PRATIQUES EXEMPLAIRES POUR PRÉVENIR LES BLESSURES DE PRESSION ACQUISES EN MILIEU HOSPITALIER CHEZ LES PATIENTS OPÉRÉS

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RÉSUMÉ :

Bien que l'on considère que les plaies de pression acquises en milieu hospitalier et les blessures des tissus profonds puissent être évitées, elles continuent dans la plupart des cas de toucher de nombreux patients en installations de soins actifs. Pour de nombreuses raisons, les patients opérés risquent tout particulièrement de développer des plaies de pression acquises en milieu hospitalier, entre autres, à cause de leur immobilité lors des périodes intra-opératoire et post-opératoire. Les plaies de pression acquises en milieu hospitalier nuisent considérablement aux patients et prennent la forme de douleurs, de vulnérabilité accrue à l'infection et de retard dans la guérison. Les infirmières et les infirmiers en soins périopératoires doivent adopter une approche proactive et globale afin de protéger leurs patients des blessures de pression, y compris les plaies de pression acquises en milieu hospitalier et les blessures des tissus profonds.

Les normes de l'AIISOC relatives à cet article figurent dans la publication Normes, lignes directrices et énoncés de positions pour la pratique de soins infirmiers périopératoires autorisés (9e édition) de l'Association des infirmières et des infirmiers de salle d'opération du Canada (AISSOC) de juin 2009, section 3, p. 187-192, Normes 2.7; section 5, p. 300-2, Normes 1.1 et 1.3; et section 5, p. 304, Normes 2.14.

BEST PRACTICES FOR PREVENTING HOSPITAL-ACQUIRED PRESSURE INJURIES IN SURGICAL PATIENTS

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ABSTRACT

Hospital-acquired pressure ulcers (HAPUs) and deep tissue injuries (DTIs), while considered to be preventable in most cases continue to affect many patients in acute care facilities. Surgical patients have an especially high risk of developing HAPUs for several reasons, including immobility during the intraoperative and immediate postoperative periods. HAPUs are responsible for significant patient harm in the form of pain, increased susceptibility to infection, and delayed recovery. Perioperative nurses must take a proactive and comprehensive approach to protecting their patients from pressure injuries, including HAPUS and DTIs.

INTRODUCTION:

Hospital-acquired pressure ulcers (HAPUs) are preventable in most cases and yet this condition continues to have an impact on many patients in acute care facilities. Surgical patients have an especially high risk of developing pressure injuries for several reasons (see Table I for factors that increase the risk of pressure injury for surgical patients). Pressure ulcers are responsible for causing significant pain, an increased risk of developing hospital-acquired infections and delayed surgical recovery. HAPUs contribute to increased healthcare costs due to extended hospital stays and the expenses associated with treatment of the ulcers.[1]

What is a Pressure Ulcer?

The National Pressure Advisory Panel defines a pressure ulcer as an area of localized injury, on the skin and/or subcutaneous tissue, caused by external pressure alone or pressure in combination with shearing or friction.[2] Most pressure ulcers develop over bony prominences with the majority of HAPUs developing over the sacrum and the heels of the feet. Pressure ulcers are classified according to the extent of tissue injury[3] (see Table II).

Table I
Factors placing Surgical Patients at an Increased Risk of Developing Pressure Ulcers [4, 6, 7, 11]

Patient-intrinsic factors	• Pre-existing skin conditions (including fragile skin in elders) • Co-morbid conditions, including diabetes, peripheral vascular disease, heart disease and obesity • Poor preoperative nutritional status, especially protein deficiency • Low preoperative hemoglobin • Tobacco use • Patient transferred from another facility
Extrinsic factors	• Pressure • Friction • Shearing
Risks specific to surgical patients	• Immobility during the surgical procedure: procedures lasting longer than 2.5 hours are associated with an increased risk for developing pressure injuries • General and regional anesthesia suspend protective mechanisms that allow individuals to feel pressure-related sensations and to reposition themselves to relieve the pressure • Anesthetic agents may lower blood pressure and cause peripheral hypo-perfusion • Intraoperative hypothermia • The use of vasoactive medications during surgery
Risk specific to cardiac surgery patients	• Altered tissue perfusion due to extracorporeal circulation during the surgical procedure • Hemodynamic instability during the surgical procedure • The use of mechanical circulatory assist devices (intra-aortic balloon pumps and ventricular assist devices)

Table II - Pressure Ulcer Staging [2]

Stage I	Intact skin with non-blanching erythema of a localized area (usually over a bony prominence)
Stage II	Superficial ulcer involving partial skin loss affecting the epidermis and/or dermis
Stage III	Full-thickness skin loss accompanied by damage to subcutaneous tissue, does not penetrate the fascia
Stage IV	Full-thickness skin loss with significant destruction of underlying tissues, possible damage to muscle, tendons and bone
Deep Tissue Injury	Localized area of discoloured (usually maroon or purple) skin or blood-filled blister due to pressure/shearing injury of subcutaneous tissues. Changes in skin appearance may be preceded by skin at the site of the injury felling warmer or cooler, "mushy", "boggy", firmer than surrounding area. Area may be painful.

