CPG SERIES

CLINICAL PRACTICE GUIDELINE

PALTmed
POST-ACUTE AND LONG-TERM CARE MEDICAL ASSOCIATION

PRESSURE ULCERS AND OTHER WOUNDS

in the Post-Acute and Long-Term Care Setting

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Preface

This clinical practice guideline (CPG) has been developed as a component of a project conducted by Post-Acute and Long-Term Care Medical Association (PALTmed), the national professional association of medical directors, attending physicians, and others practicing in the post-acute and long-term care (PA/LTC) continuum. This is one of a series of guidelines undertaken as part of PALTmed's mission to improve the quality of care delivered to patients in these settings.

Original guidelines are developed by inter-professional workgroups that consist of practitioners and others involved in patient care in PA/LTC facilities. These workgroups utilize systematic reviews, journal articles, and other information obtained through a thorough literature search to develop a concise, usable guideline tailored to the PA/LTC setting.

The guideline development and revision process is directed by PALTmed's Clinical Practice Guideline Steering Committee. Each year the Steering Committee reviews all PALTmed CPGs that are 3 years old and commissions a thorough literature review to determine whether the content of each guideline remains current. The PALTmed Clinical Practice Committee selects the existing guidelines to be revised, and new guidelines to be created, based on (1) the Steering Committee's recommendations, (2) data collected, (3) an assessment of the difficulty of development and relevance to the PALTmed membership, and (4) congruence with the PALTmed Strategic Plan. PALTmed's Board of Directors has final approval over this process.

Purpose

PALTmed seeks to develop and revise guidelines that focus on specific concerns and common issues in the PA/LTC setting. Although other agencies, organizations, and associations have developed guidelines for conditions that occur in elderly and chronically ill individuals, many of these guidelines limit or omit considerations unique to the PA/LTC population, such as team-based care.

PALTmed guidelines emphasize key care processes and are created to be used in conjunction with facility-specific policies and procedures that guide staff and practitioner practices and performance. They are meant to be used in a manner appropriate to the population and practice of a particular facility. Guideline implementation may be affected by resources available in the facility, including staffing, and will require the involvement of all those in the facility who have a role in patient care.

PALTmed considers that PA/LTC facilities play a significant role in the lives of older adults and their families and considers optimal medical care and health promotion to be priorities in this setting. PALTmed guidelines are not intended to offer an exhaustive review of the condition of interest. They

focus instead on the practical management of the condition in the PA/LTC setting, stressing aspects of care that may differ significantly from or merit special emphasis when compared with community-based care for younger adults with the same condition.

Audience

This guideline is intended for members of the interprofessional team in PA/LTC settings. Team members may include the medical director, attending physicians, director of nursing, advanced practice clinicians, nursing staff, consultant pharmacist, and other professionals such as therapists, social workers, dietitians, and nursing assistants who care for patients residing in PA/LTC facilities.

PALTmed CPGs address many functions, interventions, and tasks related to recognizing, assessing, treating, and monitoring various medical conditions and situations. They focus on process (what should be done) rather than on personnel (who should perform specific tasks). For example, a variety of health care professionals working in the PA/LTC setting, including nursing assistants, licensed nurses, dietitians, and social workers, may make and document observations (e.g., that a patient does not sleep at night, has become more withdrawn, or has a change in usual eating patterns). Only some of these professionals, however, may be qualified to determine the significance of those observations (e.g., the cause of sleeplessness or of a change in eating patterns). In contrast, practitioners may not be present to make observations but are trained to analyze the significance and causes of symptoms.

Thus, each facility should ensure that tasks are done correctly and by the appropriate interprofessional team members. It is important for observers to make and effectively document their observations; when interpretation of those observations is not within the scope of their training or practice, they should receive appropriate support from practitioners.

Assumptions

Practice guidelines for the PA/LTC setting should be consistent with the fundamental goals of desirable practice in this setting. Operationally, this requirement means that the care team should systematically address (1) each patient's risk factors for multiple diseases and conditions; (2) the adverse consequences of these diseases and conditions on the patient's functioning and quality of life; and (3) the benefits and burdens of prescribed interventions.

When patients in the PA/LTC setting are at or near the end of life, care goals will shift from curative care, functional improvement, or physical stability to end-of-life/comfort care. PALTmed guidelines address this transition and provide suggestions for appropriate modification of the patient's care plan.

