Handling the Bariatric Patient: Ergonomic Issues
Plan

• Where are you going?
Ergonomics

Defining Ergonomics

Ergonomics is NOT:

• Buzzword, passing craze/fad
• Exercise, proper body mechanics
• Physical Therapy, treatment of injuries
• Lift Teams
Reach Locations

Minimize repetitive back bending and/or excessive reaching by correct placement of controls, connections and devices

- Frequently accessed controls and connections:
  - No higher than 49” (1.24m)
  - No lower than 30” (.762m)
  - No more than 15” (.381m) horizontally from a standing location

- Other controls and connections:
  - No higher than 72” (1.82m)
  - No lower than 18” (.457m)
  - No more than 23” (.584m) horizontally from a standing location
Ergonomics

• Fitting the job to the worker
• Science
  – Study/design of the human-work environment / interaction
  – Design the work environment according to the capabilities of the human

• Objectives
  – Improve safety and health
    • Eliminate/reduce risk factors for injury through the design of the work environment
  – Increase efficiency, productivity
    • Design optimizes human capabilities and compensates for limitations
  – Enhance quality and user satisfaction
Ergonomics

Hospital Example

– Train people Better
– Select Better People
– Use Add-on, Bolt-on, or Additional Equipment
– Build in Ergonomics
– Change Process or Work Flow
• Staffing shortages
  – Over 10% of nursing vacancies in the US go unfilled each year.

• Aging workforce
  – Average age 46.8 years
  – 50% of nurses will reach retirement in 15 years

• Increasing patient acuity

• Competitive pressure to control costs

• Growing bariatric patient population
Facility Analysis: Anytown Hospital
Percent of Injuries Occurring During Each Task

- Repositioning in bed
- Lifting (not further specified)
- Lateral transfers
- Assisting into or out of bed
- Bed to chair transfer
- Transfer to toilet or BSC
- Pushing beds

1999 and 2000

78% of Lost and Restricted Work Days are due to patient handling injuries

Annual Direct Injury Costs Due to Patient Handling = $425,000
Cumulative Risk Factors

- Average age of nursing = 47 yrs.
- Greater risk vs. average occupation
- 10-12 hr. work shift
- Maintains normal family duties

- Stand Assisting Patients
- Lifting Patients
- Repositioning Patients
- Transporting Patients

↓ Daily Recovery

Insufficient time to recover and heal from muscle strains sustained daily - compounding the risk for greater injury.
Body Mechanics Training

- Questionable applicability to patient care
  - Reaching and lifting loads far from the body
  - Lifting heavy loads
  - Twisting while lifting
  - Unexpected changes in load demand during the lift
  - Reaching low or high to begin a lift
  - Moving a load a significant distance

- All transfer tasks produce excessive compressive forces on spine (Marras et al., 1999)

Solicit assistance

- Additional staff--Back stress only reduced by 10% (Marras et al., 1999)

- Not effective in reducing injuries among health care workers
• Our bodies first reaction to stress, either physical or emotional stress, is muscle tension (Fight or Flight Syndrome)

• A tense muscle is a tight muscle. And tight muscles are much more susceptible to strains and sprains
Recent data indicates that the prevalence of overweight adult Australians is similar to that in the US, Canada and the UK.

**Figure 3.10: Prevalence of overweight (BMI 25 to <30) and obesity (BMI 30 or over), 2002**

*Note: Persons aged 15 years or over.*

*Source: WHO 2005.*
Trends in obesity prevalence for selected countries, 1978 to latest year. The increasing prevalence of obesity in Australia is part of a worldwide trend, with the exception of Japan. Source: OECD15.
Obesity Trends in Australia

Figure 3: Population obesity prevalence projections, Australia, 2008-2028 (assuming current trends continue)

Source: Access Economics 2008(13)

Millions of obese people.
Effective Ergonomics: Anticipation

• Build in Ergonomics from the Start

• Ergonomics by Design
  – Equipment
  – Work Environments
  – Work Processes
  – Organization
Care of the Severely Obese Patient

• Same Ergonomic Principles
  – Fit the Work Environment to the Human User
    • Caregiver and patient

• Importance of Ergonomics
  – Reduce risk of caregiver and patient injury
  – Enhanced potential for inefficiency, loss of productivity
  – Improve impact on quality of care

• Anticipation is Key
  – Unique patient population
  – Unique intervention
  – Unique equipment needs
    • Transportation
    • Placement
Key Elements

- **Facility/Unit Preparedness**
  - Statement of Purpose
  - Systematic Process of Care
  - Environment Design and Equipment

- **Staff Preparedness**
  - Safe Patient Handling Practices
  - Training and Education

- **Patient Preparedness**
  - Orientation
  - Discharge Planning

- **Program Evaluation**
Ergonomics Improvement Process

- Root Cause Analysis
- Identify Solutions
- Develop Policy & Procedure
- Implement Solutions
- Educate Staff

