provider and the patient.
- During any patient transferring task, if any caregiver is required to lift more than 35 lbs of a patient's weight, then the patient should be considered to be fully dependent and assistive devices should be used. (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107[8], 53-59.)
**Bariatric Algorithm 2: Bariatric Lateral Transfer To and From: Bed/Stretcher/Trolley**
rev. 10/01/08

- The destination surface should be about 1/2" lower for all lateral patient moves.
- Avoid shearing force.
- Make sure bed is the right width, so excessive reaching by caregiver is not required.
- Lateral transfers should not be used with specialty beds that interfere with the transfer.
  In this case, use a bariatric ceiling lift with supine sling.
- Ensure bed or stretcher doesn’t move with the weight of the patient transferring.
- ** Use a bariatric stretcher or trolley if patient exceeds weight capacity of traditional equipment.

"Stand by for safety." In most cases, if a bariatric patient is about to fall, there is very little that the caregiver can do to prevent the fall. The caregiver should be prepared to move any items out of the way that could cause injury, try to protect the patient's head from striking any objects or the floor and seek assistance as needed once the person has fallen.

- Assure equipment used meets weight requirements. Standard equipment is generally limited to 250-350 lbs. Facilities should apply a sticker to all bariatric equipment with "EC" (for expanded capacity) and a space for the manufacturer's rated weight capacity for that particular equipment model.
- If patient has partial weight-bearing capability, transfer toward stronger side.
- Consider using an abdominal binder if the patient's abdomen impairs a patient-handling task.
- Identify a leader when performing tasks with multiple caregivers. This will assure that the task is synchronized for increased safety of the health care provider and the patient.
- During any patient transferring task, if any caregiver is required to lift more than 35 lbs of a patient's weight, then the patient should be considered to be fully dependent and assistive devices should be used. (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107[8], 53-59.)
INTRO TO SAFE PATIENT HANDLING COURSE

Bariatric Algorithm 3: Bariatric Reposition in Bed: Side-to-Side, Up in Bed
rev. 10/01/08

Start Here

- Can patient assist?
  - Fully
    - Caregiver assistance not needed; patient may/may not use weight-specific positioning aid

- Partially or No

- Is patient cooperative?
  - Fully
    - Bariatric ceiling lift with supine sling, air-assisted device or friction-reducing aid (minimum of 2-3 caregivers)

- Partially or No

- Bariatric ceiling lift with supine sling, air-assisted device or friction-reducing aid (minimum of 3 caregivers)

- If patient has partial weight-bearing capability, transfer toward stronger side.
- Consider using an abdominal binder if the patient's abdomen impairs a patient-handling task.
- Assure equipment used meets weight requirements. Standard equipment is generally limited to 250-350 lbs. Facilities should apply a sticker to all bariatric equipment with "EC" (for expanded capacity) and a space for the manufacturer's rated weight capacity for that particular equipment model.
- Identify a leader when performing tasks with multiple caregivers. This will assure that the task is synchronized for increased safety of the healthcare provider and the patient.
- During any patient transferring task, if any caregiver is required to lift more than 35 lbs of a patient's weight, then the patient should be considered to be fully dependent and assistive devices should be used. (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107[8], 53-59.)

- When pulling a patient up in bed, place the bed flat or in a Trendelenburg position (if tolerated and not medically contraindicated) to aid in gravity; the side rail should be down.
- Avoid shearing force.
- Adjust the height of the bed to elbow height.
- Mobilize the patient as early as possible to avoid weakness resulting from bed rest. This will promote patient independence and reduce the number of high-risk tasks caregivers will provide.
- Consider leaving a friction-reducing device covered with drawsheet, under patient at all times to minimize risk to staff during transfers as long as it doesn't negate the pressure relief qualities of the mattress/overlay.
- Use a sealed, high-density, foam wedge to firmly reposition patient on side. Skid-resistant texture materials vary and come in set shapes and cut-your-own rolls. Examples include:
  - Dycem (TM)
  - Scoot-Guard (TM): antimicrobial; clean with soap and water, air dry.
  - Posey-Grip (TM): Posey-Grip does not hold when wet. Washable, reusable, air dry.
Bariatric Algorithm 4: Bariatric Reposition in Chair: Wheelchair, Chair, or Dependency Chair
rev. 10/01/08

Start Here

Can patient assist?

- Fully
- Partially or No

Stand by for safety as needed*

Is patient cooperative?

- Fully
- Partially or No

Bariatric ceiling lift, floor-based lift, repositioning device or seated friction-reducing device
(minimum of 2 caregivers)

- Fully

Bariatric ceiling lift, floor-based lift, repositioning device or seated friction-reducing device
(minimum of 3 caregivers)

- Fully

* "Stand by for safety." In most cases, if a bariatric patient is about to fall, there is very little that the caregiver can do to prevent the fall. The caregiver should be prepared to move any items out of the way that could cause injury, try to protect the patient's head from striking any objects or the floor and seek assistance as needed once the person has fallen.

- If patient has partial weight-bearing capability, transfer toward stronger side.
- Consider using an abdominal binder if the patient's abdomen impairs a patient handling task.
- Assure equipment used meets weight requirements. Standard equipment is generally limited to 250-350 lbs. Facilities should apply a sticker to all bariatric equipment with "EC" (for expanded capacity) and a space for the manufacturer's rated weight capacity for that particular equipment model.
- Identify a leader when performing tasks with multiple caregivers. This will assure that the task is synchronized for increased safety of the healthcare provider and the patient.
- During any patient transferring task, if any caregiver is required to lift more than 35 lbs of a patient's weight, then the patient should be considered to be fully dependent and assistive devices should be used. (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107[8], 53-59.)
Can patient sustain limb position to assist in making body part accessible?

Fully

Proceed with patient-handling task

Partially or No

Assemble multidisciplinary team to develop creative solutions that are safe for patient and caregiver.

Examples:
- Modify use of a full body sling lift to elevate limbs for bathing or wound care (i.e. bariatric limb sling).
- Use draw sheet with handles for 2 caregivers (one per side) to elevate abdominal mass to access the perineal area (e.g., catheterization, wound care).
- To facilitate drying a patient between skin folds, use the air-assisted lateral transfer aid to blow air or use a hair dryer on a cool setting.
- Use sealed high-density foam wedge to firmly reposition patient on side. Skid-resistant texture materials vary and come in set shapes and cut-your-own rolls. Examples include:
  - Dycem(TM)
  - Scoot-Guard(TM): antimicrobial; clean with soap and water, air dry.
  - Posey-Grip(TM): Posey-Grip does not hold when wet. Washable, reusable, air dry.

- A multidisciplinary team needs to problem solve these tasks, communicate to all caregivers, refine as needed and perform consistently.
- Consider using an abdominal binder if the patient's abdomen impairs a patient handling task.
- During any patient transferring task, if any caregiver is required to lift more than 35 lbs of a patient's weight, then the patient should be considered to be fully dependent and assistive devices should be used. (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107[8], 53-59.)
If the patient has respiratory distress, the stretcher must have the capability of maintaining a high Fowler's position.

Newer equipment often is easier to propel.

If patient is uncooperative, secure patient in stretcher.

During any patient transferring task, if any caregiver is required to lift more than 35 lbs of a patient's weight, then the patient should be considered to be fully dependent and assistive devices should be used. (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107(8), 53-59.)
Bariatric Algorithm 7: Toileting Tasks for the Bariatric Patient
rev. 10/01/098

Start Here

Is patient cooperative?

Yes

Use full-body sling lift with a toileting sling to transfer to bedside commode
(minimum of 3 caregivers)

No

Can patient bear weight and ambulate?

Yes

Use stand-assist lift and transfer patient onto bedside commode.
(minimum of 2 caregivers)

No

Can toilet accommodate patient's weight?

Yes

Stand by for safety to escort to toilet or bedside commode.
(minimum of 1-2 caregivers).

No

Stand by for safety to escort to toilet or bedside commode.
(minimum of 1-2 caregivers).

Does patient have upper-extremity strength?

Yes

No

Partial

Considerations:
- Is bathroom doorway wide enough to accommodate entry of mechanical lift device and patient?
- Assure equipment used meets weight requirements and is appropriately sized for patient.
- Typically, standard toilets are rated to 350 lbs maximum capacity.
- During any patient transferring task, if any caregiver is required to lift more than 35 lbs of a patient's weight, then the patient should be considered to be fully dependent and assistive devices should be used.
  (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107[8], 53-59.)
Bariatric Algorithm 8: Transfer a Bariatric Patient Up From the Floor
Last rev. 10/1/08

Do not lift patient off floor.
Do not allow patient to lean on caregiver for base of support.
"Immobilization Technique" definition: use spinal precautions if can't use lift due to suspect hip, pelvic, or vertebral fractures.
Use floor-based lift that goes all the way down to the floor (most of the newer models are capable of this).
During any patient transferring task, if any caregiver is required to lift more than 35 lbs of a patient's weight then the patient should be considered to be fully dependent and assistive devices should be used. (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107[8], 53-59.)

- If patient is in cardiac arrest initiate CPR and wait for emergency response team before moving.
- If spinal board is necessary use 2 friction-reducing sheets to transfer the patient onto spinal board.
- Obtain low stretcher.
- Lift patient on spinal board onto low-lying stretcher using 6 caregivers.
- If caregivers are familiar with scoop stretcher it may be used as an option.
- Spinal board and Hover Jack are also options.

