

The Elephant in the Room: Huge Rates of Nursing and Healthcare Worker Injury

Nearly all of us are aware of nurses with back pain—or we may suffer from it ourselves. What we may not realize is how enormous the problem is. This issue of the UNA Newsletter is dedicated to educating Utah nurses about the risks they and their co-workers face in performing routine patient care. We'll also give you information about what you can do to help: you *and* your co-workers.

“My name is Elizabeth White. I am an RN who graduated in 1976 from the BYU College of Nursing. In December, 2003, I was working in the Surgical ICU at Arrowhead Regional Medical Center, the San Bernardino, California county hospital. My assignment that night was a 374 lb patient who was on a ventilator and also on spinal precautions. I was able to get help to turn and bathe him only once that shift. However, because he was on spinal precautions his mattress was flat, but had to be in reverse Trendelenberg because of the vent. He slid down to the foot of the bed, of course. Only one other staff member was available to help pull him away from the foot of the bed. By the end of the shift, I was in so much pain I could hardly walk. I ended up leaving clinical nursing: nearly six (6) years later I still have pain on a daily basis.”

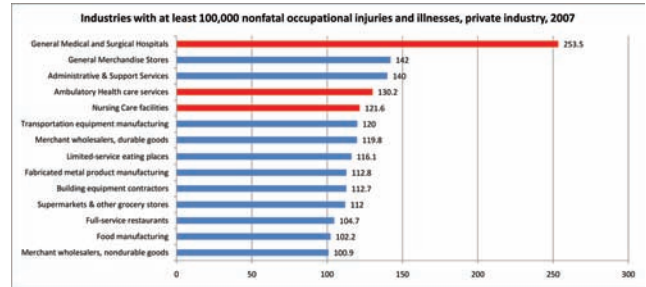
Last year, over 71,000 nurses suffered a back injury—but these are only the injuries that can be directly traced to work. 48% of nurses complain of chronic back pain, but only 35% have reported a work related injury.ⁱ Many of the injuries will simply be endured by nurses and health care givers, with no recourse to any compensation. The cumulative weight lifted by a health caregiver in one typical eight hour shift is 1.8 TONS.ⁱⁱ *Back injuries are incremental and pain often presents in unrelated circumstances.*

Cost of the problem

Nurses back injuries cost an estimated \$16 billion annually in workers compensation benefits. Medical treatment, lost workdays, “light duty” and employee turnover cost the industry an additional \$10 billion.ⁱⁱⁱ

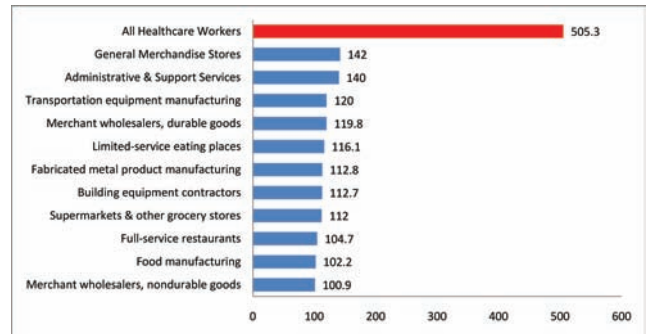
Bureau of Labor Statistics show an inexcusable situation. Fig. 1 is a 2007 Bureau of Labor Statistics chart of the industries with the highest numbers of worker injuries.^{iv} The top category: hospitals. In addition, the fourth and fifth categories are also of health care workers. In total, over 505,000 health care workers were injured. We know that a large percentage of these injuries are due to patient handling.

Fig. 1^v



It is interesting that the Bureau of Labor Statistics divided health care into three categories, when they are really of one industry. A more accurate chart would look like Fig. 2:

Fig. 2



Healthcare worker injuries were **three times** the number of any other industry. Also, the **RATES** of injury are six times the rates of construction workers and dock workers. Why are we not angry? Perhaps it is because we are used to it, and figure that it can't be any other way. After all, patients must be cared for, right?

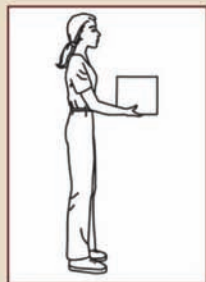
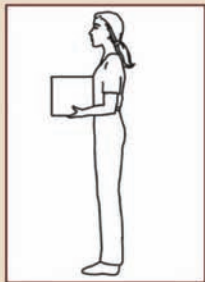
THE CAUSES OF NURSING BACK INJURY, or, YOU MUST NOT BE USING GOOD BODY MECHANICS

Hospitals and nursing homes are well aware of the risks of back injury resulting from patient care. Virtually all of us have had numerous “back injury prevention” classes over our work life. Why then, are the injuries so high? Is it because we just don't listen? Or, is it because *there is no safe way to manually lift and care for patients?* Just look at the diagram on page 2 for a comparison between the NIOSH lifting standards and everyday patient care reality.

