

# A Patient Handling and Movement Needs Assessment Toolkit

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Jim Harrell has 53 years of experience in medical programming, space planning, and design. As a Senior Medical Planner at PDT Architects, LLC, he is exclusively focused on creating innovative healthcare environments - from ambulatory care to critical care design. Mr. Harrell is a founding member of the Committee to Recommend Standards for Newborn ICU Design. He helped draft the SCCM design standards for ICUs and recommendations for women's healthcare environments. He contributed to the FGI 2010 guidelines language for safe patient handling/movement.. He is a frequent speaker at healthcare design symposia and a contributing writer for healthcare design publications.

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Regan Henry brings a unique perspective to healthcare design through her background as a scientist. Dr. Henry received her undergraduate and master's degrees in architecture, but then went on to receive her PhD in molecular biology. After working for years in a laboratory, publishing and teaching in higher education, she returned to architecture seeking to meld her two interests. Her work follows research based design principles and seeks to engage all vested parties in the design process. She appreciates that a good design process is a teaching and learning tool for both client and architect.

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## **Abstract**

The FGI Guidelines, 2014 edition, stipulates that the governing body of the health care facility provide a Patient Handling and Movement Needs Assessment (PHAMA) to the design team on facility improvement projects. A PHAMA is intended to evaluate the movement and handling of patients in order to assess safety risk - for patients and staff - and identify best practices. This is an integral part of the pre-design functional and space programming process. It should be updated as new information becomes available during throughout project design, construction, and commissioning. PHAMA recommendations and revisions are intended to inform the design about patient handling and movement (PHAM) equipment and associated accessories to be used in specific locations. Such advice includes information about any spatial, structural, utility or design considerations related to installation, use, and servicing of such equipment.

Many healthcare providers have adopted policies and procedures for safe patient handling and mobility, but it is unclear how many design projects are implemented using a PHAMA. There are a number of states in which the preparation and use of a PHAMA occurs rarely, or not at all. In this White Paper we will elaborate upon the FGI's recommendations by discussing specific factors to be addressed in a PHAMA and draft sample PHAMAs for a variety of spaces and high risk patient populations. It is our aim that this White Paper be used as a tool for hospital administrators and designers as they draft PHAMAs for their respective projects.

### **Keywords:**

PHAMA, stipulate, safety risk assessment, design, toolkit.

### **Category:**

Education

## Introduction

The Facility Guidelines Institute (FGI) Guidelines stipulate that a Patient Handling and Movement Needs Assessment (PHAMA) be completed to address issues with patient mobility when embarking upon a facility improvement project.

