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# Current Topics in Safe Patient Handling and Mobility



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# Safe patient handling and mobility: A call to action

## Much more must be done to enhance safety for patients and caregivers.

By Melissa A. Fitzpatrick, MSN, RN, FAAN



A confluence of demographic and economic trends is pushing us toward the perfect storm:

- Today's nursing workforce is aging. The average age of the American registered nurse is 44.6.
- The patients we serve are heavier than ever.
- Experts predict increases in patient acuity, age, and comorbidity.
- Staffing issues continue to cause concern. Some experts project the United States will be short about 250,000 nurses over the next 10 to 12 years.
- Economic imperatives require us to move patients through the healthcare delivery system more quickly to shorten stays and enhance financial reimbursement.

Any one of these trends is cause for concern. All of them occurring at once is cause for alarm—and a call to action. Imagine older nurses lifting heavier, older, and sicker patients. Obviously, all parties are at greater risk for injury.

In too many cases, nurses continue to deliver care "the way we've always done it." For many, this means doing the heavy lifting needed to mobilize patients manually in an attempt to avoid the many sequelae of immobility—decreased cardiovascular, pulmonary, integumentary, and psychological functioning, to name a few.

While the intentions of manual patient mobilization may be honorable, the effects are far from optimal for all involved. There's no such thing as "safe lifting" when we use our bodies as the lifting mechanism. Old-school teachings about safe body mechanics have been proven invalid, and many of us must unlearn them. As nurses, we must change our mindset and get in the habit of using safe patient handling and mobility (SPHM) technology to keep both our patients and ourselves safe from harm.

How many times have you or a colleague suffered an injury to your back, shoulder, or both during manual patient handling? How many colleagues have we lost to our profession because of a career-ending injury? How many millions of dollars are spent on workers' compensation claims for employees who've had patient handling and mobility injuries? Caregiver injuries adversely affect staff morale, staffing levels, and, ultimately, patient safety. Such injuries have made headlines in many communities and are top of mind for healthcare leaders. Legislatures have taken on the issue, and in 2013 the American Nurses Association (ANA) supported a federal bill to eliminate manual patient handling, including lifting, transferring, and repositioning patients. That same year, ANA published national interprofessional standards to guide caregiving teams of nurses, physical therapists, nursing assistants,

transportation orderlies, and others in implementing the standards and creating a culture of safety in their organizations. However, only 11 states have enacted SPHM laws and these laws vary significantly. Much more work needs to be done to enhance safety for patients and caregivers.

This special report provides a helpful resource to caregivers as they continue to practice SPHM—or to embark on their SPHM journey if they're not already on it. National experts share their perspectives and best practices to align people, processes, and technology to set the course for action. I'd like to thank all of the authors who've contributed to this special report for sharing their expertise and strategies, which we hope will be implemented where you work. Please take these best practices to heart and engage your colleagues to do the same. And please join all of us at Hill-Rom on our mission to ensure SPHM. Much is at stake, and nothing is more important than your health and well-being—to enable you to continue doing what only nurses can do. We've never needed nurses more than we do now.

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Melissa A. Fitzpatrick is vice-president and chief clinical officer at Hill-Rom.

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# Elements of a successful safe patient handling and mobility program

**Program success hinges on leaders' and nurses' commitment.**

By John Celona, BS, JD

**S**ince safe patient handling and mobility (SPHM) efforts began more than a decade ago, data show dramatic reductions in caregiver injuries after a safe patient handling and mobility (SPHM) program is implemented. So why doesn't every healthcare facility have one?

The first reason is cost. An SPHM program requires a substantial outlay. Second, SPHM program results have been inconsistent. Tales abound of equipment bought but not used because it's too much trouble to fetch it from the closet, or because no one can locate the necessary sling. Finally, SPHM program value costs are clear but benefits are hard to quantify.

This article addresses these issues by laying out the basic elements of a successful SPHM program. These elements can be divided into two broad categories—determining out what you need and making it happen. (See *Simplifying the equation*.)

## Determining what you need

Start by estimating how many patients on a given unit are totally



## Simplifying the equation

dependent on the nurse to lift or mobilize them. Then estimate how many patients on the unit need partial assistance with mobility activities, such as toileting or moving from bed to chair.

For each patient category, estimate the numbers and types of mobilization each will need over the course of an average stay. Types of mobilization include boosting, turning, moving from bed to chair, assisting with ambulation, and so on. For these categories and frequencies of mobilization tasks, figure out how much and what types of equipment are needed to eliminate variation in practice and standardize how to safely accomplish the task.

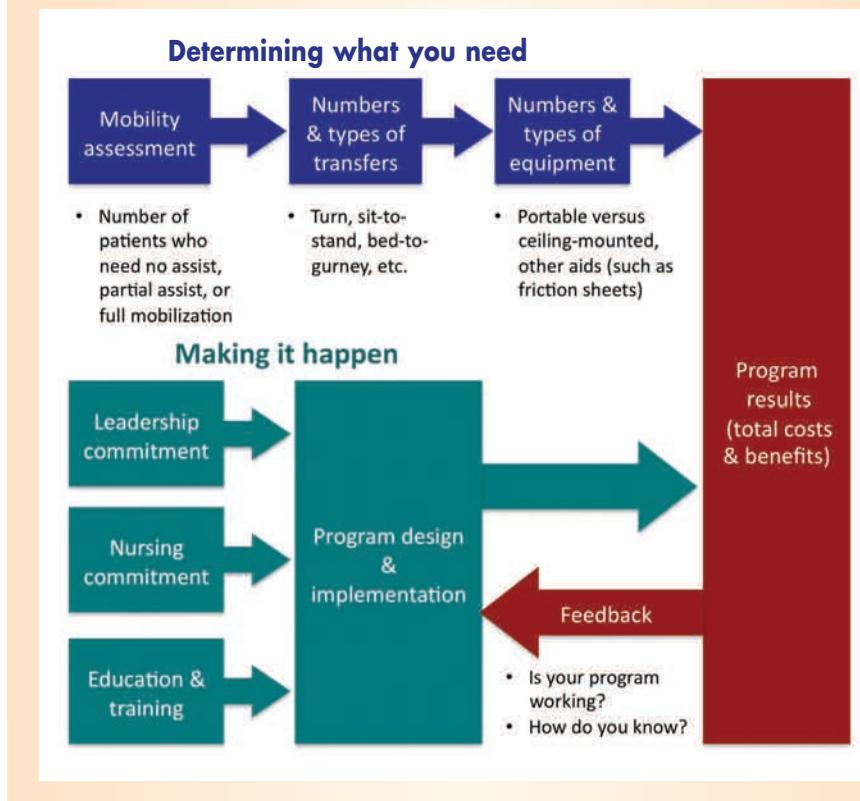
In practice, most people develop rules of thumb or use intuition and experience rather than calculating the four types of information described above. Also, vendors of handling and mobility equipment have experience in determining required equipment.

I've observed three different approaches to supplying the equipment needed to mobilize patients:

- installing overhead lifts—ceiling tracks to which lifting slings are attached
- using portable lifts—floor-mounted structures for mobilizing patients that can be moved around as needed
- going the "equipment light" route—using a low-tech system that combines slide sheets, limb lifters, and slide boards to mobilize patients instead of using ceiling-mounted or portable floor lifts.

Any of these approaches will work to mobilize patients and reduce caregiver injuries if the healthcare organization can get staff to use them.

This diagram shows in broad strokes how a healthcare organization can develop and implement a safe patient handling and mobility program.



### Compliance rate

When designing and implementing an SPHM program, the compliance rate is the key variable an organization is driving. The compliance rate is defined as the number of mobilizations for which SPHM equipment is actually used, divided by the number of mobilizations for which it should be used. The compliance rate is critical because it drives program benefits. A rate of 0% means the equipment is never used and isn't producing benefits. A rate of 100% means caregivers are using the equipment every time they should be, creating the maximum possible value from the SPHM program.

A small level of investment in SPHM equipment makes little difference in the compliance rate or program results. Without the right amount or type of equipment

available, an organization can't standardize a new mobilization process, so the equipment gets used for relatively few mobilizations. With higher investment levels, using the equipment becomes part of caregivers' routine, so the compliance rate goes up.

### Making it happen

A successful SPHM program requires leadership commitment, nursing commitment, and an education and training plan. Leadership commitment is needed to approve SPHM equipment purchase, design of training plans, and time away from duty for training. Such commitment is best obtained by creating a business case to describe the proposed SPHM program and quantify its total costs and benefits, including return on investment (ROI). (See "Making

the business case for a safe patient handling and mobility program" in this report.)

The entire nursing staff must be committed, especially the chief nursing officer, who has to approve the time required for staff training and education. Nursing commitment should be easy to get if the business case has identified the program's potential for reducing caregiver injuries, increasing staff availability for duty due to injury reduction, and improving nursing retention and satisfaction.

An education and training plan addresses which SPHM technology is purchased, installed, and deployed and when and where it's installed and deployed; who gets trained, at what level of training, and when training takes place; and how program data will be tracked and monitored to determine if it's achieving the intended results. In many cases, training accounts for half or more of total SPHM program costs.

### Levels of expertise

Three levels of expertise in using SPHM equipment and methods exist:

- A *facility champion* can "train the trainers" and aid program design and revision (adjusting the deployed equipment or training if needed). To be effective, this person needs both extensive training and experience.
- A *super user* (such as a unit peer leader at the Veterans Health Administration) can train other caregivers in the unit and answer questions. Reaching this level of expertise requires in-depth training.
- A *general caregiver* knows how to use SPHM technology and methods but may not be qualified to train others.

### Why feedback is important

Feedback is crucial for tracking and monitoring the SPHM program to determine how well it's working. Successful programs use two types of feedback. *Compliance rate monitoring* gives some reassurance that caregivers actually are using SPHM technology when they should be. Such monitoring may be done indirectly by requiring annual staff certification to ensure they know how to use the equipment. Direct methods include observing the unit to see if caregivers use appropriate SPHM methods. Some newer types of equipment come with devices to measure how many times they're used.

*Program result monitoring*, on the other hand, depends on SPHM program goals. These vary by facility but may include reduced caregiver injuries from patient handling, decreases in pressure ulcers and patient falls, increased patient and staff satisfaction, and improved staff retention. The business case and ROI for the SPHM program should identify which program results create the most value. Methods for monitoring these results should be created if they don't already exist.

Most SPHM programs monitor workers' compensation costs from caregiver injuries related to patient handling. Usually, this necessitates connecting incidence data on the types and causes of injuries (such as on the Occupational Safety and Health Administration's Form 300) with costs associated with those injuries (found in the workers' compensation system).

Any equipment strategy (overhead lifts, portable lifts, "equipment lift" or a combination) can drive a high compliance rate and favorable program results. But us-

ing more efficient lifting methods and equipment might yield additional program benefits from time savings. Stanford University Medical Center compared the average time for a chair-to-bed transfer using ceiling lifts vs. portable lifts. On average, a ceiling-lift transfer was completed before the portable-lift transfer even began. These data were used to justify ceiling lift installation in Stanford's new hospital.

