Skin Integrity, Immobility, and Pressure Ulcers in Class III Obese Patients

INTRODUCTION

Class III obese patients are identified as having a body mass index greater than or equal to 40 or weighing 100 pounds or greater than their ideal body weight. Class III obese patients have an increased susceptibility to tissue injury, infections, and altered skin integrity resulting from the aberrant distribution of dense adipose tissue (e.g., weighted skin folds, overlying skin layers) and changes in skin physiology (e.g., moisture from excessive sweating, decreased perfusion). The increased body mass is associated with functional limitations that predispose the class III obese patient to sitting, lying, or remaining in a sedentary, immobile position for extended periods of time. Immobility contributes to the prolonged compression of skin, and without relief of the pressure through repositioning, injury to the skin and underlying tissues can result. The ability of a class III obese patient to effectively reposition or alleviate the pressure on the skin and underlying tissues is greatly compromised, increasing the occurrence of sustained, unrelieved pressure, with shearing and friction forces on the skin resulting in skin breakdown and tissue injury.

ANALYSIS OF PA-PSRS CLASS III OBESE PATIENT EVENT REPORTS

A query of five years of event reports—from January 1, 2007, through December 31, 2011—to the Pennsylvania Patient Safety Authority’s Pennsylvania Patient Safety Reporting System (PA-PSRS) identified that 33.1% (n = 588 of 1,774) of all of the event reports for class III obese patients were skin integrity reports, which is higher than the 15.5% (n = 35,454 of 228,835) of skin integrity reports in the general PA-PSRS population in 2011. The query was conducted on the narrative descriptions using the terms “obese,” “morbidly obese,” or “bariatric.” A detailed analysis of the 588 skin integrity event reports identified immobility as a factor in 82.8% (n = 487) of the reports, of which 20.7% (n = 101 of 487) were Serious Events (i.e., adverse events resulting in patient harm). This percentage of class III obese patient skin integrity reports that were Serious Events is high compared with the 2.3% (n = 800 of 35,454) of Serious Event skin integrity reports in the overall PA-PSRS population in 2011. The analysts conducted a detailed analysis of the class III obese patient skin integrity event reports in which immobility was a factor.

PA-PSRS CLASS III OBESE PATIENT SKIN INTEGRITY EVENT REPORTS

Immobility was identified in class III obese patient PA-PSRS event report narratives when the narrative descriptions indicated patients needed moderate or maximum assistance when turning, transferring, or amputating or when patients were on bed rest or had conditions indicative of immobility (e.g., ventilator dependency, recent surgery, limb infections, limb amputations, preexisting pressure ulcers).

The skin integrity event report narratives were analyzed and categorized according to four different types of conditions: (1) pressure-related conditions that were present on admission or were a hospital-acquired condition; (2) cuts, tears, or lacerations; (3) conditions involving weight of skin on skin; and (4) skin infections. The analysis of pressure-related conditions, accounting for 85.0% (n = 414 of 487) of the skin integrity event reports for this patient population, included all clearly identified pressure ulcers and any type of skin injury (e.g., blisters, ecchymotic areas) that occurred as a result of pressure.

Class III obese patients have a different mechanism underlying the development of a pressure ulcer. In thin patients, the pressure of the bony prominences injure the tissue covering the bone. In class III obese patients, the excess adipose tissue creates pressure from the weight of the tissue. When skin lays on top of skin, the weight, lack of air circulation, and moisture with poor tissue perfusion set up conditions for a pressure ulcer.
to develop. For example, the weight of an abdominal pannus can cause skin breakdown (i.e., a pressure ulcer) over the pubic area due to the weight of the extra tissue along with the moisture leading to skin breakdown underneath the pannus. Pressure ulcers and pressure-related skin issues predominated the reported skin integrity event issues, followed by cuts, tears, or lacerations; events involving weight of skin on skin; and skin infections (see Table).

Many of the event reports had more than one conditional attribution occurring at the time of the event report (e.g., many of the events involving weight of skin on skin were also counted as pressure-related events). The Table shows a summary of the event types.

The majority of the pressure-related conditions (85.7%, n = 355 of 414) were identified as pressure ulcers. An analysis of the pressure-related event time of occurrence showed that 57.7% (n = 239) were hospital-acquired conditions, 37.4% (n = 155) were present on admission, and the remaining 4.8% (n = 20) did not indicate the time the condition occurred. An analysis of preexisting conditions that can contribute to poor skin conditions revealed that 26.7% (n = 130 of 487) of the patients had diabetes, 12.3% (n = 60) had venous stasis, 6.0% (n = 29) were incontinent, and 3.9% (n = 19) had poor hygiene.