PA/LTC facilities care for a variety of individuals, including younger adults with chronic diseases and disabilities, short-stay patients needing post-acute care, and very old and frail individuals with multimorbidity. Patient-centered care means establishing individualized goals of care for each patient.

Thus, when a workup or treatment is suggested, it is crucial to consider whether such a step is appropriate for that individual. A workup may not be indicated if the patient has a terminal or end-stage condition (i.e., with a life expectancy of less than 6 months), if it would not change the management course, if the burden of the workup is greater than the potential benefit, or if the patient or his or her legally authorized representative would refuse treatment. It is important to carefully document in the patient's medical record the reasons for decisions not to treat or perform a workup or for choosing one treatment approach over another.

How to Use These Guidelines

Each guideline includes a narrative portion that covers definition, recognition, assessment, treatment, and monitoring of the condition being addressed. Recognition identifies the presence of a risk or condition. Assessment clarifies the nature and causes of a condition or situation and identifying its impact on the individual. Treatment is the selection and provision of appropriate interventions for that individual. Monitoring is the review of the course of a condition or situation as a basis for deciding to continue, change, or discontinue interventions. Each guideline also includes an algorithm that summarizes the steps involved in addressing the condition or situation that is the focus of the guideline.

Each guideline now also includes recommendations. The system PALTmed has adopted for grading the recommendations in its CPGs is modified from the GRADE Working Group system, a framework for grading the quality of evidence and the strength of recommendations that can be applied across a wide range of interventions and contexts.

Terminology

We recognize that people who reside in PA/LTC facilities are residents. Throughout these guidelines, however, we use the term patient(s) because we are addressing individuals within the context of treating a medical condition. When referring to pharmaceutical products, we avoid the use of brand names and refer to classes of drugs whenever possible.

A nursing home/skilled nursing facility (NF/SNF) is a place of care for people who require 24-hour nursing and rehabilitation for chronic medical conditions or impaired mental capacity and who have significant deficiencies in activities of daily living. The goal of care is to assist the individual in achieving his or her highest level of function and well-being. Both SNFs and NFs care for frail elderly patients and younger adults with physical disabilities (although pediatric and other specialized SNFs also exist). Many SNFs and NFs offer special care units (e.g., dialysis, ventilator units).

A subacute/post-acute care unit (sometimes called a "step-down" unit) is a facility in which care can be the bridge between an acute hospital stay and a return to a community home. It combines aspects of both the hospital and the SNF to reduce the cost of services while maintaining quality of care. This type of care requires frequent patient reassessment and review of the clinical course and treatment plan for a limited time period, until the patient's condition has stabilized, or a predetermined treatment course is completed.

To be consistent with the terminology now used by the Institutes of Medicine (IOM), Centers for Medicare & Medicaid Services, Health Resources and Services Administration, and other agencies, we have adopted the term interprofessional in place of interdisciplinary. As defined by Hall and Weaver,[1] interprofessional means "a group of individuals from different disciplines working and communicating with each other [as] individuals." According to the IOM,[2] "members of an interprofessional team communicate and work together, as colleagues, to provide quality, individualized care for patients."

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PRESSURE ULCERS AND OTHER WOUNDS

in the Post-Acute and Long-Term Care Setting

DEFINITION

A pressure ulcer is localized damage to the skin or underlying soft tissue, usually over a bony prominence or related to a medical or other device. The ulcer may present as intact skin or as an open ulcer and may be painful. The ulcer occurs as a result of intense or prolonged pressure or pressure in combination with shear*. The tolerance of soft tissue for pressure and shear may also be affected by microclimate*, nutrition, perfusion, comorbidities and condition of the soft tissue (NPUAP, 2016).[3]

Pressure ulcers should be distinguished from diabetic, arterial, and venous ulcers (**Table 1**), as well as from wounds caused by trauma, incontinence, or dermatologic disease. Many wounds, particularly those on the lower extremities, have multifactorial etiologies with combinations of physiologic and pathologic components.

