CE

Suggestions for Preventing

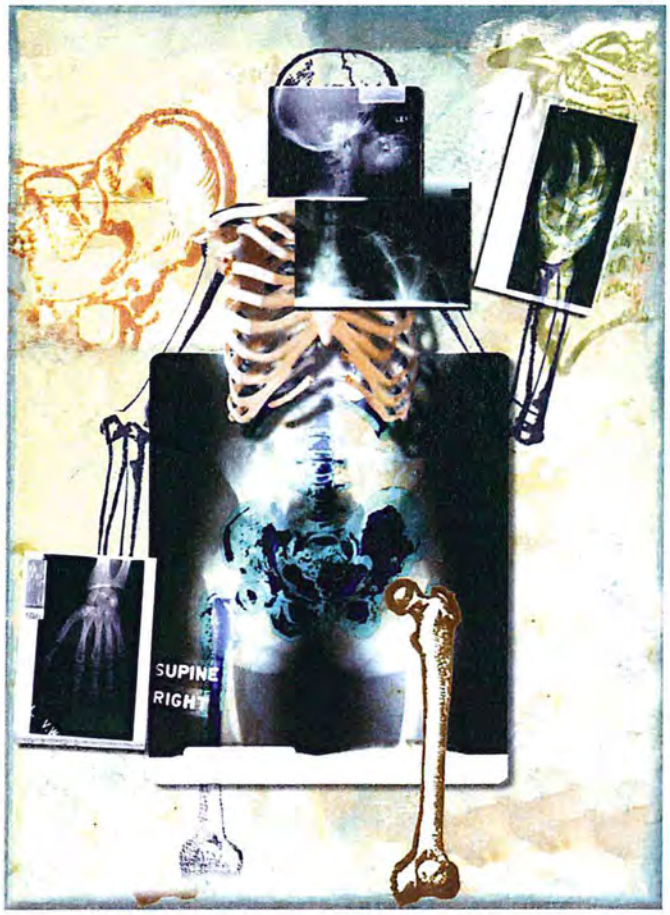
Musculoskeletal Disorders in Home Healthcare Workers

Part 2: Lift and Transfer Assistance for Non–Weight-Bearing Home Care Patients

Home healthcare (HHC) is one of the fastest-growing professions, currently employing more than 1 million workers in the United States. Unfortunately, these workers sustain an exceptionally high rate of musculoskeletal disorders. This is the second article in a two-part series providing information and suggestions for preventing overexertion that can lead to such disorders.

Overexertion from lifting and moving patients is a common cause of work-related injuries among healthcare personnel. As described in the first part of this two-article series (Parsons et al., 2006), the prevalence of such injuries is particularly high in HHC as compared with many other occupations (Bureau of Labor Statistics [BLS], 1994–2001; Galinsky et al., 2001). The purpose of these articles is to describe an ergonomic approach for preventing overexertion injuries in HHC workers. The approach involves the use of assistive devices and strategies that allow the patient's activities of daily living to be accomplished with minimal physical strain or discomfort on the part of the worker or the patient.

In part one, overexertion was defined, statistics were provided, and the importance of preventing injuries in HHC workers was addressed. Readers are referred to the first article, published in the March 2006 issue of *Home Healthcare Nurse*. That article described basic devices for assisting patients who have some degree of upper body strength or weight-bearing ability. In this article, more elaborate de-



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vices for assisting patients who can bear very little or none of their weight are described. It should be kept in mind that in some situations, the use of basic devices in conjunction with the more elaborate devices can further reduce the likelihood of overexertion while assisting patients who cannot bear weight. In some cases, the costs for assistive devices are fully or partially covered by insurance and may require a physician's prescription. It is imperative that all individuals who use a device are thoroughly trained to use it safely and properly.

Other useful sources of information on ergonomic strategies for safe patient handling are available from the Occupational Safety and Health Administration (OSHA; http://www.osha.gov/ergonomics/guidelines/nursinghome/index.html) and the Veterans Health Administration (VHA; Patient Safety Center; http://www.visn8.med.va.gov/patientsafetycenter). Those Web sites, although developed primarily for hospital and nursing home settings, also contain information that can be helpful in developing ergonomic strategies for home care environments.

Hospital Beds

The use of an electric hospital bed is a beneficial strategy for reducing the risk of musculoskeletal disorders because much of the moving and transfer of patients occurs in and around the bed. Newer fast-raising electric hospital beds can raise from the lowest to the highest bed height in 22 seconds or less. This feature increases the likelihood that a worker will properly adjust the height of the bed before and during patient handling tasks. Similarly, the results of a study by Nestor (1988) suggest that conveniently placing the primary nursing controls "on the bed side frame or siderail" may also encourage workers to use the controls to properly adjust bed height before maneuvering a patient.

