General

Guideline Title

Guideline for prevention and management of pressure ulcers (injuries).

Bibliographic Source(s)

Wound, Ostomy and Continence Nurses Society (WOCN). Guideline for prevention and management of pressure ulcers (injuries). Mt. Laurel (NJ): Wound, Ostomy and Continence Nurses Society (WOCN); 2016. 164 p. (WOCN clinical practice guideline; no. 2). [511 references]

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Wound, Ostomy and Continence Nurses Society (WOCN). Guideline for prevention and management of pressure ulcers. Mount Laurel (NJ): Wound, Ostomy and Continence Nurses Society (WOCN); 2010 Jun 1. 96 p. (WOCN clinical practice guideline; no. 2). [341 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

The level of evidence ratings (A-C) and the classifications of the strength of the recommendations (I, II, III, IV) are defined at the end of the "Major Recommendations" field. Where a level-of-evidence was not provided, there is a designation to indicate the recommendation was based on the consensus of opinion of the task force (Task Force Consensus [TFC]).

Assessment

Perform a risk assessment upon the patient's entry to a healthcare setting, and repeat the assessment on a regularly scheduled basis, or when there is a significant change in the individual's condition. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Use a valid/reliable risk assessment tool in conjunction with the identification of additional risk factors (e.g., perfusion and oxygenation, increased body temperature, advanced age, etc.), along with clinical judgment. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Assess for intrinsic/extrinsic risk factors. Risk factors can be defined as anything that increases the chance of developing a pressure ulcer. *Level of Evidence = C (Benefit/Effectiveness/Harm =*

Class I)

Identify high-risk settings and groups to identify where to target prevention efforts to minimize risk. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Assess and inspect skin regularly. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Monitor patients who have some degree of immobility frequently to minimize the risk of pressure ulcer formation. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Differentiate pressure ulcers from other types of wounds and moisture-associated skin damage (MASD) caused by incontinence-associated dermatitis (IAD) due to exposure to urine and/or stool, or intertriginous dermatitis (ITD) due to trapped perspiration. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Assess for incontinence and, based on assessment findings, implement an individualized plan for management of incontinence. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Perform a nutritional assessment upon the patient's entry to a new healthcare setting and whenever there is a change in the individual's condition. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Utilize laboratory parameters as only one part of the nutritional assessment process, because they should not be considered in isolation. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Assess for history of a prior ulcer and/or presence of a current ulcer, previous treatments, and/or surgical interventions. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Assess pressure ulcer(s) on admission to a care setting, and regularly reassess and monitor for any signs of skin or wound deterioration. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Assess for factors that impede healing status. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Consider the impact of the pressure ulcer on the patient's quality of life. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Assess/evaluate healing using a valid and reliable tool. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Assess for potential complications associated with pressure ulcer(s). *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Prevention

Implement measures to reduce the risk of developing pressure ulcers: minimize/eliminate pressure, friction, and shear. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Minimize/eliminate pressure from medical devices such as oxygen tubing, catheters, cervical collars, casts, and restraints. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Maintain the head-of-bed elevation at/or below 30°, or at the lowest degree of elevation consistent with the patient's medical condition to prevent shear-related injury, and use a 30° side-lying position. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Schedule regular repositioning and turning for bedbound and chairbound individuals, taking into consideration the condition of the patient and the pressure redistribution support surface in determining the repositioning strategy. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Position sitting patients with special attention to the individual's anatomy, postural alignment, distribution of weight, and support of the feet. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Consider prophylactic dressings to prevent sacral and heel ulcers in at-risk patients. *Level of Evidence = A (Benefit/Effectiveness/Harm = Class I)*

Use heel suspension devices for patients who are at risk for pressure ulcers that elevate (float) and offload the heel completely, and redistribute the weight of the leg along the calf without putting pressure on the Achilles tendon. *Level of Evidence = B (Benefit/Effectiveness/Harm = Class I)*