Monitoring SPHM program results and comparing them against the potential results quantified in the business case are crucial for ensuring the program is working as designed and the organization is realizing the projected ROI. When results vary from the ranges identified in the business case, the cause must be identified and remedial action must be taken.

Understanding and implementing the essential elements of an SPHM program will help you ensure that your organization's program is successful and can truly achieve better outcomes for caregivers and patients.

A valuable resource for establishing a safe patient handling and mobility program is *Implementation Guide to the Safe Patient Handling and Mobility Interprofessional National Standards*, available at [www.nursesbooks.org/SPHM-Package](http://www.nursesbooks.org/SPHM-Package).

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John Celona is a principal at Decision Analysis Associates, LLC, in San Carlos, California. He is the author of *Decision Analysis for the Professional*, 4th ed.

# Transforming the culture: The key to hardwiring early mobility and safe patient handling

**Culture change requires deliberate focus, staff education, and full engagement.**

By Kathleen M. Vollman, MSN, RN, CCNS, FCCM, FAAN, and Rick Bassett, MSN, RN, APRN, ACNS-BC, CCRN

**E**arly mobility in the intensive care unit (ICU) is critical to a patient's short- and long-term recovery. Studies show early mobility programs result in more ventilator-free days, fewer skin injuries, shorter ICU and hospital stays, reduced delirium duration, and improved physical functioning.

But accomplishing early mobility requires significant coordination, commitment, and physical effort by the multidisciplinary team. How do we balance the benefits of early mobilization against the potential risk of staff or patient injury during the mobilization activity? Part of the solution to ensuring safe mobilization of critically ill patients is to view mobilization along a continuum based on patient readiness, progression based on goals, strategies to prevent complications, and assessment of activity tolerance. This view keeps safety at the forefront.

Within the ICU, barriers to early mobility may include clinicians' knowledge deficits and fears, insufficient human and equipment

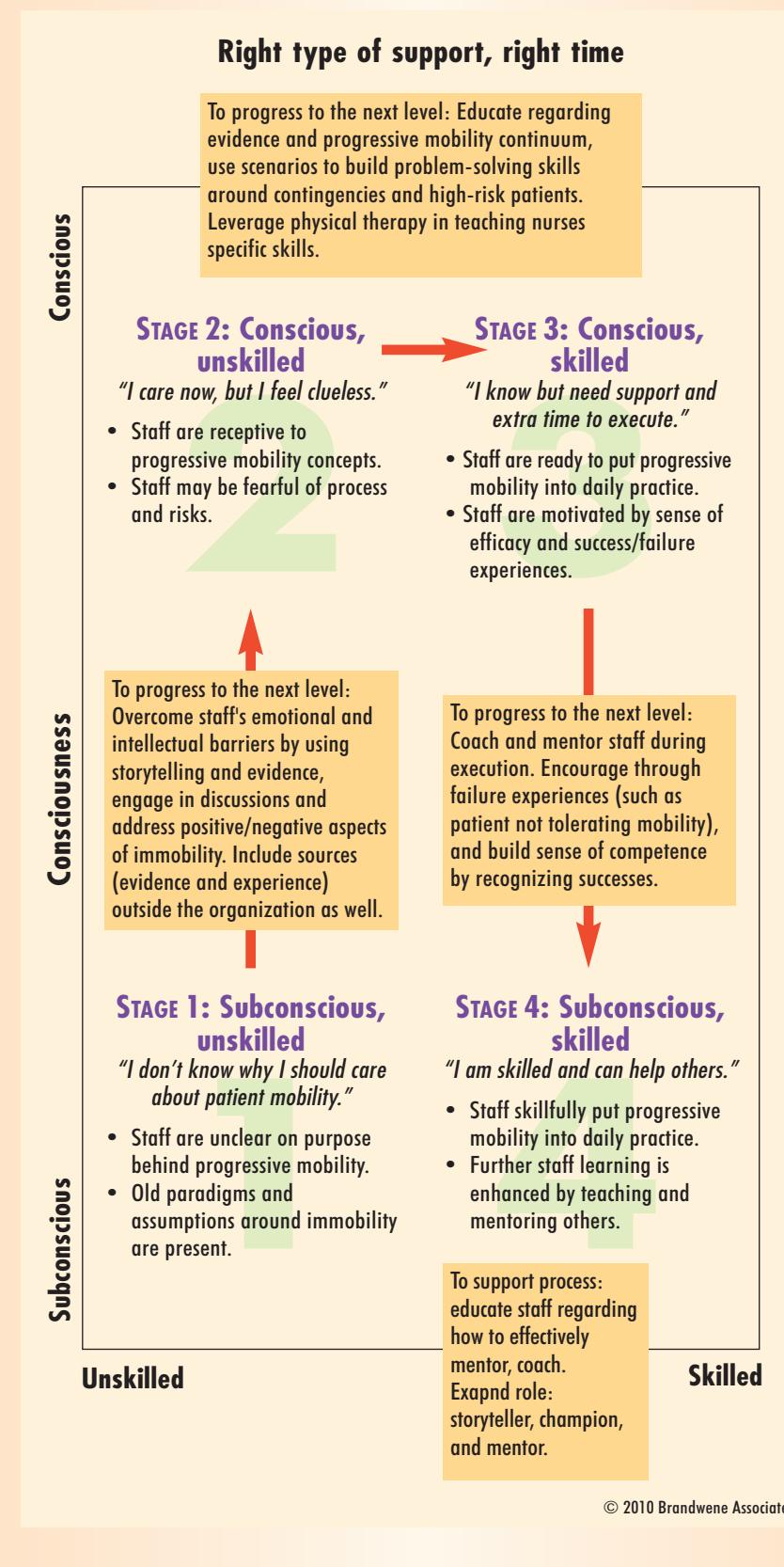


resources, patients' physiologic instability, lack of emphasis on the value and priority of mobilizing patients, and the ICU culture related to mobility. A 2014 international survey of early mobilization practices in 833 ICUs found only 27% had formal early mobility protocols, 21% had adopted mo-

bility practices without a protocol, and 52% hadn't incorporated early mobility into routine care practices. Barriers to implementation of mobility initiatives included competing staffing priorities, insufficient physical therapy staff, and concern about patient and caregiver injury. The study found that a standardized protocol may promote successful implementation of an early mobility program.

## Learning progression for patient mobility

This diagram shows the four stages of staff learning regarding early patient mobility and safe patient handling.



## Importance of a culture change

Sustaining any clinical improvement initiative requires an organizational culture change. Baseline assessment of the current culture as well as early engagement of team members is the starting point. In 2012, the authors led a VHA, Inc. critical care improvement team collaborative of 13 ICUs from eight organizations to implement safe and effective early patient mobility in the ICU. Efforts focused on elements central to sustainable change. First, team members acquired key knowledge to understand why ICU mobility is important. Next, strategies for organizational, leadership, and clinical staff engagement were discussed. To promote the transition in practice and the required culture change, ICU clinicians needed guidance. An organizational development tool was designed to help teams create an effective culture change. Although it was adapted specifically to integrate with early patient mobility efforts in the ICU, this tool can be applied to other settings. (See *Learning progression for patient mobility*.)

- Three elements are crucial to successfully implementing and sustaining an improvement initiative:
- Team members must understand and be able articulate what's being proposed. To help them understand, they must receive evidence-based literature and other relevant information.
  - Team members must grasp why the initiative is important to the patient, themselves, and the organization. Clinicians typically respond favorably to change when they can connect it to real impacts.
  - The leader of the initiative must

define the role of each team member and discipline. Understanding team roles creates a solid platform on which the culture change builds.

### Four stages of learning

To learn a skill or concept, a person progresses through four stages, according to a learning model attributed to Abraham Maslow. This model can be applied to clinicians learning about safe patient handling and mobility (SPHM).

### Stage 1: Subconscious, unskilled

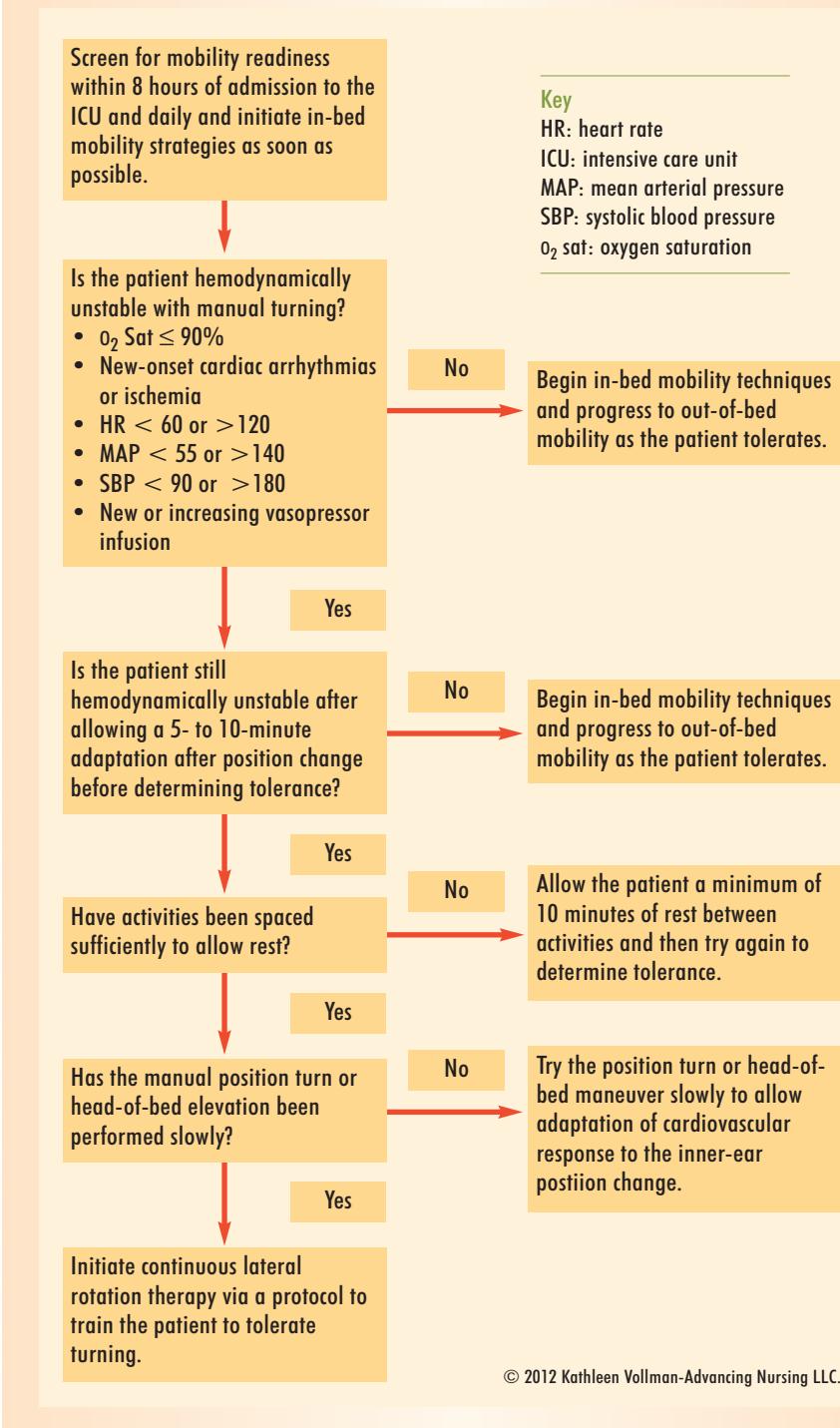
In this stage, team members are unaware of how little they know and don't realize a change is necessary. Also, they may have fears and misconceptions about the change. For example, some critical care clinicians believe repositioning or mobilizing critically ill patients threatens the security of vital tubes and lines. But with the proper knowledge, training, and resources, staff can mobilize and reposition ICU patients safely without jeopardizing tubes and lines. In one study, 1,449 activity events (such as sitting up in bed, sitting in a chair, and ambulating) were performed with mechanically ventilated patients; fewer than 1% experienced adverse events. As part of the culture change, misconceptions about SPHM need to be addressed through education and coaching. Once the purpose of SPHM is defined clearly and misconceptions have been addressed, team members are ready to move on to stage 2.