Notes on Terminology in this Guideline

1. In 2016 the National Pressure Ulcer Advisory Panel (NPUAP) adopted the term *pressure injury* to replace *pressure ulcer*. This clinical practice guideline continues to use the term *pressure ulcer*, in accordance with the terminology used by the U.S. Centers for Medicare & Medicaid Services (CMS).
2. In accordance with revised NPUAP terminology, this guideline has adopted the use of Arabic rather than Roman numerals to denote the stages of a pressure ulcer (i.e., Stages 1, 2, 3, and 4).
3. Terms indicated in the text with * on first reference are defined in the **Glossary** (pp. 60-61)

TABLE 1
Distinguishing Features of Common Types of Ulcers

Ulcer Type	Pathophysiology	Location
Diabetic	Peripheral neuropathy secondary to small or large vessel disease in chronic, uncontrolled diabetes	Usually lower extremities
Arterial	Reduction in blood flow to tissues caused by coronary artery disease, diabetes mellitus, hypertension, hyperlipidemia, peripheral arterial disease, or smoking	Usually distal lower extremities Tips of toes
Pressure	Unrelieved pressure and/or shear* resulting in damage to skin or underlying tissue	Usually over bony prominences (e.g., buttocks, elbows, heels, ischium, medial and lateral malleolus, sacrum, trochanters)
Venous	Venous hypertension resulting from incompetence of venous valves, post-phlebotic syndrome, or venous insufficiency. Tend to be irregularly shaped	Usually lower-leg region

INTRODUCTION

Pressure ulcers and other wounds remain a significant problem in the post-acute and long-term care (PA/LTC) setting. Current published estimates of the prevalence of pressure ulcers and other wounds in the PA/LTC setting are variable; in addition, estimates and available data may provide conflicting views of the problem. Nonetheless, pressure ulcers and other wounds remain a major cause of morbidity and mortality, affecting an estimated 2.5 million patients per year and costing $9.1 to $11.6 billion per year in the United States. The cost of treating one pressure ulcer ranges from $20,900 to $151,700.[4]

Data on pressure ulcer prevalence by age in the United States, based on the Minimum Data Set (MDS; **Table 2**), underscores the importance of individualized assessment when determining ulcer etiology and treatment. Assessment and treatment for the 22–30-year-old patient may look distinctly different from the care plan for the 85-year-old patient.

In a 2007 study by the National Nursing Home Improvement Collaborative, intensive preventive intervention resulted in a 69% decline in the number of new facility-acquired Stage 3 and 4 pressure ulcers but had little impact on the incidence and prevalence of Stage 1 and 2 pressure ulcers. These findings suggest that PA/LTC facilities can reduce the incidence of Stage 3 to 4 pressure ulcers, but that the incidence of Stage 1 and 2 pressure ulcers may not correlate with the incidence of Stage 3 and 4 wounds. Furthermore, for statistical purposes, the lack of impact of preventive interventions on Stage 1 and 2 ulcers tends to counteract the effectiveness of preventive interventions on Stage 3 and 4 wounds, which suggests that the publicly reported quality measure—prevalence of Stage 1 to 4 pressure ulcers—may be insensitive to substantial improvement.[5]

Non–pressure-related ulcers (venous, arterial, and diabetic ulcers) result from chronic underlying illness and are recurring. Venous stasis ulcers in the U.S. incur an annual cost exceeding $800 million, with diabetic foot ulcers costing $350 million and arterial insufficiency ulcers $140 million.[6]

Along with increased morbidity and mortality, pressure ulcers and other wounds result in a variety of physical, functional, and psychosocial issues for individual patients. Risks for these wounds are minimized and the wounds most effectively treated when the interprofessional care team—including the patient and family or legally authorized representative—develops and implements a plan of care that is consistent both with the patient's prognosis, goals, and expectations and with well-established standards of care.

While the goal is to minimize the risk of ulcer formation, it is important to recognize that many pressure ulcers may be unavoidable.[7] Factors contributing to unavoidable pressure ulcers include irremediable risk factors such as end-stage dementia, severe physiologic compromise resulting from underlying illnesses, end-of-life situations, and resistance to care. Palliative-care principles are now accepted as a critical component of ulcer care and treatment.[8] (Also see **Unavoidable Pressure Ulcers,** p. 23.)

To help ensure the application of consistent and effective approaches to the prevention, recognition, assessment, and treatment of pressure ulcers and other wounds, it is important to educate and train staff about pressure ulcer prevention and treatment. Staff should be trained to follow an orderly, systematic process of ulcer care, which includes consistent compliance with procedures based on guidelines such as this one.