Two additional, fairly inexpensive devices that can be useful for patients with very limited mobility are the inflatable bathtub and the inflatable sink (Figure 1). Both can be used while the patient remains in bed, reducing the need to transfer the patient to the bathroom solely for bathing purposes.

Hoists

In a recent study by Owen and Skalitsky Staehler (2003), aides rated the lifting and repositioning of patients in bed as being stressful to the lower back. Hoists are designed for the lifting and transferring of a patient, thereby minimizing the manual burden placed on the healthcare worker. With the use of a hoist, it is possible to perform such tasks as lifting a patient vertically, inclining a patient to a seated position, and transferring a patient from or to other surfaces, including the floor, a bed, a stationary chair, a wheelchair, a toilet, a commode, or a shower chair. It should be noted that some hoists require a patient to be manually maneuvered to a sitting position on the edge of the bed before being lifted mechanically.

Figure 1. Inflatable sink. (Copyright by Sammons Preston Rolyan. Reprinted with permission.)

Initially, use of a hoist may seem cumbersome, physically demanding, and time consuming. However, with practice, an aide can efficiently maneuver a patient using a hoist while significantly reducing the likelihood of musculoskeletal strain. Recent advances in the design of these devices have produced hoists that are more tip-resistant, more maneuverable in tight spaces, more time efficient, safer, and easier to use than older models (Evanoff et al., 2003).

There is a large variety of hoists on the market, each offering unique features and accessories. Thus, the needs and limitations of a particular patient must be considered when choosing the one that is most appropriate. The type of equipment selected often is contingent upon the patient's condition, disability, or rehabilitation goals. Hoists can be fitted with a variety of slings to ac-

commodate variations in patient size (including bariatric/obese) and positions (e.g., seated upright or incumbent). There are also specialty slings for amputees, slings for patients requiring head support, mesh slings for patient bathing, and disposable slings. Searching for products on the Internet or by calling local vendors will yield an abundance of information, and retailers can provide a great deal of assistance in evaluating needs and options. It is important that all instructions, including weight capacity specifications, be adhered to when using all equipment, for the safety of the patient as well as the home healthcare aide.

Hoists can be classified into four broad categories. Below is a general overview of these categories and some of the additional benefits and considerations associated with each.

Floor Hoists

These hoists consist of a base on wheels, body or mast, a top component often referred to as the arm or boom, a hanger for sling attachment, and a sling in which the patient sits. General variations in the raising and lowering mechanisms of these hoists include manual and powered variations. The added physical effort required by the aide when using a manual pump action to raise and lower an occupied hoist could pose more risk of musculoskeletal injury than use of a powered hoist. However, to the knowledge of the authors, no research has been conducted to confirm this possible difference.

Floor hoists are designed for temporarily lifting a patient vertically (for example, while the aide makes the bed) or transferring the patient between surfaces that are fairly close together (e.g., bed to wheelchair, wheelchair to toilet, etc.). Although some manual movement of an occupied unit over a short distance for the purpose of transfer may be unavoidable, most manufacturers of floor hoists state that they are not intended for transporting an individual from room to room throughout the home because of the potential for tipping the unit or swinging the patient while in transport. Tipping is particularly possible when crossing thresholds or other variations in floor surfaces often found in home environments. Furthermore, manually maneuvering an occupied floor hoist, particularly on padded carpet or other nonsmooth floor surfaces, can result in forceful exertions and awkward postures, which may increase the likelihood of musculoskeletal injuries (Waters et al., 2003).

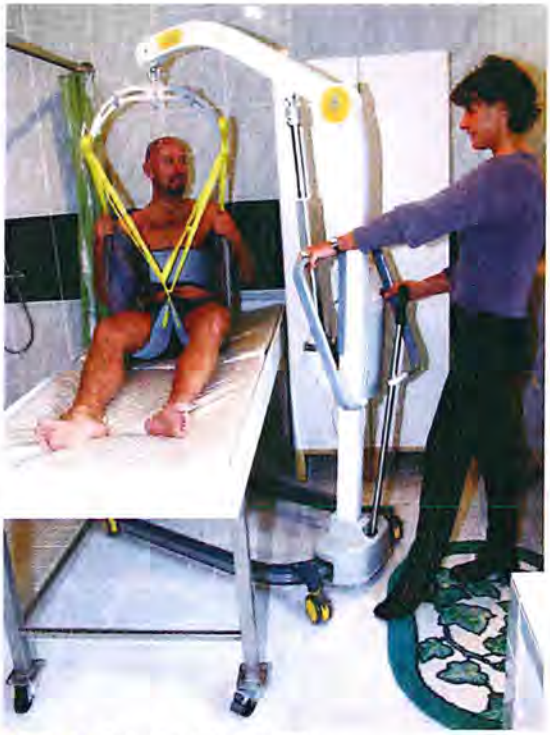

Figure 2. Standard floor hoist. (Copyright by SureHands Lift & Care Systems. Reprinted with permission.)

