



## Evaluation of Portable Ceiling Lifts for Patient Handling in Diagnostic Imaging

### Background

#### *What is Nuclear Medicine?*

Nuclear medicine is a medical specialty in which small amounts of radioactive material are used to diagnose and treat diseases. Radioactive material is injected into a patient and, as it decays, special cameras detect the gamma rays that are emitted. Images from the cameras are displayed on a computer, providing information on that specific area of a patient's body.



Patients sit or lie on a special table through which the camera can take images. In the process, technologists must often lift and transfer patients onto the imaging table, and reposition them while on the table. Lifting, transferring, and repositioning patients are regarded as activities that place workers at risk of musculoskeletal injury (MSI).

#### *What are portable ceiling lifts?*

Portable ceiling lifts are hydraulic lifting devices that assist care staff in moving patients. The portable lifts run along tracks installed in the

ceilings of rooms and hallways. The lifts can be easily attached to and detached from the tracks, which allows them to be used in more than one room. Before patients are transferred or repositioned they are put into a sling that is hooked onto the portable ceiling lift. Care staff use a hand-held control to lift the patient and push the patient along the track to the desired location.

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*To reduce the risk of injury to technologists while handling patients, two nuclear medicine departments launched an overhead ceiling lift program.*

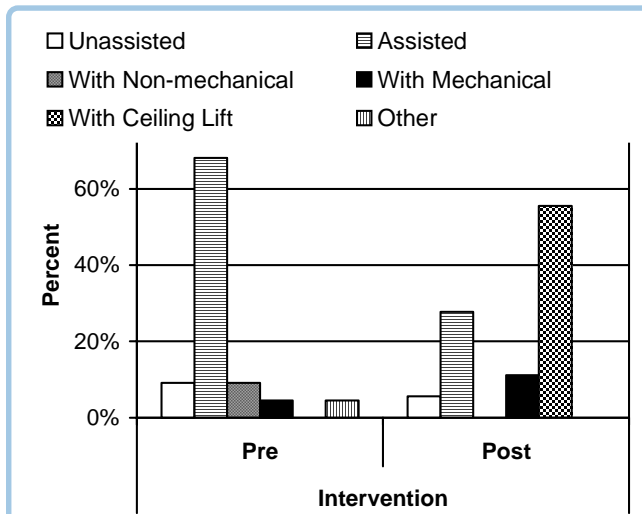
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#### *What was done and why?*

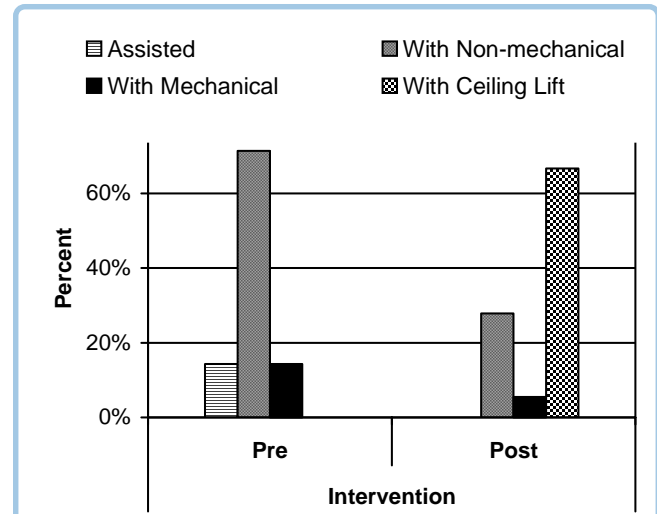
To reduce the risk of injury to technologists while handling patients, two nuclear medicine departments launched an overhead ceiling lift program. Ceiling lift tracks were installed in each camera room and each department was provided with a portable ceiling lift. Technologists received education and training on the use and maintenance of the overhead ceiling lifts. Technologists from a third nuclear medicine department formed the control group for the study.

### Methods

Technologists responded to a questionnaire before and after the implementation of the program to collect information on perceived risk of injury, pain or discomfort, preferred patient handling methods, and work organization. To determine if the program had an impact on injury rates, incident reports were used to compile injury data.



**Figure 1: Preferred patient handling method (chair-to-table or table-to-chair)**



**Figure 2: Preferred patient handling method (stretcher/bed-to-table or table-to-stretcher/bed)**

## Results

There were 22 technologists in the intervention group and 12 technologists in the control group. Approximately 56% of technologists preferred to use the overhead ceiling lifts to transfer patients from chair to table (Figure 1) and 67% preferred to use the lifts to transfer patients from stretcher/bed to table (Figure 2).