Skin integrity issues identified in class III obese patients are described in the following PA-PSRS reports:

- The patient presented to the hospital with multiple areas of skin breakdown. The patient is morbidly obese and has stage I skin breakdown on both upper and lower buttocks. Underneath the abdominal pannus has stage II-III skin breakdown and is discolored (green, yellow). The creases in the arms also have stage II breakdown. The patient has a dark purple area at the waistline posteriorly from the right lateral side of the mid-back that is 28 cm wide and 3 cm in length. The skin is intact, but the discoloration is from folds of tissue compressing the area. Possible deep-tissue injury. The patient is morbidly obese and is on a [bariatric] bed with low-air-loss surface. It requires six nurses to turn the patient. When the therapist was preparing the patient for therapy, a blood-filled blister was noted on the right buttock, which was not present when treatment was given two days prior. The patient is alert and oriented but immobile due to obesity, and their nutritional status is poor. The patient has been on a bariatric plexus mattress since admission. The patient was admitted for wound care treatment of bilateral lower buttck wounds, which are healing in response to established treatment. The patient was admitted from another facility with cellulitis with a multiple-stage wound. The patient is obese, with most wounds in the folds of skin. The left hip has a stage III wound, and the right leg has a stage IV wound in the skin folds of the leg.

- An extremely obese female patient was admitted to the hospital with tenderness in the left flank and severe pain in the left lower back. The patient's hospitalization was complicated by uncontrolled diabetes mellitus, hypertension, and a possible infection. The patient developed a pressure ulcer on the right buttocks, which progressed to stage III during the hospital stay despite wound care treatment at onset of the skin breakdown. The patient's nutritional status was suboptimal.

### SKIN INTEGRITY ISSUES

#### Class III Obese Patient Evidence-Based Protocols

The development of class III obese patient evidence-based protocols helps staff to provide safe patient care. Best practice includes performing an initial skin assessment followed by periodic reassessment, maintenance of good hygiene, keeping the skin dry, performing a nutritional analysis, repositioning patients, and use of specialized bedding and equipment. Coupling skin care protocols with ongoing routine in-service training for staff is essential to make sure that staff are up to date on class III obese patient protocols and care pathways. In addition to skin-related protocols and care pathways, sensitivity training needs to be a part of class III obesity skin care protocols.

### HOSPITAL STATEWIDE SURVEY

In July 2012, the Authority conducted a hospital statewide survey (35.3% response rate) that included questions about class III obese patient care pathways. The survey results identified that 40.7% (n = 24 of 59) of respondents had skin care protocols in place, and 20.3% (n = 12) of respondents indicated that there was no physical assessment or medical care protocol for obese patients.
Clinical Skin Assessments and Care

An in-depth, head-to-toe skin assessment is imperative, with emphasis on the areas of weighted skin folds, excessive moisture or perspiration, and incontinence and on points of increased friction and pressure.4,13,19 Inclusion of the Braden scale as part of the skin assessment assists in identifying patients at risk for the development of a pressure ulcer.4 The Braden scale does not predict the occurrence of a pressure ulcer but rather indicates a heightened risk for the development of a pressure ulcer based on a score that evaluates six characteristics: sensory perception, moisture, activity, mobility, nutrition, and friction/shear.23,24 A study by Swanson et al. identified that obese patients who were assessed with both high-risk mobility and friction/shear scores had a higher prevalence of ulcers compared with non-obese patients with both high-risk scores.25

The clinical care aspect of the care plan needs to focus on keeping all areas of the skin dry and free of bodily excretion (i.e., perspiration, excrement, and exudates) and on reducing pressure and friction. There are specific approaches to address basic skin care protection, incontinence management, and repositioning.4,26,27 Perineal care needs to be performed each time a patient is incontinent.4 Creams that have zinc oxide, dimethicone, or petrolatum provide barriers to moist areas.26 Another approach is to use moisturizers or emollients to prevent fluid loss and protect the skin from drying;26 however, falls precautions must be implemented if moisturizers or emollients are applied on or near the feet. Repositioning patients every two hours can reduce the chance of pressure-related issues.4,28 When repositioning patients, check and free up all tubes or catheters that may have become located in skin folds or underneath patients.28

Patient Skin Care Routine Assessments

During the clinical assessment of the patient’s skin, an assessment of the patient’s skin care routine provides insight into the hygiene practices of the patient and presents opportunities for patient education to improve future skin hygiene practices.27,29 One way patients can maintain good skin hygiene is by having them use long-handled, soft-bristle shower brushes to clean areas of their bodies they might otherwise not reach.27 Another aspect of the patient’s hygiene practice to evaluate is the different approaches used to keep the skin folds clean. Not all skin hygiene approaches may be beneficial.27 For example, cornstarch-based powder is a home remedy that has the potential to incubate yeast and is harmful when managing skin folds.27