What is a Deep Tissue Injury?

The body's various tissues range in their ability to tolerate pressure; muscle tissue is less tolerant of sustained pressure than skin and subcutaneous tissue. The most common type of intraoperative pressure injury, deep tissue injury (DTI), develops first in the muscle and subcutaneous tissue and spreads outward to the skin. DTIs have a very different appearance from pressure ulcers. DTIs initially manifest as a dark red, maroon or purple discolouration that is often initially misdiagnosed as a burn injury. Over the course of the early postoperative period DTIs tend to progress rapidly to develop necrosis of the affected muscle, subcutaneous tissue and skin.[4] The discolouration associated with deep tissue injuries may be visible at the completion of the surgical procedure or might not be apparent for several days. This can make it difficult for caregivers to determine the etiology of the injury.[5]

What are the Risk Factors for hospital-acquired pressure injuries?

Surgical patients are at risk of developing pressure ulcers due to a combination of intrinsic and extrinsic factors. Some pressure ulcer risk factors cannot be controlled (such as the patient's age and overall health status) making it crucial that the perioperative nurse recognize and addresses the risk factors that can be controlled.[6,7,8]

How do pressure injuries develop?

Pressure and/or friction and shearing forces contribute to the development of intraoperative pressure injuries.[8] Pressure ulcers develop as the result of tissue damage caused by external pressure of sufficient intensity and duration to obstruct the capillary blood supply to the skin and muscle tissues. Obstructed blood flow causes an interruption of the flow of oxygen and nutrients to the tissue resulting results in cell ischemia which predisposes the patient to pressure-related skin breakdown.[9] The pressure exerted on the skin and underlying tissues is dependent on the patient's weight and health status, the surgical position and the characteristics of the surface under the patient. Tissue tolerance for external

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pressure varies among individuals depending on the patient's physical condition – this includes the presence and severity of co-morbid conditions (see Table III for factors that place surgical patients at an increased risk of developing HAPUs).[9] Duration and intensity of pressure are both crucial to the development of pressure ulcers. Low-intensity pressure of a long duration can be as damaging to tissue as high-intensity pressure experienced over a shorter period of time.[10]

Shearing occurs when the patient's skin and underlying tissues slide while the bone remains stationary. This can occur when a patient is pulled up or down on the OR bed to position the patient in preparation for surgery. Shearing can also occur if only a portion of the patient's body is repositioned (for example, when positioning a patient laterally for a thoracotomy procedure and making final positioning adjustments by "dragging" the patient's upper body to the edge of the OR bed).[11] The force of shearing can compromise blood flow in vessels close to the skin by bending and stretching the capillaries that provide blood flow to the skin. The resulting damage can be more intense because less pressure is required to obstruct capillary blood flow when shearing forces are also present.[12]

Friction occurs when skin rubs against another surface such as what can happen when a patient is pulled across a rough bed sheet during positioning. Friction can cause superficial skin injuries such as abrasions and skin tears.[10]

Moisture can play a role in the development of intraoperative skin injuries and skin breakdown. When prep solutions pool under the patient it promotes skin breakdown by altering normal skin pH, weakening skin cell walls, and causing bed linens to adhere to the wet skin, all of which increase the patient's vulnerability to skin injury from friction and shearing.[13]

TAKING A COMPREHENSIVE APPROACH TO PREVENTING INTRAOPERATIVE SKIN INJURIES IN SURGICAL PATIENTS:

The essential components of any pressure injury prevention program are:

- assessment and documentation of the patient's skin condition;
- pressure reduction; and
- prevention of friction and shearing forces.

Skin Assessment and Documentation

It is important for operating room nurses to perform a thorough skin assessment, including visual inspection of potential pressure points, both before and after the surgical procedure. When performing the preoperative and postoperative skin assessment it is important to document all abnormal findings, including any breaks in skin integrity and/or redness or discolouration at major pressure points. Utilization of a single standardized skin assessment tool such as the Braden Scale (see Table III), throughout the patient's hospitalization, promotes reporter consistency and enhances communication between caregivers working in different units or on different shifts. Any relevant skin assessment findings should be included in the nurse-to-nurse handoff communication at any transfer of care including shift changes and when the patient is transferred to the post-anaesthesia care unit (PACU).[14]

Pressure Reduction

Pressure reducing/relieving materials commonly used in the OR include OR bed mattresses, mattress overlays and padding materials (including dry polymer viscoelastic (gel) and foam pads). Pressure relieving materials and surfaces can help to prevent pressure injuries by reducing and/or redistributing pressure through the following mechanisms:

Redistribution of pressure: reduces pressure and shearing forces.

Envelopment: provides pressure reduction by enveloping irregularities such as bony prominences.