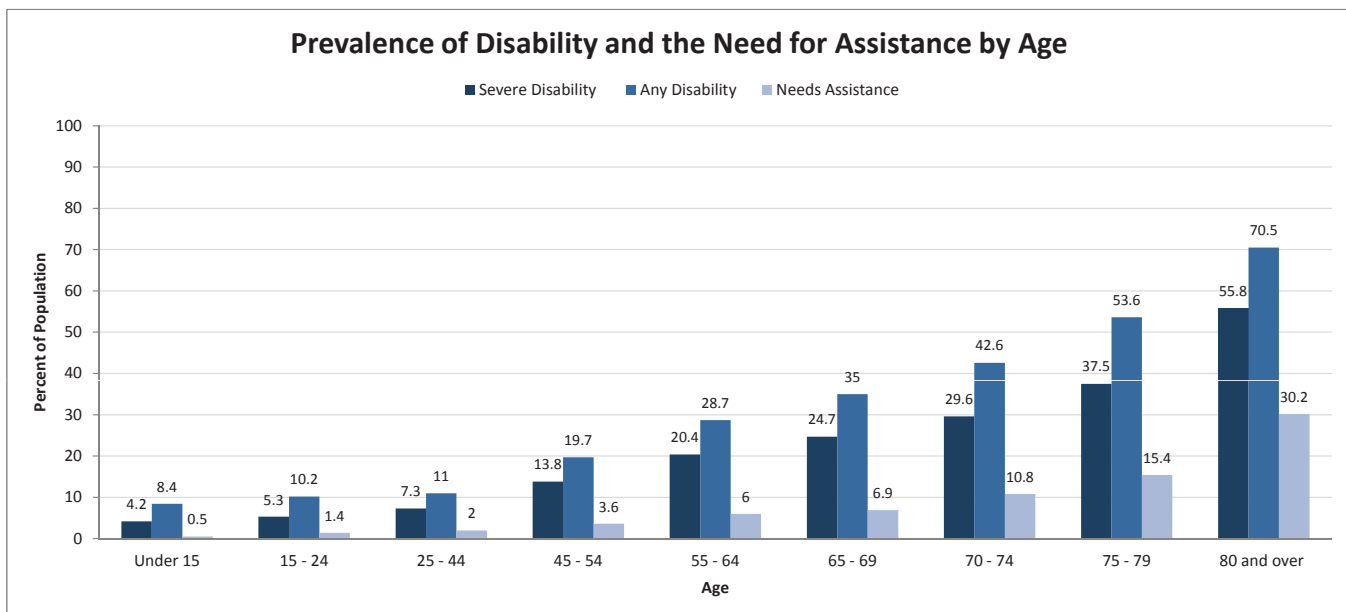
PHAMA is intended to evaluate the movement and handling of patients in order to assess safety risk - for patients and staff - and identify best practices. In this paper we hope to stress the importance of preparing a PHAMA by introducing the at-risk populations it serves, defining the existing issues with servicing these populations and providing solutions for both equipment utilization and policy adaptation that may contribute to improved patient safety and mobility.

## At - Risk Patient Populations

Increasing numbers of the population are considered obese, disabled and/or elderly. All three of these characteristics are associated with decreased mobility. This changing patient demographic has implications on how services are rendered within the healthcare industry. The following is a list of patient populations shown to have mobility challenges in a hospital setting.

**Obese:** Obesity rates continue to rise with more than 30% of adults, nearly 17% of children (ages 2 to 19) and greater than 8% of young children (ages 2 to 5) defined as obese by national surveys. Obesity is associated with immobility ([Forhan & Gill, 2013](#)).

**Disabled:** The 2010 American Census found that 18.7% of the population may be defined as Disabled and of those, 12.7% are considered Severely Disabled. A 2014 survey from the Center for Disease Control found that 7.1% of adults are unable to walk a quarter mile. Disabilities are correlated with age, with 70.5% of adults over 80 considered Disabled and of those, 55.8% were Severely Disabled ([Blackwell, Lucas & Clarke, 2014](#)). (See Figure 1: Disability Prevalence.)



Source: U.S. Census Bureau, Survey of Income and Program Participation, May - August 2010

Figure 1: Disability prevalence and need for assistance.

Aging population: The 2014 census recorded 46.2 million Americans being 65 years or older. Adults 65 and older represented 14.5% of the 2014 US population and are expected to grow to be 21.7% by 2040. Aging is directly associated with decreased mobility due to reduced muscle strength and impairment of balance and gait leading to an increased risk of falling ([Daley and Spinks, 2000](#)).

Medicated: Continued innovation in the field of disease research leads to greater numbers of medications and consequent side effects. Common side effects of pharmaceuticals include depression, dizziness or vertigo, orthostatic hypotension, visual impairment and sedation. In a 2004 study titled, Characteristics and Circumstances of Falls in Hospital Settings, researchers found many patients who fell were on many medications that could have contributed to a fall. Many of the fallen patients were administered agents with central nervous system activity (106/183; 58%) or vasoactive/blood pressure agents (102/183; 56%) in the 24-hour period prior to the fall; 12% (22/183) of fallen patients received a sedative-hypnotic.

