MANUAL HANDLING OF PEOPLE (MHP): EVIDENCE BASED PRACTICE

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Outline

• Extent & evidence for MSDs associated with manual handling of people (MHP).
  – Physical risk factors
  – Psychosocial risk factors
• Development of MHP risk management interventions
• Efficacy of MHP risk control interventions
  – Systematic reviews
  – Broader patient handling evidence base
• Patient/person handling assessment tools
• Staff & patient MHP intervention outcomes
• Importance of environment-related interventions
MSD Causation

• Systematic reviews investigating work related MSD (WMSD) causation support importance of both physical and psychosocial risk factors (Bernard 1997; NRC/IOM 2001; Macdonald & Evans 2006; da Costa & Vieira 2010).

• Sources of MSD risk:
  – Physical risk factors (e.g. heavy lifting, repetition, adverse postures)
  – Psychosocial risk factors: organisational & social context (e.g. job content, workload, work pace, work schedule, job control, organisational culture, interpersonal relationships)
Manual Handling of People (MHP) & MSDs

• MHP tasks known to expose care workers to increased risk of MSD (Hignett 1996).
• Health care workers: one of the highest rates of MSD internationally.
• Significant MSD risk exposure persists within the health and community care sectors (US Department of Labor 2015; Safe Work Australia 2017).
• Key physical & psychosocial MSD risk factors are associated with the manual handling of people.
MHP & MSD Risk Factors (1)

- Physical risk factors:
  - Patient’s weight, awkward and/or sustained postures, frequent lifting, limited clear space, and high risk tasks and handling techniques.
  - High risk MHP tasks includes: vertical transfers, repositioning in bed or chair, transferring between bed & chair, and bathing & toileting tasks

MHP & MSD Risk Factors (2)

- **Psychosocial risk factors:**
  - Evidence of influence of psychosocial risk factors on MSD incidence and rehabilitation outcomes amongst healthcare workers including: organisational, psychological and social work-related factors.
  - Bernal et al (2015): Exposure to high demands/low control, effort/reward imbalance & low social support associated with low back, neck, shoulder, upper extremity, knee and/or pain at any anatomical site, either for nurses, aides or both.
  - Oakman & Bartram (2017): Minimal attention to MSD psychosocial risks in aged care in Australia.
MHP Risk Management: Effectiveness

- Investigations of single and multi-factor MHP risk reduction strategies.
- Training & education – single factor intervention - consistently failed to reduce injury incidence.
- Multi-factor approaches - based on risk management - now increasingly advocated.
- Limited ‘high quality’ evidence to support many MHP interventions.
Systematic Reviews

- Dawson et al (2007)
- Tullar et al (2010)
- Teeple et al (2017)
- Van Hoof et al (2018)
**Hignett et al (2003)**
- Mixed studies review (MSR) methodology
- Quantitative & qualitative studies
- Seven most commonly used strategies could provide basis of a generic program (i.e. multifactor patient handling intervention) (2003:6)

<table>
<thead>
<tr>
<th>Intervention strategy</th>
<th>Frequency of occurrence of strategy in studies reviewed</th>
<th>Average quality rating of studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment provision</td>
<td>18</td>
<td>50%</td>
</tr>
<tr>
<td>Education and training (e.g. in risk assessment and equipment use)</td>
<td>18</td>
<td>54%</td>
</tr>
<tr>
<td>Risk assessment</td>
<td>13</td>
<td>55%</td>
</tr>
<tr>
<td>Policies and procedures</td>
<td>10</td>
<td>50%</td>
</tr>
<tr>
<td>Patient manual handling assessment systems (e.g. algorithms and patient assessment protocols)</td>
<td>8</td>
<td>43%</td>
</tr>
<tr>
<td>Work environment redesign</td>
<td>7</td>
<td>58%</td>
</tr>
<tr>
<td>Changes to work organisation and practices</td>
<td>7</td>
<td>63%</td>
</tr>
</tbody>
</table>
'Hierarchy of Risk Controls’ in managing risks associated with the manual handling of people in residential aged care (Coman 2015:28. Adapted from Safe Work Australia 2011).
Model of the ergonomics systematic approach to evaluating a work system applied to the manual handling of people within residential aged care (Coman 2015:29. Adapted from Stevenson 1999).
Patient/Person Handling Risk Assessment & Evaluation Methods

- Wide range of methods used in research investigations & clinical practice to identify hazards, assess risks & evaluate risk control interventions associated with the manual handling of people.
- Includes specific patient/person handling assessment tools with different levels of focus, purpose and methodology.
- Level of focus:
  - Patient
  - Work environment
  - Nurse/care worker
  - Organisation
Focus: Patient

At the level of the patient/care worker interaction, safe MHP task performance informed by:

• Patient’s health status
• care needs
• & the environment in which the task is performed.