Utilize support surfaces (on beds and chairs) to redistribute pressure. Pressure redistribution devices should serve as adjuncts and not replacements for repositioning protocols. *Level of*

Evidence = C (Benefit/Effectiveness/Harm = Class I)

Place individuals who are at risk for pressure ulcers on a pressure redistribution surface. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Consider using the Wound, Ostomy and Continence Nurses Society (WOCN) Evidence- and Consensus-Based Support Surface Algorithm (http://algorithm.wocn.org) to identify the appropriate support surface (i.e., overlay, mattress, integrated bed system) for adults (≥16 years of age) and bariatric patients in care settings where the length of stay is 24 hours or more. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Use a high specification reactive or alternating pressure support surface in the operating room for individuals at high risk for developing pressure ulcers. *Level of Evidence = B (Benefit/Effectiveness/Harm = Class I)*

Avoid foam rings, foam cut-outs, or donut-type devices for pressure redistribution because they concentrate pressure on the surrounding tissue. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Use incontinence skin barriers such as creams, ointments, pastes, and film-forming skin protectants as needed to protect and maintain intact skin in individuals who are incontinent and at risk for pressure ulcers. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Offer individuals with nutritional and pressure ulcer risks a minimum of 30–35 kcalories per kg body weight per day, 1.25–1.5 g of protein per kg body weight per day, and 1 ml of fluid intake per kcalorie per day. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Educate the patient/caregiver(s) about the causes and risk factors for developing pressure ulcers and ways to minimize the risk. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Treatment

Float/elevate the heel(s) completely off the surface with a pillow or heel suspension device for stage 1 and 2 pressure ulcers or a heel suspension device for stage 3 and 4 heel pressure ulcers. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Turn and reposition the patient regularly and frequently. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Utilize support surfaces for patients with pressure ulcers (i.e., mattresses, mattress overlays, integrated bed systems, seat cushions or seat cushion overlays) that meet the individual's needs, and are compatible with the care setting. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Consider using the WOCN Society's Evidence-and Consensus-Based Support Surface Algorithm (http://algorithm.wocn.org) to identify the appropriate support surface (i.e., overlay, mattress, integrated bed system) for adults (≥16 years of age) and bariatric patients in care settings where the length of stay is 24 hours or more. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*.

Utilize seating redistribution support surfaces that meet the needs of sitting individuals who have a pressure ulcer. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Establish an individualized bowel/bladder management program for the patient with incontinence. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Screen for nutritional deficiencies at the patient's admission to the care setting, when their condition changes, and/or if the pressure ulcer is not healing. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Provide daily calorie and protein intake for adult patients with pressure ulcers: 30–35 kcalories per kg body weight and 1.25–1.5 g of protein per kg body weight. *Level of Evidence = B (Benefit/Effectiveness/Harm = Class I)*

Consider evaluation of laboratory tests such as albumin and prealbumin as only one part of the on-going assessment of nutritional status. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Cleanse the wound and periwound at each dressing change, minimizing trauma to the wound. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Choose appropriate solutions for cleaning pressure ulcers, which may include potable tap water,

distilled water, cooled boiled water, or saline/salt water. *Level of Evidence = B (Benefit/Effectiveness/Harm = Class I)*

Determine the bacterial bioburden by tissue biopsy or Levine quantitative swab technique. *Level of Evidence = B (Benefit/Effectiveness/Harm = Class I)*

Consider a 2-week course of topical antibiotics for nonhealing, clean pressure ulcers. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Consider use of antiseptics for "maintenance wounds," which are defined as wounds that are not expected to heal, or for wounds that are critically colonized. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Use systemic antibiotics in the presence of bacteremia, sepsis, advancing cellulitis, or osteomyelitis. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Debride the pressure ulcer of devitalized tissue, or when there is a high index of suspicion that biofilm is present (i.e., wound fails to heal despite proper wound care and antimicrobial therapy), and when consistent with the patient's condition and goals of therapy. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Modify the type of dressing as appropriate due to changes in the wound during healing or if the pressure ulcer deteriorates. Monitor and assess the wound on a regular basis and at every dressing change to determine if the type of dressing is appropriate or should be modified. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Consider adjunctive therapies as indicated:

- Platelet-derived growth factor (PDGF). *Level of Evidence = B (Benefit/Effectiveness/Harm = Class I)*
- Electrical stimulation. *Level of Evidence = A (Benefit/Effectiveness/Harm = Class I)*
- Negative pressure wound therapy (NPWT). *Level of Evidence = B (Benefit/Effectiveness/Harm = Class I)*

Evaluate the need for operative repair for patients with stage 3 and 4 ulcers that do not respond to conservative medical therapy. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Implement measures to eliminate or control the source of pressure ulcer pain. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Implement appropriate treatment of pressure ulcers to optimize healing, recognizing that complete healing may be unrealistic in some patients. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Educate the patient/caregiver(s) about strategies to prevent pressure ulcers, promote healing, and prevent recurrences of ulcers; and emphasize these are lifelong interventions. *Level of Evidence = C (Benefit/Effectiveness/Harm = Class I)*

Definitions

Level-of-Evidence Rating for Guideline Recommendations

Level of Evidence A	Two or more supporting randomized controlled trials (RCTs) of at least 10 humans with pressure ulcers (at Levels I or II), a meta-analysis of RCTs, or a Cochrane Systematic Review of RCTs.
Level of Evidence B	One or more supporting controlled trials of at least 10 humans with pressure ulcers, or two or more supporting nonrandomized trials of at least 10 humans with pressure ulcers (at Level III).
Level of Evidence C	Other studies not meeting Level B criteria, two or more supporting case series of at least 10 humans with pressure ulcers, or expert opinion.
Task Force Consensus (TFC)	Where a level-of-evidence rating is not included, the information or recommendation represents a consensus of the task force members.

Classification of Recommendations: Potential Benefit/Effectiveness versus Harm

Class I	Class II	Class III	Class IV
There is evidence and/or agreement of expert opinion that a procedure or treatment is beneficial and effective with greater benefit than harm. Is indicated and recommended; should be done.	There is limited evidence and/or agreement of expert opinion that a procedure or treatment can be beneficial and effective with greater benefit than harm. May be indicated; is reasonable to perform; may be considered.	Evidence and/or agreement of expert opinion about a procedure or treatment is less well established or uncertain and has conflicting evidence or divergence of opinion about the benefit and effectiveness; or there are risks/side effects that may limit benefit. May be reasonable; may be considered in select instances.	There is evidence and/or agreement of expert opinion that a procedure or treatment is not beneficial or effective, and/or can be harmful in some cases where risks/side effects outweigh benefit. Is not indicated or recommended; should not be performed

Clinical Algorithm(s)

The following algorithms are provided in the original guideline document:

Appendix B – Algorithm: Differential Assessment
Appendix J – WOCN Society's Evidence- and Consensus-Based Support Surface Algorithm

Scope

Disease/Condition(s)

Pressure ulcers (also known as pressure injury, bedsore, decubitus ulcer, and pressure sore)

Note: The National Pressure Ulcer Advisory Panel and European Pressure Ulcer Advisory Panel (NPUAP/EPUAP) define a pressure ulcer as a "localized injury to the skin and/or underlying soft tissue that usually occurs over a bony prominence or is related to the use of a medical or other device, and is the result of pressure or pressure in combination with shear" (NPUAP, EPUAP, & Pan Pacific Pressure Injury Alliance, 2014; NPUAP, 2016a).

