

PATRAN® SLIDE SHEETS AN INEXPENSIVE WAY TO START A SAFE-PATIENT-HANDLING PROGRAM

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ABSTRACT

Budget crunches and changes to the level of financial reimbursement for medical treatment and stays have put economic strains on healthcare facilities. The struggle over financial priorities has kept some facilities' leaders from allocating dollars for safe-patient-handling equipment and practices. Yet, in-roads can be made in reducing workers' compensation claims and other costs related to caregiver injuries with only a small investment by implementing simple yet versatile slide sheets. These sheets greatly reduce friction, allowing caregivers to slide a patient without the need for lifting or strenuous tugging. Slide sheets come in a variety of styles and sizes and, while not appropriate in all situations, can be useful in numerous frequently encountered scenarios – from moving a patient within their bed to transferring a fallen patient to a mechanical lift device.

Key Words: slide sheets, safe-patient handling and movement, equipment

INTRODUCTION

As healthcare administrators find operating budgets getting tighter, some perceive implementation of a safe patient handling and movement (SPHM) program as too costly to pursue. But the American Nurses Association (ANA) and other healthcare groups say that's a fallacy.^{1,2}

Repositioning and transferring patients are among the most common SPHM tasks that lead to caregiver injury. A low-tech, low-cost slide sheet (generally costing less than \$10 per patient) can assist in most of these cases. With no installation or accessories required, slide sheets (sometimes referred to as friction-reducing devices, slips, glide sheets, or lateral transfer devices) allow healthcare organizations to start an SPHM program with little financial investment and quickly prevent some of the most frequent and debilitating musculoskeletal injuries incurred by healthcare professionals. The U.S. Occupational Safety and Health Administration (OSHA) estimates that the direct costs of workers' compensation claims and wage replacement combined with indirect costs like employee turnover, training, and morale results in an average loss of \$27,000 to \$103,000 per patient-handling injury.³ With the return on investment⁴ resulting from reduced injury-related costs, a case can be made to use the savings to eventually add more extensive equipment and grow the SPHM program.

HOW THEY WORK

Slide sheets come in various sizes and styles. Some are large tubes, others are single sheets or a pair of sheets. Typically, they are made from a low-friction material or filled with gel.⁵ When placed under a patient,

caregivers can slide the patient to the desired location rather than having to lift or drag them. Thus, slide sheets are designed to remove the need for excessive force and limit the need for extreme postures associated with many patient-handling tasks.⁵ A number of studies have shown that only using a draw sheet or incontinence pad to move a patient for routine bed repositioning or transfers results in spinal loads and exertion levels that near or exceed the injury level.⁶ Using slide sheets reduces the forces required for these tasks to a safe level for the healthcare worker while at the same time reducing skin shear for the patient. The force required can be even further reduced by using a slide sheet in combination with gravity-assisted bed features, such as putting the bed in the Trendelenburg position, when boosting a patient (if there are no medical contraindications) to the head of the bed.⁶

While log-rolling is one method often used to get a patient onto a slide sheet, others exist. Tucking or unfolding the sheet under a patient, for instance, provide alternatives that help caregivers avoid the reaching and pulling of log-rolling and may be less stressful for spine and trauma patients. A demonstration of these techniques is available at www.patran.net. Not all styles of slide sheet accommodate all methods.

In addition to repositioning and lateral transfer tasks, many slide sheets can assist with other daily activities⁵ such as getting patients out of vehicles, repositioning them in chairs, moving patients who have fallen in awkward spaces to a place where a mechanical lift can be used, or preserving a patient's dignity by letting him or her adjust the seating on a commode.

Slide sheets vary when it comes to how often they can be used. Some can be laundered, allowing use with more than one patient. Single-patient-use (often referred to as disposable) slide sheets, can be used over and

over again with the same patient, but are disposed of when that patient leaves the facility. Recyclable and biodegradable options are available. A third group, the truly disposable slide sheets, are meant to be used once with a single patient, then discarded.

PATIENT SIZE LIMITATIONS

One of the most commonly asked questions about slide sheets is what the weight limit is. Typically, manufacturers don't put a weight limit on slide sheets. For most tasks, bed linens are used on top of the slide sheet to provide strength and comfort. It is more important to consider the patient's build and whether the slide sheet is large enough to be placed under the main points of contact: the shoulders, pelvis, and, when possible, the feet.⁵ It may take more than one slide sheet placed side by side or a bariatric-sized slide sheet to get the patient's entire body fully onto it. In addition, more caregivers are needed to move a larger patient.