- Total lift device needed using two or more caregivers.
- Hover Jack with friction-reducing sheets and 2 caregivers.

```
Start Here

Was the patient injured?

Assess for fracture or spinal cord injury. Does patient need immobilization technique?

Yes

Can patient assist?

Yes

- Caregiver is to secure chair beside patient.
- Using the chair, have patient use own strength to raise self.
- Do not tug on patient or lift patient.

No

No

No

No

- If spinal board is necessary use 2 friction-reducing sheets to transfer the patient onto spinal board.
- Obtain low stretcher.
- Lift patient on spinal board onto low-lying stretcher using 6 caregivers.
- If caregivers are familiar with scoop stretcher it may be used as an option.
- Spinal board and Hover Jack are also options.

No

Yes

Yes

No

Yes

No

```

- If spinal board is necessary use 2 friction-reducing sheets to transfer the patient onto spinal board.
- Obtain low stretcher.
- Lift patient on spinal board onto low-lying stretcher using 6 caregivers.
- If caregivers are familiar with scoop stretcher it may be used as an option.
- Spinal board and Hover Jack are also options.
Orthopaedic Algorithm #1: Turning Patient in Bed (Side-to-Side)
Patient with Orthopaedic Impairments
September 25, 2008

START

Is the patient cooperative?

Yes

No

Use a mechanical device\(^1,2,3\) or bed-assisted technology
(min. 2 caregivers)

Caregiver assistance not needed; patient may/may not use a bed-mounted repositioning aid

Can patient assist?

Yes

Fully

Encourage patient to assist using a position aid (repositioning pole or side rail) (see recommendations by weight (next 3 boxes)

No

Partially

78 lbs/(35 kg.)\(^4\)

Use a mechanical device\(^3\) or bed-assisted technology
(air bladder or bed-repositioning system)
(min. 2 caregivers)

78-156 lbs/(35-69 kg.)

Use a mechanical device\(^3\) or bed-assisted technology
(min. 2 caregivers)

156-234 lbs/(69-106 kg.)\(^4\)

Use a mechanical device\(^3\) or bed-assisted technology
(min. 3 caregivers)

FOOTNOTES:
1. Maintain orthopaedic precautions as prescribed while performing this activity such as total hip, knee, shoulder, or spine precautions.
2. Select sling to meet and maintain the patient’s pre-op or post-op positioning guideline/precautions for the affected limb/body part(s).
3. For more information on sling section, see Appendix A.
4. Examples of repositioning mechanical devices are: Turning clips: these simple slips attach to a bed sheet and can be used with a floor-based lift or ceiling-based lift to facilitate turning a patient. Turning straps/slings: one end of these straps or slings is connected to the bed and the other end is attached to either a ceiling or floor based lift to facilitate turning the patient. Powered mechanical devices: a ceiling lift is a powered overhead lift that can be used with a repositioning sling to turn a patient in bed. Friction reducing devices: either tubular in design, or two separate pieces of material are placed under the patient to assist in turning the patient in bed or moving the patient to the head of the bed. Pulley systems: these devices work by use of a pulley system and an overhead frame. The user turns a crank, which engages the pulley system to retract straps that are connected to a rod and bed sheet, thus turning the patient on the side.
4. If the patient weighs more than 234 lbs. mechanical assistive devices should be used to assist. Use your best clinical judgment for the number of caregivers required to assist.

GENERAL NOTES:
• For any patient who has, or is at risk for a pressure ulcer, care should be taken to avoid shearing force (such as using a friction reducing device for repositioning in bed). Shearing force is when there are two forces moving in opposite directions adjacent to each other (like scissors).
• The height of the bed should be appropriate for staff safety (at elbow height).
• During any patient handling task, if the caregiver is required to lift more than 35 lbs./(16 kg.) of a patient’s weight, then the patient should be considered fully dependent and an assistive device should be used. (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107(8), 53-59).
Orthopaedic Algorithm #2: Vertical Transfer of a
Post-Operative Total Hip Replacement Patient
(Bed to Chair, Chair to Toilet, Chair to Chair, or Car to Chair)
September 25, 2008

START

Is the patient cooperative?

Use a mechanical lift (min. 2 caregivers)

- No

Can the patient bear weight with lower extremities?

- No

Stand and pivot technique using a gait/transfer belt (1 caregiver) or powered standing assist lift (1 caregiver)

- Fully

Use mobility aid as prescribed (e.g., walker, cane, crutches); caregiver assistance not needed; stand by for safety as needed.

- Partially

FOOTNOTES:

1. See 1A, 1B, 1C, 1D below for techniques to position patient at side of bed.

1A. Moving from supine head of bed elevated to sitting at edge of bed requires: Patient's ability to shift their seated weight in a sitting position. Typically accomplished by unweighting one buttock and moving it toward the edge of the bed; repeating this in alternating fashion until patient is sitting at edge of bed.

1B. With an impaired upper or lower extremity, caregiver might need to support the limb while patient attempts #1A.

1C. If patient is unable to accomplish #1A with #1B and the amount of assistance from caregiver will exceed 35 lbs., then a mechanical lift device should be used to achieve sitting position at the edge of the bed.

1D. Anti-friction sheets and seated discs might be useful when the amount of caregiver assistance is close to recommended limits; be aware of skin shearing risks. Shearing forces are caused when there are two forces moving in opposite directions adjacent to each other (like scissors).

2. Maintain orthopaedic precautions as prescribed while performing this activity such as total hip, knee, shoulder, or spine precautions.

3. Select sling to meet and maintain the patient's pre-op or post-op positioning guideline/precautions for the affected limb/body part(s). For more information on sling section, see Appendix A.

4. This will include situations where the patient may be allowed: a) Limited weight bearing on one lower extremity and full weight bearing on the other extremity; b) Partial weight bearing through both lower extremities.

GENERAL NOTES:

- If patient has partial weight bearing capacity, transfer toward stronger side.
- For car transfers: a) If patient cannot tolerate a seated position when doing a car transfer use a stretcher transfer or alternative transportation may be required; b) All car transports should comply with state laws for both children and adults; c) Don't forget to use all of the features of the car (ie., adjustability of the seat) during the transfer.
- The height of the bed should be appropriate for staff safety (at elbow height).
- During any patient handling task, if the caregiver is required to lift more than 35 lbs./16 kg.) of a patient's weight, then the patient should be considered fully dependent and an assistive device should be used. (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107(8), 53-59).
Orthopaedic Algorithm #3: Vertical Transfer of a Patient with an Extremity Cast/Splint

September 25, 2008

FOOTNOTES:
1. Moving from supine head of bed elevated to sitting at edge of bed requires a patient's ability to shift their seated weight in a sitting position:
   a. When assistance is not required, this is typically accomplished by unweighting one buttock and moving it toward the edge of the bed; repeating this in alternating fashion, until patient is sitting at the edge of the bed.
   b. With an impaired upper or lower extremity:
      • if the amount of assistance from caregiver does not exceed 35 lbs., caregiver may provide limb support while patient moves unassisted to side of bed (see a. above)
      • if the amount of assistance from caregiver may exceed 35 lbs., then a limb support strap/sling with a mechanical lift will provide limb support while patient moves unassisted to side of bed (see 1a. above)
   c. If patient is unable to accomplish a. and/or b. then utilize one of the following options:
      • mechanical lift device with a seated sling to lift patient to side of bed
      • friction-reducing device to assist staff in pulling patient to side of bed.
      d. Friction-reducing devices and seated discs may be useful when the amount of caregiver assistance is close to recommended limits, but be aware of skin shearing risks. Shearing is caused when there are two forces moving in opposite directions adjacent to each other (like scissors).
2. Select sling to meet and maintain the patient's pre-op or post-op positioning guideline/precautions for the affected limb/body part(s). For more information on sling selection, see Appendix A.
3. Patient can bear weight on one leg only (e.g., weight bearing on unaffected limb or limited weight bearing on affected limb).

GENERAL NOTES:
• Need to test the fit of the sling with an immobilized extremity.
• Maintain affected extremity immobilization/alignment.
• Use lift device with limb sling if applicable.
• During any patient handling task, if the caregiver is required to lift more than 35 lbs./(16 kg.) of a patient's weight, then the patient should be considered fully dependent and an assistive device should be used. (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107(8), 53-59).
Orthopaedic Algorithm #4: Ambulation
September 25, 2008

START

Can patient bear weight on lower extremities?²

- Partially or Fully²
  - Is patient a safety risk³
    - Low Risk⁴
      - Does patient have upper extremity strength and ability to grasp with at least one hand?
        - No
          - Use ceiling lift or floor-based lift with ambulation sling (1-2 caregivers).
        - Yes
          - Use ceiling lift or floor-based lift with ambulation sling (1-2 caregivers) or sit to stand lift with ambulation capability.
    - High Risk⁵
      - Use ceiling lift or floor-based lift with ambulation sling (1-2 caregivers).
  - Stand by for safety as needed. Use assistive devices as prescribed or as determined by team (crutches, walker, cane) (1-2 caregivers).

- Do not ambulate.