Examples include:
• WorkSafe Victoria ‘Transferring People Safely’ (2009)
• Patient Handling Facility Unit Risk Assessment Tool (FURAT) (QLD Health 2012)
• NZ PH Guidelines (ACC 2012)
Patient Handling Assessment Form  
(Radovanovic & Alexandre, 2004: 327)

<table>
<thead>
<tr>
<th>Data</th>
<th>Concepts</th>
<th>Points</th>
<th>Days in hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>Up to 50 kg</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>51-69 kg</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 70kg</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>Up to 1.50 m</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.51 – 1.79 m</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 1.80 m</td>
<td>3</td>
<td></td>
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<tr>
<td>Level of consciousness</td>
<td>Alertness</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Confusion/ lethargy</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unconsciousness/ restlessness</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Mobility in bed</td>
<td>Independent</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Able to move with assistance</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dependent</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Transfer</td>
<td>Independent</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Able to transfer with assistance</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dependent</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Walking</td>
<td>Independent</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Able to walk with assistance</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dependent</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Catheters and equipment</td>
<td>Up to 1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 to 4 accessories</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ 5 accessories</td>
<td>3</td>
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<td>Special risks</td>
<td>Good</td>
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<tr>
<td></td>
<td>Risk potential</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Risk</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Total**

**Record scores and level of assistance needed:**

8-12 = ‘Low risk’. No assistance necessary. Supervision required.
13-18 = ‘Medium risk’. Patient may need assistance, some kind of handling aid or selected technique.
19-24 = ‘High risk’ Seek assistance, selected hoist or other appropriate handling aid.
Focus: Work Environment

• Evaluation of staff injury risk exposure associated with the manual handling of people within a particular work unit or environment.

• For eg.:
  – Care Thermometer (Arjo Huntleigh 2018)
  – FURAT (Queensland Health 2012)
  – MAPO Index (Battevi & Menoni 2012)
Focus: Nurse/ care worker

• Observational assessment methods have been used extensively for identification and evaluation of nurse/ care worker exposure to physical MSD risk factors associated with performance of patient handling tasks.

• For e.g.:
  – Warming instrument
  – *DiNO* (Johnsson et al 2004)
  – *SOPMAS* (Tammininen-Peter & Haintekainen 2004)
Focus: Organisational Level

Evaluation of MHP risk management systems at an organisational level informs key aspects of system effectiveness including management commitment and effective processes to support MSD prevention. Assessment tools include:

- **FURAT** tool (Queensland Health 2012)
- ‘Manual Handling Risk Controls in Hospitals’ (MARCH) Scoring System (Smedley, Poole et al 2004)
- ‘Patient Handling Organisational Question Set’ (PHOQS) (Hignett & Crumpton 2005).
Multiple Levels

• Evaluation of multiple patient handling intervention outcomes: ‘Tool for Risks Outstanding in Patient Handling Interventions or TROPHI’ (Fray 2010; Fray & Hignett 2010; Fray & Hignett 2013).

• Comprehensive patient handling evaluation instrument for assessment of a wide range of intervention outcomes, including several patient outcomes.

• Designed for application in a ward or unit, and incorporates data from the 12 most preferred patient handling intervention outcomes identified through research with expert focus groups in four EU countries.
Manual Handling Interaction: Patient Perspective

- MHP adds further complexity to ergonomics worker-system interaction.
- Patient generally has an active role as a ‘co-worker’ in performance of the task.
- Need to consider:
  - Animate nature of the ‘load’
  - Patient’s capabilities, limitations, expectations & concerns.
Assessment of Patient MHP Risk Factors &/or Intervention Outcomes

- Assessment of patient related MSD risk factors for care staff includes: patient’s weight, dependency and cognitive function.
- Measures of patient MHP intervention outcomes have included: subjective criteria (e.g. pain, anxiety) & quality of patient’s movements during and/or on completion of the transfer.
- TROPHI tool (Fray & Hignett 2013): includes measures of patient condition, patient perceptions, patient injuries & quality of care.
Emerging Key Issue: Patient MHP Intervention Outcomes

- Patient MHP intervention outcomes - such as functional mobility and patient safety - emerging as a key issue (Nelson et al 2008; Fray & Hignett 2010; Taylor et al 2011; Taylor et al 2014).
- Lack of evidence regarding patient MHP outcomes, considered to have limited investigation of association between MHP risk management & quality of care (Nelson et al 2008; Fray 2010).
MHP Risk Management and Functional Mobility Outcomes for the Older Person

- Frailty & functional mobility limitations associated with ageing: may require need for assistance
  - Exercise & rehabilitation may improve mobility
  - Mobility task demands can be reduced through personal assistance (i.e. manual handling), equipment provision & environmental changes.

- Encouraging patient to utilise residual physical capacity within the MHP interaction is a published risk control intervention, based on individualised assessment of the patient’s health status, environment and mobility tasks to be performed.

- MSD risk management mostly considers staff injury outcomes - not patient outcomes such as functional mobility.
Environment-related MHP interventions: Dual benefits

- Interventions (e.g. appropriate seated heights to aid sit-to-stand (STS) transfers):
  - Evidence based
  - Optimizing resident mobility - legislative & funding requirement
  - Relatively simple and cost-effective
  - Address quality of care outcomes for the resident & best practice in MHP risk management for the care worker.
  - However - not systematically applied.
Environment-related MHP interventions

• Methods for assessment of MHP risks and/or effectiveness of MHP interventions - some measures of environmental factors.

• Limited assessment of nature & extent of environment-related MHP interventions, such as seating provision & height adjustment, that may influence patient mobility outcomes.
Guidance Publications

- CCOHS (2018). Ergonomic Safe Patient Handling Program