

**Bariatric Space, Technology, and Design
An International Round Table**

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Introduction

Space, technology and design considerations associated with increasing numbers of patients with obesity has significant implications for patients/residents, healthcare workers and the entire healthcare system. Caring for individuals with obesity can be more complex irrespective of the setting or diagnosis. There are a number of challenges that must be addressed in terms of space, technology and design as the care environment is designed in ways that are considered exclusionary to the patient of size. For instance, super-sizing a standard piece of equipment or technology does not necessarily address the individual's weight and/or weight distribution. Bariatric equipment must combine load limit, appropriate dimensions and a design aesthetic within a size-appropriate space that blends with the environment by which patient/resident and worker safety, dignity and comfort are ensured. This International Round Table explores a practical approach to space, technology and design challenges and solutions that arise when caring for the patient of size.

Let's consider the patient whose weight ranges between 300 – 550 pounds. In your opinion, what are some of the more important considerations necessary to provide patient care for the above described patient or resident?

Ronda Fritz (RF): Space, technology and design all impact delivery of care. In terms of space, if workers don't have enough room to freely move SPHM equipment or apply slings for transferring to chairs, lifting limbs or the abdominal panniculus then it increases the risk of injury to staff members and the patient either because both the worker and patient are in a confined space or because it prevents use of the equipment. This barrier limits the ability to mobilize the patient and discourages opportunities to deliver care that would otherwise be received if the patient was not a patient of size. In terms of technology, SPHM equipment is critical to reposition, transfer, lift and mobilize patients of size safely; many beds do not allow room for adequate bed mobility. In terms of design, ceiling height is an overlooked design feature that significantly impacts care delivery. My opinion is that ceilings need to be a minimum of nine feet or shearing injury and staff injury can occur when repositioning, transferring,

lifting and mobilizing patients of size because the patient's body is dragged across the surface.

Tracy Nowicki (TN): Fall-related injury is a significant issue when caring for the 300 – 550 pound person. I think size-appropriate seating is one way to prevent this type of injury. Falls can happen because the patient is not centered properly on the seating surface. A specialized chair with a removable back cushion or extra seat depth is essential for patients who have a large gluteal shelf or excess adiposity over the thoracic area.

Janet Hope (JH): I believe that the most important considerations are: access, bariatric preparedness, and equipment management. For example, workers need the ability to move the patient in a large wheelchair, trolley/gurney or bed. This happens along the continuum of care and there need to be provisions in place to move the patient into the facility, around to different departments and then out of the facility, and this could be through the mortuary. In terms of bariatric preparedness, I strongly recommend the facility have a bariatric team or consultant who can facilitate, communicate, educate, assess and review all bariatric related issues and challenges across the facility. An organization benefits from a skilled person in this role who understands the fast growing bariatric equipment market, and has an understanding when to buy or rent/lease equipment. Bariatric preparedness is complex and challenging and should involve equipment decision making.

TN: I agree with Janet Hope, that having basic equipment on standby is a sound aspect of pre-planning. For instance, a range of bariatric beds is important to timely, seamless care. A range is necessary because some bariatric patients are mobile so only require a basic bed that accommodates their weight, width, and weight distribution, others, on the other hand, are complex and require a frame and support surface that addresses their specific need such as egress alarms, turning surface, percussion, scale or more.

Malene Alexandrowitz (MA): In the above described patient or resident it is important to match the patient's weight, body distribution, and body movement with technology. Specialized technology must be available and accessible in a timely manner. I explain to colleagues that physically dependent patients should never be manually transferred. Healthcare workers often do not realize the risks associated with push and pull load. Further, surroundings and space are often a challenge. This is especially true in the

homecare setting, where the home is transformed into a place of work. Assessment provides a basis from which to begin the process to ensure safe patient handling in the home setting. Furniture may need to be moved and floor coverings removed before the work environment is acceptable.

TN: I believe preventive skin care is important, especially among the high risk population. Moisture from perspiration, urine, or other wound drainage can become trapped between skin folds and lead to intertriginous dermatitis or incontinence associated dermatitis. Immobility can lead to pressure injuries. These harmful and preventable skin injuries can be both painful for the patient and costly for the organization by way of penalties, claims or non-reimbursed care. Performing a comprehensive skin inspection is challenging in the presence of skin folds, but especially under a large abdominal panniculus. Using existing equipment such as a ceiling hoist/lift accompanied by a limb sling or pannus lifter can assist staff members to gain access to areas between heavy skin folds. Further, more easily applied dressing technology such as the silver-impregnated fabrics provide moisture wicking and therefore reduce maceration.