FOOTNOTES:
1. Non-weight bearing: Patient is unable to bear weight through both lower extremities or weight-bearing through both lower extremities is contraindicated.
2. Partial weight bearing: This will include situations where the patient may be allowed: a) Limited weight bearing on one lower extremity and full weight bearing on the other extremity; b) Partial weight bearing through both lower extremities.
3. Safety risks may include: decreased cognition; decreased ability to cooperate/combative; medical stability.
4. Factors that contribute to low safety risk: a) Lack of combativeness; b) Ability to follow commands; c) Medical stability; d) Experience with the assistive device.
5. Factors that contribute to high safety risk: a) Combativeness; b) Lack of ability to follow commands; c) Medical instability; d) Lack of experience with the assistive device; e) Neurological deficits.

GENERAL COMMENTS/DISCUSSION:
- In healthcare, weight-bearing is often used to describe the amount of weight bearing that the patient can or has done. In orthopedics, weight-bearing status is prescribed by the physician based on the patient's ability to safely bear weight through the musculoskeletal system. Exceeding the prescribed weight-bearing status may be detrimental to the patient.
- Patients should be assessed for safety risks as described above. If patients are determined to be at significant risk for falls, then caregivers assisting with ambulation are also at risk for assisting patients to prevent fall. In high-risk situations precautions should be taken, and devices such as walking slings should be used. At some point in care, the team will need to weigh the risks of falls with the benefits of ambulation and take a "therapeutic" risk in order to functionally advance the patient.
- Need to test the fit of the sling with an immobilized leg. For more information on sling selection, see Appendix A.
- Maintain affected extremity immobilization alignment.
- During any patient handling task, if the caregiver is required to lift more than 35 lbs./16 kg. of a patient's weight, then the patient should be considered fully dependent and an assistive device should be used. (Waters, T. [2007]. When is it safe to manually lift a patient? American Journal of Nursing, 107(8), 53-59).
SPHM Roulette Lab Occupation

Cut out each square and place in piles. Piles should include: weight bearing, cooperation level, upper extremity strength, and transfer type.

Each student picks 1 card from each pile and completes a transfer using the VA Algorithms:

Weight bearing:

<table>
<thead>
<tr>
<th>Fully</th>
<th>Partially</th>
<th>No</th>
</tr>
</thead>
</table>

Cooperation:

| Yes | No |

Upper Extremity Strength:

| Yes | No |

Type of transfer:

<table>
<thead>
<tr>
<th>Bed to chair</th>
<th>Wheelchair to commode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor to bed</td>
<td>Reposition in bed</td>
</tr>
<tr>
<td>Bed to bed (supine)</td>
<td>Chair to exam table</td>
</tr>
</tbody>
</table>
Quizzes
Quiz #1

Each question is worth 1 point unless otherwise noted.

1. The soft, hydrated material found within the intervertebral disc is called
   a. annulus fibrosis
   b. nucleus pulposus
   c. erector spinae
   d. nucleus fibrosis

2. _____________ and ______________ are the two types of force that act upon the spine. (2 pts.)

3. A Newton is a measure of ________________.

4. The “safe” amount of compressive force on the spine is no greater than
   a. 2400 N
   b. 6400 N
   c. 3400 N
   d. 8000 N

5. The “maximum tolerance” of compressive force in the spine is no greater than
   a. 6400 N
   b. 3400 N
   c. 9600 N
   d. 7400 N

6. Name 3 organizations that have been integral players in the SPHM movement. Briefly describe their contributions. (6 points)
   1.

   2.

   3.
7. NIOSH is an acronym for ________________________________.

8. The Utah Estimation of Back Compressive Force and the Rapid Entire Body Assessment are types of __________________ assessments.

9. The most amount of weight a healthcare provider should manually handle is
   a. 27 lbs.
   b. 51 lbs.
   c. 35 lbs.
   d. 42 lbs.

10. Briefly describe the safe patient handling legislation that has been passed in Ohio. What types of facilities is it geared towards? What is included in the bill? (5 points)

11. In your own words, briefly describe the development of low back disorders. If you choose to draw a diagram, please elaborate briefly (5 points).
Quiz #2

Each question is worth 1 point unless otherwise noted.

1. In a recent study, a safe patient handling program was shown to significantly __________ functional outcomes in patients with stroke.
   a. decrease
   b. increase
   c. not affect

2. Describe 3 reasons why safe patient handling and rehabilitation are compatible. (6 points)
   1.
   2.
   3.

3. Name 2 ways that healthcare providers can honor the dignity of bariatric patients (in terms of moving and handling). (4 points)
   1.
   2.
4. Safe patient handling programs are often facilitated by a full-time employee with a clinical background and experience with moving and handling. This person is often known as a SPHM:
   a. Coordinator
   b. Leader
   c. Champion
   d. Facilitator

5. What is the acronym that can provide a quick assessment of mobility in a patient?
   a. FAD
   b. LAF
   c. LAD
   d. LAK

6. Using the mobility assessment above, describe the 3 step process for assessing mobility. What would you do or ask? (6 points)

   1.
   
   2.
   
   3.

7. List 3 possible health consequences that are contributed to by prolonged immobility.

   1.
   
   2.
   
   3.
Competency Checks
Competency Check #1

Name: _____________________

Each item below is worth up to 2 points (unless otherwise stated). Total of 75 points.

### Manual Transfer Checklist

<table>
<thead>
<tr>
<th>Item</th>
<th>Met</th>
<th>Not Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informs patient of direction of transfer, hand/foot placement, and any other pertinent directions (5 pts.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Places gait belt low on hips, Tightens and fastens correctly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hands placed in a lateral position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wide base of support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neutral spine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smooth, slow, and controlled transfer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusts patient after transfer (if necessary)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>End position is safe and comfortable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Low-Tech Patient Handling Device Checklist

<table>
<thead>
<tr>
<th>Item</th>
<th>Met</th>
<th>Not Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Articulates/demonstrates use of pivot disc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Articulate/demonstrate use of smooth mover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Articulate/demonstrate use of standing aid</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Air-Assisted Lateral Transfer Device Checklist

<table>
<thead>
<tr>
<th>Item</th>
<th>Met</th>
<th>Not Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure stretcher/bed wheels are locked</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log roll the patient and place the mattress underneath</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use the bridge if gap between bed and stretcher is greater than 3 inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buckle patient for safety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attach hose to mattress, then connect to power outlet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inform patient of lateral transfer (loud noise and mattress inflation)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turn on green button located on canister top to inflate mattress</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfer patient using proper posture (supinate arms and power trunk)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deflate mattress; log roll patient to remove mattress</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Floor-Based Lift Checklist

<table>
<thead>
<tr>
<th>Item</th>
<th>Met</th>
<th>Not Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn on and off</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change Batteries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raise and lower patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrate proper technique for weighing patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locate emergency stop and safety release button</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrate proper fitting of sling to patient and proper attachment of sling to lift</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrate proper removal of sling from underneath patient</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Stand Assist Aid Checklist

<table>
<thead>
<tr>
<th>Item</th>
<th>Met</th>
<th>Not Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn on and off</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change Batteries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raise and lower patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrate proper technique for weighing patient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locate emergency stop and safety release button</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrate proper fitting of harness to patient and proper attachment of harness to Stand Assist Aid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrate proper removal of harness from behind patient</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments:
Competency Check # 2

Name_________________

Name_________________

Pairs of students will simulate four transfers, working together to analyze, evaluate, and complete transfers safely. Each will be worth 10 points. Each participant can earn up to 10 points for professionalism, attentiveness to sanitization, and overall safety awareness. Students are encouraged to use course materials/outside materials to aid clinical decision making.

Key points for scoring:
- Assesses risk factors
- Reference algorithm
- Consider precautions
- Communicate with patient and other HCW
- Perform transfer safely
- End position is comfortable and safe

Articulate and demonstrate transferring the following special cases:

<table>
<thead>
<tr>
<th>A bariatric patient from the bed to the commode.</th>
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<td>Comments:</td>
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<table>
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<th>A dependent patient from floor to bed.</th>
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<td>Comments:</td>
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<tr>
<td>Scenario</td>
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<td>-------------------------------------------------------------------------</td>
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<tr>
<td>A bariatric reposition up in bed.</td>
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<tr>
<td>Comments:</td>
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<tr>
<td>An orthopaedic patient (R THA) from bed to bedside recliner.</td>
</tr>
<tr>
<td>Comments:</td>
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| Professionalism, sanitation, safety awareness (10 points)                |          |
| Total points (out of 50)                                                |          |
Midterm and Final Evaluations
Midterm Feedback and Evaluation

Instructor: __________________________
Course: ____________________________

Instructions: The primary purpose of this evaluation is to improve the learning experiences of students in this class. Please provide feedback that would be relevant to this class and future classes.

