I. Definition, assessment, and diagnosis

A. Definition
   1. Pressure ulcers are sores caused by ischemia due to elevated or prolonged pressure to the skin.
   2. Occur over bony prominences.
   3. Staging is determined by the depth of the tissue damage observed and is used primarily for initial assessment of a pressure ulcer.
      a. Stage 1 is an obvious change in appearance of intact skin. The changes seen include: skin temperature (warmth or coolness), tissue changes (firm or boggy feeling), and/or sensation (pain, itching). The ulcer appears as a defined area of persistent redness in lightly pigmented skin; whereas, in darker skin tones, the ulcer may appear with persistent red, blue or purple hues.
      b. Stage II is partial thickness skin loss involving epidermis, dermis or both. The ulcer is superficial and presents clinically as an abrasion, blister or shallow crater.
      c. Stage III is full thickness skin loss involving damage to or necrosis of subcutaneous tissue that may extend down to, but not through, underlying fascia. The ulcer presents clinically as a deep crater with or without undermining or adjacent tissue.
      d. Stage IV: Full thickness skin loss with extensive damage, tissue necrosis, or damage to muscle, bone, or supporting structures (tendon, joint capsule). Undermining and sinus tracts also are associated with Stage IV pressure ulcers.

B. Assessment
   1. Assessment of individual with a pressure ulcer
      a. Complete history
      b. Physical examination and laboratory tests
      c. Psychological health, behavior, cognitive status, and social and financial resources
      d. Availability and use of personal care assistance
      e. Positioning, posture and related equipment
   2. Assessment of the pressure ulcer
      a. Anatomical location
      b. Size (length, width, depth and wound area)
      c. Stage
      d. Exudate/odor
      e. Necrosis
      f. Undermining
      g. Sinus tracts
      h. Infection
      i. Healing (granulation and epithelialization)
      j. Wound margins/surrounding tissue

II. Management and treatment recommendations
A. Nonsurgical
   1. Cleansing
      a. Use minimal mechanical force when cleansing with gauze.
      b. Use enough irrigation pressure to enhance cleansing without causing trauma to viable tissue.
      c. Use normal saline/wound cleansers.
      d. Avoid antiseptics.
      e. Use hydrotherapy for management of large pressure sores with significant exudate or necrotic tissue.
   2. Debride devitalized tissue or eschar from pressure ulcers.
   3. Dressings
      a. Ensure that ulcer bed is moist and surrounding intact skin is dry.
      b. Schedule dressing changes.
      c. Use dressing that will control exudate but not desiccate ulcer bed or macerate surrounding tissue.
      d. Loosely fill pressure ulcer cavities with dressing material to avoid dead space; avoid over-packing.
      e. Monitor all dressing placements.
      f. Perform dressing changes on schedule based on individual, ulcer and condition of dressing.
      g. Consult dressing manufacturer for general information.
   4. Use electrical stimulation combined with standard wound interventions to promote closure of Stage III or IV pressure ulcers.
   5. Reassessment
      a. Monitor on a scheduled basis, document changes, and modify treatment if no healing over a 2-4 week period.
      b. Document status of sore and any changes to pressure ulcer management at least once weekly.
      c. Review individual risk factors.
      d. Evaluate healing process with instrument or other measurement standards.

B. Surgical referral is recommended for patients with complex, deep, stage III (undermining, tracts) or stage IV pressure ulcers.
   1. Preoperative care
      a. Local wound infection
      b. Nutritional status
      c. Bowel regulation
      d. Severe spasms/contractures
      e. Comorbid conditions
      f. Previous ulcer surgery
      g. Smoking
      h. Osteomyelitis
      i. Urinary tract infection (UTI)
      j. Heterotopic ossification
   2. Postoperative care
      a. Positioning
b. Air-fluidized bed

c. Sitting protocol after bed rest

d. Unloading of surgical area for 4-8 weeks

e. Patient education to prevent recurrence of pressure ulcer

C. Complications of pressure ulcers

1. Non-surgical

   a. Tissue/bone infection
      1) Identify presence of bone tissue in ulcers not responding to treatment.
      2) Obtain a tissue/bone biopsy for culture if necessary.

   b. Immobility caused by bedrest and pressure ulcer management. Address:
      1) Nutritional deficiencies
      2) Dehydration
      3) Decreased range of movement (ROM)
      4) Deconditioning

   c. Manage hypergranulation tissue which can impede healing.

   d. Psychosocial impacts of pressure ulcers and associated immobility. The patient may need the following:
      1) Vocational rehab
      2) Peer counseling/support groups
      3) Psychotherapy/family therapy

2. Surgical

   a. Infectious disease complications of surgical intervention

   b. Wound dehiscence and/or wound separation after surgical closure

   c. Risk of delayed infection and abscess development

   d. Development of hematoma or seroma

III. Risk factors, prevention and nutrition

A. Risk Factors: Assess and document risk in admission and reassess on routine basis; assess demographic, physical/medical and psychosocial risk factors associated with prevention.

B. Prevention

   1. Avoid prolonged immobilization.

   2. Assist with pressure relief.

   3. Use intraoperative pressure reduction strategies.

   4. Avoid improper seating position in wheelchair or use of improper wheelchair cushion.

   5. Conduct daily visual and tactile inspections of skin especially at the ischium, sacrum/coccyx, trochanters and heels.

   6. Turn and reposition in the bed every 2 hours, avoiding stretching/folding of soft tissues and prevent shearing of skin with reposition; avoid side-lying on trochanter

   7. Environmental support: pressure reducing support surfaces, prevent moisture accumulation on or around the skin, avoid temperature elevation of the skin, use pillows or cushions for unloading bony prominences (do not use donut-type devices as they will surround the sore and cut off blood supply to the area in the middle of the donut); use supportive surfaces for the bed or the wheelchair.
8. Use an individualized pressure relief technique and a pressure reducing seating system. Conduct pressure relief technique every 15 minutes when sitting in a wheelchair. This can be done using the arms or a side or forward leaning technique or if unable a manual versus power weight shift system can be used with either a tilt or recline system or an alternating pressure cushion.

C. Nutrition through dietary intake
   1. Anthropometric measurements
   2. Labs
      a. Prealbumin
      b. Albumin
      c. Total protein (TP)
      d. Hemoglobin (HgB)
      e. Transferrin
      f. Total lymphocyte count
   3. Adequate nutritional intake to meet needs
      a. Calories
      b. Protein
      c. Micronutrients (zinc, Vitamin C, A and E)
      d. Appropriate fluids

This guideline was developed to improve health care access in Arkansas and to aid health care providers in making decisions about appropriate patient care. The needs of the individual patient, resources available, and limitations unique to the institution or type of practice may warrant variations.

Guideline Developers
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Selected References