

Capstone Project – Manuscript Option: Development of a Bariatric patient Readiness
Assessment Tool (BRAT) for the Emergency Department.

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Introductory Chapter

The 2010 national obesity data of the U.S. (Centers for Disease Control, 2010), demonstrate the obesity epidemic continues and our healthcare system can anticipate increasing challenges in providing safe care to, and the handling of, the obese and morbidly obese patient populations. The comorbidities of obesity and morbid obesity in particular are associated with more than 30 illnesses and medical conditions including but not limited to type 2 diabetes, coronary heart disease, stroke, hypertension and cancer (American Society for Metabolic and Bariatric Surgery, 2009). All of these conditions are often found in patients presenting to Emergency Departments (ED). And the literature confirms the obesity epidemic with its resultant comorbidities is associated with an increase in both the number and size of obese (BMI ≥ 30 kg/m²), morbidly obese (BMI ≥ 40 kg/m²) and super obese (BMI ≥ 50 kg/m²) patients presenting to the ED (Berger, 2007).

Emergency department staffs face a variety of challenges when caring for the morbidly obese patient including difficulties in the performance of clinical procedures and in the movement and positioning of patients, lack of devices specific to the morbidly obese population, and difficulties transporting and transferring from ambulance to ED stretcher (Karn & Taylor, 2010; Grant & Newcombe, 2004). In the absence of lift devices specific to this patient population, there is an increased risk of musculoskeletal injury to healthcare providers related to manual patient lifting (Waters, Nelson, & Proctor, 2007).

In 1994 the acceptable weight of lift under ideal conditions for industrial workers was lowered from 90 to 51 pounds (Occupational Safety And Health Association, 1994). The degree of risk for injury increases for the healthcare worker when variables unique to patient care are applied to the equation to determine the safe weight of lift. Waters (2007) was able to apply

patient care variables to the equation and as a result, the recommended safe weight to be lifted by the healthcare worker is 35 pounds.

Prevention of injuries related to handling obese patients must be a priority in healthcare settings today. Priority setting will depend on the organization's commitment to safety, a willingness to adopt evidence-based best practices for safe handling of the morbidly obese patient (McGinley & Bunke, 2008) and to create a culture of change while implementing a safe patient handling program (Stenger, Montgomery, & Briesemeister, 2007). To ensure the morbidly obese patient is cared for safely, it is necessary for healthcare organizations to be prepared with all of the necessary policies focused on the care of this patient population and to have the equipment and physical space to accommodate the person of size.

There are currently no published organizational assessment tools for use in a healthcare organization to determine its readiness to care for the morbidly obese patient. The absence of such a tool is a recognized problem and the development of one which addresses the specific needs of the ED is the focus of this capstone project.

The final report of this project is presented here in manuscript form for submission to the *Advanced Emergency Nursing Journal* (AENJ). The manuscript format meets the published requirements as specified by the journal.

Title: Development of a Bariatric patient Readiness Assessment Tool (BRAT) for the Emergency
Department.

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Abstract

The current obesity epidemic in the U.S. and the chronic conditions associated with obesity and morbid obesity, present many challenges to healthcare providers, particularly in the hospital Emergency Department (ED). EDs are often not well equipped to care for the morbidly obese patient, which presents risks to safe patient handling for both patient and provider. The purpose of this study was to develop an assessment tool to determine the readiness of the ED to care for and handle the morbidly obese patient. Currently published guidelines by the Facilities Guidelines Institute (FGI) and the National Association of Bariatric Nurses (NABN) were applied to the development of the tool. The tool assesses policy, equipment, space and structural requirements, and patient handling and moving tasks. A two phase non-experimental, exploratory study in a convenience sample of five EDs was conducted applying a usability testing model to determine the tool's usability and utility. Four of the five hospital EDs agreed the tool was easy to use and helpful in determining their readiness to safely care for the morbidly obese patient. The tool was found to be usable on a limited basis. Additional application of the tool on a larger scale is recommended.

[Key words: readiness assessment tool, morbidly obese, Emergency Department]

Development of a Bariatric patient Readiness Assessment Tool (BRAT) for the Emergency
Department.

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- d. Adaptation of tool by ED CNS as both an assessment and teaching tool for staff
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Introduction

Problem.

The prevalence of obesity in our country is increasing at an alarming rate. The Center for Disease Control's (CDC) statistics from 2010 demonstrate 36 states had obesity prevalence equal to, or greater than 25% of the state's total population. However, data from 1991 demonstrated only four states had obesity prevalence rates of 15-19 percent and no states had rates above 20 percent. Today there are no states with obesity prevalence below 20%, and there are now 12 states with a prevalence of 30% or greater (Centers for Disease Control, 2010). Further, according to the National Health and Nutrition Examination Survey conducted from 2007-2008 it is estimated that 34.2% of the adult population (20 years of age and older) of the U.S. is overweight (body mass index, $BMI \geq 25 \text{ kg/m}^2$); the prevalence of obesity ($BMI \geq 30 \text{ kg/m}^2$) is 33.8%, and the prevalence of morbid obesity ($BMI \geq 40 \text{ kg/m}^2$) in the U.S. is now 6.0% (Flegal, Carroll, Ogden, & Curtin, 2010).