Immersion: reduces and redistributes pressure over a wider area by allowing the body part to sink into the support surface.[15]

The patient's body mass index is an important consideration when choosing pressure relieving surfaces and padding materials. Most OR mattresses will provide adequate pressure relief for a thin patient but may not provide adequate support and pressure relief for an obese patient.[16]

It is advisable to inspect OR bed mattresses on a regular basis as a worn or damaged mattress produces an unequal distribution of pressure that can increase the likelihood of pressure injuries in surgical patients.[9] Gel mattress overlays and pads offer the advantage of supporting the patient's weight without "bottoming out" (when the padding material becomes so compressed by the patient's body weight that it no longer provides any pressure relief) and of being self-repairing when punctured.[5] Standard foam pads and corrugated foam ("eggcrate" foam) are easily compressed and may not offer effective pressure relief for overweight or obese patients.[9]

Minimizing shearing and friction

Patient handling techniques, including the use of low-friction transfer devices such as slide sheets or air-assisted transfer devices, may help prevent skin injuries during the perioperative period by minimizing the force of shearing and friction during lateral transfers and repositioning.[10] Placing a transparent adhesive dressing over bony prominences may help to prevent skin tears, caused by shearing, for those patients with fragile skin and for very thin patients.[5] The perioperative nurse should also avoid allowing prep solutions to pool under the patient.[13]

CONCLUSION:

All surgical patients should be considered to be at risk for pressure injuries, including pressure ulcers and DTIs, for a combination of reasons. A comprehensive approach for perioperative nurses is essential to promoting positive patient outcomes by preventing intraoperative pressure injuries. Crucial components of any prevention strategy include the incorporation of regular skin and HAPU-risk assessments; routine use of pressure-relieving surfaces; and nursing interventions designed to minimize shearing and friction during patient positioning and transfer.

ORNAC Standards pertaining to this article can be found in the Operating Room Nurses Association of Canada (ORNAC) (June 2009). Recommended Standards, Guidelines, and Position Statements for Perioperative Registered Nursing Practice (9th edition). Section 3, pp 187-192, Standard 2.7; Section 5, pp 300-2, Standard 1.1 and 1.3; and Section 5, p 304, Standard 2.14.

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BRADEN SCALE FOR PREDICTING PRESSURE SORE RISK

Patient's Name:_____ Evaluator's Name:

SENSORY PERCEPTION ability to respond meaningfully to pressure-related discomfort	1. Completely Limited Unresponsive (does not moan, flinch, or grasp) to painful stimuli, due to diminished level of consciousness or sedation. OR limited ability to feel pain over most of body	2. Very Limited Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness OR has a sensory impairment which limits the ability to feel pain or discomfort over ½ of body.
MOISTURE degree to which skin is exposed to moisture	1. Constantly Moist Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.	2. Very Moist Skin is often, but not always moist. Linen must be changed at least once a shift.
ACTIVITY degree of physical activity	1. Bedfast Confined to bed.	2. Chairfast Ability to walk severely limited or non-existent. Cannot bear own weight and/or must be assisted into chair or wheelchair.
MOBILITY ability to change and control body position	1. Completely Immobile Does not make even slight changes in body or extremity position without assistance	2. Very Limited Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently.
NUTRITION <u>usual</u> food intake pattern	1. Very Poor Never eats a complete meal. Rarely eats more than ⅓ of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement OR is NPO and/or maintained on clear liquids or IV's for more than 5 days.	2. Probably Inadequate Rarely eats a complete meal and generally eats only about ½ of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement. OR receives less than optimum amount of liquid diet or tube feeding
FRICTION & SHEAR	1. Problem Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures or agitation leads to almost constant friction	2. Potential Problem Moves feebly or requires minimum assistance. During a move skin probably slides to some extent against sheets, chair, restraints or other devices. Maintains relatively good position in chair or bed most of the time but occasionally slides down.

Table III. Braden Scale for Predicting Pressure Ulcer Risk [18]

		_____ Date of Assessment			
3. Slightly Limited Responds to verbal commands, but cannot always communicate discomfort or the need to be turned. OR has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities.	4. No Impairment Responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort..				
3. Occasionally Moist: Skin is occasionally moist, requiring an extra linen change approximately once a day.	4. Rarely Moist Skin is usually dry, linen only requires changing at routine intervals.				
3. Walks Occasionally Walks occasionally during day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair	4. Walks Frequently Walks outside room at least twice a day and inside room at least once every two hours during waking hours				
3. Slightly Limited Makes frequent though slight changes in body or extremity position independently.	4. No Limitation Makes major and frequent changes in position without assistance.				
3. Adequate Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products per day. Occasionally will refuse a meal, but will usually take a supplement when offered OR is on a tube feeding or TPN regimen which probably meets most of nutritional needs	4. Excellent Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.				
3. No Apparent Problem Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair.					
	Total Score				

Best Practices (cont.)

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