NIOSH, (National Institute of Occupational Safety and Health) a division of the Centers for Disease control, sets standards for safe lifting practices.

The Standards

When a worker's hands are 10 inches from the ankles, 1/3 of the worker's body weight may be lifted, if a rest period follows. This is about 51 pounds for the average worker.



When the worker's hands are farther from the ankles, the weight must be reduced. When the hands are 16 inches from the ankles, the weight must be reduced by 40%. This would be about 30 lbs.

When a worker's hands are 25 inches from the ankles, the weight must be reduced by 60%. This would average 20 lbs. **NO Weight should be lifted beyond that point.**



The Reality

When a nurse turns a patient from side-to-side the reach is 33 to 35 inches. The nurse must lift 35% of the patient's body weight, an average of 52.5 lbs. **This is FAR beyond safe lifting limits!**



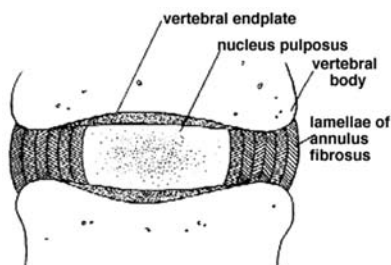
To transfer a patient, the nurses kneel on the bed, reach completely across, and pull. This requires even worse body mechanics.

Pulling a patient up in bed requires that the patient be lifted nearly off the mattress. Though the reach is not far, half of a normal patient's body weight (75 lbs.) is excessive lifting.



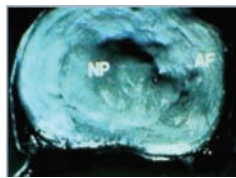
There are physiological reasons for this. William Marras, PhD, CPE, Honda Professor and Director of the Biodynamics Laboratory, Institute for Ergonomics at Ohio State University has made extensive studies on what happens to the human back under stress.^{vi}

Basic anatomy lesson: the intervertebral disc is fibrous, dense tissue with a resilient gel filled center. The outer fibrous ring is called the annulus fibrosus, and the center the nucleus pulposus. It has no blood supply, and no nerve endings. It receives its fluid and nutrients by osmosis from the adjacent vertebrae bone through the end plate, which also attaches the disc to the vertebrae.



Pathophysiology, or, We all have our limits

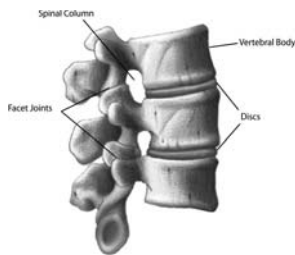
When lifting tolerances are exceeded, the end plate of the intervertebral disc is damaged with tiny tears called microfractures. No pain is felt, since nerve endings are not present in the disc or the end plate. These microfractures then heal with protein agglutinins and scar tissue which is thicker and less permeable than the normal tissue. Over time, with many microfractures occurring, most of the end plate of the vertebra converts to scar tissue. The disc can no longer absorb fluid and nutrients. It becomes weakened, porous, soft and dry, which is the condition we know as degenerated disc. The softer tissue then bulges into the spinal column causing pain and muscle spasm, or the gel in the center of the disc can even herniate through the soft porous outer tissue, causing much greater pain. With severe degeneration, the disc can collapse, which narrows the space available for the nerve root. This narrowed space puts pressure on the nerves, causing pain and muscle spasm.



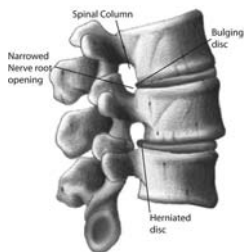
Normal disc



Degenerated disc



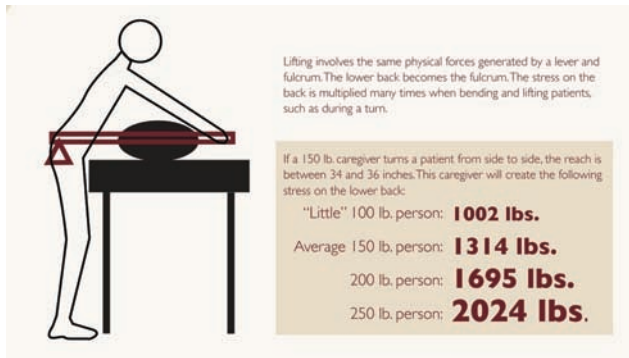
Normal spine anatomy, with healthy discs.



Disc degeneration causing bulging or herniated disc, resulting in back pain.

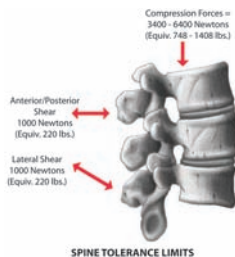
What are safe lifting pressures for the disc, or, Should you lift a “little 100 lb grandma”?