Significance.

Obesity and morbid obesity in particular are associated with more than 30 illnesses and medical conditions including but not limited to type 2 diabetes, coronary heart disease, stroke, hypertension and cancer (American Society for Metabolic and Bariatric Surgery, 2009). The obesity epidemic with its resultant comorbidities is associated with an increase in both the number and size of obese/morbidly obese and super obese ($BMI \geq 50 \text{ kg/m}^2$) patients presenting to the ED (Berger, 2007). There is a need for further research to study the impact on EDs and to determine essential additional resources to appropriately respond care for this patient population. A significant resource lacking in emergency departments is the appropriate equipment to move and position the morbidly/super obese patient (Berger).

Relevant literature.

Emergency department staffs face specific challenges when caring for the morbidly obese patient. Obese and morbidly obese patients present difficulties in clinical procedures, i.e. locating clinical landmarks, venous pressure measurements, vascular access and physical examination (Karn & Taylor, 2010; Grant & Newcombe, 2004). Other challenges include patient positioning, movement/mobility, lack of devices specific to the morbidly obese population, transporting, and transfer from ambulance to ED stretcher (Karn & Taylor) (Grant & Newcombe). EDs need to develop protocols to aid in obtaining bariatric beds and lifting equipment for use within the ED in a rapid timeframe (Grant & Newcombe). Other protocol recommendations include those that list clinical areas inaccessible by larger beds and provide alternate plans for the patient requiring a procedure outside the department (Grant & Newcombe).

Another challenge in the care of the obese patient is the staff's difficulty in estimating a patient's body weight. Staff were accurate only 33% of the time and if the BMI of the patient is underweight or obese, the accuracy was 16% and 23%, respectively. This inaccuracy is of great concern when a clinician must estimate weight for clinical treatment (Kahn, Oman, Rudkin, Anderson, & Sultani, 2007).

The lack of appropriate lifting equipment for moving and transferring the morbidly obese patient raises concerns regarding the safety of assigned healthcare providers caring for this patient population. The literature is replete with data demonstrating nurses and other ancillary health care providers experience a disproportionate number of back and other musculoskeletal injuries related to lifting heavy patients (Baptiste, Leffard, Vieira, Rowen, & Tyler, 2007) (McGinley & Bunke, 2008). Edlich et al. (2005) described risks to healthcare workers and

patients associated with manual patient lifting and their recommendation for federal legislation for no manual lifting by healthcare workers as a solution to the problem. Seven high-risk patient care tasks common to critical care include but are not limited to pushing occupied beds or stretchers, lateral transfers, lifting or moving heavy equipment, repositioning patients side to side in bed and moving patients up in bed (Waters, Nelson, & Proctor, 2007).

A number of variables contribute to common injuries sustained by the healthcare worker (Baptiste, Leffard, Vieira, Rowen, & Tyler, 2007). Those variables most relevant to the ED include: high risk situations to staff, i.e. being in a rush resulting in an attempt to complete tasks which may require more staff or equipment to complete; working in a culture wherein staff members will overlook what's best for them for the sake of helping the patient; lack of available, or use of, safe patient handling equipment or lack of a training program to support its use. Common injuries related to manual lifting include lower back and upper extremity injuries to the shoulder and to the neck (Baptiste et al.).

Injuries sustained by healthcare workers result in significant costs to healthcare facilities. Direct costs related to injuries to healthcare workers can range between \$9,000 and \$30,000 per injury (Garg, Milholland, Deckow-Schaefer, & Kapellusch, 2007). The indirect costs related to these injuries can be four to ten times greater (Garg et al.).

The maximum recommended lifting weight limit during patient handling tasks by healthcare workers has been modified to 35 pounds (Waters, 2007). Assistive devices are recommended when the weight to be lifted exceeds 35 pounds (Waters). Rationale to support the revised limitation include the unpredictability of patients during movement (resistance,

combativeness, and muscle spasms); slips and falls; and sudden movements by the patient, which can create greater weight loads on the lifter's spine than would ordinarily be experienced if the person were lifting a stable object. There is also a need to reduce the maximum weight limit when less than ideal situations exist, i.e. when lifting - with arms extended, sitting or kneeling, with one hand or in a confined space, with a twisted upper body, with the patient being off-center, or lifting during a shift which goes beyond 8 hours. In all of the previously described circumstances mechanical assistive devices should be used (Waters).

Prevention of most injuries related to patient handling is possible. Much depends on the organization's commitment to safety, and willingness to adopt evidence-based best practices for safe handling of the morbidly obese patient (McGinley & Bunke, 2008), and for creating a culture of change while implementing a safe patient handling program (Stenger, Montgomery, & Briesemeister, 2007). The Veterans Administration, particularly the VA Sunshine Healthcare Network (VISN8), has played a key role in developing a comprehensive evidence-based model for Safe Patient Handling and Movement Programs (United States Department of Veterans Affairs, 2006). This program has been implemented in many of their health care organizations within the state of Florida. The VISN8 safe patient handling and movement program is designed to allow for other healthcare facilities to adopt and implement within their organization. The program provides systematic guidance in order to increase the chance for success with implementation of a comprehensive safe patient handling and movement program. Additionally, the National Association of Bariatric Nurses (NABN) published evidence based practice guidelines for safe handling of the morbidly obese patients (McGinley & Bunke, 2008). These guidelines are comprehensive and are viewed as requirements for healthcare facilities to apply to safety initiatives aimed at the morbidly obese patient population.