A 900-plus pound patient was laterally transferred at a Wisconsin nursing home using PATRAN slide sheets, and a 750-pound patient who fell in a tight space and soiled himself at a Wisconsin hospital was moved with a PATRAN to a place where lift equipment could be used. In both cases it took a number of caregivers and more than one slide sheet to move the patient, but no manual lifting occurred. These cases demonstrate that slide sheets can be used with patients of any size; however, many SPHM experts suggest using higher-tech, more expensive equipment if available when heavier patients are involved.⁵

In some facilities, a slide sheet is assigned to every patient up to about 300 pounds, and higher-tech, higher-

cost SPHM equipment is reserved for larger patients. It is up to a healthcare facility's leaders to set guidelines and policies about when slide sheets vs. other equipment should be used based on patient weight, medical condition, and abilities. Because the National Institute for Occupational Safety and Health recommendations state that no caregiver should lift more than 35 pounds,¹ SPHM equipment should be used in moving all adult patients and many pediatric patients. It may be assumed that only heavier patients require SPHM equipment, but more injuries occur while lifting average-weight patients, likely because caregivers assume the patient is not large enough to cause injury.^{7,8} In addition, debilitating damage can occur over time from repetitive handling tasks.⁷ A study conducted in 1995 found that nurses boost patients an average of 10 times per shift; the number has increased as medical research has shown the medical contraindications of poor positioning.⁹

Table 1 demonstrates how slide sheets can address a number of barriers to a successful SPHM program.

SLIDE SHEETS IN PHYSICAL THERAPY

While repositioning patients in bed and transferring patients from one surface to another are the most well-known uses of slide sheets, many physical therapists (PT) are finding they can play a role in a successful mobility program.^{12,13} Research shows using SPHM equipment for early rehabilitation improves muscle strength, mental acuity, and functional mobility while preserving independence, which can result in shorter hospital stays and fewer readmissions and thus lower a facility's costs.^{2,13,14}

Acute care PTs spend much of their workday problem-solving¹³ how to get a patient moving. Access to a mix of

equipment, including slide sheets, allows for a higher-level of innovation.² A survey by the American Physical Therapy Association showed PTs are typically using SPHM equipment for bed mobility and transfer training, two tasks for which slide sheets can provide an assist.¹² A slide sheet provides a slippery surface that when used in conjunction with bed rails or a trapeze can aid a patient in starting to reposition himself or herself or to work on the strength and muscle coordination it takes to get to the edge of the bed.¹⁵ A growing number of PTs have started using slide sheets and other SPHM equipment for therapeutic exercises such as joint mobilization, range of motion and stretching exercises and muscle reconditioning.^{13,16}

EXPANDING ROLE

As an SPHM program expands, the role of slide sheets may grow as well. Slide sheets can be used along with higher-tech equipment. For example, slide sheets can be used to prevent skin shear while putting a lift sling on a patient or adjusting an air-assisted device under a patient. Advances in pressure redistributing mattresses for beds and chairs assist in repositioning patients but do not replace the need for caregiver involvement, according to the Wound Ostomy Continence Nurses Society.¹⁷ Therefore, slide sheets can complement the use of these devices.

LIMITATIONS

Slide sheets do have limitations,⁵ as one would expect with any low-cost item. Although slide sheets are easy

to use, caregivers must be trained on proper technique. Otherwise, they likely would rely on the lifting motions that have become habit. This would eliminate the benefits of the slide sheet. In addition, leaving a slide sheet under an unsupervised patient may put the patient at risk of falling out of bed, so the sheet must be removed between patient-handling tasks. Further, slide sheets do not bridge gaps, so for some transfers they may need to be used in conjunction with transfer boards. Slide sheets assist in most situations when patients need to be moved horizontally, but are not useful in moving a patient vertically. A lifting device is often needed to help with lifting and vertical support tasks.

CHOOSING A SLIDE SHEET

The term co-efficient of friction (COF) – a measure of how difficult it is to move one surface over another – is often used when describing and comparing slide sheets. However, the American Society of Testing and Materials says that COF numbers are not necessarily reliable because a slight change in variables – from the surfaces involved to how the patient is positioned on a slide sheet – can change results.¹⁸ If the patient's total weight is not on the slide sheet, it nullifies the results. The thin plastic material slide sheets often are made of is difficult to test, leading to potential inaccuracies. A study conducted by Jamar Health Products Inc., maker of PATRAN slide sheets, takes a look at how some typical medical surfaces impact the forces required to move a patient (Table 2). Generally, for all slide sheets, moving a patient on a softer surface that he or she can sink into is going to prove more difficult than moving a patient on a hard surface.