### Stage 2: Conscious, unskilled

In the conscious, unskilled stage,

## Decision tree for mobilizing hemodynamically unstable patients

This diagram helps clinicians determine whether and when an intensive care unit patient is ready to begin mobility activities.



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team members understand why SPHM is important but don't know how to accomplish it. Although open to new learning,

they may have fears about specific processes or actions involved in patient mobilization. For instance, they may fear certain

types of mobilization activities can cause hemodynamic instability. Education and practical application experiences can help them overcome this fear. Another way educators can break through such barriers is to use a decision tree that incorporates the latest scientific knowledge to help clinicians minimize the hemodynamic impact or retrain patients to tolerate movement. (See *Decision tree for mobilizing hemodynamically unstable patients*.)

A critical resource used with the VHA team was a nurse-driven, evidence-based multidisciplinary progressive mobility continuum tool that addresses mobility phases and corresponding interventions. The team received education on the tool and how to apply it in

## In-bed mobility encompasses repositioning activities lateral-rotation therapy, tilt-table exercises, and bed-chair sitting.

practice. The tool provided a visual foundation to guide safe mobility practices, create consistency, promote team communication, and enhance processes.

Numerous studies show that education, skill building, and protocols may not be enough to create sustainable change. Using strategies to evaluate available nursing resources and systems that can produce change makes it easier for clinicians to provide the right care for the right patient at the right time while balancing these needs against caregivers' needs for safety.

### In bed and out-of-bed activities

Strategies to promote patient and caregiver safety during mobilization can be divided into two basic categories—those used when the patient is in bed and those used when the patient is out of bed. In-bed mobility encompasses repositioning activities, lateral-rotation therapy, tilt-table exercises, and bed-chair sitting. Modern critical-care beds should be capable of rotating the patient continuously, creating a tilt table through the use of a reverse Trendelenburg position and an adjustable footboard, progressing the body through the head elevation–foot down position to a chair, and ultimately assisting the patient with standing. These features reduce the risk of patient and caregiver injury and make it easier to perform mobility actions.

For in-bed repositioning from side to side and moving up, using a breathable glide sheet and specially designed foam wedges helps reduce shear and friction for the patient and help prevents injuries to caregivers because they require a pulling rather than lifting motion. In one study, implementation of this turn-and-position system reduced hospital-acquired pressure ulcers by 28% and reduced staff injuries by 58%. Lifts can be used for some in-bed mobility activities and are effective during ambulation and the transition from in-bed to out-of-bed activities.

### Stage 3: Conscious, skilled

Stage 3 learning focuses on implementing the change, with attention to fine-tuning the process. Coaching, mentoring, and maintaining engagement are critical. In previous stages, much effort was expended in educating and training

staff. During the transition from stage 3 to stage 4, the skills and knowledge required for the SPHM initiative must become "hard-wired" or ingrained into caregivers' subconscious. This requires deliberate, focused energy on continued engagement. However, staff energy, resource availability, and competing priorities may pose barriers to sustaining the change.

Throughout stage 3, positive feedback, motivation, and sharing of successes and challenges are important for driving continual improvement and culture change. These goals can be accomplished in various ways. Here are some examples:

- Networking with other organizations in various stages of the practice change can be extremely useful. It allows collaborative identification and sharing of challenges, struggles, effective strategies, and success stories. This process creates synergistic energy among the team members, helping to motivate them and accelerate the change.
- Within the VHA mobility collaborative network, teams shared reward strategies. One team gave out M&Ms® when "caught in the act" of Moving and Mobilizing patients. Such moments present crucial coaching opportunities. For example, after a mobility event, staff can huddle briefly to discuss the event and what, if any, improvements could be made to make the process more effective.

### Stage 4: Subconscious, skilled

During this stage, the practice and culture changes are well on their

(continued on page 25)

# Standards to protect nurses from handling and mobility injuries

**Learn about ANA standards that help safeguard both nurses and patients.**

By Amy Garcia, MSN, RN, CAE

The intense focus on safe patient handling and mobility (SPHM) in acute and long-term care has yielded a valuable benefit for nurses and other health-care workers—a decrease in staff lifting injuries for the first time in 30 years. Nonetheless, nurses still suffer more musculoskeletal disorders than employees in the manufacturing, construction, and shipbuilding industries.

Many employers and nurses believe lifting injuries can be prevented by using proper body mechanics and that lifting equipment is warranted only for obese adults. But the evidence contradicts this notion. The National Institute of Occupational Safety and Health calculates maximum loads for manual lifting, pushing, pulling, and carrying using a range of variables. Typically, a maximum load for a box with handles is 51 lb (23 kg)—lower when the lifter has to reach, lift near the floor, or assume a twisted or awkward position. Of course, patients don't come in simple shapes or have handles. They may sit or lie in awkward positions, move unexpectedly, or have wounds or devices that interfere with lifting. Although proper body mechanics and good lifting technique are important, they don't compensate for



most patients' weight.

A patchwork of regulations without teeth contributes to a hazardous environment for caregivers and patients. Congress passed the ergonomic standard of the Occupational Safety & Health Administration in 2000 but rescinded it in 2001 before the regulations could take effect. Only 10 states have laws requiring comprehensive SPHM programs, typically targeting acute and long-term care settings.

## ANA standards

The American Nurses Association (ANA) recognized the need for a standard of care that applies to all healthcare disciplines and encompasses the entire continuum of care. In 2012, ANA convened an interprofessional group of subject matter

experts to develop standards. Participants included representatives of patients; nursing; surgery; therapy; biomedical engineering; risk management; architecture; law; acute, long-term, home health, and hospice care; the military; Department of Defense; certain government agencies; vendors; and professional associations.

In 2013, ANA published *Safe Patient Handling and Mobility: Interprofessional National Standards Across the Care Continuum*. Previous documents referred to safe patient handling and movement. The workgroup changed the terminology from movement to mobility to distinguish patient-initiated mobility from movement accomplished by others. Also, nurses use the word mobility differently than physical or

occupational therapists. The terminology change is designed to align our practices with patients' needs and highlight new research on the importance of early and progressive mobility in the intensive care unit. The workgroup also chose the term *technology* to describe all lifts, slings, slide sheets, computer programs, and other items used to promote patient mobility. It decided that the term *healthcare recipient* is more inclusive than patient for general use.

### A closer look at the standards

The eight ANA standards are complemented by substandards, examples, resources, and metrics for evaluation.

**Standard 1: Establish a culture of safety.** This standard calls for the employer to establish a commitment to a culture of safety. This means prioritizing safety over competing goals in a blame-free environment where individuals can report errors or incidents without fear. The employer is compelled to evaluate systemic issues that contribute to incidents or accidents. The standard also calls for safe staffing levels and improved communication and collaboration. Every organization should have a procedure for nurses to report safety concerns or refuse an assignment due to concern about patients' or their own safety.

**Standard 2: Implement and sustain an SPHM program.** This standard outlines SPHM program components, including an assessment, written program, funding, and matching the program to the specific setting. Evaluating the physical requirements of a task or role

is an important step toward minimizing risk to patients and nurses.

**Standard 3: Incorporate ergonomic design principles to provide a safe care environment.** This standard is based on the concept of prevention through design, which considers the physical layout, work-process flow, and use of technology to reduce exposure to injury or illness. Healthcare facilities should consider diverse perspectives, including those of nurses and therapists, when planning for construction or remodeling.

**Standard 4: Select, install, and maintain SPHM technology.** This standard provides guidance in selecting, installing, and maintaining SPHM technology. It emphasizes the importance of investing in appropriate amounts and types of SPHM technology to meet the needs of patients in the organization's specific environment.

**Standard 5: Establish a system for education, training, and maintaining competence.** This standard outlines employee (and volunteer) training and education needed to participate in the SPHM program. Education should be multidisciplinary and include documented demonstration of competency before the employee uses SPHM technology.

**Standard 6: Integrate patient-centered SPHM assessment, plan of care, and use of SPHM technology.** This standard focuses on the patient's needs by establishing assessment guidelines and developing an individual plan of care. It also addresses the need to establish an organizational policy on the rights of patients or family members who in-

sist on manual handling. It outlines the importance of using SPHM technology in a therapeutic manner, with the goal of promoting independence. Nurses working in rehabilitation or assisted-living settings may believe using lifts or other technology limits the patient's independence, but selecting SPHM technology to be used in a progressive manner can provide support and a sense of safety as the patient gains or regains independent movement. For example, a patient may need full-body lift technology immediately after surgery, but then progress to a sit-to-stand lift for bedside toileting and then to technology that supports ambulation.

**Standard 7: Include SPHM in reasonable accommodation and post-injury return to work.** This standard promotes an employee's early return to work after an injury and use of differently abled workers through a comprehensive SPHM program.

**Standard 8: Establish a comprehensive evaluation system.** The final standard calls for a comprehensive evaluation system for each SPHM program component, with remediation of deficiencies.

The appendix of *Safe Patient Handling and Mobility* provides an extensive list of resources for meeting each standard. To order the ANA book and the accompanying *Implementation Guide to the Safe Patient Handling and Mobility Interprofessional National Standards*, visit [www.nursesbooks.org/SPHM-Package](http://www.nursesbooks.org/SPHM-Package).

Visit [www.AmericanNurseToday.com/Archives.aspx](http://www.AmericanNurseToday.com/Archives.aspx) for a list of selected references.

Amy Garcia is chief nursing officer for Cerner Clairvia, specializing in workforce issues and was the technical writer for the SPHM standards.

# Implementing a mobility assessment tool for nurses

A nurse-driven assessment tool reveals the patient's mobility level and guides SPHM technology choices.