The Facility Guidelines Institute (FGI), a private, multidisciplinary group of experts made up of representatives from federal, state and private sectors published a document entitled *Guidelines for Design and Construction of Healthcare Facilities* (Facilities Guidelines Institute, 2010). The guidelines are revised and published every four to five years. The 2010 edition of the guidelines contains a requirement for project applicants to conduct a patient handling and movement assessment (PHAMA) as part of the predesign processes for planning of a new building or a renovation project. The primary purpose of the PHAMA is to advise construction teams of specific patient handling and movement equipment, and their accessories, which will be used in specific clinical locations. Special consideration is then given to any spatial, structural, utility or design concerns related to all aspects in the installation, use and storage of special handling equipment (Cohen et al., 2010). The Steering Committee of the 2010 Health Guidelines Revision Committee (HGRC) commissioned a Specialty Subcommittee to write a White Paper (Cohen et al., 2010) to provide comprehensive information, which provides guidance in the completion of an assessment, and the rationale for, the PHAMA guidelines. Overall the PHAMA is focused on safe patient handling and the White Paper content is advisory only and not intended to be used as regulatory or accreditation requirements. The guidelines are however accepted and published as recommendations for healthcare facilities to follow, based on the most current literature (Cohen et al., 2010).

A review of the American College of Surgeons (ACS) Bariatric Surgery Center Network (BSCN) Accreditation Program manual, which contains all of the accreditation standards required of healthcare organizations that perform bariatric weight loss surgery, outlines general equipment requirements for certain clinical areas, however none are specified for the ED (American College Of Surgeons, 2010).

In those organizations, the ACS BSCN requires general accommodations for the morbidly obese patient and equipment in both the Operating Room and Radiology departments that will accommodate the patient who is morbidly obese (American College Of Surgeons).

Purpose of the study.

The current obesity epidemic has resulted in a greater number of both obese and morbidly obese patients being cared for in healthcare organizations. Thus, healthcare workers are faced with greater challenges in safely caring for this patient population. In order to ensure healthcare workers in the Emergency Department have the necessary equipment and space to safely manage the morbidly obese patient, it is necessary to assess the status of the organization's commitment, and the individual department's structure and equipment availability to determine its readiness. Currently there are no published assessment tools available to assist an organization to determine its readiness to safely care for this patient population in general terms, or more specifically in the Emergency Department. Therefore, the purpose of this study is to develop an organizational self-assessment tool for use by a hospital emergency department to determine its readiness to safely handle and care for the morbidly obese patient.

Conceptual Framework

The conceptual framework chosen for this study is the Donabedian theoretical framework, which provides a foundation for systematic research and evaluation in healthcare quality, Donabedian (1988). The framework or theoretical model was introduced in 1966 and is known as the structure, process, and outcome (SPO) model and is presented in the diagram below.



Donabedian (1988) described the structure as the setting in which care is delivered. The primary premise of this component of the framework is that, given the right setting, or foundation, high quality medical care will exist. According to Donabedian's model (1988), structure is multifaceted and examines the physical setting in which care is provided to include things such as material and human resources and organizational factors. Material resources include but are not limited to facility design and construction, potential modifications to the building infrastructure for special patient populations, number of beds, standard equipment resources, availability of specialty equipment, and financial capital. Examples of human resources include the number and type of staff, levels of education, and board and specialty certification and training. Organizational factors include but are not limited to type of organization i.e. academic/tertiary teaching hospital vs. community hospital, also leadership structure, peer review mechanisms, reimbursement, organization of the medical staff, and presence of a safety culture (Donabedian, 1988).

Donabedian's perspective of the structure component is the basis for this project. The focus for development of a Bariatric patient Readiness Assessment Tool for the Emergency Department is on structure only. Therefore, the BRAT focuses on material and human resources as well as organizational factors which are vital to the structural component.

Methods/Design

Description.

This two phase non-experimental, exploratory study was conducted to determine the usability of an organizational self assessment tool to determine the readiness of an Emergency Department to care for the morbidly obese patient from a safe patient handling perspective.

Phase 1.

The first phase of the study focused on initial development of the tool using the PHAMA guidelines as the developmental framework as they represent the most current comprehensive standards for safe patient handling for space and equipment standards (Sections 2-4). Section 1- Policy Assessment items, were adopted from the previously described evidenced based safety guidelines published by the NABN (McGinley & Bunke, 2008).

The NABN and PHAMA guidelines provided the developmental framework for the tool, i.e. the major headings and assessment items. However, no rating scales existed for a comprehensive assessment tool. Rating scales were developed based on standard Likert terminology and scale development. Three level scales were used in the first three sections of the tool and a five level scale was used in section four, which is a frequency rating scale. An odd number rating scale was used in order to preclude the respondent from making a neutral choice. The three level scale response options in sections 1- 3 were: 1- “not at all”, 2- “somewhat”, 3- “completely” and differed from the five level frequency rating scale response options in section 4, which were: 1- “Never”, 2- “1-3 times per shift”, 3- “4-6 times per shift”, 4- “7-9 times per shift”, 5- “≥10 times per shift”. The term “somewhat” was not operationally defined, but opportunity was provided on the assessment tool for respondents to provide additional comments related to their choice.

