

# REDUCING PULMONARY COMPLICATIONS & HOSPITAL ACQUIRED PRESSURE ULCERS IN QUADRIPLEGICS

Gary Gates RN, MS, Cheri White PhD, ACNP-BC, CCRN  
Sutter Roseville Medical Center, Roseville, CA

## Zero incidence of pressure ulcers and pulmonary complications declined from 66 to 16 percent.

### PURPOSE

Cervical spinal cord injury (SCI) patients are at high risk to develop pulmonary complications and pressure ulcers that lead to increased morbidity and length of stay. A new process improvement plan was developed to reduce facility-acquired pressure ulcers while maximizing mobility, in addition to supporting pulmonary function and pulmonary toileting in SCI patients.

### BACKGROUND/PROBLEM STATEMENT

- To optimize pulmonary excursion and toileting, SCI patients are positioned sitting fully upright in a chair-sitting position as soon as their condition allows.
- The issues encountered were (1) concern over skin shear during transfer to cardio chair position, (2) additional staff time for repositioning patients in order to eliminate pressure areas created by the sides of the chair and cushions, and (3) beds that could not achieve a full upright position.

Pressure redistribution replacement surface designed for use with facility-owned step-deck bed frames.



- 4-way stretch fabric prevents shear and reduces the hammock effect for optimal patient envelopment.
- Breathable material allows low air loss to wick away moisture keeping the patient cool and dry.

### METHOD/SOLUTION

To achieve the goals of optimizing pulmonary function, toileting and zero skin breakdown, the unit collaborated with a specialty mattress manufacturer. This vendor developed a pressure redistribution replacement surface for use with facility-owned step-deck bed frames for the SCI population.

- The pressure redistribution surface provides low air loss therapy, static and alternation therapy modes and passive massage action to aid in the increase of capillary blood flow. The surface also has a four-way stretch cover to prevent shearing.
- These new surfaces were placed on existing step-deck bed frames that can be articulated into a chair.

A number of strategies were implemented to raise staff awareness of the issue around immobility and the subsequent potential for pressure ulcers and pulmonary complications. These proactive series of steps were intended to be simple, easy to follow and easily replicated in other units. These steps included:

- Developing a nurse-driven protocol for identifying patients at risk, which included a new process for ordering specialty surfaces.
- Training unit staff on the new protocol and ordering process, including key methods such as:
  - The need to turn patients every hour and document patient positioning.
  - Reinforcing and auditing concurrently staff interventions.
  - Using wedge pillows that provide a greater turn than traditional pillows.
  - Posting the unit pressure ulcer incidence data for increased staff awareness.
  - Identifying a unit PU clinical champion to educate staff and conduct prevalence and incidence monitoring.

### EVALUATION/OUTCOMES

Since the implementation in December 2008, the unit has used the pressure redistribution system with 102 patients. Two key areas of improvement were immediately found: PU incidence was reduced and pulmonary improvements were demonstrated.

- 11 SCI patients experienced a PU incidence rate of 0 percent.
- Pulmonary complications in the SCI population declined from 66 to 16 percent.

Today, the use of the pressure redistribution surface has expanded beyond the SCI population to other critically injured patients within the hospital system, and a new ordering process has been incorporated.

Poster presented at the 2010 National Teaching Institute & Critical Care Exposition with assistance & support of travel costs from:



SIZEWISE

800.814.9389 | sizewise.net

- Develop nurse-driven protocol
- Train unit staff on the new protocol