Merl Miller (MM): From a risk perspective, the most important consideration when caring for the individual weighing 300 – 550 pounds is a safe working environment. Excellent clinical care can only be delivered in an environment that fits the task. Design of the space, arrangement of the furniture, and proper equipment that is readily available are keys to provide caregivers and patients a workplace that is ideal.

More and more individuals are receiving post-acute care. Let's consider a 450 pound resident receiving long term care. In your opinion, what are the tasks that pose the most risk to healthcare workers?

Dee Kumpar (DK): For the LTC resident we need to focus on promoting and maintaining independence. This includes activities of daily living (ADL) as well as mobilization. Consider the study by Mary Ann Rose at East Carolina University. She suggests that bathing, ambulating, and assisting the bariatric patient to sit on the side of the bed were the most difficult and time consuming patient care tasks. If we focus on using size-appropriate technology when performing

these care tasks we can expect a better clinical outcome for our resident while keeping the care team safe.

MA: Education and training are key. Risk becomes a problem when staff members do not have sufficient knowledge and/or experience to develop and execute a plan for a bariatric resident in long-term care. Staff members are often not familiar with proper use of the technology and equipment and as Ronda Fritz mentioned earlier there may not enough space to use proper techniques or use the features of the technology. Understanding the best way to communicate these challenges within the organization are important. Education and training should include critical thinking and communication for outcomes.

JH: In my mind, the top three tasks posing the greatest risks are: 1) moving a resident confined to bed without mechanical aids, such as: toileting, routine turning, and daily hygiene; 2) transfers among the patient requiring moderate to maximum assistance; and 3) moving or holding limbs or tissue for purposes of dressing wounds on legs, retracting the abdominal pannus for care, wounds or indwelling catheter insertions.

In your opinion, what are the special space, technology or design opportunities that enhance early and ongoing bariatric progressive mobility in the Intensive/Critical Care Areas (ICU)?

JH: Asking for extra space in the ICU is often not negotiable. To that end, the key to successful bariatric progressive or early mobility is ceiling tracks, preferably a traverse system. The advantage of this system is that less space is required and fewer staff members are needed when providing tasks such as lifts, turns and transfers. Selecting the right ICU bed is also important. I prefer a bed frame that turns, sits, and stands. Each of these features assists in early rehabilitation and reduces the need for extra bariatric furniture.

DK: I believe that all patients, regardless of size, have special needs when providing early/progressive mobility in the ICU. The patient of size requires additional space due to the size of the bed in the room, location of the ventilator, length of tubing, number of IV poles, and

the number of people involved in ambulating a vented patient. Support people who may assist in early ambulation could include the respiratory care provider, physical therapist, nursing professionals and the physician. I agree with Janet Hope, a ceiling lift, instead of a mobile floor based lift, provides the most appropriate means of getting the patient of size up from and out of bed. Using a ceiling lift allows more space in the room this allows space for members of the care team to be present during the mobility activity.

MA: Early mobilization is a very important aspect of care for patients in the ICU. Even small steps make a big difference on clinical outcomes associated with the bariatric patient's care. We need size-appropriate technology and equipment for a number of tasks. Equipment and technology provide a way for staff members to better perform in bed repositioning, lateral transfers, hygiene, and skin care activities.

From a realistic perspective, we know there are facilities that do not meet suggested space, technology or design needs. What suggestions can you make to address this?

TN: In terms of space, too often hospitals designers lack healthcare input. Architects are thought to design around esthetics whereas nurses and other providers want the environment to serve their practical and functional needs. In terms of technology, bariatric equipment has often failed the larger patient because it is simply larger rather than addressing the unique qualities of weight distribution. The challenge we have as healthcare workers is meeting the needs of a wide range of patient sizes, ages, mobility status and other complexities.

Suggestions to address each of these issues are as follows: To better understand environmental needs, it is advisable to mark out the area using tape on the floor. Then place a bariatric bed, seating chair, commode chair, bedside locker, and walker. Once the furniture and equipment is within the outlined space, simulate care using a person wearing a bariatric body suit. This will demonstrate space limitations. Further consider simulating resuscitation efforts within the confines of the space and identify worker safety challenges. These activities help planners understand the space requirements. This type of forward planning assists in securing funding required to make improvements to ensure space is adequate. Further, this prepares patient care

advocates who may be asked to share with architects and designers when renovation or building is planned.

MM: I was fortunate to work with a large health system that supported the effort to include SPHM in the design and plans for any new construction or renovation project. This significant investment in ceiling lifts (100% in ICU rooms) and space requirements for bariatric patients were included in the template for ICU rooms and were based on the PHAMA guidelines. We developed detailed guidelines to ensure adequate technology and space was established well before construction projects actually began.

RF: We have learned to order ceiling lifts with “raised carriages” so the lift motor(s) hang within the primary rails on the traversing rail instead of below them. This design allows a six to eight inch increase in lift. The lift may still create some drag when repositioning, lifting, transferring or mobilizing certain patients of size but it can reduce the amount exposure.