Phase 2 - Sampling/setting.

Phase 2 of the study tested the tool by administering it in a convenience sample of five EDs who treat morbidly obese patients, and soliciting their feedback for improvement. A representative cross section of EDs: two large tertiary care teaching facilities; two smaller community hospitals (one inner city, one suburban), and one rural hospital were planned for the

original assessments. Further, one of the two large participant teaching hospitals provides bariatric surgical services. The ED nurse manager was the intended individual to complete the assessment tool.

Phase 2 -Testing of tool.

The nurse manager for each of the EDs was contacted via email and an IRB approved letter of invitation to participate in the project was provided. Once agreement was reached, the assessment tool was sent via email. Upon completion of the assessment tool, the user was asked to answer five questions located at the end of the tool which provided additional feedback/data to determine the tool's usability.

Human subjects protection.

No human subjects were used for this project and IRB approval was received.

Measures/data analysis.

As previously mentioned, the tool was tested for its usability. Validity testing of the instrument was not completed since the tool was based on previously accepted guidelines.

Usability is defined as "the ease of use and learnability of a human-made object" (Wikipedia, n.d.). Historically, the concept of usability has been applied in the computer software industry for determining how easy a user interface is to employ (Nielsen, 2003).

Nielsen (2003) described a number of quality components associated with usability as it applies to the software interface, which include but are not limited to learnability, efficiency and memorability. He described an additional key quality component: utility, which is determining if the software does what the users need it to do. The concept of utility as applied to the assessment tool is to determine if the tool measures the readiness of the ED to care for the morbidly obese patient from a safe patient handling perspective.

Usability testing as described by Nielsen is accomplished by asking representative users to perform tasks with an interface and observe what they do and record the results, which includes the time it takes to complete the task. Nielsen (2000) emphasized the need to test no more than 5 individual users to obtain approximately 85% of the usability problems existing with the software. After testing is completed and problems are corrected, another iteration of the software is developed and tested with 5 additional individual users in order to address the remaining 15% of usability problems. A third testing with 5 additional individual users is recommended to eliminate whatever usability problems remain (Nielsen).

For this study, a modified form of usability testing was completed. The participants were not observed while completing the tool, therefore immediate feedback and time to complete the tool was not obtained. Based on the model presented by Nielsen (2000), the assessment tool was tested at one level, in five EDs.

The assessment tool (Appendix A) reflects the modifications made based on user feedback. It contains four major headings and within three of the four headings, assessment items are listed to allow the user to rate its presence within the ED. The fourth heading “high risk patient care tasks” are assessed using an estimated frequency rating as previously described.

After determining the rating for each assessment item, the user provided written comments to further explain their response as it pertains to strengths or weaknesses of the assessment per their organization, or to provide general comments as they felt necessary. These written responses and the answers to the five questions at the end of the tool provided the data used to further modify the tool and determine its usability.

The written responses were evaluated to determine common themes or the presence of similar comments for each area. Repeated or similar comments by the nurse managers were viewed as valuable feedback to apply to modifying the tool since, for the purposes of this study, they were considered to have the highest level of operational awareness of their ED environment.

Results

Two of the five original hospitals contacted (rural, suburban community) declined to participate. Two additional hospitals were contacted that either fit or closely fit into the originally intended cross section of hospitals. Another small suburban community hospital ED agreed to participate as did a small inner city community hospital located in a predominantly rural geographic area. A rural community hospital was not included in the sample.

Only one of the five ED nurse managers complied with the request to complete and return the assessment tool within a two week time frame. The remaining four nurse managers took between three and five weeks to return the document.

Usefulness of tool.

The assessment tool was determined to have a high level of usability and utility. Four of five respondents agreed the tool was easy to use and helpful in determining if their ED was ready to safely care for the morbidly obese patient. One hospital responded as “disagree” on this particular question but did not provide a written explanation. When re-contacted the explanation given was “need more specific bariatric related information”. No further explanation was provided.

Changes to tool.

Several recommended changes to the tool were received, or changes were made based on the nature of the responses. Table 1 lists the major changes to the tool.

An explanation or rationale for the changes to the tool follows. Page numbers were added due to a previous oversight. The term “bariatric” was replaced with “morbidly obese” in all areas except for those circumstances when “bariatric” was part of a name of a piece of equipment, i.e. bariatric stretcher. It was felt this provided clarity for participants, particularly those without bariatric surgical programs.

All of the section titles were changed to short phrases for clarity. One participant did not know the definition of morbidly obese; therefore it was included in the instructions.