By Teresa Boynton, MS, OTR, CSPHP; Lesly Kelly, PhD, RN; and Amber Perez, LPN, BBA, CSPHP

A patient's mobility status affects treatment, handling and transfer decisions, and potential outcomes (including falls). Hospital patients spend most of their time in bed—sometimes coping with inadvertent negative effects of immobility. Assessing a patient's mobility status is crucial, especially for evaluating the risk of falling. Yet no valid, easy-to-administer bedside mobility assessment tool exists for nurses working in acute-care settings.

Various safe patient handling and mobility (SPHM) technologies allow safe transfer and mobilization of patients while permitting maximum patient participation and weight-bearing (if indicated). A mobility assessment helps identify the SPHM technology needed to ensure safe activities while taking the guesswork and uncertainty out of deciding which SPHM technology is right for which patient.

Because mobility is so important during hospitalization, members of a Banner Health multidisciplinary SPHM team determined nurses should take a more active role in assessing and managing patient mobility. We concluded it was crucial to develop and validate a tool that nurses can use easily at the bedside to assess a patient's mobility level and the



need for SPHM technology. For both patient and staff safety, a patient's mobility level must be linked with use of SPHM technology. When used consistently, appropriate technology reduces the risk of falls and other adverse patient outcomes associated with immobility. (See *The link between patient immobility and staff injuries*.)

## Communication barriers

Historically, mobility assessments

and management have been under the purview of physical therapists (PTs) through consultations. But the entire healthcare team needs to address patient mobility. Nurses conduct continual surveillance of patients and their progress, but typically they haven't performed consistent, validated mobility assessments. Instead, they've relied on therapy services to determine the patient's mobility level and management.

## The link between patient immobility and staff injuries

Patient immobility poses the risk of injury to healthcare workers. Nurse workloads continue to rise as patient acuity levels increase and hospital stays lengthen. This situation increases patients' dependence on nurses for assistance with their mobility needs.

What's more, nursing staff frequently rely on the patient or a family member to report the patient's ability to stand, transfer, and ambulate. But this information can be unreliable, especially if the patient has cognitive impairment related to the diagnosis or medications or if he or she has experienced unrecognized decreased mobility and deconditioning from the disease or injury that necessitated hospitalization.

To decrease the risk of caregiver injury, nurses should assess patient mobility and use safe patient handling and mobility (SPHM) technology.

## Nurses aren't trained in skilled therapy techniques and may be ill prepared to mobilize patients safely during routine daily activities.

In many cases, though, a PT's assessment doesn't translate to meaningful actionable items for nurses. What's more, PTs don't always adequately communicate a patient's SPHM needs to other healthcare team members. For example, confusion surrounds terminology typically used by PTs, such as numeric mobility levels (1+, 2+, indicating a one-person or two-person assist, respectively) as well as ranges (minimum, moderate, or maximum assist by one or more healthcare workers). Also, PTs are consulted only for a limited number of patients and at different points during the hospital stay. Nurses, for their part, aren't trained in skilled therapy techniques and may be ill prepared to mobilize patients safely during routine daily activities.

In addition to communicating potential risk to other healthcare team members, mobility assessment can identify technology need-

ed to perform SPHM. Especially if PTs aren't available, nurses must rely on their own judgment to move and mobilize patients safely. But they may be uncertain as to which equipment to use for which patients. While a total lift may be used with many patients, such a lift doesn't maximize the patient's mobility potential.

### Current mobility assessment options

Although tools to assess mobility and guide SPHM technology selection are used in hospitals, their value for the bedside nurse may be limited or inappropriate with many patients in acute-care settings.

SPHM algorithms from the Department of Veterans Affairs have been valuable as training and decision-making tools in determining which SPHM technology to consider for specific tasks. But these can be hard to use at the bedside. Also, they assume the patient's mobility status is known and don't provide quick guidance in determining a patient's overall mobility level. (See *Limitations of common mobility assessment tools*.)

### Limitations of common mobility assessment tools

Several of the mobility assessment tools discussed below already are in use, but each has certain drawbacks.

The Timed Get Up and Go Test starts by having the patient stand up from an armchair, walk 3 meters, turn, walk back to the chair, and sit down. But it gives no guidance on what to do if the patient can't maintain seated balance, bear weight, or stand and walk.

The Quick 5 Bedside Guide tool, developed by a registered nurse and physical therapist (PT), was the basis for a research project on what became known as the Quick 3. This tool takes the patient through three functional tasks but doesn't fully address patient limitations. Nor does it recognize weight-bearing limitations or address the issues or abilities of an ambulatory patient. Also, it provides only limited recommendations for SPHM technology.

The Egress test, also developed by a PT, is used in hospital settings. It starts with the patient performing three repetitions of sit-to-stand, at the bedside, marching in place, and advance step and return with each foot. But it's tailored to PTs and doesn't address how the patient performs bed mobility or comes to a standing position. Also, it gives only limited guidance for nurses on use of SPHM technology and isn't appropriate for certain patients (such as those unable to weight bear on one or both legs).



# Banner Mobility Assessment Tool for nurses

Nurses have found that the Banner Mobility Assessment Tool (BMAT) is an effective resource for performing a bedside assessment of patient mobility.

Test	Task	Response	Fail = Choose most appropriate equipment/device(s)	Pass
<b>Assessment Level 1</b> Assessment of: <ul style="list-style-type: none"><li>• Trunk strength</li><li>• Seated balance</li></ul>	<b>Sit and shake:</b> From a semi-reclined position, ask patient to sit upright and rotate* to a seated position at side of bed; <i>may use bedrail</i> . Note patient's ability to maintain bedside position. Ask patient to reach out and grab your hand and shake, making sure patient reaches across his/her midline.	<b>Sit:</b> Patient is able to follow commands, has some trunk strength; caregivers may be able to try weight-bearing if patient is able to maintain seated balance longer than 2 minutes (without caregiver assistance). <b>Shake:</b> Patient has significant upper body strength, awareness of body in space, and grasp strength.	<b>MOBILITY LEVEL 1</b> <ul style="list-style-type: none"><li>• Use total lift with sling and/or repositioning sheet and/or straps.</li><li>• Use lateral transfer devices, such as roll board, friction-reducing device (slide sheets/tube), or air-assisted device.</li></ul> <b>Note:</b> If patient has strict bed rest or bilateral non-weight-bearing restrictions, do not proceed with the assessment; patient is MOBILITY LEVEL 1.	Passed Assessment Level 1 = Proceed with Assessment Level 2.
<b>Assessment Level 2</b> Assessment of: <ul style="list-style-type: none"><li>• Lower extremity strength</li><li>• Stability</li></ul>	<b>Stretch and point:</b> With patient in seated position at side of bed, have patient place both feet on floor (or stool) with knees no higher than hips. Ask patient to stretch one leg and straighten knee, then bend ankle/flex and point toes. If appropriate, repeat with other leg.	Patient exhibits lower extremity stability, strength and control. <b>May test only one leg and proceed accordingly (e.g., stroke patient, patient with ankle in cast).</b>	<b>MOBILITY LEVEL 2</b> <ul style="list-style-type: none"><li>• Use total lift for patient unable to weight-bear on at least one leg.</li><li>• Use sit-to-stand lift for patient who can weight-bear on at least one leg.</li></ul>	Passed Assessment Level 2 = Proceed with Assessment Level 3.
<b>Assessment Level 3</b> Assessment of: <ul style="list-style-type: none"><li>• Lower extremity strength for standing</li></ul>	<b>Stand:</b> Ask patient to elevate off bed or chair (seated to standing) using assistive device (cane, bedrail). Patient should be able to raise buttocks off bed and hold for a count of five. May repeat once. <i>Note:</i> Consider your patient's cognitive ability, including orientation and CAM assessment if applicable.	Patient exhibits upper and lower extremity stability and strength. <b>May test with weight-bearing on only one leg and proceed accordingly (e.g., stroke patient, patient with ankle in cast).</b> <b>If any assistive device (cane, walker, crutches) is needed, patient is Mobility Level 3.</b>	<b>MOBILITY LEVEL 3</b> <ul style="list-style-type: none"><li>• Use non-powered raising/stand aid; default to powered sit-to-stand lift if no stand aid is available.</li><li>• Use total lift with ambulation accessories.</li><li>• Use assistive device (cane, walker, crutches).</li></ul> <b>Note:</b> Patient passes Assessment Level 3 but requires assistive device to ambulate or cognitive assessment indicates poor safety awareness; patient is MOBILITY LEVEL 3.	Passed Assessment Level 3 AND no assistive device needed = Proceed with Assessment Level 4. <b>Consult with physical therapist when needed and appropriate.</b>
<b>Assessment Level 3</b> Assessment of: <ul style="list-style-type: none"><li>• Standing balance</li><li>• Gait</li></ul>	<b>Walk:</b> Ask patient to march in place at bedside. Then ask patient to advance step and return each foot. Patient should display stability while performing tasks. Assess for stability and safety awareness.	Patient exhibits steady gait and good balance while marching and when stepping forward and backward. Patient can maneuver necessary turns for in-room mobility. Patient exhibits safety awareness.	<b>MOBILITY LEVEL 3</b> If patient shows signs of unsteady gait or fails Assessment Level 4, refer back to MOBILITY LEVEL 3; patient is MOBILITY LEVEL 3.	<b>MOBILITY LEVEL 4 MODIFIED INDEPENDENCE</b> Passed = No assistance needed to ambulate; use your best clinical judgment to determine need for supervision during ambulation.

*Always default to the safest lifting/transfer method (e.g., total lift) if there is any doubt about the patient's ability to perform the task.*

## Banner Mobility Assessment Tool

At Banner Health, we developed the Banner Mobility Assessment Tool (BMAT) to be used as a

nurse-driven bedside assessment of patient mobility. It walks the patient through a four-step functional task list and identifies the mobility level the patient can

achieve (such as mobility level 1). Then it guides the nurse to the recommended SPHM technology needed to safely lift, transfer, and mobilize the patient. (See

*Banner Mobility Assessment Tool for nurses.)*

### **Implementing BMAT**

The BMAT was created in our hospital's electronic medical record (EMR) in a way that guides the nurse through the assessment steps. Patients are determined to have a mobility level of 1, 2, 3, or 4 based on whether they pass or fail each assessment level. Educational tools and tip sheets are used to train nurses and support staff on what technology to consider for patients at each level.

**To stay current on the patient's mobility status nurses are expected to complete the BMAT on admission, once per shift, and with the patient status changes.**

Communication tools also are used. For instance, a sign outside the patient's room indicates his or her mobility level, instantly telling anyone passing by or entering if the patient can ambulate independently or if SPHM technology must be used. To stay current on the patient's mobility status (for instance, at handoffs, after procedures, with medication changes, or after a potentially tiring therapy session), nurses are expected to complete the BMAT on admission, once per shift, and with the patient status changes. The BMAT also is linked to Banner's fall assessment risk in the EMR.

Throughout BMAT implementation, we recognized that identifying a patient's mobility level and fall risk score are pointless unless

appropriate interventions are implemented and the outcomes evaluated. Nurses need to be empowered and able to recognize the connection between these assessments and choice of interventions, including SPHM technology.