DK: Tracy Nowicki makes a great point in suggesting the room design team needs to understand the clinical needs and activities that must occur in that space. The architects and designers follows the old adage, “form follows function” but often times the design team is not aware of the awkward bending and moving that takes place when the care team is performing clinical care tasks, working around the bed, or in attempting to get the patient out of bed.

The Facilities Guidelines Institute (FGI) team, along with several bariatric experts participated in a room builder exercise in 2015. We used a simulation room that included the patient room and bathroom, with moveable walls in order to explore just how much space is actually needed to use lift equipment. The team determined they could actually decrease the room size by 20 square feet if ceiling lifts were installed instead of using the mobile (floor lift) to lift, manage, and move the patient of size. This saving in dollars is attributed to the fact that the care team did not need the turning radius of the mobile lifts if the ceiling lift is in the room. The findings will be published in the 2018 FGI PHAMA publication.

RF: I believe we have to be persistent and continually raise the issue to get the necessary space, technology or design. I agree with Tracy Nowicki in that we must be prepared to interact with

our colleagues and become spokespersons for obese individuals and healthcare workers who provide care. Eventually, we achieve victories and lessen the risk for staff members and patients. Keep in mind that some things just can't be compromised.

MM: I have had the experience of collaborating with design and construction team members to ensure that architects and SPHM teams worked to promote a functional patient care environment. We wrote standards to guide the design team in selecting appropriate configuration, weight capacity, and placement. In addition, for those facilities still developing their infrastructure, we implemented "bariatric equipment bundles" based on the bedside mobility assessment score. Rental equipment was ordered specifically for the patient based on clinical needs (BMI, weight distribution, mobility level, fall risk, skin consideration, etc.). Standardizing the process with a checklist to identify the items needed provided a way for bed placement to ensure the right room assignment and equipment would be available.

Would you share one innovative idea you found helpful in providing care (from a space, technology or design perspective) for the patient of size?

MA: Recognizing differences the wide variation in body weight distribution, and integrating this into equipment selection is a relatively recent and important innovation in both the acute and home care settings.

JH: Preplanning is key. I think this is one innovation that yields consistent and predictable safe, quality care, and cannot be disregarded.

TN: Once staff members understand the emotional and physical challenges associated with larger patients, they can care for the patient of size with dignity and respect. When this understanding occurs other care falls into place.

RF: Several years ago, we purchased a bariatric training suit (BTS). After multiple attempts to get a bathroom for patients of size in our facility, I used the suit to communicate the need. The previous attempts to get the necessary support from our leadership had raised awareness enough

to get our Executive Leadership and Service Chiefs to agree to a facility tour with me to identify challenges for patients of size. An Engineer wore the BTS and played the role perfectly. We started in the Executive Offices and had them push the patient in a bariatric wheel chair to the elevator. First obstacle, they couldn't get the chair through the office door. Next obstacle, they couldn't see the feet of the patient to judge collision points. The elevator was another enlightening ride for them. The group couldn't fit in the elevator with the patient and they were very aware of the cramped space. Next, the patient tried to enter every bathroom and stall on our tour. It didn't take long for the senior leaders, engineers and other non-clinical personnel to see the problem. The patient didn't fit through the doorway, couldn't fit on the toilet, no ability to use a lift or rescue the patient if needed or even wash their hands. I'm happy to report we now have a bariatric bathroom in our facility!

MM: Like the others, we found awareness to be the first step. We sponsored a regional SPHM conference with hands-on sessions in a simulation lab. One lab breakout focused on the bariatric patient. With a bariatric model and expert instructors, we took participants through troubleshooting, the use of technology, and skills needed to overcome the challenges and issues with providing SPHM to this population. We found it opened eyes to see the actual space needed in an actual patient room.

Summary

Bariatric SPHM is becoming more important today than ever before. In the past three decades obesity has quadrupled in some segments of the international population. Experts herein have offered practical ideas for addressing space, technology and design challenges associated with caring for the patient of size. Research and resources have been summarized and offer an evidence-based approach to the topic. Healthcare providers and stakeholders are in key positions to move the approach from simply ordering a "Big Boy" bed for the bariatric patient and hoping for the best. The time is right to consider a well-orchestrated strategy to address the worker and patient safety, dignity, and satisfaction issues associated with bariatric patient care.

A Review

Safe Patient Handling and Mobility (SPHM) Technology Coverage and Space Recommendations

Although this resource does not address bariatric issues exclusively, the topic is woven throughout. Learn methods to calculate the unit-specific lift coverage and space requirements for all patients/residents, including those of size. The document discusses suggested weight capacities and configurations for ceiling lift systems, and storage ideas for floor based lift systems. Space requirements, flooring covering, and thresholds are discussed within the context of the floor-based lift system.