An insight gained during the update of the literature review (Kahn, Oman, Rudkin, Anderson, & Sultani, 2007) was the awareness that the tool did not assess if the ED could accurately measure the morbidly obese patient’s weight. An accurate weight is vitally important to ensure it does not exceed operational limits of equipment in procedure areas necessary for patient evaluation, i.e. CT scan. Additionally, knowing the size of the girth of the upper and lower body is equally important to negate the possibility the patient will not fit into CT or MRI openings. Therefore, this information was added to the assessment items in both sections two and three (see Table 1). Participant feedback resulted in further modification of assessment items in section three to reflect the existence of both open bay and private patient rooms. Those observations also led to the change in “assessing all rooms for their ability to accommodate a lift and 2-3 staff members” (see Table 1, section 3). Direct and indirect participant feedback led to additional changes in section three. The term CT “gantry,” was unfamiliar to one participant, therefore the term “opening” was added. The location of weight limit charts was reported by some to be in their respective procedure areas, CT and operating rooms. Therefore, “in the ED” was added to clarify in the assessment item that the chart was to be in the ED.

Some difficulty was expressed by two participants in applying the original frequency ratings in section four. The first tool linked “never” to number 1 and “1-3x/shift” with number 2 on the rating scale. A specific participant comment – “only concern- too much frequency difference between “never” and “1-3x/shift”, led to the current scale (Appendix A, Section 4), that provides a broader frequency range from which to choose. These changes were verified as being more realistic and useful in a follow up communication with both participants. Other feedback resulted in adding the task of lifting a patient from the floor to a stretcher, in the event of a fall, to the assessment items under “vertical lifts” in section four.

Discussion/Limitations

PHAMA Guidelines.

The PHAMA guidelines white paper document is comprehensive in scope and contains currently accepted scientific standards for the development and application of a safe patient handling program in a healthcare facility. The best practice guidelines published by the NABN for safe handling of the morbidly obese patient are also comprehensive and evidence- based. Therefore, the application of these guidelines to the development of the ED readiness assessment tool contributes to establishing credibility and the application of currently accepted standards.

Although the guidelines were applied in this project to the Emergency Department, future application of the PHAMA guidelines to all clinical areas within a healthcare organization is now required. For this reason, it is important that the leadership of all healthcare facilities is aware of the presence of the guidelines and the requirement to apply them to future projects.

Modifying the usability testing procedure for application to a non-web based assessment tool may have been a limitation, to the extent that although the majority of the respondents agreed the tool was easy to use, there was no direct observation or measurement. The nurse managers were not asked to time themselves or their designee as to how long it took to complete the assessment tool. This is an important variable to address in future development of the tool.

The ED assessment data have not been reported. And, although the small sample size of 5 participating EDs limits the ability to generalize, some results suggest the need for future study. For example, there is a limited presence of patient handling policies applicable to the morbidly obese patient, assessment tools to determine a patient's dependency level, and communication tools to communicate the type of equipment and number of people needed to perform a handling task. Additionally, floor based lifts existed only in the large tertiary care facilities. Further, no ceiling lifts existed in any of the EDs. When compared to the frequency of high risk patient handling and moving tasks, these results suggest there may be a high frequency of manual lifting tasks performed in the absence of assistive devices.

Learning points.

Prior to incorporating the recommended changes, the assessment tool was determined to be both easy to use and helpful in determining participant ED readiness to safely care for the morbidly obese patient. From this perspective the tool meets the criteria for both usability and utility, in that it demonstrated an acceptable ability level to do what it was intended to do.

In its current form, the assessment tool focuses primarily on the physical resources required for the morbidly obese patient. Assessment of resources necessary for friends and/or family members who may be morbidly obese is not addressed. Those resources may include but are not limited to furniture designed for the person of size and more space in both ED waiting

rooms and patient rooms. Additionally, similar resources for morbidly obese healthcare providers in the ED are not addressed by the tool. Therefore, there are significant implications for future modification(s) of the tool to meet these assessment needs.

Implications for Advanced Practice in Emergency Nursing

Nurse Manager.

Completion of a departmental assessment can aid the ED nurse manager in determining his/her current state of readiness to care for the morbidly obese patient. The process of identifying special equipment, which may be lacking, can provide the framework for capital budget development for the purchase of necessary lift equipment. Additionally, each area of the assessment tool provides information for the nurse manager to reference in order to establish priorities, as well as include other organizational stakeholders in developing a safe patient handling program. Further, the PHAMA guidelines can assist the manager and other organizational leaders and stakeholders, to properly integrate safe patient handling and movement principles into the design of future renovations to the ED, or in the planning of a new facility.

APN clinical practice guideline/protocol development.

The assessment tool may provide an opportunity for EDs to more clearly focus on and identify the degree to which the morbidly obese patient population is represented in the total patient aggregate. The tool can be modified to identify demographic information of patients, and the degree to which necessary data points are being documented, i.e. patient weight and height for accurate BMI calculations.

Identifying the magnitude of the problem could be the impetus for the development of medical and nursing patient care protocols or clinical practice guidelines focused on the morbidly obese patient. The development of protocols to address the clinical challenges presented by the morbidly obese patient in the ED is supported in the literature. An example where the tool may be helpful in this area is the identification of weight and size limits of equipment in procedure areas frequently utilized by ED patients, i.e. radiology and the Operating Room, by having weight limit and the CT opening size charts available in the ED. Additionally, the tool assesses the availability of resources within the ED to accurately measure patient weight and body girth to determine if the patient size and/or weight will negate the ability to complete the procedure. Again, this information could be foundational to the early development of clinical practice guidelines or protocols by the Advanced Practice Nurse to manage the unique clinical challenges presented by this special patient population.

