Evidence-Based Safe Patient Handling Program Successes

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“The adult human form is an awkward burden to lift or carry. Weighing up to 200 pounds or more, it has no handles, it is not rigid, and it is susceptible to severe damage if mishandled or dropped.”

Lancet, 1965

When lying in a bed, a patient is placed inconveniently for lifting, and the weight and placing of such a load would be tolerated by few industrial workers.”

Lancet, 1965
Why Study Nursing Musculoskeletal Injuries?

- 62% of RNs are concerned about suffering a disabling musculoskeletal injury
- 80% report working despite pain
- RNs rank 5th with 11,880 MSDs with DAW
- Nursing Assistants rank 1st with 25,010 DAW cases
- Attributed to transferring, repositioning, and ambulation of healthcare recipients

Highest Risk Occupations for Back Pain in Females in the U.S.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Cases</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing Aides &amp; Orderlies</td>
<td>269,000</td>
<td>18.8</td>
</tr>
<tr>
<td>Licensed Practical Nurses</td>
<td>99,000</td>
<td>16.3</td>
</tr>
<tr>
<td>Maids</td>
<td>84,000</td>
<td>14.9</td>
</tr>
<tr>
<td>Janitors and Cleaners</td>
<td>102,000</td>
<td>13.3</td>
</tr>
<tr>
<td>Health Aides, except Nursing</td>
<td>39,000</td>
<td>11.1</td>
</tr>
<tr>
<td>Registered Nurses</td>
<td>174,000</td>
<td>10.4</td>
</tr>
</tbody>
</table>

Research Process to Change Industry Practice

- Analysis of the Injury Data
- Peer & Stakeholder Review and input from “Key Opinion” Leaders
- Multidisciplinary Lab/Field Research
Research Methods to Change Industry Practice

- Intervention Trials
  - Develop business case
  - Assess program sustainability
- Develop “Best Practices”
- Develop evidence-base of research
- Disseminate research findings

What I Will Try to Cover?

- Evolution of Safe Patient Handling Research
- Define “Best Practices” Programs
- NIOSH Lab and Field Research
- Legislation and Policy Initiatives
- Future Challenges
- Slips/Falls, Violence and Shift Work and Long Work Hours

History of Nursing Back Injury

- Earliest reference cited (Hampton, 1898)
- 1915 - 10% in hospitals (Joel & Kelly, 2002)
- In the 1940s Post WWII – Early Ambulation
- “Aching Back” in Nursing Journals (Svec, 1951)
Evolution of Nursing Back Injury Research

- Injury rates by job title, gender, tenure and other demographic characteristics
- Ineffectiveness of Body Mechanics Training
- Task Analyses
- Biomechanical Lab Studies
- Intervention Field Trials
- Validation of “Best Practices”
- Policy Initiatives

Elements of a “Best Practices” Program

- Management Support
- Safety Culture
- Medical Management
- Stakeholder Input
- Lab and Field Testing
- Written Policies
- Engineering Controls

“Best Practices”

35-Pound Weight Limit

Even when lifting a patient with two people, the weight of any adult far exceeds the acceptable limits for manual lifting.
NIOSH Patient Lifting Research

**LAB STUDY**
- Efficacy
- Exposure Assessment
- Biomechanical Stress
- Patient Comfort and Security
- Ease of Use
- Time to Conduct Transfer

**FIELD STUDY**
- Effectiveness
- Injury rates
- Workers’ Compensation costs
- Lost workday rates
- Restricted workday rates
- Return to work issues

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Lab Study Findings

- Lifting devices significantly reduce low-back compressive forces and remove 2/3 of the lifting exposures.

- Lifting devices reduce the risk of sudden movement injury.
**Trialability**

Lab Study testing patient lifts

Field Study – Patient lifts from 3 different manufacturers were trialed for 30 days by nursing staff

Created Buy-in, ownership of the program, staff more likely to use

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**Length of Follow up**

1 year is not enough

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**Injury Rate per 100 FTEs Due to Resident Lifting/Transferring**

![Graph showing resident lift injury rate over years]
Workers' Compensation Costs Due to Resident Lifting/Transferring