US Department of Veteran's Affairs – Office of Public Health.(2016) Safe Patient Handling and Mobility (SPHM) Technology Coverage and Space Recommendations. Accessed January 30, 2017 at:

http://www.publichealth.va.gov/docs/employeehealth/Pt_Hdlg_Design_Equip_Coverage_Space_Recs.pdf

A Review

Bariatric Safe Patient Handling and Mobility Guidebook: A Resource Guide for Care of Persons of Size

This comprehensive resource specifically addresses the complex handling and mobility challenges associated with providing healthcare to the larger, heavier patient/resident. The document begins with an overview of medical conditions that impact care planning. Included are assessment criteria, an equipment checklist, sample policies and procedures, and handling and mobility algorithms. A case-based approach is used to reinforce algorithms.

The Guidebook includes numerous examples of size-appropriate technology resources; training

materials, including self-learning tools; and an extensive bibliography.

US Veterans Health Administration. VHA Center for Engineering & Occupational Safety and Health (CEOSH) (2016) Bariatric Safe Patient Handling and Mobility Guidebook: A Resource Guide for Care of Persons of Size. Accessed January 31, 2017 at:

<http://www.visn8.va.gov/visn8/patientsafetycenter/safePtHandling/toolkitBariatrics.asp>

A Review

Patient Handling and Mobility Assessment

This white paper is commonly referred to as PHAMA, and has been the standard for design and construction of healthcare facilities in terms of patient handling. Although not a bariatric-specific document, the needs of larger, heavier patients and a section titled “The Impact of Bariatric and Morbidly Obese Care on Design” is included. This section specifically addresses the environmental issues such as door widths, elevator weight limits, and more. A bariatric safety checklist is included in the Appendix as well. This resource seeks to reduce the risk of occupational injury, regardless of patient size, through attention to environment space and design. The relationship between worker safety and quality patient care is recognized, and incorporated throughout the white paper. Solutions to specific space and design issues such as floor coverings, space restrictions, storage issues, door and hallway widths, floor/walkway slopes, thresholds, and elevator limits are presented. An extensive glossary of terms and references serve to provide a foundation for additional learning. An economic model for SPHM is presented.

Cohen, M. A., Green, D. A., Nelson, G. G., Leib, R., Matz, M. A., et al. Patient Handling and Movement Assessments: A White Paper Dallas, TX: Facility Guidelines Institute.(2010)

Accessed January 4, 2017 at:

https://www.healthdesign.org/sites/default/files/FGI_PHAMA_whitepaper_042810.pdf

A Review

A Practical Guide to Bariatric Safe Patient Handling and Mobility: Improving Safety and Quality for the Patient of Size

This resource serves to provide the reader with definitions, references, and a glossary of terms. The hazards of immobility, sensitivity, ethics, pre-planning for care, and outcomes are discussed within the context of the person living with obesity. Practical ideas for care that pertains to specialty areas, various disciplines, and the high risk patient are included. For instance, bariatric SPHM techniques are applied to the bariatric patient who is also experiencing spinal cord injury, surgical site infection, pressure injury, as well as the child or the person having body contouring surgery. A case study approach is included.

Gallagher SM. *A Practical Guide to Bariatric Safe Patient Handling and Mobility: Improving Safety and Quality for the Patient of Size*. Visioning Publishers: Sarasota, FL. 2015.

More reading

American Nurses Association. *Safe Patient Handling and Mobility: Interprofessional National Standards*. Silver Spring, MD: Nursesbooks.org. 2013.

Gallagher SM, Hilton T, Monaghan H, Muir M, Dye A. Safe patient handling & movement: bariatric considerations. *Am J SPHM*. 2014;4(2)(suppl):S1-S16

Gallagher SM. *Implementation Guide to the Safe Patient Handling and Mobility: Interprofessional National Standards*. Silver Spring, MD: Nursesbooks.org. 2013.

Gallagher SM, Brannan S, Davis P: Best practices for sensitive care and the obese patient: Task Report. *Bariatric Nursing and Surgical Patient Care*. 2008; 3(3):189-196.

Rose MA, Baker G, Drake DJ, Engelke M, McAuliffe M, Pokorny M, Pozzuto S, Swanson M, Waters W, and Watkins F. Nurse staffing requirements for care of morbidly obese patients in the acute care setting. *Bariatric Nursing and Surgical Patient Care*. 2006, 1:(2):115-121.

Rose MA, Pokorny M, Drake D. Preventing Pressure Ulcers in the Morbidly Obese: In Search of an Evidence Base. *Bariatric Nursing and Surgical Patient Care*. 2009, 4:(3):221-226.