General hospital use.

Proactive preparation for the care of the morbidly obese patient in the ED provides an opportunity for healthcare facilities to expand the assessment to the entire organization. This may be particularly useful in organizations without bariatric surgical services. The NABN and PHAMA guidelines provide assessment criteria for other clinical areas within the organization. Therefore, the tool can be modified to meet their assessment needs. Additionally, preplanned clinical practice guidelines or protocols may also extend to, or include other units, i.e. the Intensive Care Unit to ensure smooth transitions or handoffs of care between units.

Use by ED Clinical Nurse Specialist.

The ED CNS has multiple responsibilities within the department. A primary role as educator could be served well by applying the accepted standards contained within the tool to

educational programs for safe practice with the morbidly obese patient. Additionally, the CNS as clinical practice expert may use the tool to enhance practice by incorporating standards into orientation programs, nursing practice guidelines, clinical pathways, and performance evaluations. In the role of researcher the CNS can expand the use of the tool by modifying it in ways to meet unique needs within the ED as well as other clinical areas within the organization.

Safe patient handling culture development.

Creating a culture of safety for both patient and healthcare provider within the ED is crucial in today's healthcare environment. The value in determining readiness to safely care for the morbidly obese patient population cannot be overstated. In light of the challenges in providing safe care to this patient population, proactive planning and preparation for both the short and long term will aid in preventing events detrimental to both patient and provider.

Expanded application.

Application of the assessment tool on a larger scale is indicated to further refine its usefulness and utility as well as increase awareness of what may be lacking in EDs across the country to safely care for members of the morbidly obese patient population. A possible mechanism to operationalize such an application would be to place the assessment tool on a specialty nursing organization's website, i.e. the Emergency Nurses Association, for access, download, evaluation and feedback by ED nurse managers or their representative(s).

Partnerships between specialty nursing organizations, i.e. the ENA and the National Association of Bariatric Nurses, can provide opportunities for further development, expansion and application of the assessment tool to all areas of a healthcare organization. In this process there are also opportunities to expand the focus of the tool beyond the morbidly obese patient by raising the awareness of a need to include friends and family of the patient, as well as all

healthcare workers who may be morbidly obese. There are a number of possible applications, many of which have not yet been defined for this organizational readiness assessment tool.

Conclusion

The obesity epidemic in the U.S. has created challenges for EDs in the safe care of the morbidly obese patient population. Applying the Facility Guidelines Institute - PHAMA guidelines and the NABN guidelines to the development of a readiness assessment tool for the Emergency Department has been shown to be successful on a limited basis. Testing of the tool in a convenience sample of five EDs to determine its usability and utility was completed in a modified usability testing approach and the tool was found to meet the criteria for both within the limitations of the testing. Modifications to the tool were made based on direct and indirect participant feedback.

The nurse manager was targeted to complete the BRAT due to his/her assumed operational knowledge of the ED. The turnaround time to return the document for four of the five managers in this study suggests the task of completing the document be delegated to appropriate staff.

Lastly, additional application of the tool is necessary to further refine its usability and utility. This may be accomplished through the placement of the tool onto a nursing specialty organization website for online testing.

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Appendix A

Bariatric patient Readiness Assessment Tool (BRAT) for the Emergency Department

Instructions: Use this tool to assess the current environment of your ED as it pertains to the safe care of the morbidly obese patient (Body Mass Index (BMI) ≥ 40 kg/m² or weight 100 lbs over ideal body weight). Please be sure to read the instructions for **each** section and respond accordingly.

(Adopted with permission from: Cohen, M. H., Green, D. A., Nelson, G. G., Leib, R., Matz, M. W., & Thomas, P. A. (2010, April). *The Facilities Guidelines Institute, Patient handling and movement assessments: A White Paper*).

Section 1: POLICY ASSESSMENT: Rate your organization/department as to the degree it meets the assessment item criteria. The items in bold below are the assessment criteria. The bulleted items (where applicable) are the components, which define the assessment item. Additionally, please list strengths, weaknesses or other comments related to each item.

Rating scale: 1 = Not at all, 2 = Somewhat, 3 = Completely

Assessment Item	Rating	Strengths/Weaknesses/Comments
Morbidly obese patient handling policy identifying		
• Minimal lift policies		
• Patient admission process		
• Roles and responsibilities of workers and management		
• How to access, clean and maintain equipment		
Safe Patient Handling mobility assessment tool to determine level of dependency of morbidly obese patient		
Communication tool readily available to place at patient bedside to identify type of equipment and number of people required to perform task		
ED guideline for safe patient handling of morbidly obese patient to include		
• Available equipment		
• Equipment weight limits		
• How to access equipment		
Other:		

EMERGENCY DEPARTMENT ASSESSMENT TOOL DEVELOPMENT

Section 2: EQUIPMENT ASSESSMENT. Rate your organization/department on the availability and quantity of equipment listed below.