Here's an example of BMAT in action at Banner: A 35-year-old male was admitted to a surgical floor late in the evening. He was 6'2" tall and weighed 350 lb (158 kg). He didn't want to use a bedpan, but his nurse wasn't comfortable getting him up to use the bathroom because he hadn't been evaluated by physical therapy, and a PT wasn't available in the evening. A nurse passing by who'd used the BMAT (which hadn't been formally rolled out Banner-wide at that time) came in and assessed the patient; the assessment found him at mobility level 3. He was transferred to the toilet using a nonpowered stand aid. Both patient and nurse were relieved and happy.

### **A step in the right direction**

As a quick bedside assessment tool, the BMAT is a step in the right direction. It's part of a broad program of increased staff awareness, education, and training around patient assessments, preventing staff injuries and patient falls, and achieving better patient outcomes. Initial evidence from a validation study completed at one Banner hospital supports the BMAT as a valid instrument for assessing a patient's mobility status at the bedside.

As we work toward customizing actions and interventions to meet individual patient needs, we continue to evaluate which additional assessment components or fall interventions or precautions are needed

or require greater focus. Although we know nurses should be more involved in assessing mobility than they have been historically, we recognize the value of involving and communicating effectively with all members of a good interdisciplinary team to help reduce patient falls and staff injuries caused by patient handling.

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Teresa Boynton is an injury prevention and workers' compensation consultant, ergonomics specialist, and certified safe patient handling professional for Risk Management at Banner Health, Western Region, based in Greeley, Colorado. Lesly Kelly is the RN clinical research program director for Banner Good Samaritan Medical Center in Phoenix, Arizona. Amber Perez is a safe patient handling clinical consultant for Handicare North America based in Phoenix, Arizona.

# The sliding patient: How to respond to and prevent migration in bed

**Migration can cause negative patient outcomes and caregiver injuries resulting from repositioning.**

By Neal Wiggemann, PhD

In hospital settings, where the head of the bed (HOB) commonly is elevated, gravity causes patients to slide, or migrate, toward the foot of the bed. Nurses are well aware of this, as they're regularly required to pull patients back toward the HOB if they can't reposition themselves.

A 1995 study at one hospital found nurses pulled patients up in bed an average of 9.9 times per shift. More recent evidence suggests this activity may be even more common in some hospitals and units.

Studies show that pulling patients who've migrated in bed

carries an extremely high risk of caregiver injury. Less research has been done on the effects of migration on patients. This article describes how migration can affect patient outcomes, outlines relevant scientific evidence, and discusses strategies for managing patient migration.



## Considerations when purchasing hospital beds

Before purchasing hospital beds, clinicians and hospital purchasing staff should evaluate relevant manufacturer claims and test data to determine how well the product performs to reduce patient migration. Keep the following points in mind.

- Migration test results may vary based on methodology, so be suspicious of marketing materials that don't describe test methods.
- Consider the relevance of test conditions to their clinical application.
- Be aware that a proper experimental design can improve test result accuracy. For example, a laboratory motion-capture system produces less error than a tape measure, and a large subject sample (10 or more) with subjects of varied heights and weights is more accurate than a small or homogenous sample.
- Make sure migration is reported with respect to the bed surface. Because the top sections of some hospital bed frames can move back relative to the floor, measuring migration relative to the floor rather than the bed surface can lead to the mistaken conclusion that a patient has migrated several inches less than he or she actually has.

### Negative effects of migration

A 2013 study found that patients in traditional hospital-bed designs migrated about 13 cm (5") when the HOB was raised to 45 degrees. Both bed movement and gravity cause patients to slide down in bed over time if the HOB is kept elevated. Such migration presumably causes friction and

tion decreases. A pilot investigation of 10 healthy subjects lying with the HOB at 30 degrees showed their torso angle was about 30 degrees when properly aligned with the hip indicator, compared to about 12 degrees when they migrated 23 cm (9") past the hip indicator.

Positioning the HOB at or above 30 degrees is intended to reduce the risk of ventilator-associated pneumonia (VAP) because torso elevation decreases the risk of aspirating gastric contents into the lungs. Once patients have migrated farther down the mattress, elevating the HOB may no longer reduce aspiration risk because their torsos are flatter. At that point, if they're not repositioned, they may be at increased risk for VAP.

When patients migrate down in bed with the HOB up, they slide out away from the pivot of the HOB section and the lumbar spine goes unsupported, causing kyphosis. Kyphosis reduces lung capacity, so respiratory function may diminish in patients who've migrated. Although the relationship between kyphotic postures caused by migration and discomfort has-

n't been studied for hospital beds, it's reasonable to expect migration would result in discomfort, especially in patients with low back pain or disc herniation.

### Responding to patient migration

To help prevent negative outcomes associated with patient migration, be diligent in repositioning patients who've migrated downward. But be aware that repositioning is most likely to affect outcomes related to torso angle (such as VAP, reduced lung capacity, and discomfort)—not friction and shear linked to pressure-ulcer development. Among patients unable to boost or reposition themselves in bed, those on mechanical ventilators and those with back pain may be most in need of repositioning by the nurse.

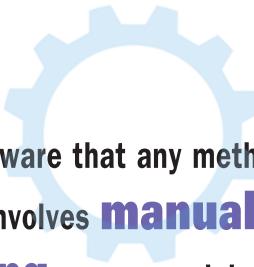
Repositioning patients manually is associated with a high risk of musculoskeletal injury, so always use repositioning aids for patients unable to reposition themselves. Using lift equipment, such as a ceiling-mounted or mobile lift, is the best way to reduce healthcare worker strain, according to the American Nurses Association's *Safe Patient Handling and Mobility: Interprofessional National Standards*, which calls for eliminating manual lifting in all healthcare settings.

If lift equipment isn't available, use a friction-reducing sheet and place the bed in the Trendelenburg position (if the patient can tolerate it). If the patient is on an air surface, use the "max inflate" function. Patients who can provide partial assistance should participate in mobilization by placing their feet flat on the mattress and "bridging" when being repositioned. The pa-

Once patients have **migrated** farther down the mattress, **elevating** the HOB may no longer reduce aspiration risk.

shear forces between the mattress and skin as the patient slides against the bed surface. Although friction and shear have been linked to pressure-ulcer formation, no research has evaluated whether friction and shear caused by migration directly contribute to pressure-ulcer risk.

As patients migrate toward the foot of the bed, the torso eleva-



## Be aware that any method that involves manual lifting can cause injury to the nurse.

tient also may pull on traction equipment, a trapeze bar, or the bed side rails, if available.

However, be aware that any method that involves manual lifting can cause injury to the nurse. One researcher found that based on the postures adopted when handling patients, caregivers who lift with forces above 16 kg (35 lb) are at increased risk of injury. The most effective way to prevent self-injury when repositioning patients is to use a ceiling-mounted or mobile lift. An air-assisted lateral transfer device also can be used to reposition the patient up in bed.

### Preventing migration

Despite the impact of migration on patients and caregivers, little research exists on how to prevent it. The bed's contribution to migration has been investigated in laboratory studies, but patient movement has yet to be studied.

To limit migration when articulating the bed, use auto-contour (a knee gatch that rises automatically and simultaneously as the HOB rises) to reduce migration by up to 2.5 cm (1"). If the bed doesn't have auto-contour, raise the knee gatch before raising the HOB. Besides limiting migration from bed articulation, keeping the patient's knees raised also may help limit migration over time. Of course, these strategies can be used only if the patient can tolerate knee bending.

Design of the bed-frame articulation seems to have an even bigger effect than auto-contour on the amount of patient migration. For example, across three different bed-frame designs, mean cumulative movement (total amount of sliding when raising and lowering the HOB) ranged from 13 to 28

cm (5" to 11"). Most likely, migration caused by bed movement will continue to decrease as manufacturers develop beds more compatible with the changing geometry of the patient as the HOB rises. (See *Considerations when purchasing hospital beds*.)

More research is needed to confirm indications that patient migration toward the foot of the bed increases pressure-ulcer and VAP risk, causes patient discomfort, and reduces lung capacity. Many tools are available to help nurses safely reposition patients who've migrated. Using auto-contour when raising the HOB or the knee gatch may help prevent migration or slow its rate. Design of the bed's articulation also affects the distance that a patient migrates.

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- Neal Wiggemann is a senior biomedical engineer and ergonomics specialist for Hill-Rom in Batesville, Indiana.

# Prepare to care for patients of size

## How to make mobilization and lifting safer for bariatric patients and staff

By Dee Kumpar, MBA, BSN, RN, CSPHP



**P**roviding care for bariatric patients is a concern for healthcare facilities and staff everywhere. Delayed patient mobilization due to fear of injury and lack of proper policy, knowledge, or equipment for handling these patients can lead to poor outcomes—and may pose legal and ethical concerns. Specialized equipment, beds, patient lifts, and surgical instruments must be made

available to help nurses and other healthcare professionals care for and support best practices for bariatric patients. (See *Bariatrics by the numbers*.)

### Mobility matters

When patients can't mobilize independently, they rely on nursing and physical therapy staff to prevent immobility complications—pressure ulcers, contractures, deep vein

thrombosis, muscle wasting, and pneumonia. Increased patient size is a significant barrier to early mobility, as are lack of proper equipment to lift and move the patient.

Yet providing early mobilization for dependent patients is challenging, and when they're large, it may seem overwhelming. The bariatric patient may be at even greater risk for immobility and deconditioning during hospitalization because nurses may fear they'll injure themselves while providing patient care. Manual patient mobilization increases the risk of musculoskeletal injury to caregivers. One study found that although bariatric patients accounted for less than 10% of the patient census in acute-care facilities, patient-handling injuries involving them accounted for 29.8% of staff-reported injuries. Safe patient handling and lifting requires skill and specialized products that support early mobility, lifting, and ambulation.

Bariatric patients may fear falling and may be embarrassed that it takes four or five people to lift, move, or support them during toileting or out-of-bed activities. They may have moderate to severe mobility limitations due to body type, decreased range of motion at the hip and knee, generalized adiposity, and location and size of the pannus (a dense layer of fatty tissue over the lower abdominal area).

### Bariatrics by the numbers

In 2011, the Centers for Disease Control and Prevention reported that 69% of adults were overweight, including 35% who were obese. Among adolescents ages 12 to 19, 18.4% were obese; among children ages 6 to 11, 18% were obese; and among children ages 2 to 5, about 12% were obese. Obesity is defined as a body mass index (BMI) of 30 to 39; morbid obesity, a BMI of 40 or higher. Overweight is defined as a BMI between 25 and 29.9.

Overweight and obese persons are at increased risk for many diseases and disorders, including type 2 diabetes, hypertension, hyperlipidemia, coronary heart disease, gallbladder disease, cancer, osteoarthritis, sleep apnea, and depression.