Rehabilitation: Mobility support is also required for patients suffering from orthopedic, or spinal cord injuries in which movement has been impaired through injury. For example, a full leg cast of a 6-foot tall person would extend almost 3 feet from their body –tight turns and door thresholds become a challenge in a wheelchair.

## **At – Risk Staff Populations**

Nurses and other healthcare workers are vulnerable to debilitating and often career-ending musculoskeletal disorders (MSDs). In 2000, 10,983 Registered Nurses suffered lost-time work injuries due to lifting patients ([Bureau of Labor Statistics, 2002](#)). An American Nurses Association survey outlined the impact injury has on these healthcare workers: 56% of nurses reported they have experienced musculoskeletal pain that was made worse by their job, 80% of nurses who reported pain from MSD said they work despite experiencing frequent pain, and 62% of nurses reported “developing a disabling musculoskeletal disorder” as a top health and safety concern ([American Nurses Association, 2011](#)). It has been reported that 12% of nurses who planned to leave the profession cited back injuries as a contributing factor ([Stubbs, Buckle, Hudson, Rivers, & Baty, 1986](#)). In addition to the physical and emotional toll of nurse injuries, costs associated with injuries to healthcare workers, both direct and indirect, were estimated to be \$7.4 billion annually in 2008 dollars ([Waehrer, Leigh & Miller, 2005](#)).

Although nursing students and employees are trained on the appropriate body mechanics for lifting patients including maintaining a neutral posture, using stronger leg muscles, and keeping weight close to the body, these strategies have proved ineffective in prevention of injury ([Wardell, 2007](#)). Additionally, studies have found that even when nurses are provided the appropriate training, education, and access to equipment designed to assist with lifting patients, many nursing staff do not use the equipment. For a variety of reasons there is a culture of unsafe patient handling within US hospitals ([Stevens, Rees, Lamb, & Dalsing, 2013](#)). Research suggests that a worthwhile PHAMA requires both access to equipment and continuing education of staff.

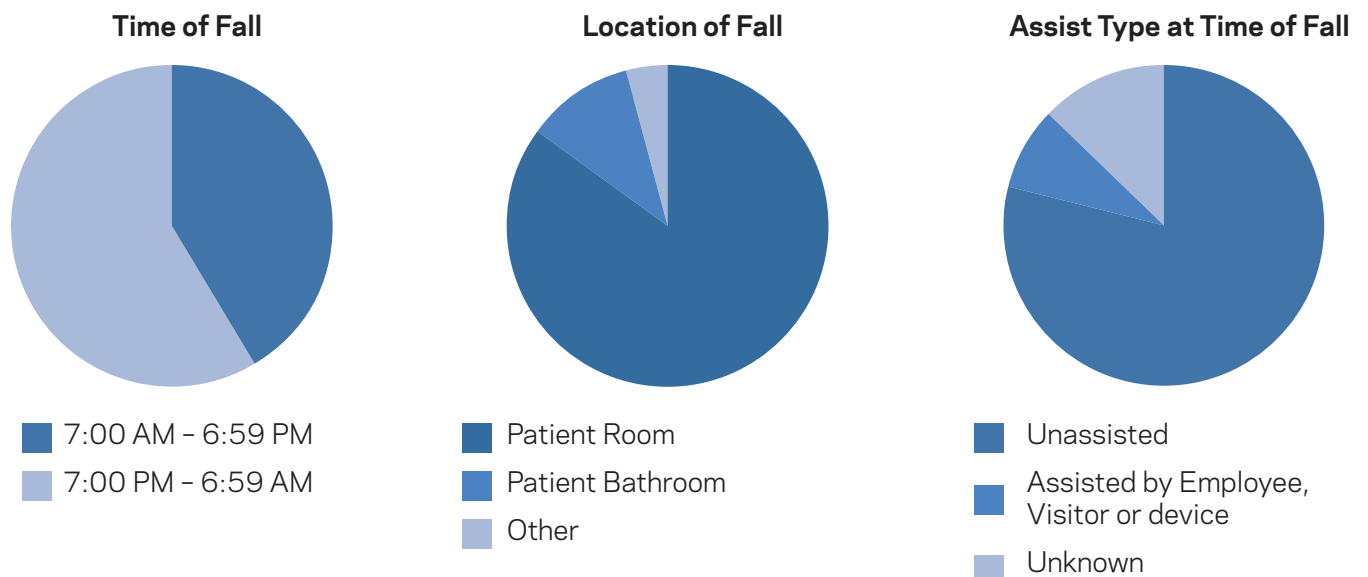
Experience shows that creating a hospital-wide plan for patient handling will improve the health of nurses and staff; in 2008 the Veterans Administration (VA) dedicated \$200 million to enforcing a Safe Patient Handling Program. Results show that VA hospitals across the country have reduced nursing injuries from moving patients by an average of 40% since the program began ([Zwerdling, 2015](#)). Administratively, The Joint Commission reports such improvement in nurse safety benefits the bottom line through decreased worker compensation and insurance costs, increased staff retention, increased patient satisfaction, returns and recommendation, and decreased litigation ([The Joint Commission, 2012](#)).