Rating scale: 1= Not at all, 2= Somewhat, 3= Completely

Assessment Item	Rating	Strengths/Weaknesses/Comments
1 Floor based power sling lift <ul style="list-style-type: none"> Maximum weight limit 500-800 lbs for removal from cars 		
1 Floor based powered Sit-to-Stand lift <ul style="list-style-type: none"> Weight capacity 300-1000 lbs 		
Lateral transfer devices (1-2):		
<ul style="list-style-type: none"> Air assisted 		
<ul style="list-style-type: none"> Mechanical 		
<ul style="list-style-type: none"> Friction reducing: sliding sheets 		
Ceiling lift		
<ul style="list-style-type: none"> Permanently mounted into ceiling of room 		
<ul style="list-style-type: none"> 50-100% coverage of all ED beds is recommended 		
Ambulance bay <ul style="list-style-type: none"> 1 expanded capacity/bariatric lift under canopy in ambulance bay 		
Bariatric stretcher-1		
<ul style="list-style-type: none"> 36-39 inches wide 		
<ul style="list-style-type: none"> Weight capacity 600-800 lbs 		
<ul style="list-style-type: none"> Built in scale for accurate measurement 		
Bariatric inpatient bed availability		
<ul style="list-style-type: none"> Weight limit 300-1000 lbs 		
<ul style="list-style-type: none"> Built in scale for accurate weight measurement 		
<ul style="list-style-type: none"> Adjustable width (especially if > 48 inches) 		
<ul style="list-style-type: none"> Side rail support 		
<ul style="list-style-type: none"> Motorized 		

Wheelchair(s)		
<ul style="list-style-type: none"> • 20-26 inches wide 		
<ul style="list-style-type: none"> • 18 inches deep 		
<ul style="list-style-type: none"> • Motorized 		
<ul style="list-style-type: none"> • Transport assistive device- is battery powered and attaches to wheelchair to assist with pushing 		
Other:		

Section 3: SPACE AND STRUCTURAL REQUIREMENTS. Rate your organization/department on the current status of recommended space and structural requirements for storing and utilizing specialty equipment for the morbidly obese patient.

Rating scale: 1= Not at all, 2= Somewhat, 3= Completely

Assessment Item	Rating	Strengths/Weaknesses/Comments
Storage space for special equipment		
<ul style="list-style-type: none"> • 1 Floor based sling lift- 10 square feet 		
<ul style="list-style-type: none"> • 1 Sit-to-Stand lift- 8 square feet 		
Larger door openings (> 48 inches)		
<ul style="list-style-type: none"> • Patient room(s)- private 		
<ul style="list-style-type: none"> • Patient room(s)- bay type 		
<ul style="list-style-type: none"> • Bathroom(s) 		
<ul style="list-style-type: none"> • Ancillary department(s)- Radiology 		
Rooms above accommodate width of patient lift plus 2-3 staff		
Larger elevator (minimally 1)		
<ul style="list-style-type: none"> • Accommodates larger bariatric bed width (> 48 inches) 		
<ul style="list-style-type: none"> • Accommodates larger bariatric bed length (8ft) 		
<ul style="list-style-type: none"> • Accommodates attending staff (at least 2) 		
Corridor width, floor finishes, transitions		
<ul style="list-style-type: none"> • Wide enough to turn and manipulate bariatric beds 		
<ul style="list-style-type: none"> • Non-carpeted floors 		
<ul style="list-style-type: none"> • Thresholds/transitions between floor surfaces are smooth 		
Radiology		
<ul style="list-style-type: none"> • CT Weight limit chart available in ED 		
<ul style="list-style-type: none"> • CT gantry (Opening) size limit chart available in ED 		

TABLE 1

CHANGES TO ASSESSMENT TOOL	
General	<ul style="list-style-type: none"> Added page numbers to document Removed term “bariatric” and replaced with “morbidly obese” in all areas except for areas wherein “bariatric” is typically a name i.e. “bariatric stretcher”
Instructions	<ul style="list-style-type: none"> Incorporated definition of “morbidly obese”
Section 1	<ul style="list-style-type: none"> Changed section title to “Policy Assessment” Incorporated “of morbidly obese patient” into assessment items
Section 2	<ul style="list-style-type: none"> Changed section title to “Equipment Assessment” Added “sliding sheets” as example for “friction reducing” Added assessment item – “Built in scale for accurate measurement” under “bariatric stretcher” Added assessment item – “Built in scale for accurate weight measurement” under “bariatric inpatient bed availability”
Section 3	<ul style="list-style-type: none"> Changed section title to “Space and Structural Requirements” Added term “private” after “patient room” under assessment item “larger door openings” Added assessment item “patient room(s)- bay type” Moved assessment item “ancillary department(s)-radiology” under “bathroom(s)” Added “rooms above” to assessment item “accommodate width of patient lift plus 2-3 staff” Added “available in ED” after “CT weight limit chart” in assessment item under “radiology” Added “(Opening)” after “gantry” and “available in ED” after chart in second assessment item under “radiology” Added assessment item “Equipment available to measure body girth” under “radiology” Added “in ED” to both assessment items under “operating room”

TABLE 1 (continued)