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
<th>$0</th>
<th>$50,000</th>
<th>$100,000</th>
<th>$150,000</th>
<th>$200,000</th>
<th>$250,000</th>
<th>$300,000</th>
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</thead>
<tbody>
<tr>
<td>&lt;16-24</td>
<td>$183,012</td>
<td>$161,337</td>
<td>$161,337</td>
<td>$61,020</td>
<td>$31,716</td>
<td>$249,706</td>
<td>$20,820</td>
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<td>16-24</td>
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<td>$111,837</td>
<td>$111,837</td>
<td>$21,716</td>
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<td>25-34</td>
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<td>$0</td>
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<tr>
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<td>$0</td>
<td>$75,000</td>
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<td>$0</td>
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<td>45-54</td>
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<td>$0</td>
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<td>$0</td>
<td>$25,000</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
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<tr>
<td>55+</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$5,000</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
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</tbody>
</table>

Pre- and Post-Intervention Injury Rates by Age Group

<table>
<thead>
<tr>
<th>Length of Employment</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1yr</td>
<td>$161,337</td>
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<td>1-5yr</td>
<td>$61,020</td>
<td>$31,716</td>
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<tr>
<td>5-10yr</td>
<td>$31,716</td>
<td>$0</td>
</tr>
<tr>
<td>&gt;10yrs.</td>
<td>$0</td>
<td>$0</td>
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</table>

Pre- and Post Patient Handling Injury Rate by Length of Employment
Pre- and Post Patient Handling Injury Rates by Gender

Injury Rate Pre- and Post for each Nursing Home

Poisson Regression Results

• Worker Compensation Data
  – Rate Ratio = .34 (.24, .47),
  – p-value = .0001

• OSHA 200 logs
  – Rate Ratio = .42 (.30, .58),
  – p-value = .0001

• 1st Reports of Employee Injury
  – Rate Ratio = .62 (.47, .82),
  – p-value = .006
Field Study Results
Pre- vs. Post-Intervention

• 47 Worker Comp Claims per Year vs. 16 
  ↓ 66%
• 14.0 Injuries/100 Nursing Staff vs. 5.6/100 
  ↓ 60%
• LWD Rates 5.8/100 vs. 2.0/100 
  ↓ 66%
• RWD Rates 9.3/100 vs. 5.7/100 
  ↓ 39%
• $152,075 Worker Comp Costs vs. $74,352

Business Case
Does the intervention pay for itself?

• Business Case for Safe Patient Lifting Programs
  • Mailed to 17,000 Nursing Homes
  • Portuguese & Japanese
  • 2.5 year payback

Business Case
• Does the intervention pay for itself?

Business Case
• Business Case for Safe Patient Lifting Programs
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Acute Care Hospital – Safe Patient Lifting Program Evaluation

• Urban Level 1 Trauma Center
• 40,000 admissions per year
• 776 licensed beds
• 6,300 employees

Establishing the Safe Patient Handling Program

• In 2006, 60% of lost-time injuries were associated with patient-handling
• Presented business case - senior leadership
• Presentation of unit specific data
• Identified equipment and educational needs
• RN Retention
• Patient Outcomes

Safe Patient Handling Program

• Created Injury Prevention Specialist position
• Safe Patient Handling Policy
• Patient Education
• Established Team Champions
• Monthly rounds on Ceiling-lift units
• Ceiling-mount lift installation
**Study Methods**

- 9-year longitudinal field trial (3 years pre- and 6 years post-intervention)
- Assess intervention effectiveness
  - Injury rates
  - Injury costs
  - Nurse satisfaction

**Ceiling Mounted Lift Installation**
- Lifts to cover all adult inpatient rooms & all Emergency Department rooms (except Labor & Delivery / Post-Partum)
- 18 months to install 483 lifts (572 beds)
- Radiology
  - CT scan rooms
  - MRI holding areas
- Installed in all newly created nursing units

**Initial Rounding**
- Monthly rounds to reinforce education, ensure compliance and encourage change in culture
  - Counted slings in use
  - Reviewed patient specific needs with nursing staff
  - Discussed barriers and strategies to overcome barriers
- Shared unit data and comments with Nurse Managers and Champions
Continuous Reinforcement

- Repeated Hands-on Training
- Videos support safe patient handling intranet webpage
- 35-pound recommended weight limit campaign
- Product Alerts
- Advanced SPH Course
- Nursing and Preceptor Orientation