Internalize Ergonomics Management Skills
Facility/Unit Preparedness

- Environment Design and Equipment
  - Facility wide perspective
    - Admission to discharge
  - Elevators/Hallways/Passageways
  - Room
    - Dimensions
    - Bathroom
    - Family
  - Audit Ancillary Departments
    - Weight bearing and dimensional capacity
    - Clearance
    - Access to lift assist equipment
  - Reference manual/database
# Facility/Unit Preparedness

## Environmental Assessments

### Hospital Bed
- Weight limit [ ] lbs.
- Side rail support [ ] lbs.
- Bed Scale?
  - Yes [ ] if yes, weight limit [ ] lbs.
  - No [ ]
- Width of bed [ ] inches.
- Bed adjustable for patient height?
  - Yes [ ] No [ ]
- Mattress type:
  - Pressure relief [ ]
  - Pressure reduction [ ] Alternating [ ]
  - Rotational [ ]
- Other [ ]

### Bathroom
- Doorframe width [ ] inches
- Shower door width [ ] inches
- Toilet weight bearing limit [ ] lbs.
- Wall mounted grab bars
  - weight limit [ ] lbs.

### Patient Care Environment
- Patient care weight limit [ ] lbs. (basic seating chair not Geri/Cardiac chair)
- Patient chair width [ ] inches
- Geri/Cardiac chair weight limit [ ] lbs.
- Geri/Cardiac chair width [ ] inches
- Geri/Cardiac seat height [ ] inches
- Step stool weight limit [ ] lbs.

### Wheelchair
- Weight limit [ ] lbs.
- Width [ ] inches
- Seat height [ ] inches
- Handle width [ ] inches
- Powered? Yes [ ] No [ ]

### Stretcher
- Weight limit [ ] lbs.
- Width [ ] inches
- Length [ ] inches
- Side rail support [ ] lbs.
- Powered? Yes [ ] No [ ]

### Transfer Devices
- Lateral transfer devices weight limit [ ] lbs.
- Lateral transfer devices width [ ] inches
- Powered? Yes [ ] No [ ]
- Full Body (sling) weight limit [ ] lbs.
- Powered? Yes [ ] No [ ]
- Full Body (sling) goes to the floor? Yes [ ] No [ ]
- Sit to stand devices weight limit [ ] lbs/
- Sit to stand devices width [ ] inches
- Powered? Yes. [ ] No [ ]

### Ancillary Departments
Bariatric Bathroom

Bariatric Toileting Assists

Pivoting Support Bars
• Providing space for two nurses to assist patients with toileting, positions the toilet away from adjoining walls and grab bar supports.

• Pivoting arms on wall or floor mounts provide patient support and staff access.

Angled Grab Bars
• Angled grab bars provide additional ergonomic leverage for getting to a standing position.

* Specify support bars with a 500lbs. weight capacity
Bariatric Bathroom

Bariatric Bathroom Toilets

Specify floor mounted toilets with 800-1000 lbs. capacity based on anticipated patient weight.

Wall mounted toilets are not recommended for bariatric patient environments (250 lbs. capacity). Wall mounted toilets increases the risk of hardware failure and patient injury.
Bariatric Bathroom

Bathroom Design Considerations

• Place rails to maximize patient ability to assist self/caregiver and caregiver to assist patient
• Assist bars in the bathroom can be beneficial in allowing bariatric patients to rise from a toilet. Both horizontal and vertical bars can be useful.
• Horizontal bars should extend from directly beside the commode to a point at least 4” (.101m) in front of the commode. The height of this bar should be 6” (.152m) to 8” (.203m) above the commode seat height.
• Vertical bars should be in front of the commode and near seated shoulder height.
• Avoid placing towel rack near handrails
Bariatric Bathroom

Bathroom Design Considerations

• Bathroom/shower door design

• Avoid open door as an obstacle either inside or outside the bathroom or shower stall

• Width of bathroom and shower entrance should allow for the patient, caregiver and assist devices.

• Ideally, the door width should be 60”.

• Entrance to shower should be flush with bathroom floor to allow ease of use for assist equipment and to avoid presenting an obstacle for patients and caregivers
Facility Preparedness

• Reduce/eliminate hallway and room clutter where possible. Difficult to maneuver equipment with patients in crowded areas.
Facility Preparedness

Patient Handling Equipment

• High visibility placement and ease of accessibility of lifting equipment will promote consistent use.
• Do not block access.
Hierarchy of Controls

The design of equipment, components, tools and environments that are compatible with human anatomy & physiology to promote efficiency and productivity.