There are two main categories of floor hoists: (1) a standard floor hoist, which typically remains in a single household (Figure 2), and (2) a transportable floor hoist designed to be much lighter in weight so that the entire hoist can be taken apart or folded for transport during travel or for daily use in multiple patient home settings. Although advertised as highly moveable, currently the lightest of these transportable units weighs approximately 50 lb and can be quite cumbersome to transport and time consuming to assemble and disassemble (lighter versions are being designed). In addition, the maximum patient weight capacity is usually less with the transportable units than with the standard floor units. Another consideration is how household members will move the patient should the home care team member take the hoist when they leave the patient's home. This is a consideration with any equipment used by an aide in multiple patient homes.

Additional Benefits of Floor Hoists

- Do not have to be a permanent feature in a home

- Some transportable hoists can be folded for storage in closets or under beds when not in use

Additional Considerations for Floor Hoists

- Require sufficient open floor space for maneuverability
- Some types of flooring can impede movement along the surface

Sit-to-Stand Hoists

These units typically are used to provide assistance to individuals who are weight bearing and have some upper body strength (although these hoists are not designed for patients who cannot bear weight, they are described here to provide a thorough overview of hoists) (Figure 3). For safety reasons, these hoists should be used only with patients who are both cooperative and able to follow simple directions. These units are especially beneficial for removing a patient's pants for toileting purposes when the patient is in a standing position.

Additional Benefits of Sit-to-Stand Hoists

- Do not have to be a permanent feature in a home

Figure 3. Sit-to-stand hoist. (Copyright by Sammons Preston Rolyan. Reprinted with permission.)

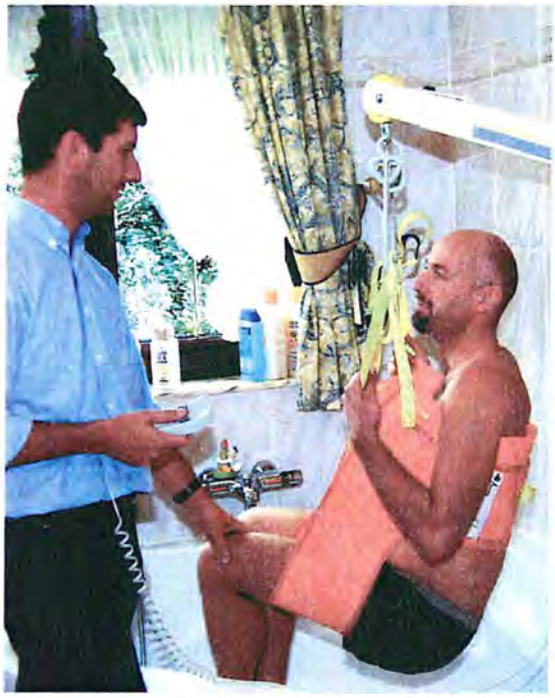

Figure 4. Wall-mounted hoist. (Copyright by SureHands Lift & Care Systems. Reprinted with permission.)

- Assist in maintenance of patient's upper body strength
- May facilitate patient independence and self-esteem

Additional Considerations for Sit-to-Stand Hoists

- Require adequate open floor space for maneuverability
- Some types of flooring can impede movement along the surface

Wall-Mounted Hoists

These units are mounted to the wall generally beside the bed or in the bathroom where space is usually limited and considerable patient transferring occurs (Figure 4). The level of force required to push or pull the patient during transfers using wall-mounted hoists is likely to be significantly less than that required for use with floor units (Waters et al., 2003). Some options include affixing several wall mounts throughout the home and transporting a single boom and hanger to be shared between mounts (this can be physically demanding) or affixing more than one complete

unit, including a boom and hanger, in various locations where the most patient transfers occur.

Additional Benefits of Wall-Mounted Hoists

- Excellent when space is tight and specific transfers are frequent, such as in the bathroom or at the bedside
- The wall-mounted hoist can be temporary or permanent, depending on need

Additional Considerations for Wall-Mounted Hoists

- Maximum permissible patient weight may be less than with some standard floor units
- Structural integrity of the wall may not permit the use of a wall-mounted hoist

Track-Mounted Hoists

Like the wall-mounted hoists, track-mounted hoists are an excellent option when space is tight and transfers occur frequently. One of the most important features of the track-mounted hoists is that they minimize the physical demand on the aide because the level of force required to push or pull the patient during transfers is significantly less than that required with the use of standard floor units (Waters et al., 2003). Tracking can be mounted permanently to the ceiling or to a semi-portable free-standing overhead frame anywhere in a room, such as over a bed or toilet.