<table>
<thead>
<tr>
<th>Strongly Disagree (SD)</th>
<th>Disagree (D)</th>
<th>Agree (A)</th>
<th>Strongly Agree (SA)</th>
<th>Not Applicable (NA)</th>
</tr>
</thead>
</table>

General Questions:
1. Online modules are well prepared and easily accessible.          SD  D  A  SA  NA
2. The instructor speaks clearly and understandably during modules. SD  D  A  SA  NA
3. The instructor makes expectations of the course clear.             SD  D  A  SA  NA
4. The instructor’s examples and illustrations are clear and concise. SD  D  A  SA  NA
5. The instructor is familiar with concepts covered in the lecture and laboratory time. SD  D  A  SA  NA
6. The instructor’s use of visual aids and hands-on experiences is effective. SD  D  A  SA  NA
7. The instructor encourages students to participate actively during lab time. SD  D  A  SA  NA
8. The instructor is available via e-mail, meetings, and phone calls.   SD  D  A  SA  NA

Grading Questions:
9. The instructor returns students’ work in a reasonable time.       SD  D  A  SA  NA
10. The instructor’s feedback on assignments is valuable.             SD  D  A  SA  NA

Other Questions:
11. Blackboard is easy to navigate.                                   SD  D  A  SA  NA
12. I have understood the basic principles of this course.            SD  D  A  SA  NA
13. I am pleased with my learning and performance in this course so far. SD  D  A  SA  NA

I would like the instructor to: (check all that apply)

_____ Shorten online modules
_____ Lengthen online modules
_____ Include more laboratory time in the course.
_____ Clarify the objectives of each class more
_____ Demonstrate more real life handling examples
_____ Review content more frequently
_____ Encourage students to respond to each other's comments more
_____ Be more open to different points of view
_____ Other? __________________________
Comments:
14. What are the strengths of your instructor’s teaching style?

15. What areas of the course (please be specific) could your instructor improve upon to increase your learning?

16. Overall, what are the strengths of this course?

17. What would you suggest to improve the course?
Final Feedback and Evaluation

Instructor: __________________________
Course: ____________________________

Instructions: The primary purpose of this evaluation is to improve the learning experiences of students in this class. Please provide feedback that would be relevant to this class and future classes.

<table>
<thead>
<tr>
<th>Strongly Disagree (SD)</th>
<th>Disagree (D)</th>
<th>Agree (A)</th>
<th>Strongly Agree (SA)</th>
<th>Not Applicable (NA)</th>
</tr>
</thead>
</table>

General Questions:
1. Online modules are well prepared and easily accessible.  
   SD D A SA NA
2. The instructor speaks clearly and understandably during modules.  
   SD D A SA NA
3. The instructor makes expectations of the course clear.  
   SD D A SA NA
4. The instructor’s examples and illustrations are clear and concise.  
   SD D A SA NA
5. The instructor is familiar with concepts covered in the lecture and laboratory time.  
   SD D A SA NA
6. The instructor’s use of visual aids and hands-on experiences is effective.  
   SD D A SA NA
7. The instructor encourages students to participate actively during lab time.  
   SD D A SA NA
8. The instructor is available via e-mail, meetings, and phone calls.  
   SD D A SA NA

Grading Questions:
9. The instructor returns students’ work in a reasonable time.  
   SD D A SA NA
10. The instructor’s feedback on assignments is valuable.  
    SD D A SA NA

Other Questions:
11. Blackboard is easy to navigate.  
    SD D A SA NA
12. I have understood the basic principles of this course.  
    SD D A SA NA
13. I am pleased with my learning and performance in this course so far.  
    SD D A SA NA

I would like the instructor to: (check all that apply)

- Shorten online modules
- Lengthen online modules
- Include more laboratory time in the course
- Clarify the objectives of each class more
- Demonstrate more real life handling examples
- Review content more frequently
- Encourage students to respond to each other's comments more
- Be more open to different points of view
- Other? __________________________
Comments:
14. What are the strengths of your instructor’s teaching style?

15. What areas of the course (please be specific) could your instructor improve upon to increase your learning?

16. Overall, what are the strengths of this course?

17. What would you suggest to improve the course?
Annotated Bibliography

Summary & Significance:

There are two Accreditation Council for Occupational Therapy Education (ACOTE) standards that pertain to safe patient handling that are relevant to all levels of occupational therapy education (associate, master, and doctoral). B.5.11 relates to increasing functional mobility of the client and B.5.19 relates to the use of technology to enhance occupational performance in clients. Course content will address these two, as well as many other, ACOTE standards.


Abstract:

Safe patient handling and movement (SPHM) programs are effective in reducing healthcare worker injuries. However, the perception among rehabilitation personnel that SPHM equipment promotes patient dependence and adversely affects functional outcomes is one barrier to implementing successful programs. This barrier is particularly evident in acute inpatient rehabilitation facilities, where functional independence is the primary goal. The purpose of this retrospective cohort study was to evaluate this perception. Functional Independence Measure (FIM) ratings were collected from 94 patients with a diagnosis of stroke. Forty-seven patients were admitted 1 year prior to implementation of the SPHM program (Group 1), and 47 were
admitted to the facility over a period of 1 year (Group 2) 18 months after program implementation. Group 2 obtained equal or better discharge mobility FIM ratings than Group 1, who received care without the SPHM equipment. This study suggests that SPHM programs do not impede functional outcomes in stroke patients.

Summary & Significance:

This article is important because it demonstrates the value of safe patient handling and movement strategies and equipment in therapeutic rehabilitation. It will be a required reading for the occupational therapy students and practitioners who take this class. It will also be an important part of the “SPHM and Rehabilitation” module.


Summary & Significance: This toolkit defines who bariatric patients are, overviews their common medical diagnoses, and strategies to move and handle them in a safe and dignified way. It includes the algorithms needed and provides a step by step process. This toolkit will be used to formulate content for the SPHM and Special Populations lecture.


Abstract:

Understanding what is lacking in the online teaching literature is critical to helping researchers and practitioners develop programs and support mechanisms for online teachers in higher education. This review formulates a critique of the standards- and competency-driven
vision of online teaching from the perspective of transformative learning theory, in order to offer an alternative exploration of the professional development of online teachers as adult learners. The results indicate that while research about online teacher roles and competencies guides the development of teacher preparation and training programs, it lacks in terms of addressing the issues of empowerment of online teachers, promoting critical reflection, and integrating technology into pedagogical inquiry. An alternative perspective is suggested that considers teachers as adult learners who continuously transform their meaning of structures related to online teaching through a continuous process of critical reflection and action.

Summary & Significance:

This article provides an overview of teaching and learning literature, with an emphasis on the online educator. As I am quite unfamiliar with teaching and learning, this will be a valuable resource for theory as I develop the philosophy of this course and how it relates to the University of Toledo’s Philosophy and my own philosophy of education.


Abstract:

To reduce musculoskeletal injuries in employees and to lower the financial costs associated with them, a 525-bed county nursing home in upstate New York initiated a five-step ergonomics program and purchased mechanical lifting devices. The five steps in the program were (1) creation of a resident transfer evaluation team, (2) establishment of an accident review committee, (3) mandatory ergonomics training for new nursing aides, (4) regular maintenance checks for lifting equipment, and (5) direct access to the management and budget process.
During the 7-year period of this study, 8 smooth movers, 10 hydraulic stretchers, 7 Hoyer lifts, 1 Arjo lift, 9 Sarita lifts, and 1 Maxilift were purchased. Comparisons in health and financial outcomes were made between the preintervention period (1992-1993) and the intervention period (1994-1998). There was a significant reduction in the number of low-back injuries per 100 full-time nursing aides from 15.7 in the preintervention period to 11.0 in the postintervention period (p<0.05). The total number of lost workdays was significantly (p<0.05) reduced from 1476 per year before the intervention to 625 per year after the intervention. In addition, the lost workdays per full-time nursing assistant was significantly reduced from 7.8 to 3.0 (p<0.05). Although the average number of lost workdays per injury decreased from 49 to 27 days, this decrease was not statistically significant. Financially, there was a significant reduction in the average yearly cost associated with low-back injuries from $201,100 before the intervention to $91,800 during the intervention.

Summary & Significance:

This article is relevant to my Capstone Project because it identifies how the use of safe patient handling equipment as well as training can reduce both the number of injuries incurred by staff as well as the monetary expenses of the employer. The intervention used a multi-pronged approach (much like the course will will), using a combination of safe patient handling equipment, ergonomics program, and evaluations of potential lifting environments.


Summary & Significance:
The moving and handling of dependent patients is a main task of nursing personnel. Proper body mechanics and lifting techniques continue to be the main form of education on patient handling, although a wide body of research is available stating otherwise. Body mechanics training alone has not been shown to reduce the risk of injury while on the job. While musculoskeletal disorders occur in all populations, increased age, female gender, long shifts, and a high BMI are significant contributing factors. Other factors which contribute include shorter hospital stays and higher acuity level of patients. Consequences of musculoskeletal injuries in nursing personnel include high costs for both the employee and the employer, including worker’s compensation, insurance, and time away from work. Safe patient handling and movement programs, including task analysis, algorithms, and technology, is suggested to reduce the risk of injury amongst health care workers. This chapter provides a historical context for the importance of the implementation of safe patient handling curricula for health care professions.


