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### Essentials of a Bariatric Patient Handling Program

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#### Abstract

There is a noticeable increase in the number of bariatric admissions to healthcare facilities. This trend presents a challenge to healthcare providers and facilities striving to provide dignified care that is effective and safe both for the patient and the provider. Many bariatric patients, due to their size and difficulty with mobility, require assistance with numerous activities of daily living. The more mobility-dependent the patient is, the greater the risk for injury for those providing the care. The additional myriad of bariatric patients' co-morbidities makes these patients especially vulnerable for health complications during their hospital stay. The authors of this article provide definitions related to bariatrics and describe specific health concerns of bariatric patients. They also discuss the risks of injury for providers caring for bariatric patients, explain the components of a bariatric safe patient handling program, and conclude with a discussion of current issues related to the care of bariatric patients.

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**Key words:** bariatric patients; injury prevention; safe patient handling protocols and guidelines; risk to healthcare workers

Healthcare providers cannot help but notice the increase in obese and morbidly obese patients admitted to our healthcare facilities. The magnitude of the obesity problem world wide has been described by the World Health Organization [WHO] (2000; 2009), as being one of the world's most significant health problems. They estimate that worldwide there are more than a billion adults considered to be overweight, with 300 million of those meeting the criteria of obese (WHO, 2009). As nurses we desire to offer quality and respectful patient care to bariatric patients; yet the methods, equipment, and environment in which many of us we were prepared to care for these patients no longer serve us well. New approaches to caring for bariatric patients are needed. To meet these challenges all healthcare professionals must work collaboratively and accept standardized, evidence-based approaches in the care they provide. In this article the authors will provide definitions related to bariatrics and describe specific health concerns of bariatric patients. They will also discuss the risks of injury for providers caring for bariatric patients, explain the components of a bariatric safe patient handling program, and conclude with a discussion of current issues related to the care of bariatric patients.

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#### Bariatric Definitions

Bariatrics is the science of providing healthcare for those who have extreme obesity.

Bariatrics is the science of providing healthcare for those who have extreme obesity. Both a patient's weight and the distribution of this weight throughout the body are involved in determining whether one is a bariatric patient. The most commonly accepted and consistent language for identifying and defining bariatric patients has been through the use of the Body Mass Index or BMI. The World Health Organization describes people who have a BMI greater than 30 as obese, and those having a BMI greater than 40 as severely obese (WHO, 2000). Other definitions of bariatric include overweight by more than 100-200 pounds or body weight greater than 300 pounds. (Hahler, 2002). In the recent past, standard facility weight capacity for patient-handling-equipment lifts has been 250-350 pounds. Staff often activate bariatric protocols, guidelines, and/or

similar actions when a patient's weight exceeds 350 pounds.

#### Health Concerns of Bariatric Patients

Bariatric patients are more vulnerable to specific health conditions

than those patients having a lower weight. If they have been bariatric for a significant period of time, their life span may be reduced by as much as 10 -15 years compared to the non-bariatric population. They are more prone to chronic illness, including cardiac disease; hypertension; respiratory disease; diabetes; skin conditions, such as dermatitis and ulcers; osteoarthritis; stress incontinence; hyperlipidemia; depression; decreased self esteem; certain types of cancers; and gallbladder disease (Muir & Haney, 2004). Also, many bariatric patients suffer from obstructive sleep apnea and require assisted breathing devices during sleep, so as to address the build up of excess carbon dioxide in their blood that can further contribute to cardiac issues, such as congestive heart failure. Medical management of any person meeting the definition of bariatric should always include an assessment for sleep apnea. While all medical conditions are a serious concern and can impact the complexities of providing safe nursing care for the patient, we will focus, in the remainder of this section, on the interrelated issues of skin and mobility, as they are the most relevant to safe patient handling and movement.

The ideal time to identify needed equipment and/or consultations is during the nursing admission assessment.