## Clinical consequences

There are significant clinical consequences associated with awkward patient handling and movement including diminished quality of care, patient safety, and patient comfort ([Wicker, 2000](#)). Lack of mobility has been shown to have a direct negative influence over patient care and health ([Iezzoni, McCarthy, Davis, Harris-David, & O'Day, 2001](#)). Patients with mobility impairment are often denied services, receive less preventive care, and report longer wait times to see subspecialists ([Lagu, 2013](#)). Patients disabled due to obesity report feeling shamed by healthcare providers and consequently avoid care and foster a general mistrust of doctors ([Obesity reviews, 2015](#))([2005](#)). A paper published in 2013 found that subspecialty practices were especially discriminatory. Of 256 practices included in the study (56/256) 22% reported that they could not accommodate a patient in a wheelchair who could not self-transfer, nine of the 56 were located in a handicap inaccessible building and the remaining 47 practices stated that they could not transfer a patient from a wheelchair to an examination table. Reasons for the inability to transfer the patient included lack of staff who could perform the transfer (37/56), a concern about liability (5/56), or that the "patient was too heavy" (5/56) ([Lagu, 2013](#)).

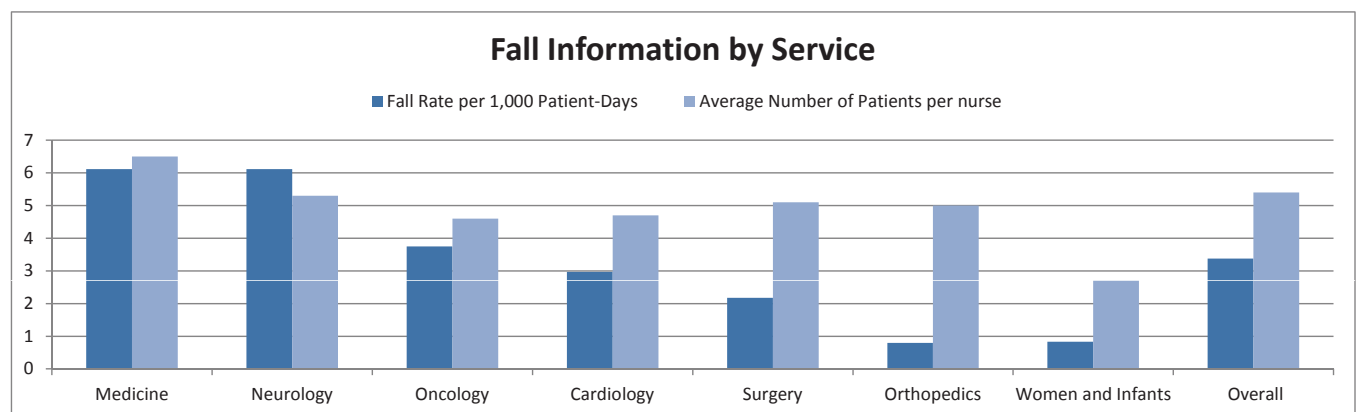
Poor patient handling practices are related to increased patient falls. The rate of falls among inpatient hospitals ranges from 2.3 to 7 falls per 1,000 patient-days ([Halfon, Eggli, Van Melle, & Vagnair, 2001](#)). A 2004 report found 42% of inpatient falls result in injury, with 8% resulting in serious injury ([Morse, Prowse, Morrow, & Federspiel, 1985](#)). This rate has increased from a similar study in 1998 by Ash, MacLeod, and Clark. In 1995 hospital organizations reported fallen patients who sustain injury have hospital charges over \$4,200 higher than patients who do not fall - or \$6,620 in 2016 dollars ([Bates, Pruess, Souney, & Platt, 1995](#)).