Guideline Category

Evaluation

Management

Prevention

Risk Assessment

Treatment

Clinical Specialty

Dermatology

Family Practice

Geriatrics

Nursing

Nutrition

Physical Medicine and Rehabilitation

Plastic Surgery

Preventive Medicine

Surgery

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Health Care Providers

Nurses

Physical Therapists

Physician Assistants

Physicians

Guideline Objective(s)

To support clinical practice by providing consistent research-based information with the goal of improving cost-effective patient outcomes as well as stimulating wound-related research

Target Population

Patients with or at risk for developing pressure ulcers

Interventions and Practices Considered

Evaluation/Risk Assessment

- Assessment of the following
  - Individual risk for developing pressure ulcers
  - Other intrinsic/extrinsic risk factors
  - Skin
  - Incontinence
  - Nutritional status
  - History of prior ulcer and/or presence of current ulcer, previous treatments, and/or surgical interventions
  - Potential complications associated with pressure ulcers
  - Impact of the pressure ulcer on the patient's quality of life

Prevention/Management/Treatment

- Measures to minimize/eliminate pressure, friction, and shear
  - Redistribution of pressure
  - Appropriate head-of-bed elevation
  - Regular repositioning and turning
  - Prophylactic dressings
  - Heel suspension devices

- Support surfaces
- Incontinence skin barriers and skin protectants

Bowel/bladder management and retraining program
Nutritional management
Wound management

- Cleansing of wound
- Topical and systemic antibiotics or antiseptics
- Debridement of devitalized tissue
- Utilization of appropriate dressings

Consideration of adjunctive therapies, including platelet derived growth factor (PDGF), electrical stimulation, and negative pressure wound therapy (NPWT)
Evaluation of need for operative repair
Management of pain
Patient/caregiver education

Note: Foam rings, foam cut-outs and donut-type devices were considered but not recommended.

Major Outcomes Considered

- Incidence and prevalence of pressure ulcers
- Efficacy of intervention for preventing the development of pressure ulcers and facilitating wound healing
- Validity of tools used to assess patients at risk and pressure ulcer healing
- Morbidity and mortality rates
- Quality of Life
- Cost-effectiveness

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Search Strategy

The two primary authors of this guideline independently conducted systematic searches of MEDLINE, CINAHL, and Cochrane Library databases for studies published in English from January 2010 through July 2015 relative to the search questions. The following medical subject headings (MESH) were used to search for each specific question related to pressure ulcers: pressure sore, decubitus ulcer, and bedsore.

The search targeted randomized controlled trials (RCTs), prospective clinical trials, retrospective studies, meta-analyses, and systematic reviews. If available and relevant, national guidelines and published expert opinion were included to support opinion in areas that were clinically important where research was lacking or did not exist. Titles of references and abstracts were retrieved from the electronic searches and were screened for relevance to pressure ulcers and the search questions, and in accordance with the inclusion and exclusion criteria. After the initial screening, full-text articles were obtained that met the inclusion criteria. Additionally, some relevant studies were included that were identified from reference

lists of selected articles.

Inclusion Criteria

Published in English; peer reviewed literature
Available abstract
Primary focus on pressure ulcers or reported specific data relevant to pressure ulcers
10 subjects included in studies/case studies
Human studies
Primary research reports relevant to pressure ulcers and the search questions

Exclusion Criteria

Foreign language publication
Abstract not available
Secondary reports of research
Conference abstracts/posters
Primary focus not on pressure ulcers or lacked specific data about pressure ulcers
Nonhuman studies
Description of study or outcomes lacked sufficient detail to draw conclusions

Number of Source Documents

- 195 total new articles reviewed
- 64 articles excluded
- 131 new articles included as support for the updated guideline

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Rating of Research Evidence

Level I: A randomized controlled trial (RCT) demonstrating a statistically significant difference in at least one important outcome defined by $p < .05$. Level I trials can conclude the difference is not statistically significant if the sample size is adequate to exclude a 25% difference among study arms with 80% power.

Level II: An RCT not meeting Level I criteria.

Level III: A nonrandomized controlled trial with contemporaneous controls selected by some systematic method. A control might have been selected due to its perceived suitability as a treatment option for an individual patient.

Level IV: A before-and-after study or a case series of at least 10 patients using historical controls or controls drawn from other studies.

Level V: A case series of at least 10 patients with no controls.

Level VI: A case report of fewer than 10 patients.