Skin conditions are prevalent among bariatric patients. These patients, because they have increased skin folds, large abdomens, and larger, heavier body parts, often experience more difficulty managing their own self care, such as hygiene and toileting, because of difficulty in reaching and moving adequately. As a result, it is not uncommon to find skin excoriation, rashes, or ulcers in the deep tissue folds of the perineum, breast, legs, and/or abdominal areas (Gallagher, 1996). These patients often experience bodily congestion resulting from fluid retention and poor circulation secondary to heart and kidney failure. This congestion can cause the leaking of fluid from pores throughout the body, a state called diaphoresis, which makes the skin even more vulnerable to infections and tearing (Muir & Haney, 2004). It is essential that healthcare personnel take care to prevent damaging the skin during all patient handling and care activities. The need for antifungal or yeast-treating medications should be assessed. Additionally, low-air-loss mattresses and consultations with nurses specializing in skin and wound care are recommended.

Mobility challenges increase with age for bariatric patients. These increased mobility challenges are complicated by any added stress to the joints, such as osteoarthritis. Assistance is often required in the form of mobility devices that are weight and size appropriate, e.g., walkers, wheelchairs, scooters, or canes. The ideal time to identify needed equipment and/or consultations is during the nursing admission assessment.

#### Risks for Healthcare Providers

Over the past decade considerable attention has been given to the injuries healthcare providers have experienced while providing patient care. The task of caring for the bariatric patients is challenging; it puts workers at risk for injuries during repositioning and nursing care activities that assist patients in meeting their daily activity needs, such as hygiene, bathing, ambulation, and dressing changes (Muir & Archer-Heese, 2008; Muir, Archer-Heese, McLean, Bodnar, & Rock, 2007). Muir and Gerlach (2003) have identified costly injuries related to bariatric patient handling activities. Many nursing activities encountered while caring for bariatric patients readily exceed safe working-loads and can lead to musculoskeletal injuries, strains, sprains, and excessive spinal loading. Spinal loading refers to the peak and cumulative spinal loads experienced when the spine assumes the weight and forces of lift and shear. Marras, Davis, Kirking, and Bertsche (1999) have recommended that spinal loading not exceed 3400 N, which is already exceeded when boosting a 110-pound patient on regular bed linens.

Another potentially dangerous activity is reaching.

The activity of elevating a limb, which is often necessary for completing a dressing change, is especially dangerous. One leg is approximately 16% of a person's total body weight. It is recommended that the spinal loading be limited to forces below 3400N, which is about 35 pounds (Marras et al., 1999; Waters, 2007). The weight of a leg of a 350-pound patient would be 62 pounds. Because lifting such a leg far exceeds a safe lifting load, healthcare personnel should use a mechanical lift device and limb sling while performing an activity such as this to off-set excessive loading (Veteran's Health Administration [VHA], 2006).

Another potentially dangerous activity is reaching. When large bariatric patients are lying on a mattress, they are quickly outside of safe working and reaching ranges. Safe reaching occurs when (a) one's elbows are close to one's sides, (b) reaching is limited to a 24-inch radius with the elbow as a pivot point, and (c) the reach is not over the nurse's shoulder height. Reaching over the top of a patient to provide care often involves sustained reaching that is outside of the recommended safe range. Utilization of a bed that can be lowered to an appropriate range can limit some of the danger associated with reaching in these situations.

#### Components of a Bariatric Patient Handling Program

The key to an effective and safe bariatric patient handling program is to be prepared prior to the admission. Thus each facility is encouraged to develop a bariatric patient handling plan in advance of admitting bariatric patients. Safe patient handling programs include critical core elements, such as tools and references, which are available online in the [Veterans Affairs \(VA\) Bariatric Tool Kit](#). (United States Department of Veterans Affairs [U.S. VA], 2007). These pdf resources can also be downloaded. Essential components of a bariatric safe patient handling program include the following:

- Operational Procedure and Policy

- Patient Assessment Tools
- Communication Tools
- Patient Handling Algorithms & Guidelines
- Space & Environment Considerations
- Equipment Needs
- Staff Training & Education
- Evaluation

Each of these components will be discussed in turn below.