Abstract:

Physical therapists are at risk for work-related musculoskeletal disorders (W^SDs). Little is known of how therapists respond to injury or of what actions they take to prevent injur). The purpose of this study was to investigate the prevalence and severity of WMSDs in physical therapists, contributing risk factors, and their responses to injury. As part of a larger study, a systematic sample of 1 in 4 therapists on a state register (n = 824) was surveyed. An 8-page questionnaire was mailed to each subject. Questions investigated musculoskeletal symptoms,
specialty areas, tasks and job-related risk factors, injury prevention strategies, and responses to injury). Lifetime prevalence of WMDSs was 91%, and 1 in 6 physical therapists moved within or left the profession as a result of WMSD. Younger therapists reported a higher prevalence of WMDSs in most body areas. Use of mobilization and manipulation techniques was related to increased prevalence of thumb symptoms. Risk factors pertaining to workload were related to a higher prevalence of neck and upper-limb symptoms, and postural risk factors were related to a higher prevalence of spinal symptoms. Strategies used to reduce work-related injury’ in industry’ may also apply to physical therapists. Increased risk of thumb symptoms associated mobilization techniques suggests that further research is needed to establish recommendations for practice. The issues for therapists who move within or leave the profession are unknown, and further research is needed to better understand their needs and experiences.

Summary & Significance:

This article, which is specific to physical therapy, outlines the incidence and prevalence of injuries amongst physical therapists secondary to manual handling. It provides information that will be useful in the lectures relating to epidemiology and making a case for the use of safe patient handling equipment in facilities.


Abstract:
Objective: The objective of this research was to determine the impact of work-related musculoskeletal disorders (WMSD) on presenteeism in allied health care professionals.

Methods: Data were collected via postal questionnaires. Work-related musculoskeletal disorders were assessed using an established instrument and case definition. Data on presenteeism were collected with the Stanford Presenteeism Scale (13-item version). The association between WMSD and presenteeism was assessed with a Mann-Whitney U test. Results: The response rate was 76%. About 48% of therapists reported WMSD in the past 4 weeks (n = 712). Moderate WMSD were associated with higher levels of presenteeism than minor WMSD. Both work impairment and work output were affected by WMSD. Conclusions: Work-related musculoskeletal disorders may impact presenteeism in these populations. Costs associated with presenteeism due to WMDS may be substantial.

Summary & Significance:

Occupational and physical therapists injure themselves due to manual handling of patients, resulting in work related musculoskeletal disorders. Occupational and physical therapists work through pain, and use coping strategies such as self-treating, treating by colleagues, or altering treatment sessions. Information on the ways that therapists cope with work-related pain will be pertinent to course materials regarding safe patient handling and the rehabilitation professional.


Abstract:
Occupational therapists are at risk of work-related injuries (WRIs) because of the demanding nature of their work. However, information about WRIs and musculoskeletal disorders among occupational therapists is limited. For comparison, research indicates that up to 91% of physical therapists experience work-related musculoskeletal disorders (WMSDs) and pain. The purpose of this study was to gather new information about the prevalence, severity, and characteristics of work-related musculoskeletal symptoms and injuries among occupational therapists and to compare this information with physical therapists in the state of Wisconsin.

Investigators mailed surveys to 3,297 randomly selected physical and occupational therapists living in Wisconsin. Results indicated a 2006 annual incidence rate of 16.5 injuries per 100 full-time workers among occupational therapists and 16.9 injuries per 100 full-time workers among physical therapists, a rate similar to workers employed in heavy manufacturing. Occupational therapists and physical therapists face similar and significant risks of injury and WMSD.

Summary & Significance:

This article will be useful in my Capstone Project as a means to gain demographic information about the injuries that occupational therapists incur while on the job. Along with quantitative statistics regarding the actual numbers of injuries that occupational therapists have, the authors are also proponents of safe patient handling techniques. The author’s suggestions can serve to shape course content.

Abstract:

In response to the significant number and severity of work-related back injuries and other musculoskeletal disorders among nurses, the American Nurses Association (ANA) has launched the Handle with Care Campaign. The campaign seeks to build a health care industry-wide effort to prevent back and other musculoskeletal injuries. This is being done through developing partnerships and coalitions, education and training, increasing use of assistive equipment and patient-handling devices, reshaping nursing education to incorporate safe patient handling, and pursuing federal and state ergonomics policy by highlighting technology-oriented safe-patient handling benefits for patients and nurses. In the absence of ergonomics regulations at national or state levels that protect health care workers, ANA has taken on alternative approaches to encourage a movement to control ergonomic hazards in the health care workplace and prevent back injuries among the nation’s nursing workforce.

Summary & Significance:

The American Nurses Association has been a key player in research, advocacy, and the practices of safe patient handling. This article is important because it allows students to understand the historical context of safe patient handling in the United States. It will be of value when describing the history of safe patient handling and the key players which are important to the movement.

Abstract:

Musculoskeletal injury is common among nurses as a result of lifting and handling patients. In response to musculoskeletal injuries, safe patient-handling programs are being instituted to decrease the risk of injuries and resulting impaired function. This study was designed to identify patient-handling practices in clinical practice. This qualitative study used 128 hours of observations of patient-handling practices and interviews of 32 nursing staff who discussed these practices. Findings demonstrated five factors impact nurses' judgment regarding the best way to move patients: complexity of everyday care, patient treatment goals, time, knowledge, and equipment issues.

Summary & Significance:

This article is valuable to my Capstone because it outlines the reasons that nurses either choose or do not choose to use safe patient handling equipment. This article will add to the basis of knowledge about when safe patient handling is used in clinical practice. When developing a program, one must be able to foresee barriers to success. This article will be added to my course content related to creating and implementing a program.


Abstract:

The lifting burden of a nursing aide during work in a geriatric ward was determined by using a force-plate. Three lifting operations were performed for all patients needing lifting assistance. At the same time as the forces obtained from the force-plate were recorded, the lifts were photographed. The lifting burden during nursing often equalled or exceeded the
recommendations of various authors concerning permissible maximum weight loads during different types of lifts. The lifts were often performed under unfavourable conditions and seldom with an "ideal" lifting technique.

Summary & Significance:

This article is one of the very first articles which proposed that the manual handling of patients could be detrimental to health care practitioners. Although it is outdated, this article serves as further justification for implementing a safe patient handling course. The findings of this study further validate the risk involved with manually handling a patient even under “ideal” conditions or using “ideal” technique.


Abstract:

Recognition related to the need for ergonomic design improvements among health care workers, management and administration, and equipment manufacturers is growing. The future should bring new concepts and innovations which can provide many benefits. Beyond the potential reduction in caregiver injuries, many possibilities exist to improve patient outcomes through better equipment design. As an additional benefit, applying the principles of ergonomics may enhance and increase caregiver productivity through a reduction of patient transfers required, and by minimizing staff required to ambulate patients. Another added value to applying ergonomics to equipment design is the development of convertible furnishing which could create a reduction in operating and capital expenses by reducing the need for some furnishings.
Equipment such as cardiac chairs, sling scales, patient chairs, special rental surfaces, and other features might be incorporated into bed design. Ergonomic programs make sense and provide opportunities to create win-win situations throughout the health care industry. Current and future innovations will provide improvements resulting in outcomes from which everyone will benefit. These benefits include a higher quality of work life for health care workers and an improved quality of care for patients.

Summary & Significance:

This article is relevant to my Capstone Project in that it identifies occupational therapy practitioners as an at-risk group for injuries while on the job, justifying the need for the course. It also identifies that traditional occupational therapy education approaches to preventing musculoskeletal disorder are not effective, and in turn, practitioners need further education to safely handle patients on the job.


Abstract:

Patient-handling tasks have historically been recognized as the primary cause for musculoskeletal disorders among the nursing workforce. Children's Hospitals and Clinics of Minnesota (Children's) implemented an innovative and industry-leading pediatric safe patient-handling program to minimize the frequency of occupational injuries associated with patient-handling tasks. An analysis of workers' compensation claims revealed that the rate of post-implementation incidents was reduced by 71.4% when compared with Children's pre-
implementation incidence rate. A review of risk perception surveys illustrated that most patient-handling tasks at Children's were perceived to be significantly less risky after implementation.

Summary & Significance:

This article is relevant to my Capstone Practicum as it identifies a special population in need of safe patient handling protocols. While the pediatric population is often overlooked in safe patient handling literature, this article reinforces that all patients (regardless of age) pose a risk to occupational therapy practitioners.


Abstract:

To identify and explore the manual handling risks for patients and caregivers using bariatric patient pathways in health and social care. A mixed methodological approach, including focus groups and questionnaires, was used in this study. Participants were recruited for the focus groups from the National Back Exchange (NBE) Special Interest Group on Bariatrics and the National Ambulance Risk and Safety Forum (NARSF). The questionnaire was distributed to all members of the NBE and NARSF in 2006. The data sets were analysed thematically (focus groups: n = 25) and descriptively (questionnaires: n = 230). Patient pathways were mapped for medical (acute), community and maternity admissions resulting in five generic themes: patient factors; building and vehicle space and design; equipment and furniture; communication; and organisational and staff issues. A total of 59% (n = 136) of respondents reported that their organisation did not have a bariatric manual handling policy. Of all responding organisations (n = 230), 77% (n = 177) had access to specialist equipment but only 32% (n = 68) of NBE
respondents (n = 212) provided specialist bariatric manual handling training for staff. Lack of formal communication systems between and within organisations contributed to manual handling risks at admission and discharge. There is a need to review and design more appropriate buildings, vehicles, furniture and equipment to reduce the manual handling risks to health professionals and bariatric patients. More research is required to examine the implementation of policies, in particular focusing on the use of equipment and the communication between care-providing agencies.