Figure 5. Ceiling-mounted tracking. (Copyright by SureHands Lift & Care Systems. Reprinted with permission.)

The ceiling-mounted tracking allows for the greatest degree of mobility because the tracking can be mounted in nearly any length and configuration throughout the home (Figure 5). In many instances, ceiling mounted tracking can eliminate the need for a wheelchair. In general, ceiling-mounted tracking is installed as a permanent feature in a home. Additional options include specialty walking slings or harnesses to assist patients who can walk with some support or who need to walk for exercise or rehabilitation.

Overhead frame-mounted tracking (Figure 6), unlike ceiling-mounted tracking, can be moved

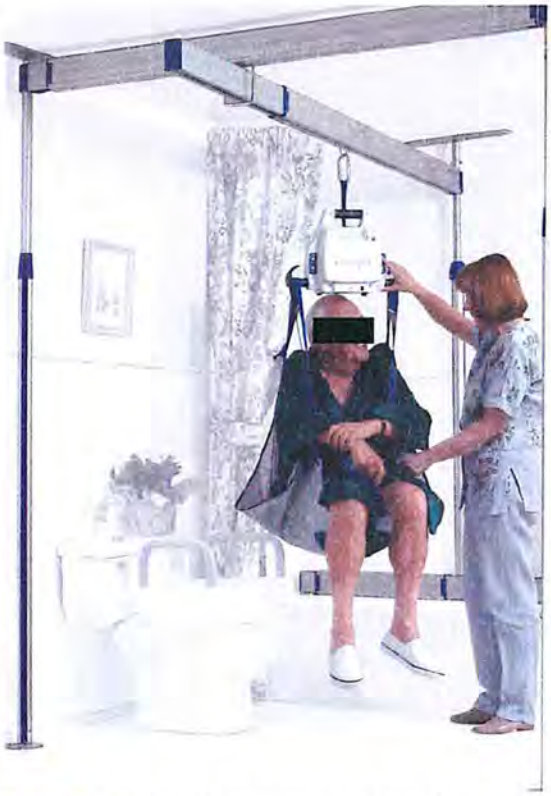

Figure 6. Overhead frame-mounted tracking. (Copyright by Sammons Preston Rolyan. Reprinted with permission.)

Figure 7. Portable hoisting unit. (Copyright by SureHands Lift & Care Systems. Reprinted with permission.)

and repositioned within an area and disassembled when necessary. The overhead frame-mounted track does require available floor space for the platform legs. Frame-mounted tracking can be more economical than ceiling-mounted tracking yet provides some of the same advantages. Other than a standard floor hoist, frame-mounted tracking may be the only option when the structural integrity of a ceiling or wall is not adequate for a ceiling- or wall-mounted hoist.

In addition to variations in the tracking, there are variations in the hoisting unit itself. For example, the unit can be motor driven or manually operated, depending on the model. Some of these hoisting units remain permanently mounted to the tracking, whereas others are portable and can be carried to another room or location for use in multiple homes (Figure 7). Portable hoisting units can weigh as little as 12 to 15 lb. There are a few points to consider when choosing between a permanently mounted hoisting unit and one of the lighter, more portable versions. First, the maximum permissible patient weight is generally less and the spreader bar for sling attachment is usually narrower with a portable hoisting unit than with a permanently mounted one, making these units less desirable for larger patients. In addition, there may be fewer lifts possible between battery charges. There is also the issue of how a family member will transfer a patient when the portable hoisting unit is removed to be used in another patient's home.

Additional Benefits of Track-Mounted Hoists

- Type of flooring is generally of no importance

Additional Considerations for Track-Mounted Hoists

- When using a portable hoisting unit, the unit may lower with the patient, thus remaining directly overhead during operation. For various reasons, some patients have reported disliking this feature.

Conclusion

According to the BLS (2006–2007), the home healthcare industry employed approximately 624,000 home health aides in 2004, and this occupation is expected to be one of the fastest growing through the year 2014. With this increased workforce comes the need for increased ergonomic awareness, education, and intervention. We hope this two-part series of articles provides a comprehensive set of useful suggestions toward that end. ■

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The conclusions in this report are those of the authors and do not necessarily represent the views of the National Institute for Occupational Safety and Health.

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The authors do not have any financial ties to any manufacturers of healthcare equipment. Some equipment manufacturers have loaned NIOSH equipment that it used in its research.

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