## Promoting a culture of safety

As a nurse, you can lead the way to creating and maintaining a culture of safety by supporting and modeling safe patient-handling practices on your unit. A focused approach to managing bariatric patients' mobility needs requires thoughtful planning and knowledge of the technology designed to support care for these patients throughout their entire stay. Lifting and mobility practices can be standardized successfully if nurses have a voice in developing a safe patient-handling and mobility (SPHM) program and in selecting SPHM technology.

## Assessing the level of assistance needed

Changing practice begins with evaluating the types of lifting and moving tasks required. Bariatric patients may need assistance with common activities, such as toileting, bathing, skin care, eating, sitting upright, and ambulating. To eliminate variations in care practices, caregivers should be clear on how to assess a patient's mobility status. Barriers to moving independently—not the patient's weight—should be the main criteria for determining the need for lift equipment.

Standard categories of dependency levels include:

- *dependent*—the patient relies on the nurse or caregiver for all lifting and moving activities
- *minimally to moderately dependent*—the patient relies on the nurse or caregiver for more than 50% of lifting and moving activities
- *independent*—the patient can perform lifting and moving activities without assistance from the nurse or other caregiver.

Other assessment considerations include:

- weight-bearing capability (full, partial, or none)
- whether the patient has bilateral upper-extremity strength
- patient's level of cooperation and comprehension
- medications, such as vasopressors and paralytics
- conditions that may affect choice of transfer technique, such as stomas, fractures, severe edema, or joint replacements.

For more information on assessment, read "Implementing a mobility assessment tool for nurses" in this supplement.

## Patient-handling algorithms

In 2003, the Veterans Administration created algorithms to provide guidance on how to safely perform high-risk activities related to patient handling and movement. Each algorithm specifies the suggested number of caregivers as well as selection and use of appropriate lift equipment. To download these algorithms, visit [www.tampavaref.org/safe-patient-handling.htm](http://www.tampavaref.org/safe-patient-handling.htm).

## Organizational guidelines

Manual lifting of any patient isn't safe. The National Institute of Occupational Safety and Health (part of the Occupational Safety and Health Administration), recommends 35 lb (15 kg) as the safe patient-lifting limit for healthcare workers. The American Nurses Association (ANA) supports a policy of no manual lifting, as discussed in its 2013 book, *Safe Patient Handling and Mobility: Interprofessional National Standards*.

A 2010 white paper from The

Facility Guidelines Institute, titled *Patient handling and mobility assessment* (FGI-PHAMA), provides recommendations for the right amount of equipment in the right location based on the specific needs of patients on each type of unit. (The ANA publication mentioned above cites this document as supporting evidence on select-

## Barriers to moving independently—not the patient's weight—should be the main criteria for determining the need for lift equipment.

ing and using lift equipment.) For example, we know many patients in intensive care units (ICUs) are dependent and must rely on nurses to boost, turn, and reposition them frequently throughout the day. FGI-PHAMA recommends 100% ceiling lift coverage in ICUs to ensure patient mobilization activities can be done without delay or injury to nurses. For medical-surgical units, FGI-PHAMA recommends 50% ceiling lift coverage, because generally half the patients on these units depend on the nurse to lift, manage, move, and support their ambulation activities throughout some portion of their stay.

## Challenging environments

Advances currently are under way to promote safe patient handling in other challenging hospital areas, such as the operating room (OR), emergency department, outpatient areas, and ancillary units. Preplanning for patient flow and transfer activity to and from these units is essential. The care team must communicate, coordinate, and cooperate during patient transport, lateral transfers, and

# Case study: Bariatric surgery using the proper SPHM technology

By Ronda Fritz, RN, BSN, MA

An estimated 179,000 bariatric surgeries were performed in the United States in 2013. Demand for such surgery continues to rise. However, using safe patient handling and mobility (SPHM) technology in the operating room (OR) can be challenging because of the sterile environment and potential lack of knowledge about safe equipment use—especially for such tasks as lifting the pannus and limbs. This case study shows how one nurse was able to promote a culture of safety in the OR and how the surgeon recognized the benefits to both the surgical team and patient. As described below, a team of experts in the hospital determined how to incorporate the patient lift system to support the pannus during surgery to protect staff from injury and enhance the surgeon's visualization and safety.

A morbidly obese patient weighing 488 lb (221 kg) with a BMI of 70 was scheduled for a panniculectomy (pannus removal) and hernia repair. The surgeon requested use of a patient lift during the procedure to lift and hold the pannus. As the patient was being prepped for surgery, the surgeon learned that the requested Böhler Steinmann pin holders, which would attach to the lift to support the pannus, weren't available. He cancelled the surgery and rescheduled it for a later date. He said he wouldn't perform the surgery without the patient lift because he didn't want staff to hold the pannus, which weighed more than 100 lb (45 kg), for the 3 to 5 hours the surgery would take.

The panniculectomy was rescheduled. Before the operation, the nurse worked with SPHM experts to assess how to best handle the patient and developed a plan to incorporate the patient lift system to support the pannus during surgery, thus protecting staff from injury and enhancing the surgeon's visualization and safety.

The surgery was performed with use of a portable patient lift. The patient was positioned on an OR table appropriate for his size and weight and prepped in sterile fashion. The pannus was suspended with two Steinmann pins attached to two Böhler Steinmann pin holders and a Golvio® 7007 lift. The patient was draped and prepped in standard sterile fashion. An SPHM expert positioned and operated the lift during the procedure. The panniculectomy removed 40 lb (18 kg) of adipose tissue. When the surgery was completed, the patient was transferred off the OR table with an air-assisted lateral transfer device.

## Benefits of using the proper equipment

Using the proper patient-handling equipment during the panneucleotomy yielded the following benefits:

- No unpredictable movement of the pannus occurred while it was attached to the lift. It was moved only when the surgeon moved the tissue or directed the SPHM expert to reposition or lift it.
- Use of the lift during the surgery enhanced patient safety.
- The patient's adipose tissue was hiding many blood vessels. Having the pannus stabilized by the lift helped avoid unintentional vessel dissections. Estimated blood loss was 300 mL.
- Use of OR staff was improved. Although six additional staff members were assigned to assist with holding the pannus and transferring the patient off the OR table, they weren't needed and were released to other duties.
- No staff members were injured during the procedure. Because the air-assisted lateral transfer device was used, no patient or staff injuries occurred during transfer from the OR table to the bed.
- No patient injuries occurred.

Ronda Fritz is a safe patient-handling facility champion at VA Nebraska-Western Iowa Health Care System in Omaha, Nebraska. She is on the board of directors of the Association of Safe Patient Handling Professionals.

repositioning. With technology available to prevent injury to both caregivers and patients, no department should put staff at risk for injury during transfer activities.

(For a case study on bariatric equipment use in the OR, see *Case study: Bariatric surgery using the proper SPHM technology*.)

Bariatric patients present multi-

ple concerns for healthcare workers. We encourage all nurses to speak up about safety and to support a SPHM workplace environment.

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Dee Kumpar is the director for Safe Patient Handling Programs at Hill-Rom in Batesville, Indiana and a member of the workgroup for ANA's Safe Patient Handling and Mobility: Interprofessional National Standards. She is on the board of directors of the Association of Safe Patient Handling Professionals.

# Developing a sling management system

Learn about key decisions for this segment of an SPHM program.

By Jan DuBose, RN, CSPHP

A patient mobility assessment determines your new patient needs a dependent sling. But when you finish your admission intake and reach the sling inventory storage site, you find no slings are available. Or perhaps you see a sling hanging on a hook and wonder if it's clean or dirty.

If you've had an experience like this, you're probably eager for your workplace to adopt a safe patient handling and mobility (SPHM) program that addresses slings, among other things. But before adopting such a program, a healthcare facility must perform a unit assessment to evaluate:

- medical conditions and mobility needs of its patient population
- maximum number of bariatric patients on the unit at a given time, and how often the unit reaches this number
- tasks performed on the unit
- unit staffing
- storage constraints.

Other parts of an SPHM program related to sling use include infection control and selection of the sling fabric.

## Launderable vs. disposable

The SPHM committee, which oversees all aspects of the SPHM program, must decide if the facility should use launderable and reusable slings, disposable slings, or both types. Input from



the laundry department is critical. Each type of sling has benefits and drawbacks. (See *Comparing launderable and disposable slings*.) If the committee chooses launderable slings, the next decision is whether to launder them in-house or out-

source laundering to a laundry company.

### In-house laundering

Advantages of in-house laundering include:

- negligible number of missing or lost slings because all slings

## Comparing launderable and disposable slings

Despite their laundering costs, launderable slings are more cost-effective than disposable slings because they're reusable. Also, more launderable sling types are available, giving healthcare facilities more solutions for patient transfer and lifting needs. However, these slings raise concerns about infection control and sling sharing.

Disposable slings, on the other hand, are easier to store. With no laundering process, the safe patient handling and mobility (SPHM) program is simpler, no slings are lost to laundering, and infection control is easier. On the flip side, the ever-increasing cost of replacing slings can be a financial drain even on a successful, sustainable SPHM program. Also, disposable sling styles are limited, which can reduce the potential success of the program by failing to address all the manual tasks required.

## Case study: On-site laundry with centralized distribution

By Deanna Watkins, MSN, RN, CSPHP

One hospital chose to build an 800-square-foot on-site laundry facility to reduce overall product processing costs, reduce the required product inventory, and decrease the risk of product loss. The laundry facility also represented an investment in the hospital's infrastructure. Achieving return on investment was estimated to take less than 18 months.

The hospital purchased four times the estimated inventory of slings and accessories, compared to six times the inventory that offsite laundering would require. Keeping products on-site keeps losses low and allows barcoding of all items for product management and tracking. Also, the on-site facility custom-laundered linens with the potential for future savings.

The hospital has a centralized process managed by the linen service of the environmental services department. This allows better inventory tracking and accountability. Each unit and department has an established inventory or periodic automatic replenishment (PAR) level of lift products. PAR levels were determined by reviewing patient demographics for each unit; the most difficult tasks reported by the staff; admission, discharge, and transfer data; average patient weight; and location from where most patients are admitted (such as direct admit vs. postoperative).

All products are barcoded and labeled with organization identification, not unit or department identification. That way, slings can be transferred with the patient as he or she flows throughout the care continuum. This is accomplished by the linen service using a laundry cart exchange process. Carts are exchanged daily depending on product use. Specialty slings and accessories (such as amputee slings) also can be acquired through the centralized system by calling the main phone number for linen distribution.

Deanna Watkins is a nursing administrative specialist at Mayo Clinic Hospital in Phoenix, Arizona.

stay in the facility

- shorter turnaround time due to better control of the process
- reduced sling purchase cost due to reduced inventory
- better oversight for maintaining sling standards.

Disadvantages include:

- the need for a dedicated staff member to oversee and manage the process
- the need for space to house a washer, dryer, drying cabinet, folding surface, and storage carts
- a properly vented environment to avoid dampness and mold
- possible injuries to laundry staff due to the added workload. (See Case study: On-site laundry with centralized distribution.)