Summary & Significance:

While the risks of manually handling the bariatric therapist are widely known, this article identifies several aspects of transfers (such as dignity and privacy) that are often overlooked.

This article will be beneficial to my Capstone Practicum as I develop course content that is directed toward working with populations with specific needs to consider.


Summary & Significance:

This chapter outlines the many aspects of risk assessment in terms of the manual handling of patients. It provides theory about the risk assessment process, steps to risk assessment, and several standardized risk assessment tools. This article is helpful to my Capstone Practicum in terms of creating content related to assessing risk in terms of the patient, the health care worker, the environment and other factors.

Abstract:

Results from a longitudinal study of low back pain in 199 student nurses followed up for 20 months show that 37% reported back pain which lasted for at least 3 consecutive days. The first incidence peaked markedly between 9 and 12 months into training, and coincided with work on wards described by the nurses as “heavy”. A combination of personal characteristics are also associated with back pain reports, within this group of nurses. These include attitudes to health as measured by the Health Locus of Control, low levels of trait anxiety, increased neuroticism, and emotional disturbance as measured by the General Health Questionnaire, the strength endurance of the thigh muscles (quadriceps), and height. Recommendations are made for (1) the consideration of a modified training program for lifting and handling; and (2) the need for a standardized system of recording back problems as suggested by the DHSS-commissioned Robens Institute (University of Surrey) Report.

Summary & Significance:

This article supports the notion that musculoskeletal disorders begin when a healthcare provider is in school, and are subsequently aggravated over their career. This information provides an epidemiological basis for the importance of safe patient handling curriculum in nursing and allied health training. Evidentiary support for training during schools is important when describing the importance that safe patient handling curriculum has for healthcare practitioners.

Abstract:

Although patient handlers suffer from low-back injuries at an alarming rate worldwide, there has been limited research quantifying the risk for the specific tasks performed by the patient handlers. The current study used both a comprehensive evaluation system (low-back disorder risk model) and theoretical model (biomechanical spinal loading model) to evaluate risk of LBD of 17 participants (12 experienced and five inexperienced) performing several patient handling tasks. Eight of the participants were female and nine were male. Several patient transfers were evaluated as well as repositioning of the patient in bed; these were performed with one and two people. The patient transfers were between bed and wheelchair (fixed and removable arms) and between commode chair and hospital chair. A 'standard' patient (a 50 kg co-operative female; non-weight bearing but had use of upper body) was used in all patient handling tasks. Overall, patient handling was found to be an extremely hazardous job that had substantial risk of causing a low-back injury whether with one or two patient handlers. The greatest risk was associated with the one-person transferring techniques with the actual task being performed having a limited effect. The repositioning techniques were found to have significant risk of LBD associated with them with the single hook method having the highest LBD risk and spinal loads that exceeded the tolerance limits (worst patient handling job). The two-person draw sheet repositioning technique had the lowest LBD risk and spinal loads but still had relatively high spinal loads and LBD risk. Thus, even the safest of tasks (of the tasks evaluated in this study) had significant risk. Additionally, the current study represented a 'best'
case scenario since the patient was relatively light and co-operative. Thus, patient handling in real situations such as in a nursing home, would be expected to be worse. Therefore, to have an impact on LBD, it is necessary to provide mechanical lift assist devices.

Summary & Significance:

This is a classic study which provides evidence for musculoskeletal injuries secondary to manual handling of patients. Marras outlines several transfer and reposition techniques (both 1 and 2 person), then describes the forces on the lower back related to each. Each of the techniques he describes are over the safe limit and some exceed the “maximum tolerance limit” of compression and shear force on the spine. This article will be of value when completing modules related to the biomechanical basis for injury amongst healthcare workers.


Abstract:

This study evaluated the effect of introducing a No Lifting policy on back injuries to nurses, across an entire health care system. Methods included: analysis of the data for all public health agencies in the Australian state of Victoria; compensation data from the Victorian Workcover Authority; data about workforce and program implementation from a retrospective survey of agencies; longitudinal analysis of standardized workers compensation claim rates for back injuries before, during and after the intervention. A statistically significant decline in back injury claim rates during implementation contrasted with no statistically significant trends within the periods before and after the intervention. A statistically significant reduction occurred in
mean quarterly standard back injury claim incidence rates per 1,000 equivalent fulltime nursing staff (EFTNS), representing a 24% reduction in standard back injury claims/1000 EFTNS. 

Ergonomics principles encourage changing the work environment to suit the worker. This approach delivered a significant improvement in the immediate term. The substantial decline in back injury rates signifies a major improvement in the safety of a critical aspect of the work environment for nurses.

Summary & Significance:

This evidence-based research articles serves as another justification for implementing a safe patient handling program for hospital personnel. The use of injury rates as well as worker’s compensation claims as a measure of savings places a monetary gain for the use of safe patient handling. This increases the likelihood that employers and therapists themselves will fund and participate in a safe patient handling course or program


Abstract:

Hospitals are under pressure to provide care that not only shortens hospital length of stay but also reduces subsequent hospital admissions. Hospital readmissions have received increased attention in outcome reporting. The authors identified survivors of acute respiratory failure who then required subsequent hospitalization. A cohort of acute respiratory failure survivors, who participated in an early intensive care unit (ICU) mobility program, was assessed to determine if
variables from the index hospitalization predict hospital readmission or death, within 12 months of hospital discharge.

Summary & Significance:

This article provides evidence that early mobility increases functional and overall medical outcomes for patients who have had intensive care unit stays. Although not directly related to safe patient handling, there is an important link between the two. Safe patient handling equipment has been shown to allow for earlier mobility than traditional manual handling methods. This will be an important piece of evidence for the safe patient handling and rehabilitation module.


Summary and significance:

Several consequences exist for the injured healthcare provider. These include guilt over the injury itself, potential for chronic pain and injury, decreased quality of life, and the potential inability to perform essential job duties. In addition, there are consequences for the patient. They suffer from a decrease in quality of care as well as decreased comfort and safety. At the organizational level, injuries lead to issues with productivity, retention of staff, and high costs (worker’s compensation, litigation, etc.). Understanding the consequences of injuries to all related parties is an important skill in safe patient handling and movement competence.

Abstract:

Efforts to reduce injuries associated with patient handling are often based on tradition and personal experience rather than scientific evidence. The purpose of this article is to summarize current evidence for interventions designed to reduce caregiver injuries, a significant problem for decades. Despite strong evidence, published over three decades, the most commonly used strategies have strong evidence that demonstrate they are ineffective. There is a growing body of evidence to support newer interventions that are effective or show promise in reducing musculoskeletal pain and injuries in care providers. The authors have organized potential solutions into three established ergonomic solution types: engineering based, administrative, and behavioral. For each intervention, the level of evidence to support its use is provided.

Summary & Significance:

Because traditional means of preventing injuries have been ineffective, the authors suggest several new means of preventing injuries. This article relates to my Capstone Project because one of the strategies suggested is a protocol change in curricula for nurses, which is parallel to a curricula change for occupational therapy personnel as well. An available continuing education class would prove as a step in the direction toward evidence-based education of future health care practitioners.

Abstract:

Despite the well-documented evidence for preventing musculoskeletal injuries among nurses providing patient handling tasks using ergonomic principles, faculty in nursing schools continue to rely on the teaching of body mechanics which fails to reduce the risk of musculoskeletal injuries. In this article the authors report the qualitative data from a parent study designed to develop and test an evidence-based curriculum module in nursing schools. Focus groups were conducted with participating faculty to elicit their perceptions of facilitators and barriers for implementing a new, evidence-based, safe patient handling curriculum module at their nursing schools. Content analysis was used to analyze the data. Faculty, who were overwhelmingly positive about the curriculum module, related numerous implementation facilitators and recommendations for overcoming barriers. Findings from this study can be used to facilitate implementation of the curriculum module at other nursing schools and thus promote the use of safe patient handling throughout healthcare.

Summary & Significance:

This article is of value to my Capstone mentored studies as I review the safe patient handling curriculum of various health fields. The field of nursing has begun to implement their own safe patient handling curriculum, although not wide spread. They have had good results with the small populations they have studied. This article also led me to the free safe patient handling curriculum toolkit that is available online, also shaping course development and course materials.


Summary & Significance:
The Nurse and Health Care Worker Protection Act of 2009 was the first piece of legislation at the federal level that related directly to safe patient handling. It called for a reduction in the number of work related musculoskeletal disorders through the elimination of manual lifting and implementation of technology. The bill would have provided grants for the training and installation of equipment. It would have also allowed healthcare workers to refuse to perform certain work duties if they felt in good faith that they were unsafe tasks. The bill was sent to committee in 2010, but subsequently died in committee and was not enacted.


Abstract:

The risk of back injury is a continuing problem for nurses. Patient-handling tasks (eg, transferring patients on and off stretchers, repositioning patients on OR beds) are a major precipitating factor to this problem. Educating nurses about body mechanics has not been the answer to preventing back injuries; however, changing the physical demands of the job (ie, using an ergonomic approach) by using assistive devices (eg, friction reducers) has been proven to decrease perceived stress and injury rates and increase patient comfort. This article focuses on the problem of nurses' back and shoulder overexertion injuries and explores the application of ergonomics in the perioperative setting.