Technologists felt that the ceiling lifts significantly reduced ( $p < 0.05$ ) physical discomfort in the head, neck, shoulders, and arms when they moved a patient from chair to table or from stretcher/bed to table. When ceiling lifts were used to reposition patients, there was also a significant reduction ( $p < 0.05$ ) in physical discomfort in the shoulders, arms, and lower back.

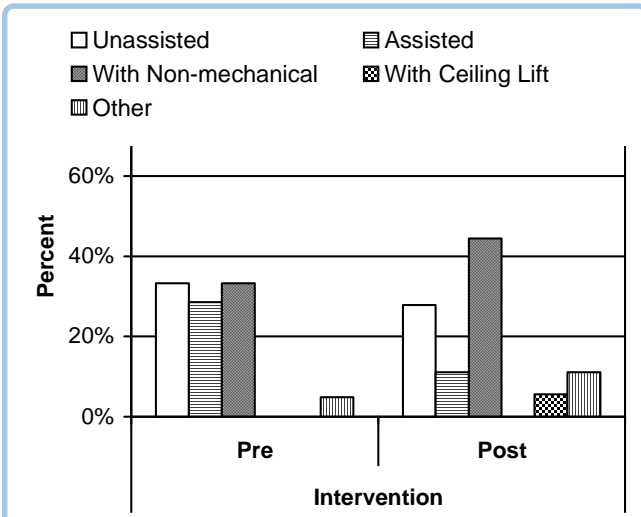
Overhead ceiling lifts were not the most preferred method for repositioning patients on the imaging table (Figure 3).

All of the technologists felt that the ceiling lifts made lifting patients easier, and the majority (88%) felt that using the ceiling lifts made their jobs easier to perform. Approximately 56% of staff agreed that ceiling lifts required less time than other devices, and 61% of staff found them to be safe and effective.

Although injury rates were compared before and after the program, it was difficult to determine the effects of ceiling lifts on injury rates due to the relatively small sample size.

### Key Points

- 56% of technologists preferred using portable ceiling lifts for lifting or transferring patients from chair to table
- 67% of technologists preferred using portable ceiling lifts for lifting or transferring patients from stretcher/bed to table
- All technologists found that lifting patients with the portable ceiling lifts was easier and 88% of technologists reported that their jobs had become easier to perform
- Portable ceiling lifts were not the most preferred method of repositioning patients



**Figure 3: Preferred patient handling method (repositioning patient on table)**



**Discussion**

Assisting patients to and from the imaging table can be a physically demanding aspect of a nuclear medicine technologist’s job. There has been little research on the impact of overhead lifting devices in diagnostic imaging departments. This project provides information regarding the usefulness of these assistive devices for handling patients in a nuclear medicine department.

After implementing the ceiling lift program we found that technologists preferred using ceiling lifts to lift and transfer patients. Technologists also felt that the ceiling lifts reduced the physical load of handling patients and decreased the presence of physical discomfort to certain parts of the body.

Overhead ceiling lifts were not the most preferred method for repositioning patients on the imaging table. When a patient only needs to be moved a small distance, using an overhead ceiling lift takes more time than traditional methods. Consequently, most technologists continued to use repositioning sheets and slider boards to reposition patients.

Portable ceiling lifts are beneficial in diagnostic departments because of the low frequency of assisted lifts, transfers, and repositions. These departments are particularly suited for portable ceiling lifts because the lifts can be moved easily from one room to another.



### Further Information

#### ***In what healthcare settings are portable ceiling lifts best suited?***

Portable ceiling lifts are ideal when the frequency of lifting and transferring patients in one particular room is low. Because portable lifts can be easily detached from and reattached to the tracks, they can be shared among a number of rooms. Departments where there are a large number of patients that need to be lifted and transferred should consider ceiling mounted lifting devices.

#### ***What information is available for facilities looking to implement a ceiling lift program?***

A resource guide has been collated by OHSAH, which outlines the steps needed to implement a successful ceiling lift program. In addition to providing specific information on selecting and configuring ceiling lifts, the resource guide provides sample material from an existing ceiling lift program implemented in the former Okanagan-Similkameen Health Region.

#### ***Have there been any other studies that have shown the effectiveness of ceiling lifts in reducing the risk of injury?***

Yes, there are a limited number of studies that have evaluated the effectiveness of ceiling lifts; however, none have been conducted in a diagnostic imaging environment.

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### Related Research

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