TABLE 2
Pressure Ulcer Prevalence by Age, United States

Year/Age Group	All ages	0–21 years	22–30 years	31–64 years	65–75 years	76–84 years	85–94 years	95+ years
2011	5.9	5.3	10.1	7.3	6.6	6.0	5.1	4.6
2012	5.4	3.9	10.6	6.9	6.1	5.6	4.7	4.2
2013	5.2	4.2	10.3	6.6	5.9	5.3	4.5	4.0
2014	5.1	4.0	9.6	6.4	5.8	5.1	4.4	3.8

Source: CMS, 2013[9]

Components of a Systematic Facility Approach to the Management of Pressure Ulcers and Other Wounds

Evidence-based components of an effective pressure ulcer prevention and management program include

- Individualized risk assessment,
- Comprehensive assessment and risk mitigation programs,
- Correct identification of ulcers, and
- Interprofessional wound care team (IPT) involvement.

The use of an IPT may help to ensure the implementation of a consistent, appropriate management process for ulcer prevention and treatment based on objective protocols. In many PA/LTC facilities, the IPT consists of a designated wound care nurse and may also include a dietitian, physical or occupational therapist, pharmacist, and health care practitioner. At least one team member (e.g., registered nurse, advanced practice nurse, physician assistant, or physical therapist) should have training and certification in wound care and, if practical, the team should have access to a wound-care specialist. The roles of IPT members are outlined in **Table 3**.

Outsourcing wound care to a local clinic or consulting service that brings physicians on site has certain advantages and allows for focused consultation and regular follow-up. Wound care, however, even when outsourced, still requires the active participation of the IPT within the facility. See **Appendix 1** for suggested components of a training program in pressure ulcer prevention and management for PA/LTC facility staff.

TABLE 3
Roles of Interprofessional Team Members in Wound Care

Wound-care team	■ Establish a system for risk assessment and care plan interventions using best practices ■ Reward staff for early identification and reporting of skin lesions ■ Establish a notification system and parameters for how team members are notified about the need for assessment of a new lesion ■ Establish a system to track healing ■ Establish a nonpunitive system of identification, reporting, and investigation (root-cause analysis) ■ Implement a system to thoroughly investigate and document all new in-house pressure ulcers. ■ Establish an interprofessional system of oversight and review that includes monitoring quality indicators, investigating deviances, and addressing system-wide problems ■ Require that any pressure ulcer or skin lesion be inspected and staged by a trained, expert professional ■ Establish systems to enable staff to readily obtain pressure-relieving devices
Medical director	■ Collaborate in all key care decisions ■ Provide input on plan of care as needed ■ Oversee QI processes
Attending physician **Advanced care practitioners**	■ Periodically inspect wounds visually and document their status ■ Provide direction to other caregivers for difficult-to-treat ulcers ■ Assess the patient's need for nutritional consultation

TABLE 3 Continued
Roles of Interprofessional Team Members in Wound Care

Administrator	■ Establish facility wound care systems ■ Establish a nonpunitive system for reporting of skin-related concerns ■ Oversee QI and resources ■ Allocate adequate time for staff education ■ Assure appropriate resources are available to staff
Wound nurse or "wound champion"	■ Coordinate with Administrator to ensure availability of proper wound-care products ■ Consult with wound-care team members to help determine causation, diagnosis, and treatments and define appropriate ulcer management strategies as the patient's status changes ■ Work collaboratively with other caregivers to establish an appropriate plan of care for each patient with a pressure ulcer or other skin lesion ■ Help to select appropriate support surfaces for patients with ulcers ■ Educate all staff, including nursing assistants, on proper skin assessment and recognition of skin lesions; including procedures for reporting findings to a nurse, advanced care practitioner, or physician ■ Implement a monitoring system to assure that all patients receive skin assessments weekly (or more frequently for those at higher risk) ■ Assure that pressure ulcer risk assessment takes place on admission, with a change in condition, on readmission to the facility following a hospital stay, quarterly, and when a new skin lesion is observed to which pressure is a contributing factor ■ Evaluate the effectiveness of the current ulcer-treatment regimen ■ Establish a formulary of commonly used wound-care products
Nursing staff **Nursing assistants**	■ Be aware of all components in the wound care program ■ Consult with wound care team members ■ Report all skin changes
Dietitian	■ Assess nutritional requirements for all patients with or at risk for pressure ulcers or other wounds ■ Make recommendations in regard to nutritional management
Physical therapist	■ Assist in the selection of appropriate support surfaces for patients with ulcers ■ Provide direct care (e.g., debridement) if applicable ■ Coordinate with staff for mobility and off-loading goals
Pharmacist	■ Provide information on chemical debriding agents, antibiotic use as applicable, and medications that interfere with healing or cognition, or that may decrease mobility
Wound consultant	■ Coordinate with attending physician or advanced care practitioner regarding recommendations for wound care (may be an outside consultant)