Downward pressure will cause damage to the disc end plate at pressures from 700 to 1100 lbs. Since many caregivers are physically small, the limits should be at the low end of this. However, most manual patient handling includes pushing and pulling elements. With pushing and pulling, damage occurs at about 1/3 the force. Nurses understand shearing: shearing damage to the disc occurs at lower forces than pressure.



vii

This illustration shows only the downward pressure, and doesn't take into account the pulling (shearing) required to turn a patient on to his side. Nurses are the ONLY people who call 100 lbs *light!* Since there is no way to keep the weight bearing close to the body, no “good body mechanics” will compensate for the forces that damage your back.



viii

THERE IS NO SAFE WAY TO MANUALLY MOVE A PATIENT!!! EVER. You WILL be injured *every single time* you manually move a patient. This includes not only transfers, but turning, linen changes, rolling a patient on to a sling, boosting the patient up in bed, and assisting the patient to stand.

WHAT IS THE SOLUTION to manual patient handling? Patients must be cared for. Every nurse knows it is not an option to simply refuse to care for their assigned patients.

Lifting Teams? These teams are very expensive, though they have been shown to reduce injuries. But, what about the lifting team? They will be injured as well, inevitably. Also, no lifting team can be everywhere at once, and patients may need repositioning at any time, not just on the lifting team schedule.

Patient Handling equipment is the only answer. There are multiple equipment solutions available on the market today. None does everything; but there is equipment available which will completely eliminate the manual lifting required for patient care.

We apologize to all makers of equipment which are not featured in this article. Care has been taken to present representative examples of equipment performing each task. Each facility should determine its own needs, and investigate each company and brand of equipment. We do not present the pros and cons of different types of equipment. A list of companies who manufacture and sell each type of equipment is provided, to give some place to start to those who might wish to begin. The list of companies is by no means exhaustive. No remuneration has been given by any company.

Tasks which exceed safe spinal loading, requiring Safe Patient Handling Equipment:

- **Transfers:** bed to bed, or gurney to bed
- **Transfers:** bed to chair, chair to shower
- **Bed repositioning:** Side to side turn, and pull away from the side rail
- **Bed repositioning:** Boosting to the head of the bed
- **Bed repositioning:** Linen changes and bathing
- **Sling placement:** Bending and lifting to roll a patient on to a sling
- **Assisting patient to stand**
- **Assisting a patient up from the floor**

Bed to bed transfer



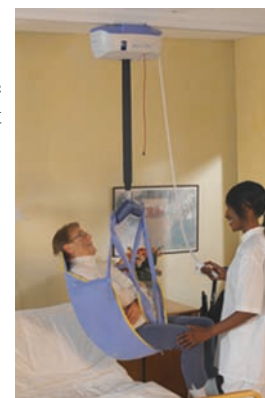
This is a mattress that uses a blower to inflate a mattress, which then slides on a cushion of air. The brand name is Hover Matt. It removes most of the friction so the force needed for transfer is minimal.



Slide Boards reduce friction; not entirely but they help. Some facilities use a slick fabric tube or even garbage bags to reduce the friction in a bed to bed transfer.

Bed to wheelchair transfer

A ceiling lift can facilitate transfers, after placing the patient on a sling. This is an Arjo lift.



An Arjo bariatric lift accommodates heavy patients.



This Liko mobile lift will lift in sitting, standing or horizontal positions.



The Arjo 4-point spreader bar puts the patient in a comfortable semi-reclined position.



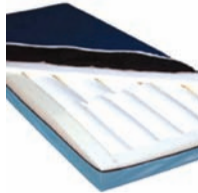
There are also vehicle transfer solutions. Liko has a video on its web site.

Bed Repositioning: Side to side turn



Advanced hospital beds have skin saving programs, and some abilities to reposition patients. This is the Hill-Rom Versa-Care bed. Some mattress overlays available will turn the patient by inflating the mattress on one side, then another.

This is an advanced mattress by Joerne, for pressure reduction.



Bed Repositioning: Boosting patients up in bed



The ErgoNurse, designed for bed repositioning, boosts a patient using the sheets. It will also lift for side to side turns, linen changes and bathing.



A Liko ceiling lift repositions a patient using a loop sling. Linen can be changed while the patient is suspended.

Some specialty fabrics will allow boosting with minimal effort, then resist sliding again.

Linen changes and bathing of bedridden patients



Ceiling lifts can use repositioning slings to move the patient around for linen changes and bathing.

Placing the patient on a sling:



The ErgoNurse uses a sheet to suspend the patient, allowing sling placement without bending and lifting.



This is a Barton Sit-to-Stand device.

Assisting a patient up from the floor



The HoverJack, from HoverTech, inflates to lift a patient from the floor.