Level-of-Evidence Rating for Guideline Recommendations

Level of	Two or more supporting randomized controlled trials (RCTs) of at least 10 humans with

Evidence A	pressure ulcers (at Levels I or II), a meta-analysis of RCTs, or a Cochrane Systematic Review of RCTs.
Level of Evidence B	One or more supporting controlled trials of at least 10 humans with pressure ulcers, or two or more supporting nonrandomized trials of at least 10 humans with pressure ulcers (at Level III).
Level of Evidence C	Other studies not meeting Level B criteria, two or more supporting case series of at least 10 humans with pressure ulcers, or expert opinion.
Task Force Consensus (TFC)	Where a level-of-evidence rating is not included, the information or recommendation represents a consensus of the task force members.

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Data Extraction

From the selected full-text articles, the primary authors extracted the following data, which were compiled into evidence tables relative to each of the 13 search questions: source/citation (author, publication date, title, publication); type/design of study; sample (size, setting/location, description of subjects); intervention(s), outcome measures and length of follow up; results, including statistical significance of findings (*p* values, odds ratios [OR], hazard ratios [HR], confidence intervals [CI], sensitivity/ specificity, etc., as appropriate to the study); and limitations. For studies of diagnostic or screening tests, data included if a valid reference standard was used. For systematic reviews/meta-analyses, data included the number and quality of randomized controlled trials (RCTs) reviewed and the results.

Based on the judgment of the authors, studies were assessed as acceptable or unacceptable for inclusion and were excluded if there were methodological issues or insufficient detail to evaluate the results. Additionally, the primary authors rated the research (Level I–VI) using criteria as identified in Table 1 of the original guideline document. Any differences of opinion about the quality/rating of the studies for inclusion in the guideline were resolved by discussion between the primary authors or by consensus after a review and discussion by the full task force.

Synthesis and Evaluation of Evidence

The two primary authors synthesized the data and prepared a descriptive narrative summary of the available evidence derived from the search and review of the literature. The guideline is organized into a topical outline format that addresses key content areas for assessment, prevention, and treatment of patients with or at risk for pressure ulcers. The summary of evidence derived from the review and evaluation of literature was integrated into the appropriate content sections of the guideline and a draft was presented to all task force members for review, discussion, clarification, and development of consensus. A series of conference calls was conducted during 2015 and early 2016 in which the task force reviewed/evaluated the evidence in the draft guideline until consensus was reached.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Guideline Development

The Wound, Ostomy and Continence Nurses Society (WOCN) developed this evidence-based guideline using the following process: (a) A task force of nurses from the WOCN Society's membership, representing a wide range of experience and clinical practice backgrounds, was convened to plan the guideline format; (b) in preparation for the update, task force members reviewed the 2010 guideline: outline/content, search questions, inclusion/exclusion criteria, scheme for rating the research evidence (see Table 1 in the original guideline document), and level-of-evidence ratings to classify the strength of recommendations (see Table 2 in the original guideline document); (c) after the initial review, two questions (number 5 and 13) were added to the search questions; and (d) the 13 questions were utilized to guide the literature search for evidence on the following topics related to pressure ulcers: assessment, prevention, and treatment.

Assessment

What factors are important to assess for pressure ulcer development?

Prevention

What are the major pressure ulcer prevention strategies?
What support surfaces are appropriate for high-risk patients?

Treatment

What is the most appropriate method to identify the presence of infection in pressure ulcers?
When should pressure ulcers be biopsied?
Are topical antibiotics, systemic antibiotics, or both, effective methods of treatment for an infection in pressure ulcers?
What topical dressings are most effective for treating pressure ulcers?
What adjunctive therapies are most effective for treating pressure ulcers?
What are the most effective support surfaces for patients with pressure ulcers?
What methods or tools are used to assess healing of pressure ulcers?
What is the role of surgery in treating pressure ulcers?
What factors are the most influential in recidivism of pressure ulcers?
When should palliative care be considered for patients with pressure ulcers?