QI: quality improvement

Expected Outcomes from Implementation of this Guideline

This guideline recommends processes that, if implemented, should help PA/LTC facilities to systematically manage and improve the care of patients with pressure ulcers and other wounds. Potential benefits associated with the implementation of this guideline include

- Greater individualization of care,
  Enhanced quality of life,
- Earlier identification of risk factors affecting pressure ulcers,
- Improved monitoring and treatment protocols, and
- Improved staff education and awareness of pressure-ulcer risk and management.

RECOGNITION

Early recognition of pressure ulcers and of any risk factors associated with the development of pressure ulcers and other wounds is critical to their successful prevention and management.

STEP 1

Does the patient have risk factors for pressure ulcers? A history of pressure ulcers is a primary risk factor for the development of new pressure ulcers. Patients with a history of pressure ulcers are more than five times as likely to develop another pressure ulcer as are patients with no such history.[10] Document any history of pressure ulcers in the patient's medical record.

CMS interpretive guidance for 42 CFR 483.25 (F314) identifies risk factors and comorbid conditions that may increase risk for the development of pressure ulcers (**Table 4**). Conditions related to these risk factors should be evaluated and the findings documented in the patient's medical record.

TABLE 4

F314 Surveyor Guidance: Risk Factors for Developing Pressure Ulcers

According to the surveyor guidance accompanying F314, the risk factors that increase a patient's susceptibility to developing pressure ulcers, or that may impair the healing of an existing pressure ulcer, include but are not limited to the following:

- Comorbid conditions (e.g., diabetes mellitus, end-stage renal disease, thyroid disease),
- Drugs that may affect ulcer healing (e.g., steroids),
- Exposure of skin to urinary or fecal incontinence,
- History of a healed pressure ulcer,
- Impaired diffuse or localized blood flow (e.g., generalized atherosclerosis, lower-extremity arterial insufficiency),
- Impaired or decreased mobility and functional ability,
- Increase in friction* or shear*,
- Cognitive impairment,
- Resident refusal of some aspects of care and treatment, and
- Undernutrition, malnutrition, and hydration deficits.

Adapted from CMS, 2014[11]

The Braden Scale for Predicting Pressure Sores[12] (**Appendix 2**) has been extensively studied;[13,14] it is widely used in the United States and is the only assessment tool that has been validated in nonwhite populations. The Norton Score[15] (**Appendix 3**) is another tool for assessing pressure ulcer risk. A recently developed assessment tool, the interRAI Pressure Ulcer Risk Scale (PURS), may also be considered; derived from the MDS, this new tool eliminates the need for separate pressure ulcer risk scoring and can be performed at the bedside.[16]

Both the Braden Scale and the Norton Score have been shown to have good sensitivity* and specificity* but poor positive predictive value*.[17, 18, 19] A meta-analysis of 33 studies found no evidence that the use of risk assessment scales decreases pressure ulcer incidence, but did find that the use of scales increases the intensity and effectiveness of preventive interventions.[13]

Although no single scale is recognized as best for predicting pressure ulcers, it is recommended that facilities use one tool consistently.[20] Many of the risk factors included in these instruments can also be identified through the MDS and the Care Area Assessments (CAAs). None of these instruments, however, may accurately capture all of an individual patient's risk factors. A patient's absolute score on a risk assessment instrument may be less important than identifying his or her individual major risk factors and developing a care plan that addresses those specific risks.[14, 21, 22, 23, 24, 25]

Patients with no risk factors for pressure ulcer development should be monitored periodically for the development of risk factors. If a patient has risk factors for pressure ulcers, appropriate preventive interventions should be implemented to correct or manage them. Document risk factors, interventions, patient/family education about pressure ulcers, and the rationale for all decisions (including decisions not to intervene) in the medical record.