In order to best manage safe patient handling, it is important to understand who the patients are and where patients have the greatest likelihood of falling. Research shows the largest proportions of patients fell in the evening or at night (107/183; 59%), in the patient's room (155/183; 85%) or bathroom (20/183; 10.9%) and were unassisted when they fell (145/183; 79%). The most common activity performed at the time of the fall was ambulation (35/183; 19%). The mean age of the 183 fallen patients surveyed was 63.4 years (range 17 to 96 years), however 4.7% were under the age of 65. A significant proportion (81/183; 44%) of patients were confused or disoriented at the time of the fall. (See Figure 2: Circumstances of First Falls.) The medicine and neurology services had the highest fall rates (both were 6.12 falls per 1,000 patient-days), as well as the highest patient to nurse ratios (6.5 and 5.3, respectively) (Hitcho, E., Krauss, M., Birge, S., Claiborne Dunagan, W., Fischer, I., Johnson, S., et.al., 2004). (See Figure 3: Fall Information by Service.) As 79% of fall cases were unassisted, it is important to note that a large part of safe patient handling involves understanding when a patient needs ambulatory assistance. Other factors listed as contributing to falls include slippery floors, inappropriate door openings, poor placement of rails and accessories, and incorrect toilet and furniture heights (Brandis, 1999).



**Figure 2** Circumstances of First Falls (N=183)

Source: Hitcho, E., Krauss, M., Birge, S., Claiborne Dunagan, W., Fischer, I., Johnson, S., et.al., 2004



**Figure 3: Fall information by service**

Source: Hitcho, E., Krauss, M., Birge, S., Claiborne Dunagan, W., Fischer, I., Johnson, S., et.al., 2004

## Equipment

Providing the necessary equipment is a vital step in drafting a successful PHAMA. Each facility should assess their at-risk patient populations and provide patient handling equipment relative to scale. The following is a list of equipment which may assist with mobility and a brief discussion regarding the appropriate application of such a device.

- a. Walkers and Canes should be available and a physical therapy program introduced to increase utilization (especially reachable by the bedside).
- b. Lifts, either ceiling-mounted, wall-mounted, portable, or floor-based lifts and their accompanying slings, assist in lifting and transferring patients, ambulating patients, repositioning patients, and other patient handling tasks. Ceiling mounted slings are believed more effective in patient handling and safer for both patient and caregiver than portable life devices; however, they have increased demands on the building structure. The FGI, Patient Handling and Movement Assessments white paper published in 2010 outlines the appropriate locations for lifts, identifies high risk manual patient handling tasks and storage requirements for portable PHAM equipment.
- c. Lateral Transfer Devices provide assistance in moving patients horizontally from one surface to another (e.g., transfers from bed to stretcher) and include air-assisted, mechanical, and friction-reducing types as well as Transfer Chairs.
- d. Unique beds are designed to provide assistance with patient handling tasks, such as lateral rotation, transportation, and bringing patients to sitting positions.
- e. Motorized Stretchers provide assistance with transporting heavy patients and Hydraulic Gurneys exist to help lift patients to desired heights.
- f. Repositioning Aids are mats which alleviate some friction (through materiality, inflation, etc.) and thus provide assistance in turning and pulling patients.
- g. One-way Slide Chair Cushions and similar devices prevent a patient from slipping down into chairs and beds.
- h. Powered Height-Adjustable Exam Tables assist in the transfer of patients onto exam tables and bringing patients to sitting positions.
- i. Ergonomic Shower Chairs that are height-adjustable and have reclining features to more easily and safely clean patients.
- j. Appropriately sized and adhered grab bars in bathrooms and other locations of transfer to assist with patient weight redistribution.