The more important factor to consider when choosing a slide sheet is the task that needs to be accomplished.¹⁹ Questions to consider include:

- Is a disposable preferred for toileting assistance?
- Is the material radio-lucent for transfers and repositioning on imaging equipment?
- Will the slide sheet be used for predominantly for transfers, requiring it to move in just one direction, or will it be used for a variety of tasks and need to move in multiple directions?

Slide sheets should meet the organizational goals, as well as the spatial constraints of a facility and its equipment, physical needs of the caregiver, and physical and emotional needs of patients.^{20,21}

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Table 1. OVERCOMING BARRIERS TO SAFE-PATIENT HANDLING PRACTICES

Barrier to SPHM Equipment Use	How a Slide Sheet Can Help
Perception that it takes too much time to find equipment/storage issues ^{10,11}	Typically compact, many slide sheets can be stored close to the patient, such as between the mattress and footboard of the bed, a dispenser close to patients or in an ambulance supply cabinet.
It takes too long to find people to assist in an SPHM activity ¹¹	Often nurses will spend time rounding up a group of fellow staff, guessing how many people it will take to safely move a patient. A recent study* using the PATRAN slide sheets, provides guidelines for how much force it takes to move patients on several typical medical surfaces so it can be more accurately determined how many people it would take to safely transfer or boost a patient (Table 2). It may take fewer caregivers than previously thought.
Not enough devices for the number of caregivers and/or patients ^{10,11}	Assigning a slide sheet to a patient upon admission and keeping it near the patient as they move through a healthcare facility can help eliminate that issue.
Not enough space to maneuver ^{10,11}	A slide sheet is flexible and can be folded and maneuvered to fit in most spaces.
SPHM equipment is complicated to use	To prevent injuries, training is required to use slide sheets. However, they are not complicated to use.
SPHM equipment isn't properly maintained ^{10,11}	Slide sheets are low-tech. There are no batteries to charge or accessories to find. If a slide sheet is dirty, send a launderable to be cleaned or replace a disposable.
Patient aversion to equipment ¹¹	Slide sheets reduce skin shear and provide physical and emotional comfort to patients afraid of being moved.
Lack of training and understanding about proper equipment use ¹¹	The simple design has led some supervisors to hand off slide sheets and expect they can be used without training. Regardless of the type of SPHM equipment, training and continuing reminders and encouragement are needed to change habits.

Table 2. FORCE REQUIRED TO MOVE PATIENT ON DIFFERENT SURFACES USING PATRAN® SLIDE SHEETS BY JAMAR HEALTH PRODUCTS, INC.

Dummy weight (lbs.)	171		223		300		350		
Force used (lbs)	Min	Max	Min	Max	Min	Max	Min	Max	PATRAN Location
Hard table									
Unfolding Insertion		13		18		25		31	Between sheet and pad
Boost	23	26	29	36	36	43	46	58	On poly cotton sheet
Transfer	20	27	27	37	30	44	37	49	On poly cotton sheet
Segmented transfer	15	18	18	26	19	29	23	34	On poly cotton sheet
Massage table									
Unfolding Insertion		12		17		18		24	Under sheet
Unfolding Insertion		14		19		23		28	Between sheet and pad
Boost	21	33	32	43	45	60	54.5	71	On vinyl cover
Transfer	20	34	30	42	43	61	57	74	On vinyl cover
Segmented transfer	14	25	18	28	25	39	32	53	On vinyl cover
Transfer w/slideboard	24	31	29	43	48	60	52	73	On slide board
350# rated mattress									
Unfolding Insertion		18		19		22		27	Between mattress and sheet
Boost	20	27	24	33	34	46	40	54	On mattress cover
Transfer	18	25	24	39	34	56	50	75	On mattress cover
Segmented transfer	10	21	19	28	20	43	32	51	On mattress cover
Unfolding Insertion		20		22		26		33	Between fitted sheet and drawsheet
Boost	24	36	31	46	43	63	57	74	On fitted sheet
Transfer	19	31	30	47	44	62	50	90	On fitted sheet
Segmented transfer	12	21	21	30	30	47	33	61	On fitted sheet