Bariatric Equipment Use

Bariatric-size equipment is another way to address skin integrity issues. Measuring the patient’s weight, height, and abdominal girth is the first step to ensuring that the appropriate-size equipment is obtained.4,26 Securing the appropriate-size equipment for class III obese patients can help reduce some of the challenges with keeping this patient population’s skin safe.27 Pressure-redistribution devices for sitting and sleeping are another way to reduce pressure for immobile patients.4,26 For example, bariatric beds with low-air-loss mattresses and specially designed frames provide comfort for class III obese patients.28 Another type of bed-related equipment, a trapeze can increase the patient’s mobility while decreasing friction on skin during movement.4,20

Proper use of equipment is essential in providing safe patient care and is illustrated in the following PA-PSRS event report:

The patient was noted to have darkened (purple) areas to [their] bilateral buttock [with one side worse than the other]. The patient’s skin [was] reported by the nurse to be “sloughing off” in [several] areas of the buttocks. The patient reported that [she] had been put on the bedpan [and left on it for a couple of hours during the day]. Wound care was initiated by the nurse. Patients with reduced mobility need frequent monitoring, especially in cases in which bedpans are used. When possible, patients should be offered a bariatric-size commode rather than a bedpan to keep patients mobile and reduce pressure from a bedpan.30

Communication

Clear and effective communication among staff and between staff and their patients is the first step to proactively reducing the occurrence of skin integrity issues. Staff-to-staff communication needs to convey: (1) the patient’s condition and any new changes in their skin, (2) equipment acquisition issues, and (3) transferring and repositioning issues, including timing of repositioning, the patient’s capability in participating, and identifying the number of staff required to reposition or transfer the patient along with the type of equipment needed to safely move the patient.

Staff-to-patient communication requires sharing information about the patient’s condition and plan of care so that everyone understands the reasons behind the decisions for the patient’s care. Information sharing can occur formally with planned educational materials or informally (e.g., throughout the day, when vital signs are taken, during the delivery of meals, when patients use their nurse call light).

LIMITATIONS

The 487 PA-PSRS class III obese patient skin integrity event reports identified for this analysis underrepresent the actual number of class III obese patients who experienced skin integrity events during hospitalization. PA-PSRS event intake forms do not specifically request the patient’s weight or body mass index, except for the medication intake form. The search of the PA-PSRS event reports relied on the subjective assessments provided by the individuals reporting the events. Limitations associated with the statewide survey response rate reflect
Immobility coupled with excess skin and adipose tissue changes in skin physiology has resulted in a high percentage of pressure ulcers and pressure-related issues in class III obese patients in Pennsylvania. Cuts, tears, or lacerations; issues involving weight of skin on skin; and skin infections were also problematic in this patient population. The development and communication of evidence-based class III obese patient protocols that address clinical skin care assessments and care plans, equipment use, hygiene practices, and educational programs are ways to proactively address skin conditions, whether the conditions are present on admission or acquired in the hospital.

NOTES


LEARNING OBJECTIVES

- Recall the definition of a class III obese patient.
- Recognize the Braden subscale characteristics used to identify class III obese patients who are at risk for developing pressure ulcers.
- Recognize the appropriate patient assessments for securing the proper type of equipment for class III obese patients.
- Distinguish between treatments that are and are not beneficial for maintaining good skin integrity in a class III obese patient.

SELF-ASSESSMENT QUESTIONS

The following questions about this article may be useful for internal education and assessment. You may use the following examples or develop your own questions.

1. Complete the following sentence. The definition for a person with class III obesity is a person with a body mass index (BMI) greater than or equal to 40 or ____________
   a. a BMI of 35 with one comorbidity.
   b. weighing 100 pounds above his or her ideal weight.
   c. a BMI of 35 with two comorbidities.
   d. weighing 100 pounds or greater than his or her ideal weight.

2. A study by Swanson et al. identified that obese patients who had high-risk scores on two Braden subscale characteristics had a higher prevalence of pressure ulcers compared with nonobese patients. One characteristic was mobility. Which was the second characteristic?
   a. Activity
   b. Friction/sheer
   c. Sensory perception
   d. Moisture

3. Which of the following actions does not provide useful information when identifying and securing bariatric equipment for class III obese patients?
   a. Measuring the patient’s height
   b. Measuring the patient’s weight
   c. Measuring the patient’s skin folds
   d. Measuring the patient’s abdominal girth

4. Which of the following actions is not a discussed prevention method used to reduce the chance of skin-related problems for class III obese patients?
   a. Checking and freeing up all tubes or catheters that can get caught in skin folds or under a patient every time the patient is repositioned
   b. Repositioning the patient every three hours
   c. Performing a head-to-toe skin assessment
   d. Securing bariatric-size equipment

5. Which of the following skin treatments is not beneficial for maintaining good skin integrity in a class III obese patient?
   a. Use of moisturizers or emollients
   b. Use of zinc oxide creams, dimethicone, or petrolatum
   c. Use of cornstarch
   d. Performing perineal care every time the patient is incontinent
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