	CHANGES TO ASSESSMENT TOOL
Section 4	<ul style="list-style-type: none">• Changed section title to "Patient Handling and Moving Tasks"• Removed "Never" from frequencies• Defined rating scale number 1 as "Rarely" – 1-2x/month• Defined rating scale number 2 as "Occasionally" – 1-2x/week• Defined rating scale number 3 as "Daily" – 1-2x/shift• Added "Daily" to rating scale numbers 4, 5, & 6• Changed rating scale 4 frequency to 3-6x/shift• Added assessment item "floor to stretcher in the event of a fall" under "Vertical lifts"

Concluding Chapter: Translation into practice

The translation model (Appendix B) chosen for this capstone project is described by Rosswurm and Larrabee (1999). They tested their model in the development and application of evidence-based practice protocols to a healthcare setting. And although the primary outcome of this project is not evidence-based practice protocols, it is quite possible a secondary outcome in the application of the assessment tool, and further translation of the results into practice, will produce evidence-based protocols.

The six steps in the model will be used to describe the translational process.

Step 1. Assess the need for change in practice: the primary objective of the tool developed for this project is readiness assessment to care for the morbidly obese patient population. Applying established guidelines from the NABN and the FGI- PHAMA guidelines to the measurement items provides awareness to the nurse manager performing the assessment as well as the staff of the need for a standardized approach to determining what is needed to safely care for the morbidly obese patient population, particularly when necessary items are missing. The readiness assessment results can be used by a multidisciplinary team of representative stakeholders within the ED and the organization lead by a DNP, to begin to gather additional data relevant to this population. Internal data can include but not be limited to current documented clinical care problems, quality improvement and risk management issues regarding adverse events, admission data for patients with a BMI ≥ 40 kg/m², assessment of current safe patient handling equipment training and frequency of use by staff, and staff injury data particularly musculoskeletal injuries related to patient handling.

Step 2. Link problem with intervention(s) and outcomes: The advantage of the readiness assessment tool is the criteria used for the assessment are taken from evidence-based guidelines

which provide solutions to identified problems. From the data gathered by the DNP lead multidisciplinary team in step 1, a strategic plan which prioritizes actions/interventions to be taken and desired outcome indicators addressing the most concerning issues can be formulated. A reduction in back and musculoskeletal injuries to healthcare providers associated with manual patient lifting as well as improved patient and staff satisfaction scores are examples of key successful outcome measures.

Step 3. Synthesize best evidence: As was previously stated, currently accepted best evidence and practice guidelines are applied to the development and application of the readiness assessment tool. In the application of this translational model, the DNP can facilitate the process of determining what criteria will be used for the updated literature review; provide direction in completing the review and developing a process for critiquing and rating the quality of the evidence. Additionally, after critiquing and rating the evidence, the DNP can continue to facilitate and lead the discussion among the multidisciplinary team to question the feasibility of using the evidence found in practice. Expansion of the focus of the readiness assessment tool within the ED, i.e. to incorporate clinical care assessment criteria is an application example.

An example of a literature review focused on additional equipment necessary to address a clinical challenge unique to the morbidly obese patient, i.e. vascular access, can be applied here. After completing the process, the final feasibility discussion could result in a decision to purchase new equipment since the evidence is strong enough to demonstrate a measurable benefit to the morbidly obese patient, with very little risk. A purchase and implementation of new vascular access equipment will require a change in practice.

Step 4. Design a change in practice: At this stage the DNP led team can decide on the best method or format for integrating the new equipment into practice. Rosswurm and Larrabee

(1999) suggest there is a higher likelihood of acceptance of a practice change by staff if the format is in the form of a protocol with a low complexity in application. They further recommend the protocol focuses on the patient population represented in the evidence review (Rosswurm & Larrabee) and if the change in practice affects a standard of care, a pilot test is recommended. Given these recommendations, the DNP is in an ideal position to provide direction in both developing the pilot test and coordination of the effort to apply new vascular access equipment to the care of the morbidly obese patient in the ED.

Step 5. Implementing and evaluating a change in practice: A pilot study designed for evaluation of vascular access equipment for the morbidly obese patient can be completed and overseen by a DNP. Further, at this stage of the readiness assessment tool translation process; there is a twofold outcome resulting from the change in practice in the use of new vascular access equipment for the morbidly obese patient. The first outcome is the clinical benefit to the patient, however measured. The second outcome is the incorporation of vascular access equipment into the assessment tool, potentially as part of a new protocol. Like the guidelines used to develop the tool, the protocol would be evidence-based; specific recommended equipment would be listed in the tool, and the possibility for application to other clinical areas within the organization exists, or to other EDs.

Step 6. Integrate and maintain change in practice: Expansion of the focus of the readiness assessment to incorporate clinical care assessment criteria is one mechanism by which the tool can support the integration and maintaining of a change in practice, as previously described. Further, the leadership provided by the DNP is particularly important at this stage of the translational process. Rosswurm and Larrabee (1999) describe a model for change to evidence-based practice and they point out at this stage that changes in practice are not always

readily accepted. The importance of continued communication between stakeholders for the acceptance of change is stressed, as well as the need to adhere to organizational operational policies and to provide ongoing education to facilitate acceptance of the change. The leadership provided by the DNP from the beginning of this process suggests the chance for sustainable acceptance of new evidence-based practice is increased.

Appendix B