- **Engineering controls**
  - Beds
  - Room Design
  - Lifting Devices
  - Engineering controls

- **Administrative controls**
  - Schedules & Planning,
  - Lift Teams
  - Administrative controls

- **Work practice controls**
  - Policies & Procedures, Training
  - Develop procedures for proper work techniques. Provide maintenance and proper feedback for improvements
  - Work practice controls

Reduce exposure, frequency & duration of task
Adequate staffing
Facility Preparedness: Equipment

• Equipment Considerations: Beds
  – Weight Capacity / Mattress length-width
    • Importance of appropriate fit
  – Features that prevent the patient from sliding down in bed
    • Frame design
    • Retractable foot section
  – Turn assist feature
Facility Preparedness: Equipment

Vertical Lift Device

• Powered lift
• Ability to lift from floor level
• Integrated scale
• Types

  – Portable-base units

  – Overhead ceiling mounted units
Facility Preparedness: Equipment

• **Vertical Lift Devices continued**
  – Assist to stand
  – Assist to ambulate
  – Assist with patient dressing
  – Integral scale feature
    • Eliminates additional transfer task
  – Contraindicated
    • Non-weight bearing patients
    • Restricted ROM
Facility Preparedness: Equipment

• Lateral Transfer Devices
  – Powered
  – Air-assisted sliding aid
    • Eliminates force and awkward posture
    • Reduces the number of staff required
  – Friction-reducing sheet
    • Limitations with patient population
    • Assist with sling application
    • Other limitations
      – uneven surface transfer
      – Can bind where mass is greatest
  – Supine sliding boards
  – Same concept applies to repositioning in bed
Facility Preparedness: Equipment

• **Stretcher-Chair**
  • Facilitates bed-to-chair transfers
    – Hip/knee surgery
  • Ability to recline

• **Inter-Unit Transport**
  – Portable diagnostic equipment
  – Bed powered transport
  – Bariatric stretcher
    • Powered transport
  – Bariatric wheelchair
Facility Preparedness: Equipment

• Commode/Shower Chair
  – Adjustable side-rails for access to the patient

• Bariatric Walkers
  – Sufficient weight bearing capacity
  – Compatibility with body mass distribution

• Reducing Static Loading

• Abdominal Binders
  – Use if abdomen impairs a patient handling task

• Modified Lift Slings
• Blanket with Handles
Facility Preparedness: Equipment

• Buyer Beware!!!

Bariatric Transfer Board with Hand holes

This laminated high gloss finish bariatric transfer board is made from strong plywood. The chamfered ends facilitate secure positioning during transfers. This heavy duty board is ...designed to accommodate a wide variety of functional transfers. Hand holes are cut into both ends for easier grip.
Staff Preparedness

- Patient Handling Protocol/Practices
  - Written policy
  - Based upon dynamic patient assessment
    - Determine level of dependency
      - Ability to bear weight
      - Upper body strength
      - Level of cooperation
  - Incorporates available equipment
  - Specifies minimum assistance required
  - Outlines consistent approach
    - Prepare patient
    - Prepare team
    - Prepare environment
Process Recommendations:

Unit Specific Implementation Plans

• Policy is different than the implementation plan. The policy reflects commitment to reducing injuries through improvements in equipment, processes, training, and work practices. It also reflects who is responsible and accountable for achieving improvement and how that improvement will be measured. The policy may be hospital-wide or even system-wide.

• The implementation plan may be unit specific and describes how the goals will be achieved. The implementation plan is generally developed by the unit with direction and assistance from the ergonomics committee or patient handling committee.
## Safe Patient Care Practices

### Determine Lift Strategy

#### Bed to Chair Transfer

<table>
<thead>
<tr>
<th></th>
<th>Equipment Assisted Lift</th>
<th>Manual Assist</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Assist</strong></td>
<td>Bed with Chair feature or Full body sling with minimum of 3 staff</td>
<td>Prohibited</td>
</tr>
<tr>
<td><strong>Partial Assist</strong></td>
<td>Foot egress with stand assist lift and bariatric chair or stretcher chair with minimum of 2 staff</td>
<td>Prohibited</td>
</tr>
<tr>
<td><strong>Independent</strong></td>
<td></td>
<td>Bariatric chair/stretch chair</td>
</tr>
</tbody>
</table>
Policy Development

- Using a “canned” policy
  - Equipment mis-matches
  - Lack of ownership, NIH Syndrome
  - Culture, Program of the Month
Staff Preparedness: All Levels

Senior Nurse Executives
• Periodic communication of program expectations and commitment
• Accountability at unit level

Nurse Managers
• Model and reinforce desired behaviors

Direct Caregiver Training
• Program launch, annual refresher, new hire
• Capabilities and safe operation of equipment
• Safe patient handling protocol/practices
• Successful involvement of patient

Other staff who interact directly with the patient
• Sensitivity/Unintentional promotion of negative stereotypes
Staff Preparedness

Importance of patient cooperation and participation in care

• Admission orientation packet
  • Care staff
  • Procedures/equipment for lifting, repositioning and moving the patient
  • Safety policy
  • Beneficial patient participation
  • Videos /graphics demonstrate each procedure with Bariatric patient

• Discharge Planning
  • Ambulation Assessment
  • Ability to use bathroom
  • Bed/Sleep Assessment
  • Support systems
Process Recommendations:

“Life is a journey, not a destination”
Questions?

Statina Healthcare International

Marlin Medical

The Association of Safe Patient Handling Professionals

ASPHP.ORG