PRODUCT ALERT
Use of Ceiling Lifts when your patient is on SPINAL PRECAUTIONS

- Patient is unable to maintain a head of at least 20 degrees
- Must be transferred using a hip belt or prone position

Champion Rounds Unit Specific Data

- Repositioning (% Daily)
- Transfer (% Daily)
- Turning (% Daily)
- Lift Lift (% Daily)
SPH Policy & Patient Education

- Policy reinforces accountability with use of equipment
- Patient education pamphlet

Preliminary Results

- 48% Decrease in Workers Compensation Dollars Incurred
  - Incurred includes dollars paid to the injured employee and reserve dollars
- 80% Decrease in Nursing's Lost Work Days on CML Units
- 73% Decrease in R.N. & Certified Nursing Assistant (C.N.A.) Replacement Costs

New Student Nursing Curriculum

- NIOSH, ANA, and the Veteran’s Administration
- Evidence-Base of Science
- Nursing School Faculty
- 26 Schools of Nursing/Clinical Labs
- NCLEX Test Questions
National Conference

- VA, NIOSH, ANA Co-sponsor
- Started 10 years ago 75 attendees
- April 11-15, 2016, Glendale, AZ
  - Healthcare practitioners
  - Not Researchers

Legislation

- Testimony before Congress
- 11 State laws
  - California – 10/11
  - Illinois – 7/11
  - New Jersey – 01/08
  - Minnesota – 05/07
  - Maryland 04/07
  - Rhode Island – 07/06
  - Hawaii – 04/06
  - Washington State Law – 03/06
  - Ohio – 03/06
  - New York – 10/05
  - Texas State Law – 06/05
- Federal Bill Submitted
ANA Safe Patient Handling and Mobility Standard

• Standards to establish basis for policies, laws, regulations to protect workers, patients
• 26 Member Work Group

Future Challenges

• Changing Safety Culture
• Program Sustainability
• Home Health Care
• Bariatric Patients
• Legislative and Policy Initiatives
• Nursing Curriculum
• Show Link to Patient Outcomes

Leading Sources of Workers’ Compensation in Health Care

• Overexertion, primarily due to patient lifting and repositioning
• Slips, Trips, and Falls
### Workers Compensation Claims
#### Cost by Incident Type

<table>
<thead>
<tr>
<th>Incident Type</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work</td>
<td>$1</td>
<td>$2</td>
<td>$3</td>
</tr>
<tr>
<td>Auto</td>
<td>$4</td>
<td>$5</td>
<td>$6</td>
</tr>
<tr>
<td>Medical</td>
<td>$7</td>
<td>$8</td>
<td>$9</td>
</tr>
<tr>
<td>Fall</td>
<td>$10</td>
<td>$11</td>
<td>$12</td>
</tr>
<tr>
<td>Slip</td>
<td>$13</td>
<td>$14</td>
<td>$15</td>
</tr>
<tr>
<td>Trip</td>
<td>$16</td>
<td>$17</td>
<td>$18</td>
</tr>
<tr>
<td>Fall</td>
<td>$19</td>
<td>$20</td>
<td>$21</td>
</tr>
</tbody>
</table>

*Photo Credit: Alex Telfer [www.proofphoto.com](http://www.proofphoto.com)*


### Slip, Trip, and Fall Prevention for Healthcare Workers


### Safe Patient Handling Training for Schools of Nursing
NIOSH Workplace Violence Prevention On-line Course
http://www.cdc.gov/niosh/topics/violence/training_nurses.html

Workplace Violence Topic Page
http://www.cdc.gov/niosh/topics/violence

American Nurses Association
INCIVILITY, BULLYING, AND WORKPLACE VIOLENCE

- ANA Position Statement
- Background of the issues
- Primary, secondary, and tertiary prevention recommendations
- ANA resources
- Extensive references
NIOSH Training for Nurses on Shift Work and Long Work Hours

• http://www.cdc.gov/niosh/docs/2015-115/

Provides nurses and their managers training and recommendations to address the health and safety risks associated with shift work, long work hours, and workplace fatigue.

Thank you!

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Phone: (304) 285-5998

http://www.cdc.gov/niosh/topics/safepatient/default.html

“The findings and conclusions in this presentation are those of the author and do not necessarily represent the views of NIOSH.”