#### ***Operational Procedure and Policy***

It is important that facilities provide operational policies and procedures to identify for both managers and workers how the tasks needed to care for bariatric patients will be accomplished. These operational policies and procedures are needed to identify processes and responsibilities for completing patient admissions and assessments; the roles of managers and workers in accessing and maintaining equipment; and statements regarding expectations for respectful care of bariatric patients ([Muir & Archer-Heese, 2008](#)).

Due to their size, the bariatric patients' needs are different from those of other patients during the admission process. The specialty equipment and space needed to provide safe care require the adaptation of the regular room environment. Also, if modern lifting equipment is not available, additional space for the increased number of staff needed may also be required. For example, an older floor lift would require two staff to move it safely while transferring a bariatric patient from the bed to the chair, and a third healthcare provider to monitor the patient. Because a modern ceiling lift does not need to be manually moved, it requires fewer personnel for the same maneuver. Healthcare workers may need increased education and support as they master new patient handling techniques. These educational needs should be specified in the policies and procedures regarding the care of bariatric patients.

For elective admissions facilities may want to have a pre-admission protocol which incorporates a site visit from the patient to identify the bariatric equipment and techniques that will be used once the patient is admitted. If there are specified bariatric suites within the facility, they need to be requested during the admission process. For urgent, sudden admissions, staff should have readily accessible guidelines to assist with the admission process. It is also advisable during the admission process (if not before) to map out usable pathways to the operating rooms, intensive care units, and other areas that may be needed for the care of a given bariatric patient. In addition, the elevator weight capacities and ability to fit the transport device into the elevator need to be considered.

#### ***Patient Assessment Tools***

It is also important to assess and document, both during the admitting assessment and on a regular basis, bariatric patients' ability to participate during repositioning, transferring, and ambulation. Their ability may be impaired by pain, medication, level of consciousness, or mobility limitations secondary to their other medical condition(s). These abilities can change daily in acute care settings, or even hourly in critical care settings. Important areas to assess include: required level of assistance for patient; weight bearing capability; height and weight; and conditions likely to affect transfer/repositioning techniques, such as hip/knee replacements, paralysis, amputations, contractures, osteoporosis, skin/wound conditions, and spine stability.

Additionally a consultation from a professional trained to assess bariatric patients' physical function and strength as it relates to mobility is required. Physical therapists have the tools and skills to meet this need. Facilities that have patient handling programs in place will have protocols and tools already available for assessing the patient needs related to safe patient handling.

#### ***Communication Tools***

The information gathered during the patient assessment needs to be documented on the patient's record. It is also recommended that the patient's mobility status prior to admission be recorded to serve as a baseline function for future reference and to prevent a situation of unrealistic expectations for restorative function.

The recommendations for patient handling should be established, based on the assessment findings, and communicated in a readily accessible place in the patient's room. Sometimes this communication can be further enhanced with the use of a communication system that may include a pictorial representation of a transfer or movement tasks, which may be posted at the bedside, on the care plan, and/or on the patient's wristband. The information should include the number of staff, type of equipment, and method of transfer as it relates to the task at hand.

#### ***Patient Handling Algorithms and Guidelines***

Patient handling algorithms have been developed based on research that has analyzed patient handling procedures to identify the safest method of transfer. These algorithms serve to facilitate problem solving when determining the level of assistance and equipment required, the staff actions, and the number of caregivers recommended to assist in a given patient handling activity. They are available online, free of charge, from the Patient Care Ergonomics Resource Guide ([U.S. VA, 2001/2005](#)). These algorithms, published by the U.S. Veterans Affairs ([2006](#)) address issues related to body mechanics and patient handling ergonomics that play a role in keeping caregivers safe from injury. It must be cautioned that the role of body mechanics, although important and relevant, cannot be relied upon as a sole solution to the prevention of injuries during patient handling tasks. The algorithms provide a sequential approach to asking questions related to patient abilities, the answers of which guide the healthcare provider in making the safest patient handling decisions. The U.S. VA

algorithms (2006) address the following bariatric patient handling activities:

- Bariatric Algorithm 1: Transfer To and From: Bed/Chair, Chair/Toilet or Chair/Chair
- Bariatric Algorithm 2: Lateral Transfer To and From: Bed/Stretcher/Trolley
- Bariatric Algorithm 3: Bariatric Reposition in Bed: Side to Side, Up in Bed (see [Figure](#))
- Bariatric Algorithm 4: Bariatric Reposition In Chair: Wheelchair, Chair or Dependency Chair
- Bariatric Algorithm 5: Patient Handling Tasks Requiring Access to Body Parts (Limb, Abdominal Mass, Gluteal Areas)
- Bariatric Algorithm 6: Bariatric Transporting
- Bariatric Algorithm 7: Bariatric Toileting Tasks

Guidelines such as these are needed because bariatric patients' ability to transfer and reposition in bed is challenged by their size and cardiac and/or respiratory status. The weight of their chest in the supine position can exhaust respiratory muscles, and/or the additional bulk of tissue can compromise their airway, leaving them vulnerable during turning and repositioning. Nurses must be aware of the need to keep the head of the bed elevated as much as possible. If the head of the bed must be lowered, it should be lowered for only a very limited time, and the nurse must be vigilant in monitoring patients' tolerance and respiratory status, especially while the head of the bed is lowered. Patients may also have difficulty in maintaining a side-lying position by themselves; additional supportive devices may be required. Wedge foam cushions are more supportive and effective than regular pillows which easily crush under a heavy load.

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[Figure. Basic Algorithm 3: Bariatric Reposition in Bed](#) [pdf]

#### **Space and Environment Considerations**

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Almost all healthcare facilities are pressed for space. Spaces designed specifically for the care of bariatric patients are seldom seen outside of facilities that specialize in bariatric surgery. Yet larger rooms are required for the care of bariatric patients. Space is needed to accommodate several large pieces of equipment, including the bed, additional healthcare workers (up to six), mechanical lift devices, wheelchairs, stretchers, commodes, and seating chairs ([Muir & Archer-Heese, 2008](#); [Muir et al., 2007](#)). Additionally, healthcare workers need enough space to avoid awkward postures ([Muir & Haney, 2004](#); [Villeneuve, 2005](#)). In acute care units, these needs can be met by converting a two-bed patient room into a single room for the accommodation of the bariatric patient. It is recommended that facilities conducting a walk-through chart each bariatric patient's pathway through the facility determine the space needed for the transport devices that will be required.

Additional space for transporting the bariatric patient through doors and elevators, and into treatment rooms and morgue areas should be addressed in the facility environmental space assessment and walk-through.

#### **Equipment Needs**

The increase in bariatric patients is resulting in an increased development and availability of bariatric equipment. Whenever possible, facilities should choose mechanized powered devices for this population. Progress in bed repositioning with mattress features, such as a pneumatic tilt or differential baffle inflation (both of which assist in turning the patient using air pressure), and new ceiling lift slings are now being incorporated into clinical practice to assist with repositioning as well as transfers. It is important that healthcare providers work with equipment designers to assure that specialized bariatric equipment fits through standard-sized doorways and into elevators.

When planning for bariatric patients, whether in long-term care or acute care settings, caregivers will need to have access to appropriate weight-rated and sized equipment. This equipment will include:

- A bariatric bed, preferably with an expandable deck, having power-assisted drive for moving and a built in weigh scale. An expandable deck allows for the deck of the bed to be pushed inwards to allow the bed to pass through doorways, and then increased in width once in a room, to provide adequate support for the patient.
- A total lift system, preferably a ceiling system, in patient rooms. Ceiling lifts provide lift capability within the framework of the ceiling track structure. However, floor lifts are also needed to retrieve patients after a fall outside of ceiling lift areas. For example, if a patient falls in a hallway where there is no track overhead, the ceiling lift cannot be employed and a floor lift will be needed.
- Full body slings, and specialty slings, such as limb slings and pannus slings
- Wheelchairs in varying widths and depths
- Walkers
- Stretchers with a 1,000 pound capacity and extra width, and also stretchers, which are stretchers that have the capability of being adjusted into a chair with armrests and preferably a knee gatch or seat tilt feature
- Stepstool and aerobic bench
- Commode up to 42 inches wide
- Bariatric bedpans
- Bariatric washbasins