Summary & Significance:

This article explores the severity of the issue of musculoskeletal disorders amongst nurses. It also explores several of the patient handling technologies that were available at the
time of print. This article serves as a valuable piece of nursing evidence-based literature which highlights the dangers of manual patient handling and provides practical ergonomic approaches to reducing the risk.


**Abstract:**

The purpose of this study was to evaluate musculoskeletal injuries and disorders resulting from patient handling prior to the implementation of a "minimal manual lift" policy at a large tertiary care medical center. We sought to define the circumstances surrounding patient handling injuries and to identify potential preventive measures. Human resources data were used to define the cohort and their time at work. Workers’ compensation records (1997-2003) were utilized to identify work-related musculoskeletal claims, while the workers' description of injury was used to identify those that resulted from patient handling. Adjusted rate ratios were generated using Poisson regression. One-third (n = 876) of all musculoskeletal injuries resulted from patient handling activities. Most (83%) of the injury burden was incurred by inpatient nurses, nurses' aides and radiology technicians, while injury rates were highest for nurses’ aides (8.8/100 full-time equivalent, FTEs) and smaller workgroups including emergency medical technicians (10.3/100 FTEs), patient transporters (4.3/100 FTEs), operating room technicians (3.1/100 FTEs), and morgue technicians (2.2/100 FTEs). Forty percent of injuries due to lifting/transferring patients may have been prevented through the use of mechanical lift equipment, while 32% of injuries resulting from repositioning/turning patients, pulling patients
up in bed, or catching falling patients may not have been prevented by the use of lift equipment. The use of mechanical lift equipment could significantly reduce the risk of some patient handling injuries but additional interventions need to be considered that address other patient handling tasks. Smaller high-risk workgroups should not be neglected in prevention efforts.

Summary & Significance:

This retrospective study aimed to quantify the amount of musculoskeletal injuries that could have been avoided if mechanical lifting equipment was available for use. The study revealed that a large proportion of patient handling injuries could have been avoided if equipment would have been available for healthcare workers. This study will add to the evidence-based research that will formulate the modules related to epidemiology.


Abstract:

The purpose of this study is to investigate the prevalence and type of musculoskeletal injury due to patient handling as well as to ascertain current safe patient handling practices in occupational therapy within the state of Ohio. A questionnaire focusing on safe patient handling issues was e-mailed to 1,113 occupational therapy practitioners in the state of Ohio, with an overall response rate of 26%. Sixty-four percent indicated they were required to transfer patients manually. Of these respondents, 8% indicated receiving an injury, 11% missed days away from work in connection with sustaining an injury, and 12% considered leaving the profession early
due to patient handling concerns. The study demonstrated that this sample of occupational therapy practitioners was exposed to occupationally based high-risk situations regarding patient handling with moderate to high incidence rates for musculoskeletal injuries. Additional research is needed to ascertain the status of safe patient handling among occupational therapy practitioners nationwide.

Summary & Significance:

The study quantified the prevalence of musculoskeletal injuries secondary to patient handling for occupational therapists in the State of Ohio. This study is valuable to the development of this course because it is occupational therapy specific, and provides evidence that occupational therapists are injured due to manual handling at a rate that is similar to other healthcare professions.


Abstract:

This study investigated the differences in required push, pull and rotating forces for moving fully loaded, floor-based and overhead-mounted full body patient lifting devices with simulated patients of varying weight on a floor of optimal design (i.e. level vinyl tile over concrete). A single person operated the lifting devices for all of the tests. Eighteen male and female volunteer participants, ranging in weight from 51 to 146 kg, acted as patients during the lifting tests. For each test, the simulated patients were pushed and pulled for 3.7 linear metres and were rotated while sitting in the lift slings. Force measurements were acquired using two
single axis dynamometers affixed to the lifting devices. Results revealed that, in general, operator input force and torque increased with patient weight category and floor-based lifts required greater force and torque compared to the overhead-mounted lift. Comparison of the required forces with published force limits reveals that the required push and pull force from the various patient lift systems, across all weight categories, were generally acceptable to 90% of the female population. The required forces for these patient transfer tasks, however, could exceed maximum acceptable force limits if the floor surfaces were less than ideal, such as floors composed of carpet, wood, or inclined surfaces. Additional research is needed to assess these conditions.

Summary & Significance:

This research study will be beneficial for the content aspect of the course development. It contains valid research regarding the use of both floor-based and ceiling-mounted lifts as being within safety guidelines for practitioners to use on a daily basis. It will be important that all content within the course be evidence-based and no technique or assistive device be without clinical research.


Abstract:

High-risk patient-handling tasks lead to work-related musculoskeletal disorders for orthopaedic nurses and other members of the healthcare team who are involved in moving patients with orthopaedic issues. Serious consequences can arise from manually moving/lifting
these patients. A task force was organized that included representatives from the National Association of Orthopaedic Nurses, the Patient Safety Center of Inquiry at the James A. Haley Veterans Administration Medical Center in Tampa, the National Institute for Occupational Safety and Health, and the American Nurses Association to identify high-risk tasks performed in the orthopaedic setting and to develop evidence-based solutions to minimize the risk of musculoskeletal disorders. High-risk tasks for moving and lifting orthopaedic patients were identified. Four orthopaedic algorithms and a clinical tool were developed by the task force to direct nurses and healthcare team members caring for orthopaedic patients through the use of scientific evidence and available safe patient-handling equipment and devices.

Summary & Significance:

This article provides context for describing safe patient handling techniques for the orthopaedic populations. These include general precautions for this population and the algorithms that are used. This article will provide necessary information when creating content related to safe patient handling for special population.


Abstract:

Patients with critical illness can acquire a syndrome of weakness and dependence on mechanical ventilation that has been linked to peripheral nerve and muscle injury. Our aim was to systematically review published data on the diagnosis, risk factors and outcomes of patients with critical illness neuromuscular abnormalities (CINMA). MEDLINE, EMBASE, CINAHL,
and the Cochrane Library were searched, and studies were included if they reported on ICU patients > 16 years old who were evaluated for CINMA clinically and electrophysiologically, and they contained sufficient data to quantitatively measure the association between CINMA and clinically relevant exposures and/or outcomes. Two reviewers independently extracted data on study methodology and quality, methods for diagnosing CINMA, and CINMA prevalence, risk factors, and outcomes. In 1,421 ICU patients who were evaluated in 24 studies, 655 (46%) were diagnosed with CINMA. All enrolled patients were receiving protracted mechanical ventilation, had sepsis, or had multiple organ failure. Diagnostic criteria for CINMA were heterogeneous and few reports explicitly differentiated between the polyneuropathic, myopathic and mixed types of CINMA. CINMA was linked in several studies to hyperglycemia, the systemic inflammatory response syndrome, sepsis, renal replacement therapy, and catecholamine administration. In contrast, across studies there was no consistent relationship between CINMA and patient age, gender, severity of illness, multiple organ failure, and use of glucocorticoids, neuromuscular blockers, aminoglycosides, or midazolam. Mortality was not increased in patients with CINMA, but mechanical ventilation and ICU and hospital stays were prolonged. The risk of CINMA is nearly 50% in a subset of ICU patients with sepsis, multiorgan failure, or protracted mechanical ventilation, but there were no data to support CINMA as an independent predictor of death. The impact of frequently cited risk factors is uncertain, but emerging data indicate glycemic control decreases CINMA risk in vulnerable patients.

Summary & Significance:

This article analyzed critical illness neuromuscular abnormalities (CINMA) in intensive care unit patients. While not directly related to safe patient handling, this article discusses how immobility and dependence logically lead to a whole host of other intensive care unit acquired
illnesses. When developing course content related to early mobilization through occupational and physical therapy, this article provides evidence that mobilizing patients earlier and safer leads to better outcomes.


Abstract:

The purpose of this study was to describe American physical therapy students’ knowledge and attitudes of safe patient handling and movement practice based upon their entry-level education they received in this subject. During the 2009-2010 academic year, 420 physical therapists representing 24% of the CAPTE-Accredited program and 56% of U.S states completed a 47-item electronic survey. Results revealed that a majority (81.6%) of students received traditional manual patient handling instructed. Of the 18% of students that taught SPHM, 50% reported seeking SPHM devices while in the clinical setting. Students were 3 times more likely to seek SPHM devices in clinical facilities with SPHM policies. Their responses suggest a dissonance between what students learn in patient handling education in current entry-level curricula and the expectation of practicing safe patient handling and movement in healthcare today.

Summary & Significance:

This article is important as I uncover curricular trends in safe patient handling in the allied health professions. This article also shows support for curricular education in safe patient
handling, as the physical therapists that learned safe patient handling in school more likely to use it in clinical practice.


Abstract:

Declines in physical activity that accompany an admission to an intensive care unit (ICU) represent a significant stress to the body. Decreases in physical activity have been demonstrated to result in losses in functional capacity of the musculoskeletal and cardiovascular systems. These two systems are central to achieving and maintaining functional independence, which is a prerequisite for discharge from a healthcare facility, as is independent functioning of the individual in the community setting. Whereas a decrease in physical activity will result in an attenuation in the functioning of the cardiovascular and musculoskeletal systems, increases in physical activity can stimulate gains in their functional capacity.