ASSESSMENT

The purpose of the assessment is to collect enough information to evaluate the patient's general condition, characterize a pressure ulcer, and identify related causes and complications. A well-coordinated, comprehensive assessment and related documentation can avoid the repetition of diagnostic tests and the duplication of paperwork. For example, a consolidated form supplemented by pertinent progress notes may suffice to document ulcer risk identification and care throughout the assessment and treatment course.

NOTE: Although the assessment process has been broken down into steps, in practice multiple steps may be performed simultaneously and it may be unnecessary to complete all steps for every patient. The step-by-step breakdown is presented to ensure that a thorough, systematic assessment is undertaken for any patient who has or is at risk for a pressure ulcer.

STEP 2

Examine the patient's skin thoroughly to identify existing pressure ulcers. Examine the patient's skin upon admission or readmission, whenever a significant change in condition occurs, and as required by the MDS. Both initial and follow-up skin assessments should identify and characterize current skin breakdown as well as the risk of new skin breakdown. Expose all of the patient's skin surfaces for a thorough examination. Carefully document ulcers that are present on admission or readmission.

Inspect the patient's skin at least once weekly during routine care (e.g., during a bath). Direct caregivers should be aware of the signs and symptoms of pressure ulcers (e.g., heel or sacral pain) and of predisposing factors. Assessment by members of the IPT can help to distinguish ulcers caused by pressure, diabetes, arterial or venous disease, or other etiologies. Ulcers with different etiologies are evaluated and managed differently (see **Table 1** above); however, some ulcers may have a mixed

etiology. The practitioner or the IPT should help to clarify the etiology of ulcer(s) and delineate other contributing factors. Distinguishing ulcers by type can improve both ulcer management and documentation.

STEP 3

Assess the patient's overall physical and psychosocial health and characterize the pressure ulcer. A pressure ulcer should be assessed along with the patient's overall clinical, functional, and cognitive status. Suggested factors that should be assessed are listed in **Table 5**. In most cases, weekly reassessment and documentation of ulcer characteristics is recommended. More frequent reassessment may be necessary for ulcers that are not responding to treatment or are worsening despite treatment. Consider photographing the ulcer as part of the assessment (see **Table 16** and **Appendix 4**). Photographs must always be used within the scope of a consistent policy and procedure. It is particularly recommended that photographic documentation be obtained when a patient is admitted to the facility with a pressure ulcer. Depending on the stage and extent of the ulcer and other comorbid conditions, consultation with a Certified Wound Specialist or referral of the patient to a comprehensive ulcer care program should be considered.

STEP 4

Identify factors that can influence ulcer treatment and healing. Identify and document the physiologic, functional, and psychosocial factors that may influence ulcer healing. Methods of assessing risk factors for pressure ulcers are identified in **Table 6**.

Physiologic factors. Relevant physiologic factors include those causing or contributing to the ulcer's development and those that may affect the ulcer's healing and the development of related complications (see **Table 5** above).

Skin moisture. Whether urinary incontinence and incontinence-associated dermatitis (IAD) are risk factors for pressure ulcer development remains controversial. Although the evidence for a causative relationship between urinary incontinence, IAD, and pressure ulcer/injury is inconsistent, expert opinion supports treating excess skin moisture as a risk factor.[27] It is increasingly understood that the local-skin microclimate plays a role in the development of Stage 1 and 2 pressure ulcers. Skin damage is more likely when there is (1) an increase in both temperature and humidity or moisture and temperature, and (2) low-humidity or dry skin that is more likely to shear or break.[22] A systematic review of studies of IAD, incontinence, moisture, and pressure ulcers found significant associations between pressure ulcer development and both IAD and double incontinence (fecal and urinary).[28]

Functional factors. Functional factors, including impaired mobility, a self-care deficit, and incontinence (especially fecal incontinence), may influence the severity, duration, and healing of a pressure ulcer.