- Shower chair or shower stretcher
- Sit-Stand device
- Pressure reducing mattresses
- Trapeze Bar System for over the bed
- A powered tugger to move loaded beds and stretchers
- A low-air-loss mattress for comfort, easy of bed mobility, and prevention of pressure sores
- Visitor Chairs that allow for bariatric patients or bariatric visitors to sit comfortably and safely

Other equipment considerations include patient-care supplies. A readily available bariatric cart supplied with the following items allows for a smoother admission and provides better and more dignified care. We encourage such a cart to include the following:

- Larger hospital gowns, pants, housecoats, slippers
- Blood pressure cuffs that will fit around a bariatric arm
- Longer needles and catheters

Although progress has been made in increasing the availability of bariatric equipment, limitations in this equipment remain. Progress includes, for example, an increase in the previously limited numbers of sling choices. Mechanical lift devices remain very helpful in patient care. Yet the use of the traditional floor lift that has now expanded its weight capacity puts workers at risk due to the excessive exertion required to move it under load. Also stretchers continue to be built too narrow for patients weighing over 500 pounds, even though the stretchers are rated for 1000 pound capacity. Therefore proper lifting and moving techniques are imperative. The ceiling lift device has been identified as the best choice for bariatric transfers and bed repositioning; it also can reduce space requirements ([Muir & Archer-Heese, 2008](#)).

### ***Staff Training & Education***

It is recommended that all healthcare workers be prepared in advance to provide quality and respectful care in a safe manner before they are asked to care for a bariatric patient. Appropriate body mechanics, along with the use of equipment and safe techniques, have been found to be effective in injury prevention among healthcare personnel ([Collins, Wolf, Bell, & Evanoff, 2004](#); [Nelson et al., 2003](#)). Healthcare providers should be trained on use of the bariatric algorithms and the equipment that has been identified as appropriate. It is recommended that a hands-on training session be available to staff soon after a bariatric patient arrives on the unit. For elective surgeries, training and problem solving ahead of time may be beneficial.

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One of the challenges in staff education relating to bariatric patients is the lack of retention of the material if bariatric admissions are infrequent to the unit. When this occurs, staff will require ongoing refreshers and support. Additionally the techniques and procedures are often not easy to grasp; hence, they should be supported with videos of workers performing the task with a real patient, pictures of a patient using the equipment, and step-by-step written procedures for reference. Dr. A Nelson and associates are in the final stages of authoring a book that provides pictures and procedures describing the care of bariatric patients; the expected release for this book is 2009. Bariatric equipment companies also have equipment procedures and videos that should be made available to healthcare personnel. In order for healthcare workers to become competent in bariatric patient handling tasks, several repetitions and return demonstrations are required. We have found it helpful to identify a resource person who can help provide the education needed for the entire facility and who can keep abreast of developments in equipment and techniques.

Education must also address the healthcare workers' negative feelings or fears related to the care of bariatric patients. Literature has reported that families and patients have identified disrespectful care and attitudes as prevalent among healthcare staff including doctors; negative stereotyping and stigma are common ([Klein, 2004](#); [Muir & Haney, 2004](#)). Examples of respectful care include using the needed number of personnel (but not more than needed) to assist with the care; addressing the patient respectfully; not blaming the patient; providing an environment that includes adequately sized equipment; and using proper names for the equipment such as EC (expanded capacity) as opposed to negative names, such as Big Boy Bed or Hefty Herman Lift. Providing appropriately sized hospital gowns, protecting privacy in regards to the patients' weight, and weighing respectfully are also important.

### ***Evaluation***

As in any ergonomics program, evaluation is essential to determine if the program is effective in meeting the desired outcomes. Measures for evaluating a bariatric program would include those used in evaluating any safe patient handling program to assess effectiveness in preventing and reducing injuries. Specific data relative to a bariatric program would include patient satisfaction and comfort with equipment. To identify equipment shortages and predict future needs, the facility may track the number of bariatric admissions and patient demographics. This information may be helpful in identifying future needs for the program and making a business case for additional equipment or environmental space design. From time to time there are unforeseen issues specific to the patient size, equipment fit, and/or the task being performed, i.e., a poor sling fit or equipment failure that can cause a poor outcome during a transfer to a chair. These unforeseen events may result in injury to personnel as they exert themselves in attempt to resolve the situation. Collection of injury data should identify patient size and mobility status.