## Policy

In addition to providing the necessary patient handling equipment, another vital step in drafting a successful PHAMA is to evaluate patient handling procedure and policy. The U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) states that “employers should implement an effective ergonomics process that provides management support, involves employees, identifies problems, implements solutions, addresses reports of injuries, provides training, and evaluates ergonomics efforts.” (*U.S. Department of Labor, OSHA, 2002*). The following are some examples of how a healthcare facility may be able to achieve improved patient handling through policy implementation.

- a. Increased scheduled assistance from hospital staff armed with the appropriate equipment could help reduce the number of patients getting out of bed unassisted.
- b. Ergonomic assessment of patient rooms and facilities to identify potential physical hazards for patients such as uneven surfaces or protruding objects.
- c. Development of clinical assessment protocols and algorithms to select the right equipment and number of staff for each patient handling and mobility task (*Nelson, Fragala, & Menzel, 2003; Charney & Hudson, 2004; U.S. Department of Labor, OSHA, 2003*). It has been shown that communication amongst nurses is improved when there are standardized protocols and policies (*Nelson, Lloyd, Menzel, & Grosset, 2003b*).
- d. Regularly scheduled staff huddles dedicated to the topic of safety provides a venue to share information, experiences and best-practices. Such huddles should be a nameless blameless environment (*Iezzoni, McCarthy, Davis, Harris-David, & O'Day, 2001*).
- e. Assignment of a specially trained unit peer leader assigned to share knowledge with coworkers and advocate for safe patient handling and movement (*Nelson & Baptiste, 2006*).
- f. Assigning an administrator the role of Safety Coordinator and charging that person with the responsibility of ensuring the right equipment is available, the staff are trained, and a PHAMA is implemented.
- g. Formalizing patient lift teams has been found to be effective in decreasing lost days, restricted workdays, and compensable injury costs (*Davis, 2001*). The working definition of a lift team includes (at least) two physically fit people, competent in lifting techniques, who work together to perform high-risk patient transfers (*Meittunen, Matzke, McCormack, & Sobczak, 1999*).
- h. Ongoing continuing education and testing of nursing staff regarding safe patient handling. One survey reported that nurses want more education, encouragement, and management support for the use of patient handling equipment. (*Meeks-Sjostrom, Lopuszynski, & Bairan, 2010*). Information obtained from posttests, skills assessments, and self-assessments show retention of trained best-practice behaviors decrease to 54% in just twelve weeks following instruction. (*O'Donnell, Goode, Henker, Kelsey, Bircher, Peele, & Sutton-Tyrrell, 2011*).

- i. Implementation of 'no lift policies' for anything greater than 35 pounds ([Price, Sanderson, & Talarek, 2013](#); [Stevens, Rees, Lamb, & Dalsing, 2013](#)).
- j. Utilization of 'Badge buddies', or a small sticker attached to staff badges, used to help staff identify which equipment is appropriate for which patient ([Agency for Healthcare Research and Quality, 2013](#)) and 'Equipment buddies' cards adhered to equipment with key operation and use information ([Daily, 2014](#)).