### Outsourced laundering

Advantages of outsourced laun-

dering include a reduced impact on laundry staff and transfer of responsibility for a smooth, successful process off-campus. Disadvantages are possible loss of slings, sling damage from industrial laundering methods, long turnaround time, and costs (determined by the pound or item).

### Fabric maintenance

Whichever laundering process is chosen, fabric maintenance guidelines must be followed. Meeting infection-prevention standards is paramount. For example, a protocol for disposing of or treating soiled or infected slings must be established, along with protocols for single patient use of slings. Fabric integrity must be maintained to extend sling life; preserving sling quality for prolonged fabric reliability and sling longevity promotes patient safety and cost-effectiveness.

If the facility has chosen to outsource its sling laundering, it must establish a good working relationship with the laundry company, with clear and regular communication.

### Inventory purchase and stocking of supplies

A sling management process includes estimating the number and sizes of slings a unit uses, purchasing inventory, and stocking supplies in an organized, effective way. Several factors can affect inventory. For instance, as the SPHM program grows, the facility will need more slings and accessories, and purchasing may be slow to catch up. The laundry service, whether in-house or outsourced, also may be unable to keep up with demand. And despite seemingly reasonable initial expectations, turnaround time might become impractical as the SPHM program evolves. Also, the number or sizes of slings a unit uses may have been estimated improperly initially.

Healthcare facilities have two options for establishing and keeping a satisfactory sling inventory—periodic automatic replenishment (PAR) or centralized distribution.

### PAR system

To maintain a PAR level, the facility must keep enough slings on hand so it doesn't run out while waiting for resupply. Space constraints may limit the PAR level. PAR requires not just a storage area but also a dedicated staff member, along with unit staff, transport staff, and laundry staff for backup. What's more, if specialized slings are stored on specific units, they're not easily available on other

units. On the other hand, using a PAR system means slings will be readily available on all shifts, which leads to better compliance with the SPHM program.

### Centralized distribution

With this system, access to slings may not be available when needed, especially on evenings, nights, weekends, and holidays. A staff member must be put in charge of maintaining central storage for efficient distribution, and a process for obtaining slings must be established. For instance, is a runner needed? If so, who supplies the runner?

Nonetheless, a well-organized centralized distribution process can be highly effective if communication is clear and consistent. Also, lack of unit storage for slings isn't a concern.

(continued from page 10) way to becoming firmly rooted and incorporated into caregivers' daily practice. Although the practice change is becoming the new norm, coaching and mentoring are needed to help maintain momentum. Stories learned along the journey should be used to inspire both novice and expert clinicians.

Objective evaluation of the improvement process should continue, focusing on outcome measures and identifying improvement opportunities to promote refinement. Team members are now doing things they never thought were possible—and previously believed to be unsafe. Recently, I learned of a ventilator patient at St. Luke's Medical Center, Boise/Meridian (Idaho) who was receiving continuous renal replacement therapy (CRRT). Staff safely mobilized the

### Sling tracking

Sling tracking promotes return of slings to the proper unit. Tracking can be handled in several ways:

- Slings can be labeled with an indelible marker, barcoded, or embroidered. A simple marking system can yield valuable benefits.
- Vendors may have sling tracking systems your facility can use.

### Support for the SPHM program

A well-developed sling management system supports a facility's SPHM program. The SPHM must elicit input from units that will use the system and from the laundry department or outsourced laundry company to ensure all parties' needs are met. It must choose sling styles and fabric

and put in place procedures for sling purchase, inventory maintenance, care, laundering, tracking, and replacement. Once these issues have been addressed, the facility is ready to embark on an SPHM program that can improve patient care and help prevent staff injuries.

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Jan DuBose is director of Safe Patient Handling Programs and Services at Hill-Rom.

patient to the chair using the hospital's mobility protocol. In many ICUs, such a patient would be bedbound. But at St. Luke's, early mobility is now routine practice even for these patients. Conversation about mobility occurs in daily rounds and often is a major focus of daily patient goals.

In fact, staff members are likely to comment that they no longer ask the question "Can we mobilize this patient?" Instead, they ask, "Is there a reason why we can't mobilize the patient?" Key lessons learned to promote and maintain this cultural transformation include the importance of testing new practices on a small scale, getting regular feedback of performance and outcome data, providing sufficient education, and increasing caregivers' will to mobilize patients by seeing the work in action.

### Deliberate focus, full engagement

Incorporating new evidence into daily practice isn't enough to sustain a culture change to emphasize early mobility and SPHM. Such a change comes only with a deliberate focus on three key questions: What are we are doing? Why are we doing it? What's my role? Full engagement and cultural transformation can occur only when all team members can respond to these questions with full understanding.

Visit [www.AmericanNurseToday.com/Archives/aspx](http://www.AmericanNurseToday.com/Archives/aspx) for a multidisciplinary progressive mobility continuum tool and a list of selected references.

Kathleen M. Vollman is a clinical nurse specialist, educator, and consultant with Advancing Nursing, LLC in Northville, Michigan. Rick Bassett is a cardiovascular clinical nurse specialist in adult critical care at St. Luke's Medical Center, Boise/Meridian, Idaho.

# Making the business case for a safe patient handling and mobility program

**Learn about three approaches to preparing an investment justification.**

By John Celona, BS, JD

The value of a safe patient handling and mobility (SPHM) program is clear, but the benefits may be difficult for some nurse leaders to quantify. Some investment justifications are available from vendors of SPHM equipment, but even when well done, they don't give a complete picture of potential benefits—and inevitably are discounted because vendors are in the business of selling equipment. This article describes how to make an independent, unbiased business case for an SPHM program and presents a case study of a decision analysis process used at Stanford University Medical Center.

## Elements of a good business case

A business case should:

- describe the proposed program, such as required equipment and training
- quantify program costs and benefits
- show the program's net benefit (benefits minus costs), expressed either as a net present value or return on investment (ROI).

A good business case consid-

ers alternative program designs and includes projections for the results if the proposed program isn't implemented (such as increased workers' compensation costs and increased pressure ulcers). Net benefits commonly are measured by subtracting costs with the program in place from costs without the program in place.

Although preparing such projections is feasible for those with a master's degree in business administration or a similar education, many SPHM program champions have clinical backgrounds. Here are some possible strategies they can use, starting with the easiest but least facility-specific.

## STRATEGY 1: Refer to a published study

The easiest but least facility-specific and least accurate way to prepare an investment justification is to refer to published studies. For example, the risk-management study I undertook for Stanford, published in the April 2011 issue of *Journal of Healthcare Risk Management*, shows what a facility with all the elements of a successful SPHM program can achieve.

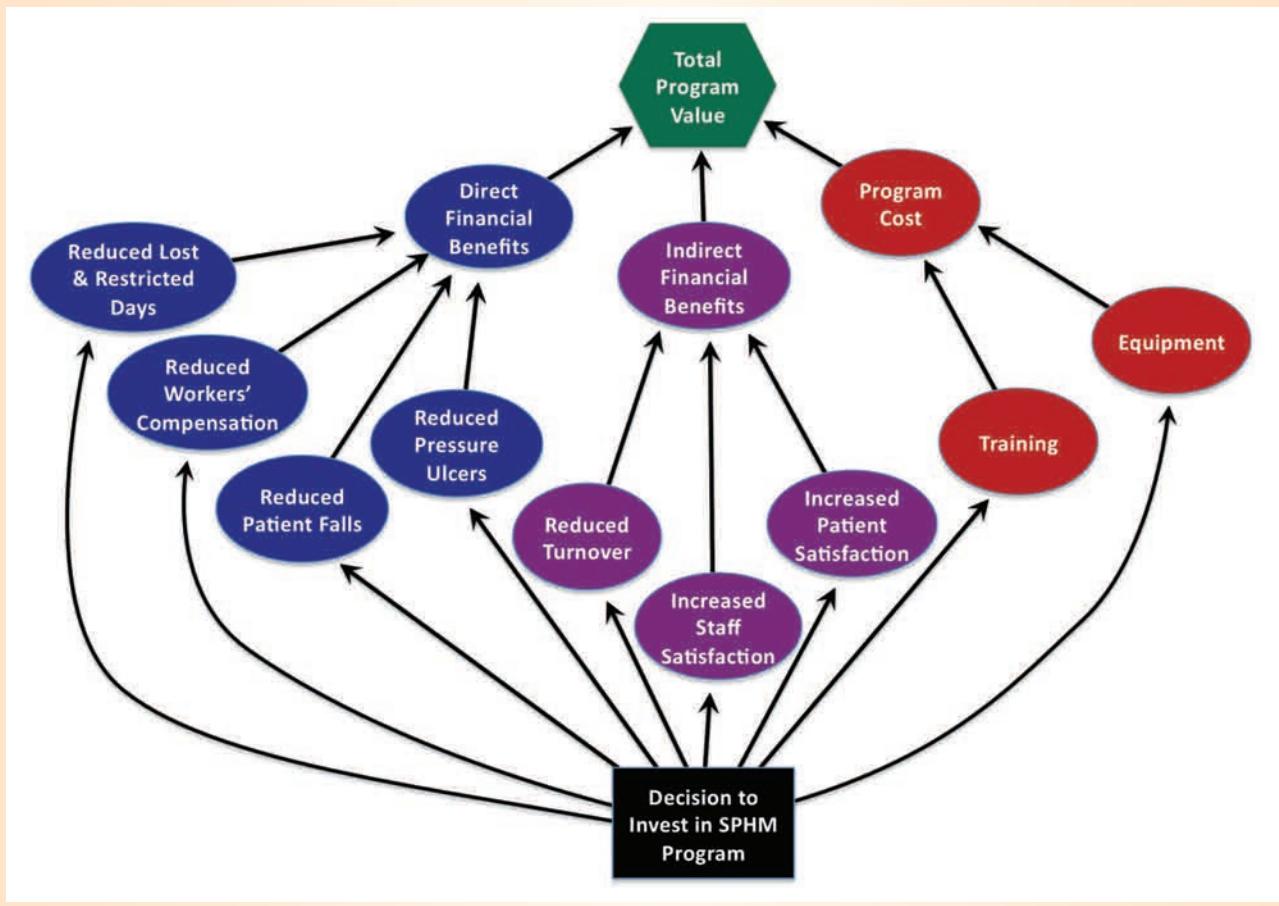
## STRATEGY 2: Complete a simple template

The next most accurate way to prepare an investment justification is to fill out a simple template. Most likely, your employer's finance department or capital committee has a standard template for proposed expenditures. Most organizations require a cost-benefit projection for 5 years into the future. The cost part is fairly easy, and most people are familiar with preparing budgets for what they propose to spend. Be sure to include estimates for equipment purchases and training time.

As for benefits, the most commonly cited ones for an SPHM program are reductions in workers' compensation costs and in lost or restricted staff days due to patient handling and mobility injuries. Unless your facility already has identified these costs, you'll need to crossmatch data from the Occupational Safety and Health Administration Form 300 (listing causes of injuries and whether they led to lost or restricted duty

## Influence diagram

An influence diagram is a simple, graphic way of showing all items of interest and demonstrating what's related to what. Uncertainties are shown in ovals, decisions in boxes, and the final value as a hexagon; arrows show relationships among items. This influence diagram shows all safe patient handling and mobility (SPHM) costs and benefits of interest to leaders at Stanford University Medical Center when considering whether to invest in an SPHM program.



days) against cost data in the workers' compensation system.