### **Current Issues in Patient Care related to Bariatric Patients**

Although considerable progress has been made in the care of bariatric patients, controversies continue regarding specific aspects of bariatric care. Two major areas of controversy include the appropriate time to discuss weight loss with bariatric patients and the balance between patient independence, nurse safety, and patient safety.

The first controversy centers on the question of whether the issue of weight loss should be addressed during an admission in which the patient is being treated for an acute illness. We have heard both sides of the answer to the question. Continued discussion is needed on this important question so as to most adequately provide for the well being of bariatric patients.

In our experience one of the biggest controversies in the area of patient handling of the bariatric patient regards maintaining the balance between patient independence and the mechanization of assistance. The question here regards choosing equipment to mobilize the patients versus encouraging bariatric patients to participate more actively in their own mobilization and care. The latter focus puts both healthcare workers and patients at risk. Allied health professionals are starting to recognize the value of some mechanization in their practice; for example, they are now incorporating the use of stand-assist lifts and ceiling-track devices into their rehabilitation settings. The availability of this type of assistance is especially important for bariatric patients; however, at this point in time it is only available for the smaller bariatric patients, leaving limited solutions for the larger patients. When making decisions on issues that relate to safety, healthcare workers should keep in mind that safe patient handling must be balanced equally with staff safety and patient participation. This balance is like that seen in an isosceles triangle in which the three sides must be equal so that it remains an isosceles triangle. The final decision must be one that (a) is safe for the worker, (b) is safe for the patient, and (c) encourages patient participation and independence. Each of these three considerations need to receive equal emphasis. We should not unbalance the triangle by putting more importance on any one of these considerations.

The field of safe patient handling for bariatric patients is developing at an increasingly rapid pace. Because new technology is entering the market at this fast pace to meet the growing demands, we are seeing more options for safe patient handling than ever before. This increasing pace means that current guidelines can become quickly outdated as safer and better equipment choices become available. Unfortunately, staff ability to research best practices and outcomes is not keeping pace with new developments; therefore the evidence that supports their use may be lagging. We encourage facilities to find ways to evaluate their experiences and share these evaluations with other facilities, using an evidence-based model to determine best practices. Evidence-based publications in the literature and presentations at professional conferences can help all nurses caring for bariatric patients keep abreast of the latest innovations in bariatric care. The National Association of Bariatric Nurses <[www.bariatricnurses.org/](http://www.bariatricnurses.org/)> and The Patient Safety Center of Inquiry <<http://www.visn8.med.va.gov/patientsafetycenter/>> are very interested in sharing evidence-based outcomes and in providing this information to all healthcare professionals. Both of these groups have annual conferences which offer excellent opportunities to share information and experiences related to bariatric care. Meanwhile, with the implementation of the critical components of a bariatric safe handling program discussed in this article, nursing can be well on its way to providing care with dignity, respect, and safety for all involved.

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Marylou Muir is currently practicing as a private consultant. She has been employed in the field of nursing for 30 years, and has recently retired. She graduated from the St. Boniface Hospital School of Nursing, Red River Community College, and the University of Manitoba Occupational Health Nursing Program in Winnipeg, Manitoba, Canada. Ms. Muir has participated in a number of research studies related to safe patient handling and most recently has focused on preventing injuries associated with the safe patient handling of bariatric patients. She has assisted in the development of safe patient handling programs both for Winnipeg Regional Health Authority and for other international safe patient handling programs; she has also contributed to the development of the Bariatric Tool Kit for the United States Veterans Administration's VISN8 Patient Safety Center. Ms. Muir has authored numerous journal articles and book chapters on the topics of bariatric patient handling and other ergonomic and occupational health issues. She continues to teach, conduct workshops, and speak internationally.

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