## Discussion

A PHAMA must analyze both the physical characteristics of patient handling as well as the procedural aspects in order to minimize safety risks to both patients and staff. By understanding the needs of at-risk populations and locations, a hospital network may begin to target procurement dollars and policy implementation in an effort to manage risk and improve patient handling and mobility. There are programs in place to assist with financing equipment designed to improve access to disabled patients, but that is just one piece of the puzzle ([Internal Revenue Service, 1990](#)). Architects and Medical Planners, increasingly more often asked to assume advisory roles during design, also benefit from understanding the influences impacting safe patient handling and movement and how design may be impactful. Appendix 1: A PHAMA Checklist was created as a tool for hospital administrators and medical planners alike. The checklist identifies several factors that are relevant when developing a comprehensive Patient Handling and Movement Assessment or designing a healthcare facility. This paper provides the reader with a review of existing literature, introduces both equipment and policies that may be useful in planning for safe patient handling and movement and provides a toolkit from which an administrator may begin to analyze patient handling within their hospital.

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# Appendix 1

A comprehensive Patient Handling and Mobility Assessment should include the following:

## Patients

### Analysis of Patient Demographics

By understanding the number of patients who are at-risk of falling, a hospital administrator or planner may better plan for assisting those patients. It is recommended that larger operations look deeper into patient demographics, by dividing data collection by department. Understanding patient demographics by department enables hospital administrators to allocate patient handling and mobility improvement tools to at-risk patient populations.

Key statistics to analyze:

- Number of patients considered overweight, obese or morbidly obese (as defined by the world health organization)
- Number of patients considered disabled, severely disabled or needing assistance (as defined by US Census Bureau)
- Number of patients who fall into the following age ranges 65 - 69; 70-74; 75-79; 80 and over
- Number of patients taking prescriptions which are associated with dizziness or vertigo, visual impairment, sedation, or other side effect that may hinder mobility
- Number of patients in rehabilitation for post-surgery or injury-related conditions which hinder mobility

### Patient Assessment

This review paper has identified the types of patients who are in greatest risk of falling. It is suggested that hospital administrators implement policies to assist at-risk patients before their mobility is tested. If completion of a risk assessment checklist was required upon patient check-in, patients may be tagged early on as 'at-risk for falling'. Depending upon the conditions of their assessment, staff may choose to implement an hourly check to see if a patient requires assistance ambulating to the restroom, or places a walker within arm's reach of the bed. Appendix 2 is an example template of a Fall Risk Assessment and the procedural consequences.

## **Staff / Nurses**

### **Review of Staff Vulnerabilities**

In order to fix a problem, the problem itself must be fully understood. While a thorough analysis of in-house falls over the last several years would be beneficial to understanding the problem and how it relates to a particular department, often such data goes unrecorded. However, hospital administrators should have access to thorough records regarding staff assignments and workers compensation claims. Working backwards, it is possible to track nurse and staff injuries incurred on the job and compare them against personnel job descriptions and departmental placement to determine if any correlative relationships exist. This data will help inform executives on the frequency/severity of injuries, which staff are most vulnerable to injury and the departments which are in greatest need of tools, policy and procedural change.

### **Analysis of Staff Behaviors**

Interviewing and observing staff working with immobile, mobility challenged and/or fall risk individuals will provide invaluable insight into the existing state of patient care and mobility assistance. Tracking and recording this data provides hospital administrators with an understanding of current policies and procedures, how they are implemented in the clinical environment daily and what vulnerabilities may exist. Paying particular attention to the departments identified as having greater at-risk populations and the staff most vulnerable to injury may increase the impact of the final assessment's recommendations.

### **Education of Staff**

While many nurses fear injuries at work (62%), most are still unacquainted with the numerous tools available to mitigate risk and prevent workplace injuries (American Nurses Association, 2011). Analyzing the current educational curriculum and how it stands up against best-practices should be a part of a PHAMA. Research shows that even when educated, nurses retain just over half (54%) of the information after twelve weeks (O'Donnell, Goode, Henker, Kelsey, Bircher, Peele, & Sutton-Tyrrell, 2011). Implementing regularly scheduled staff huddles, appointing a Safety Coordinator, formalized patient lift teams, creating badge and equipment buddies and hosting ongoing education sessions are just a few tools hospital administrators may use to better inform staff. A plan for ongoing support and education regarding patient handling is a vital part of any PHAMA.