Development of Recommendations

Based on the evidence in the guideline, recommendations were developed for specific areas where evidence was sufficient to support the recommendation. In selected areas where evidence about clinically significant topics was lacking or did not exist, the recommendations were based on the consensus of expert opinion by the task force (see Table 2 in the original guideline document).

Level-of-Evidence Rating for Strength of Recommendations

Based on an appraisal of the strength of the evidence for recommendations in the guideline, a level-of-evidence rating (Level A, B or C) was assigned to specific recommendations (see Table 2 in the original guideline document). The rating refers to the strength of the evidence for a recommendation and does not relate to the importance of the recommendation. The rating system was adapted from the rating systems described by Sackett (1989), Cook et al. (1992), the Agency for Healthcare Policy and Research (AHCPR)—now called AHRQ (Bergstrom et al., 1992; Bergstrom et al., 1994), and the American College of Cardiology Foundation-American Heart Association (Hirsch et al., 2006).

The recommendations and level-of-evidence ratings were reviewed by the task force and discussed until consensus was reached. A narrative summary of the available evidence underlying the recommendations, along with the level-of-evidence are provided in the full text of the guideline, and the specific references that were included are cited in the text and the final reference list.

Assessment of Benefit/Effectiveness versus Harm: Classification of Recommendations

To facilitate clinical decision making, the recommendations in the guideline were reviewed and classified by a consensus of the task force based on an assessment of the benefits/effectiveness versus a lack of benefit/effectiveness or harms of a procedure or treatment according to the evidence and/or expert opinion as presented in the guideline (see Table 3 in the original guideline document). The criteria used to classify recommendations according to benefit/effectiveness versus harm was developed from information described by Hirsch et al. (2006).

Rating Scheme for the Strength of the Recommendations

Classification of Recommendations: Potential Benefit/Effectiveness versus Harm

Class I	Class II	Class III	Class IV
There is evidence and/or agreement of expert opinion that a procedure or treatment is beneficial and effective with greater benefit than harm. Is indicated and recommended; should be done.	There is limited evidence and/or agreement of expert opinion that a procedure or treatment can be beneficial and effective with greater benefit than harm. May be indicated; is reasonable to perform; may be considered.	Evidence and/or agreement of expert opinion about a procedure or treatment is less well established or uncertain and has conflicting evidence or divergence of opinion about the benefit and effectiveness; or there are risks/side effects that may limit benefit. May be reasonable; may be considered in select instances.	There is evidence and/or agreement of expert opinion that a procedure or treatment is not beneficial or effective, and/or can be harmful in some cases where risks/side effects outweigh benefit. Is not indicated or recommended; should not be performed.

Cost Analysis

The guideline developers reviewed published cost analyses.

Method of Guideline Validation

External Peer Review

Description of Method of Guideline Validation

The completed guideline was peer reviewed by an independent group of seven certified wound, ostomy and continence nurses for relevance, clarity, accuracy, comprehensiveness/organization, consistency with current research/best practices, and usefulness to the target population. Feedback was reviewed by the task force and incorporated into the final document as appropriate.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field). References in support of the recommendations are identified in the full text of the original guideline document and in the final reference list.

Benefits/Harms of Implementing the Guideline

Recommendations

Potential Benefits

- Identification of individuals at risk for developing pressure ulcers and early initiation of prevention programs
- Implementation of appropriate strategies/plans to:
  - Attain/maintain intact skin
  - Prevent complications
  - Promptly identify or manage complications
  - Optimize potential for wound healing
  - Involve patient/caregiver in self-management
- Implementation of cost-effective strategies/plans that prevent and treat pressure ulcers