The concept of improving the functional capacity of the body to withstand anticipated musculoskeletal stressors has had limited application to the effects of inactivity associated with an ICU admission. By increasing an individual's functional capacity through increased physical activity prior to an ICU admission, it seems reasonable that the patient would retain a higher level of functional capacity over their entire ICU admission. The process of enhancing functional capacity of the individual to enable them to withstand the stressor of inactivity associated with an admission to ICU is termed *prehabilitation*. A generic program of prehabilitation includes warm-up, aerobic, strength, flexibility, and functional task components. The initial level of
prehabilitation training and the progression of the training will be different for each individual based upon their initial functional capacity and the degree to which they individually respond to increases in physical activity. Declines in physical activity among ICU patients represents a significant health risk that may be reduced through introducing prehabilitation interventions.

Summary & Significance:

This article defines the term “prehabilitation” as mobilization and occupational engagement of the critically ill patients. Prehabilitation has been shown to increase functional independence and medical outcomes. The use of safe patient handling equipment can increase the safety of both the healthcare worker and the patient when undergoing such early mobilization of critically ill patients.


Abstract:

The purpose of this study was to describe the availability of preventive devices and training in relation to neck, shoulder, and back musculoskeletal injuries/disorders (MSD) in registered nurses. Nurses have one of the highest rates of MSD of any occupation. Studies have shown that mechanical lifting devices and lifting teams can reduce MSD rates and associated costs. Data from 1163 randomly selected currently working nurses (1+ years on the current job) were collected in anonymous mailed surveys (74% response rate). MSD cases had neck, shoulder, and/or back symptoms for at least 1 week, or at least monthly, and moderate or more pain, in the past year. Nurses with mechanical lifting devices available were significantly less likely to have neck or back MSDs. Back injury was less likely when lifting teams were available.
However, adjustable beds and transfer sheets were associated with greater odds of back MSD. Training in workstation adjustment was associated with significantly lower MSD prevalence, though postural training was not. Though use of mechanical devices and lifting teams was limited in nursing workplaces, these prevention strategies were related to reduced odds of MSD. Nursing administrators can use these findings to consider workplace changes.

Summary & Significance:

This survey article provides evidence that the use of safe patient handling equipment decreases the number of work-related musculoskeletal disorders and associated costs. Lifting teams and friction reducing slide sheets decreased the injury rates when they were available. This article further the evidentiary support for safe patient handling programming, equipment, and training.


Summary & Significance:

Information from the Bureau of Labor Statistics reveals that healthcare workers are among the top industries to be injured and require days away from work. Healthcare workers, in particular nursing staff and orderlies, injure themselves at higher rates than truck drivers, construction workers, and janitorial staff. When compared across all industries, healthcare workers injure themselves more than four times the average injury rate.

Abstract:

Patient safety within the Canadian healthcare system is currently a high national priority, which merits a comprehensive understanding of the underlying causes of adverse events. Not least among these is worker health and safety, which is linked to patient outcomes. Healthcare workers have a high risk of workplace injuries and more mental health problems than most other occupational groups. Many healthcare professionals feel fatigued, stressed, in pain, or at risk of illness or injury - factors they feel impede their ability to provide consistent quality care. With this background, the Occupational Health and Safety Agency for Healthcare (OHSAH) in British Columbia, jointly governed by healthcare unions and healthcare employers, launched several major initiatives to improve the healthcare workplace. These included the promotion of safe patient handling, adaptive clothing, scheduled toileting, stroke management training, measures to improve management of aggressive behavior and, of course, infection control - all intended to improve the safety of workers, but also to improve patient safety and quality of care. Other projects also explicitly promoting physical and mental health at work, as well as patient safety are also underway.

Summary & Significance:

This article describes a trend toward a culture of safety in Canada. Information from other countries is important to identify trends to compare and contrast the U.S. to other countries. Content regarding trends in other countries is important for developing course materials
pertaining to regulations and legislation regarding safe patient handling programming and training.


Abstract:

In 1994 the National Institute for Occupational Safety and Health (NIOSH) released the Revised NIOSH Lifting Equation—an ergonomics assessment tool that can be used to calculate the recommended weight limit for two-handed manual-lifting tasks. However, NIOSH excluded assessment of patient-handling tasks from the uses of the revised equation, arguing that such tasks involve too many variables. The equation in fact can be used to calculate a recommended weight limit for a limited range of patient-handling tasks in which the patient is cooperative and unlikely to move suddenly during the task. In general, the revised equation yields a recommended 35-lb. maximum weight limit for use in patient-handling tasks. When weight to be lifted exceeds this limit, assistive devices should be used.

Summary & Significance:

This article will be useful in the course content aspect of course development. Thomas Waters and NIOSH have recently introduced guidelines that would be beneficial for occupational therapy practitioners to learn and implement within their practice. These new guidelines support the use of assistive devices when the weight exceeds a safe amount for a therapist to lift unassisted (35 lbs.).

Abstract:

Healthcare workers who handle and move patients as part of their jobs suffer a disproportionately high number of work-related musculoskeletal disorders (MSDs). The majority of reported work-related MSDs are back pain cases that result in significant numbers of lost work days. It is likely that these lost workdays have a substantial impact on the quality and cost of health care. Patient care ergonomics can reduce the risk of work-related MSDs by helping safety experts design the work so it can be safely performed by most workers. This article provides a general overview of ergonomics—what it is, how it can be used to help design safe work, and why all healthcare workers and administrators should know and understand how excessive work demands can lead to increased risk of work-related MSDs. The article will also explain technological solutions that can be implemented to reduce the risk of work-related MSDs for healthcare workers.

Summary & Significance:

This article provides an overview of ergonomic principles that are important for any healthcare worker with direct patient care to understand. Waters reviews level systems and explains how the level systems of the back are at a large biomechanical disadvantage when lifting a heavy load, or even a lighter load repetitively. This information is valuable to my Capstone as I prepare content related to biomechanics and safe lifting practices.

Abstract:

Critical care nurses are at high risk for development of work-related musculoskeletal disorders (WMSDs). Many patient handling tasks in critical care require physical demands that may result in excessive internal forces, increasing the risk for WMSDs. There are solutions for performing these tasks safely, using technology. This article describes risk factors associated with high-risk patient handling tasks and presents solutions for reducing risk for WMSDs. Studies show that implementing a safe patient handling and movement program that incorporates new technology can pay for itself in a short period of time and provide long-term benefit for health care facilities and nursing staff.

Summary & Significance:

This article is valuable because it provides a basis for safe patient handling in a specialty area, in this case critical care. Because there will be many different areas of clinical practice involved in the course, it needs to have a wide breadth. This article is an evidence-based practice article that will shape course content and development.


Abstract:
Every day, thousands of physical therapists and rehabilitation nurses are required to perform physically demanding therapeutic patient handling tasks that are stressful to the caregiver and increase his or her risk of developing work-related musculoskeletal disorders (MSDs). In rehabilitation, patient handling tasks might be classified as "traditional" or "therapeutic." Traditional tasks have a practical goal, such as transferring a patient from bed to a wheelchair, and therapeutic tasks have more targeted goals such as facilitating patient function and independence. Therapeutic patient handling tasks present a greater risk for caregivers to sustain work-related MSDs than typical patient handling tasks do because caregivers are exposed to high mechanical loads on the spinal tissues for longer amounts of time. The Veterans Health Administration, Association of Rehabilitation Nurses, and the American Physical Therapy Association endorse the use of modern patient handling technology as part of a comprehensive safe patient handling program for providing therapy in rehabilitation settings. Information about patient handling technology that is effective in reducing the risk of work-related MSDs from performing therapeutic patient handling and movement tasks is also presented and discussed in this article.

Summary & Significance:

This article plays a significant role in identifying the relationship between safe patient handling and rehabilitation professionals (occupational and physical therapy). It outlines how therapy practitioners place themselves at risk by the awkward postures and increased time spent supporting the body weight of patients. It advocates for practitioners to employ safe patient handling techniques during therapy as a protection measure for themselves as well as their patients.

Abstract:

Nursing staff are at risk for musculoskeletal injuries because of the physical nature of patient handling. The purpose of this study is to examine the effectiveness of a multifaceted minimal-lift environment on reported equipment use, musculoskeletal injury rates, and workers’ compensation costs for patient-handling injuries. The pilot study consists of a mixed measures design, with both descriptive and quasi-experimental design elements. The intervention consists of engineering (minimal-lift equipment), administrative (nursing policy), and behavioral (peer coach program) controls. The comparison nursing unit has received engineering controls only. The convenience sample includes nursing staff employed on two medical-surgical nursing units, who provide direct patient care at least 50% of the time. Nursing staff employed in a multifaceted lift environment report greater lift equipment use and experience less injury, with reduced worker’s compensation costs.

Summary & Significance:

This study used a multifaceted approach to implement a safe patient handling program. Their results were a reduction in injuries as well as reduced associated costs. This study adds evidentiary support for the implementation of safe patient handling policies and programs in the actor care setting. This study will be of value as I develop content related to programming, cost-benefit analysis, and reduction in injuries.