Typically, organizations estimate they'll save 60% to 80% of workers' compensation costs related to patient mobilization if they have an SPHM program, and will save zero to 50% of the cost of replacement staff to fill in for out-of-work or restricted-duty staff (depending on the facility's replacement staff policy). Subtracting each year's costs from the benefits yields the annual net benefit. If your facility's template hasn't built in these costs, someone from the finance department can help convert the year-by-year figures to a net present value or ROI.

### STRATEGY 3: Prepare a decision analysis

Preparing a decision analysis is more difficult than referring to a published study or using a template. But it's facility-specific and thus provides the most complete and accurate picture. Of course, it must be done by someone skilled in decision analysis. But for large investments, the cost of the analysis is well worth it, because it:

- delivers a highly accurate quantification of costs and benefits, including uncertainties
- shows worst- and best-case scenarios for costs and benefits and describes exactly how these might occur

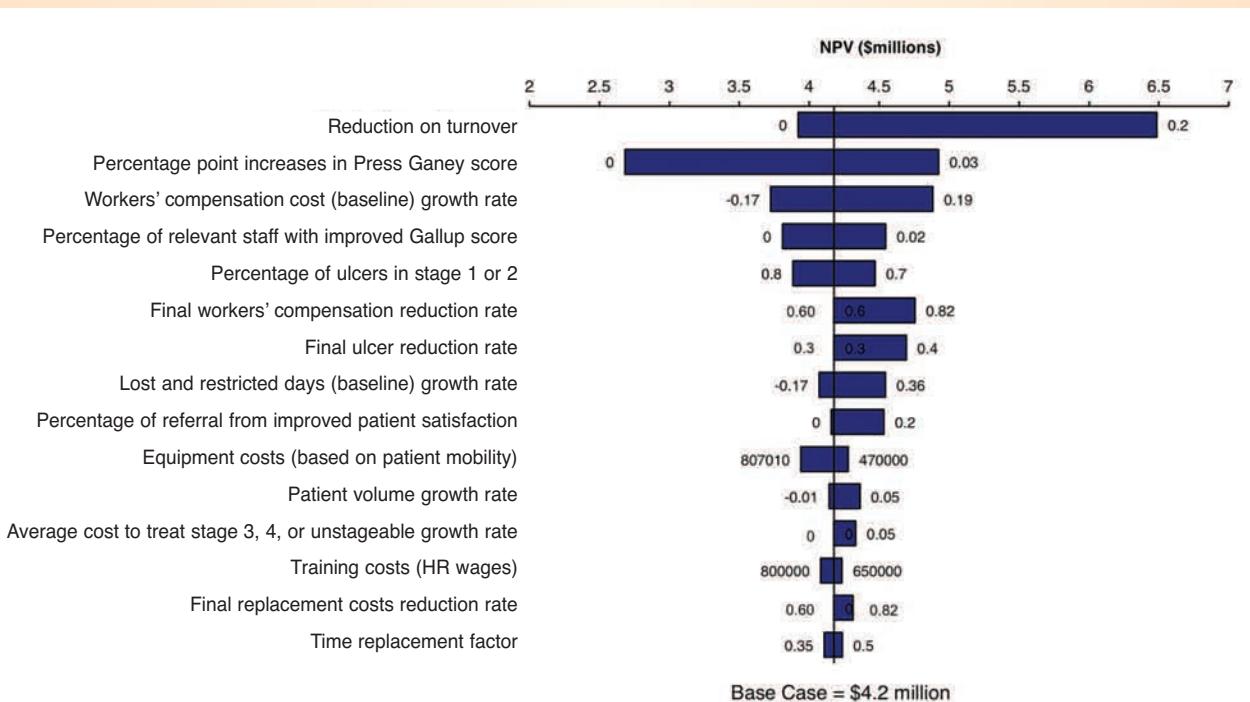
- identifies how to get more value out of the SPHM program
- specifies which result measures should be tracked to validate that the program is working as it should be, and pinpoints what the values for those measures should be.

Generally, a decision analysis costs much less than 1% of the program cost. What's more, it produces recommendations for increasing program value, which dwarf the cost of the analysis.

I worked with Stanford on a decision analysis for its SPHM program because it became apparent that the simple-template approach

## Tornado chart: Key value drivers

In this so-called tornado chart, the key value drivers for Stanford's safe patient handling and mobility (SPHM) program appear at the top. Uncertainties farther down the chart (the complete chart had 40 uncertainties) don't merit much time or attention. For example, whether 35% or 50% of restricted staff time was replaced with other staff time didn't significantly affect total program value. In reality, of course, all uncertainties are varying at the same time, rather than one at a time as shown in this chart.



initially used there missed most of the value and wouldn't justify a program in the new hospital under construction.

### Case study: Standford decision analysis

At Stanford, we began by drawing an influence diagram to show all SPHM costs and benefits of interest to leaders. (See *Influence diagram*.) For each cost or benefit, more detailed work explored exactly how to quantify the results. For example, to estimate the benefits of reduced staff turnover, we needed to know:

- number of nurses mobilizing patients who would be affected by the SPHM program
- average annual staff turnover rate
- average cost to recruit and

- train a nurse (\$60K to \$80K, based on a literature search)
- estimate of how much the SPHM program would reduce staff turnover.

We did similar work for each type of cost and benefit. Unlike using a simple template or referring to a published study, the decision-analysis approach enabled us to use a range of numbers to represent uncertainty regarding how significant the future impact might be. For turnover reduction, we used a range of 0% to 20%.

These data were then programmed into a Microsoft Excel spreadsheet. One immediate result was that the total value of an SPHM program (including hard-to-quantify benefits) would amount to more than twice the value of re-

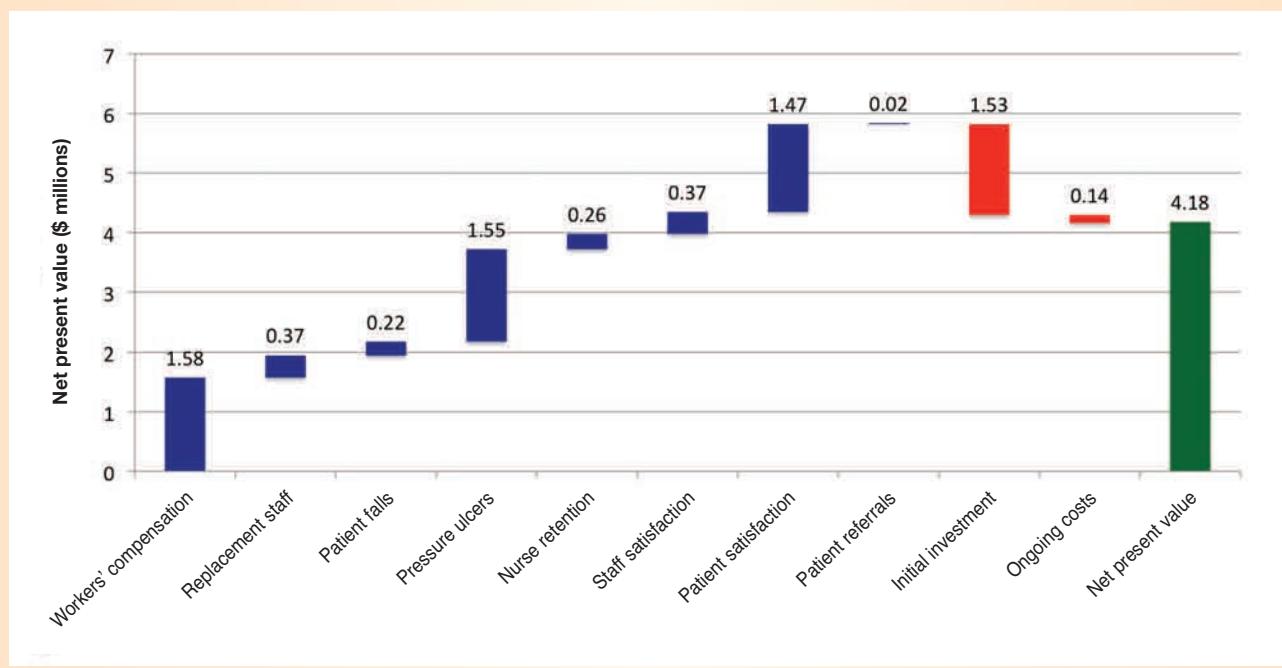
duced workers' compensation costs and lost and restricted days alone.

The next step was to set each uncertainty (such as a change in the nurse turnover rate) to the low value in the range, record the total program value, set the uncertainty to the high value in the range, and record the total program value. The difference between the two program values was plotted on a bar chart. When the bars were sorted from highest to lowest impact on program value, the characteristic tornado shape resulted. (See *Tornado chart: Key value drivers*.)

Stanford leaders were surprised to learn that reduced staff turnover had the greatest potential for getting more value out of the SPHM program, possibly increasing total

## Components of total SPHM program value

This “waterfall” chart shows that the largest components of value for Stanford’s safe patient handling and mobility (SPHM) program are decreases in workers’ compensation costs and in pressure ulcers and increased patient satisfaction. Nurse retention is a small component of total program value in the base case scenario shown here (with only a 2% reduction in turnover), although it has the largest potential for increasing program value if turnover reduction could be pushed up to 20%.



program value from about \$4 million to \$6.5 million. As a result, Stanford decided to inform the nursing staff that it was going to put in place the SPHM tools needed to keep them healthy and able to work. Stanford also surveyed staff satisfaction improvements resulting from the SPHM program. Combinations of all the variables produce thousands of scenarios, best shown in a probability distribution. The probability distribution for Stanford showed that the mean program value was more than double the estimate from the template approach. It also showed that in a worst-case scenario, the program would still pay for itself.

An easy way to show the components of program value is to take the overall program value from the base case (all uncertainties set to their middle value) and break these down into compo-

nents of cost and value. This produces a so-called waterfall chart. (See *Components of total SPHM program value*.)

### Outcome of the decision analysis

Stanford’s decision analysis produced:

- a high degree of confidence that the actual value of the SPHM program and uncertainty in that value had been quantified accurately
- a deeper understanding of how the program would add value and which benefits were most important
- insight into how to get more value from the program
- identification of which value measures would need to be tracked to validate program results.

At Stanford, reductions in work-

ers’ compensation claims were on track (within the 60% to 80% range forecast), but baseline workers’ compensation costs were growing faster than the maximum 19% annual increase forecast. A closer look revealed that a return-to-work program had been discontinued, sending costs skyrocketing. Stanford quickly reinstated that program.

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John Celona is a principal at Decision Analysis Associates, LLC, in San Carlos, California. He is the author of *Decision Analysis for the Professional*, 4th ed.

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