Potential Harms

- Caution is advised when considering "body-worn" products/briefs for fecal incontinence management because some products may contribute to the development of incontinence associated dermatitis (IAD).
- Due to concerns over side effects, resistance, and hypersensitivity reactions, the use of topical antibiotics is limited in pressure ulcers.
- Avoid using cleansing products or solutions in open wounds that are intended for use on intact skin and/or designed to remove fecal material; such products can be toxic to the wound bed. Also, when an antiseptic is added to a cleanser the toxicity increases.
- Wounds scrubbed with coarse sponges are significantly more at risk for infection than wounds scrubbed with softer sponges.
- Environmental contamination such as splashing is possible during pressurized irrigation/pulsatile lavage, and infection control precautions should be routinely followed, such as wearing protective clothing, gloves, and eyewear.
- Any of the debridement methods may increase the size of the pressure ulcer due to removal of the necrotic tissue. Conservative sharp debridement should be used with caution for individuals who are immunosuppressed, on anticoagulants, or have bleeding disorders.
- Leakage or strike-through of occlusive dressings can cause a break in the dressing barrier, which can expose the wound to external contamination.
- High rates of pressure ulcer recurrence and postoperative complications have been reported after surgery for pressure ulcers. Suture line dehiscence is the most common complication after surgery.

Contraindications

Contraindications

- Electrical stimulation (ES) should not be used in patients with pacemakers and ES electrodes should not be placed over topical substances containing metal ions (e.g., povidone iodine, silver), or over the heart.
- Hand checks are not recommended for mattress replacements and are contraindicated with integrated bed systems because hand checks are not effective or safe to monitor these newer technologies.
- Avoid foam rings, foam cut-outs, or donut-type devices for pressure redistribution because they concentrate pressure on the surrounding tissue.
- Avoid synthetic sheepskin for pressure redistribution. The synthetic sheepskin provides comfort, but it does not provide pressure redistribution.

- Maggot debridement therapy (MDT) should not be used in the following situations: presence of active hemorrhage or bleeding disorders, exposed blood vessels, limb or life-threatening infection, necrotic bones or tendons, inadequate perfusion for healing, wounds in deep cavities or sinus tracts of unknown origin, rapidly advancing tissue necrosis, and/or allergy/sensitivity to larval proteins or the nutrient media for the larvae.
- Do not debride hard, dry eschar on ischemic limbs.
- Continuous lateral rotation therapy (CLRT) should not be used for patients with unstable spinal fractures (position with wedges to maintain alignment).

Qualifying Statements

Qualifying Statements

Recently, the National Pressure Ulcer Advisory Panel (NPUAP) announced changes in the terminology and definitions for pressure ulcers and the staging system following a Staging Consensus Conference held April 8-9, 2016. Pressure ulcers were redefined as pressure injuries and the staging system definitions and illustrations were updated (see Appendix A in the original guideline document).

Therefore, in the original guideline document the term pressure ulcer is considered equivalent/interchangeable with the term pressure injury. At present, these changes in terms and definitions are not universally adopted and may require some time for translation and assimilation into practice. Consequently, it will be important for healthcare providers to recognize that the updated terminology for pressure ulcers and staging may not align perfectly with that in the published literature and in current use by clinical and regulatory agencies. If there are discrepancies in terminology that is required for documentation by regulatory agencies (e.g., reimbursement, coding, quality reporting) and that in use in clinical practice, healthcare providers should seek guidance from the regulatory agency.

Implementation of the Guideline

Description of Implementation Strategy

The recommendations in this Clinical Practice Guideline (CPG) were developed to be adopted and implemented by individual healthcare providers who care for patients with or at risk for pressure ulcers in various care settings. Strategies/plans to facilitate implementation and integration of the guideline's recommendations into clinical practice by members of the Wound, Ostomy and Continence Nurses (WOCN) Society and other healthcare providers include providing access to the information through publication and dissemination of the guideline in a print format and in a mobile application for iPads, iPhones, and iPods; provision of educational programs to increase awareness and knowledge of recommendations and their evidence base; and dissemination of the recommendations to a global audience through publication of the recommendations in the *Journal of Wound, Ostomy and Continence Nursing*.