Companies offering Safe Patient Handling equipment:

- ArjoHuntleigh/Diligent Services
- aXtraHand, LLC
- Barton Medical Corporation
- Dane Technologies, Inc.
- Ergolet
- ErgoNurse
- ERGOTug, Division of NuStar, Inc.
- EZ Way
- Guldmann Inc.
- Hill-Rom, Inc.
- Horcher Lifting Systems, Inc.
- HoverTech International
- Jamar Health Products, Inc.
- Joerns Healthcare, Inc.
- LiftSeat
- Medcare Products
- Molift, Inc.
- Optima Products, Inc.
- Prism Medical
- RecoverCare
- Rehab Seating Systems
- Rifton Equipment
- Sizewise
- Stryker
- SureHands Lift & Care Systems
- Technimotion Medical, a Division of Ergo-Asyst Technology
- Vancare, Inc.

Help is on the horizon. Nationally, the Nurse and Health Care Worker Protection Act of 2009 has been introduced in both houses of Congress. In brief, these bills (identical at the present time) require OSHA to establish a safe patient handling standard, require health care facilities to establish safe patient handling programs, and allow health care workers to refuse to perform any lifting task which exceeds the standards or for which they have not been trained. The House bill is HR 2381, and the Senate bill is S 1788. It is certain that the wealthy and powerful hospital lobby will oppose the bill. However, we nurses have numbers on our side. Since there are about 2.5 million nurses, and about 1 million nursing aides, if we were all to contact our legislators, we could ensure the passage of these bills.

HOW TO CONTACT YOUR REPRESENTATIVES IN CONGRESS:

For the House of Representatives: Go to: House.gov, and put in your zip code. The website will tell you who your representative is, and contact information for them. Those who do not live in Utah can also visit the websites; just put in your state and you can get your representative information.

Utah's senators are:

- Senator Orrin Hatch
- 104 Hart Senate Office Bldg
- Washington, DC 20510
- 202-224-5251
- Legislative Aide in charge of health care: Linda Gibbons
- Tel: (801) 524-4380

Senator Bob Bennett
 431 Dirksen Senate Office Bldg
 Washington, DC 20510
 202-224-5444
 Legislative Aides for Utah:
 John Cox—Labor
 Jessica Christopher—Health Care
 Phone: (801) 524-5933

Note! The volume of emails is now so great that less attention is paid to them. They will get it, but it might take a while. It is better to send a hard copy of your letter.

COST EFFECTIVE

Safe Patient Handling equipment is very cost effective. When associated factors such as lost work days, modified duty, worker retraining, employee turnover, and even bedsores are factored in, the hospital recoups its investment in less than two years!

Those who have instituted Safe Patient Handling programs have learned that not only is equipment needed, but training, education and surprisingly, enforcement. Though it may seem a paradox, many times caregivers resist change. They've been doing it one way for their entire working careers as caregivers, and feel that it takes too much time, or is inconvenient. Yet, they continue to incur injuries at high rates. However, when a no-lift policy is implemented (and if necessary, enforced), the staff will adopt the safe patient handling equipment especially as they realize their back pain and injuries diminish. Oregon SAIF, the State Worker Comp Company, instituted pilot Safe Patient Handling programs, and has seen injury rates and costs plummet.^{ix} Harris Methodist Ft. Worth, in Ft. Worth Texas, also instituted a pilot program, and went to zero injuries.^x Their pilot unit has had no injuries in 2 ½ years. We know that these injuries are entirely preventable. Let's work together and solve this problem.

- ⁱ "Safe Patient Handling: A Report", by Peter Hart & Associates, March 2006
- ⁱⁱ Tuohy-Main, Kate, "Why manual handling should be eliminated for resident and carer safety," *Geriatrics*, 1997, 15(10)
- ⁱⁱⁱ Eldlich, Richard F., Kathyne L. Winters, Mary Anne Hudson, L.D. Britt, William B. Long, "Prevention of disabling back injuries in nurses by the use of mechanical patient lift systems," *Journal of Long-Term Effects of Medical Implants*, 2004, 14(6)
- ^{iv} Bureau of Labor Statistics, Department of Labor, *Nonfatal Occupational Injuries and Illnesses Requiring Days Away from Work*, 2007, Nov. 2008
- ^v Bureau of Labor Statistics, 2008, op cit
- ^{vi} Marras, W. "A Comprehensive Analysis of low-back disorder risk and spinal loading in patient handling", *Ergonomics*, 1999, 42(7) 904-906
- ^{vii} Bloswick, Donald, Professor of Ergonomics at the University of Utah, "Manual Material Handling"
- ^{viii} Marras, 2009 op cit
- ^{ix} Oregon SAIF, report, http://www.saif.com/medical/medical_571.aspx
- ^x Dougherty, M, "Handle With Care," *Strategies for Nurse Managers*, April 2008