## Space and Equipment

### Spatial Audit

Research tells us that patients are likely to fall within their rooms (85%) or bathrooms (10.9%) (Hitcho, E., Krauss, M., Birge, S., Claiborne Dunagan, W., Fischer, I., Johnson, S., et.al., 2004). A few factors identified as contributing to falls include slippery floors, inappropriate door openings, poor placement of rails and accessories and incorrect toilet and furniture heights. Hospital administrators should have an audit of each patient room and bathroom performed to identify and rectify potential fall hazards before they occur. This may entail changing the height of a handrail or coordinating the times housekeeping cleans the floors in a patient room.

### Inventory of Equipment

Having and using the appropriate equipment when necessary is an important part of a successful patient handling plan. Understanding the demographics of patients a hospital serves will inform what types and quantities of equipment are required. There are many devices on the market to assist with patient mobility and patient risk is best mitigated by properly pairing a device to the risk condition. Equipment should be easily accessible (to both staff and patients), staff should be appropriately (and regularly) trained on the equipment and when to utilize it (using Equipment Buddies, if appropriate) and patients should be educated about their risk of falling and the importance of using mobility assistance equipment.

## Appendix 2

Appendix 2 is an example template of a Fall Risk Assessment and the procedural consequences.

### Fall Risk Assessment

- o Is the patient considered overweight, obese or morbidly obese (as defined by the world health organization)?

If yes, consider:

- Assigning him/her to a room with a lift or parking a mobile lift outside of his/her door
- Assigning him/her to a bariatric room with appropriately sized fixtures and clearances
- Assigning him/her to a motorized bed / stretcher / exam table for easy height adjustment
- Ensuring the appropriate equipment for transfer and repositioning are within his/her room



- o (Is the patient considered disabled, severely disabled or needing assistance (as defined by US Census Bureau)?)

If yes,

- Identify and document the side and severity of the disability which may compromise mobility – ensure information is communicated to caregiver team
- Implement a regular check to see if a patient requires assistance ambulating to the restroom or other purpose.
- Assigning him/her to an ADA accessible room with appropriately sized fixtures and clearances
- Ensuring the appropriate equipment for transfer and repositioning are within his/her room

- o (Does the patient fall into one of the following age ranges 65 - 69; 70-74; 75-79; 80 and over?)

If yes,

- Examine the patient's mobility and any challenges he/her identify- ensure information is communicated to caregiver team
- Ensure the appropriate equipment for mobilization (cane, walker, etc.) is within arm reach of the bed
- Ensure appropriate environmental conditions and features are present within patient room, e.g. clearances, handrails, lighting, flooring, etc.
- Implement a regular check to see if a patient requires assistance ambulating to the restroom or other purposes

- o (Is the patient taking prescriptions which are associated with dizziness or vertigo, visual impairment, sedation, or other side effect that may hinder mobility?)

If yes,

- Identify and document the side effects which may compromise mobility – ensure information is communicated to caregiver team
- Implement a regular check to see if a patient requires assistance ambulating to the restroom or other purposes
- Ensure the appropriate equipment for mobilization is within arm reach of the bed
- Ensure appropriate environmental conditions and features are present within patient room, e.g. clearances, handrails, lighting, flooring, etc.

- o (Is the patient in rehabilitation for post-surgery or injury-related conditions which hinder his/her mobility?)

If yes, first identify the severity of the disability:

- Implement a regular check to see if a patient requires assistance ambulating to the restroom or other purposes
- Ensure the appropriate equipment for mobilization is within arm reach of the bed