The WOCN Society published and disseminated the print document via the Society's online bookstore www.wocn.org). Members were notified of the availability of the document by email and social media. To enhance providers' knowledge of the guideline and the new recommendations, an educational seminar was provided at the joint meeting of the WOCN Society and the Canadian Association of Enterostomal Therapists in Montreal, Canada on June 8, 2016. A webcast of the educational program was provided by live streaming, and a PowerPoint presentation of the updates to the CPG is available online (http://www.wocn.org/page/CEC).

To facilitate differential assessment of types of wounds as a basis for implementation of the recommendations for prevention and treatment of pressure ulcers, an algorithm for differential

assessment of wounds accompanies the CPG (Appendix B). The algorithm serves as a tool to prompt providers to consider key decision points when caring for patients with a wound to guide the clinician in deciding which wound guideline is appropriate to consult for recommendations about care (i.e., CPG for pressure ulcer/injury; or venous, arterial, or diabetic/neuropathic wounds). Additionally, to facilitate implementation of the recommendations to select appropriate support surfaces to prevent/treat pressure ulcers (injuries), the WOCN Society has developed an evidence- and consensus-based algorithm to guide clinicians in selecting support surfaces based on the individualized needs of the patient. An interactive, electronic version of the algorithm is available online (http://algorithm.wocn.org/#home), and a print copy was included in the CPG (Appendix J). The WOCN Society recognizes that for healthcare providers to adopt changes in practice, additional strategies will need to be developed to identify and address feasibility issues and barriers to implementation and integration of guideline recommendations into clinical practice in different care settings.

Implementation Tools

Chart Documentation/Checklists/Forms

Clinical Algorithm

Mobile Device Resources

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Wound, Ostomy and Continence Nurses Society (WOCN). Guideline for prevention and management of pressure ulcers (injuries). Mt. Laurel (NJ): Wound, Ostomy and Continence Nurses Society (WOCN); 2016. 164 p. (WOCN clinical practice guideline; no. 2). [511 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2016

Guideline Developer(s)

Wound, Ostomy and Continence Nurses Society - Professional Association

Source(s) of Funding

No outside funding source was used in the development of this guideline.

Guideline Committee

Wound, Ostomy and Continence Nurses Society (WOCN) Guidelines Task Force

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Financial Disclosures/Conflicts of Interest

Individuals involved in developing clinical practice guidelines are charged by the Wound, Ostomy and Continence Nurses Society (WOCN) to develop guidelines that are objective, comprehensive, and practical. To ensure the integrity of the WOCN Society and the Clinical Practice Guideline Program, prior to participating in any guideline activity, participants submit a disclosure form to the WOCN Society regarding any financial relationships with commercial companies that could create a conflict when the company's products or services are related to the subject of the guideline. Each member of the guideline task force submitted a disclosure form, which was reviewed by the WOCN Society's Executive Director, who determined that no conflict of interest exists with any individual task force member.

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Wound, Ostomy and Continence Nurses Society (WOCN).

Guideline for prevention and management of pressure ulcers. Mount Laurel (NJ): Wound, Ostomy and Continence Nurses Society (WOCN); 2010 Jun 1. 96 p. (WOCN clinical practice guideline; no. 2). [341 references]

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available for purchase from the Wound, Ostomy and Continence Nurses (WOCN) Society's Online Bookstore .

Availability of Companion Documents

The following are available:

> Updates: 2016 WOCN Society for Prevention and Management of Pressure Ulcers. Continuing education course. Available for purchase from the Wound, Ostomy and Continence Nurses Society's (WOCN) Continuing Education Center Web site .

Wound assessment tools including a Braden Scale for predicting pressure sore risk, nutritional assessment forms, and a pressure ulcer healing chart are available in the original guideline document.

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI on January 14, 2004. The information was verified by the guideline developer on February 16, 2004. This summary was updated by ECRI Institute on September 28, 2010. The updated information was verified by the guideline developer on December 13, 2010. This summary was updated by ECRI Institute on March 16, 2011 following the U.S. Food and Drug Administration advisory on negative pressure wound therapy (NPWT) systems. This summary was updated by ECRI Institute on December 6, 2016. The updated information was verified by the guideline developer on December 28, 2016.

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