Mobility factors. Patients at risk for pressure ulcers must have the head of their bed (HOB) positioned at less than 30 degrees.[22] However, patients who are being tube fed or who are on ventilator support require HOB elevation at greater than 45 degrees to prevent aspiration. There is currently no guideline that reconciles these conflicting requirements. HOB elevation may prevent aspiration but will increase shear forces on the lower back, sacrum, and buttocks.[22]

TABLE 5
Factors to Consider in Ulcer Assessment

A. Pressure Ulcer

- Status of current medical conditions
  - Comorbid conditions (e.g., anemia, congestive heart failure, diabetes, edema*, hypoxia, immune deficiency, malignancies, peripheral vascular disease, thyroid disease)
  - Fecal and/or urinary incontinence
  - Complications (e.g., cellulitis, osteomyelitis)
  - Presence of dementia, depression, or terminal illness
- Use of medications that may affect mobility or wound healing
  - Antipsychotics, anxiolytics, hypnotics, topical and systemic corticosteroids, and immunosuppressants may delay healing[26]
  - Re-evaluate medications that may lead to or cause incontinence (e.g., diuretics, laxatives, stool softeners)
- Nutritional status, including dietary and fluid intake. (Please refer to PALTmed's clinical practice guidelines *Altered Nutritional Status*[a] and *Dehydration and Fluid Maintenance*[b]). Presence of malnutrition or cachexia resulting from underlying disease.
- Presence of medical conditions that may interfere with independent feeding or decrease overall oral intake (e.g., bradykinesia, contractures, dysphagia, hemiparesis/hemiplegia, lack of coordination, poor or painful dentition, thrush, tremor)
- Bed and chair mobility and ability to sense and react to pain and discomfort
- Presence or absence of pain
- Previous skin breakdown at the same site or other skin-integrity problems (e.g., dermatitis, psoriasis)

B. Lower-Extremity Ulcer of Unknown Etiology

- Presence of coolness
- Delayed capillary refill
- Dusky discoloration
- Pedal pulses
- Edema*
- ABI†

ABI: ankle-brachial index

†ABI or blood vessel competence determined by Doppler arterial studies may be helpful in determining whether a lower-extremity ulcer is caused by vascular insufficiency or by pressure. ABI, however, is less reliable in patients with noncompressible arteries caused by advanced atherosclerosis, and the practitioner must turn to other noninvasive studies (e.g., pulse-volume recordings).

[a] Ordering information available at https://paltmed.org/products/pressure-ulcers-other-wounds-cpg

[b] Ordering information available at https://paltmed.org/products/pressure-ulcers-other-wounds-cpg

Psychosocial factors. The patient's ability and willingness to adhere to treatment will influence pressure ulcer management. Some patients (e.g., those who have behavioral disturbances associated with dementia, delirium, or psychosis) may resist interventions to prevent or treat a pressure ulcer. For example, some patients do not want to be turned or repositioned. Some patients are cognitively incapable of understanding the treatment plan or remembering instructions. Others may resist changing a habit (e.g., smoking) that affects circulation or may be unwilling or unable to elevate an extremity to try to reduce edema* that may affect ulcer healing. Document all relevant factors in the initial and follow-up assessments, indicating how they should be addressed in the ulcer treatment plan.

TABLE 6
Assessing Risk Factors for Pressure Ulcers

Risk Factor	Mechanism	Assessment Findings
Nutrition		
Obesity	Higher pressures resulting from own body weight; reduced muscle mass; skin maceration* increases due to sweating, moisture, skin contact, candidiasis May be associated with poor nutrition	**History**: Weight loss or gain, intake and type of foods, psychological issues **Examination findings**: Elevated BMI, prominent skin and adipose folds, low exercise tolerance
Low body weight	Increased bony prominences	**History:** Intake, weight history, weight loss history **Examination findings:** Low BMI, prominent bones, low subcutaneous padding and fat
Dehydration	Impaired circulation, impaired skin integrity	**History:** Poor fluid intake, requires staff to provide fluid intake **Examination findings:** Lack of skin turgor, tenting, dry mouth or eyes, dry skin **Other tests:** BUN/creatinine, sodium
Poor nutrition (low albumin, low intake, dysphagia, anorexia, cancer)	Unable to repair skin damage, impaired skin integrity Leads to low body weight May be associated with frailty, which has high morbidity	**History:** Low oral intake, cancer, weight loss, cachexia **Examination findings:** Underweight

TABLE 6 Continued
Assessing Risk Factors for Pressure Ulcers

Risk Factor	Mechanism	Assessment Findings
Circulation		
Arterial (claudication, peripheral vascular disease, CAD, atherosclerosis, CHF, smoking, small-vessel disease)	Decreased blood flow to extremities and skin	**History:** PVD, vascular surgery, claudication, CAD, CHF, history of arterial or vascular ulcers **Examination findings:** Poor peripheral pulses, cool extremities, lack of hair on extremities, delayed capillary refill
Poor venous return (CHF, venous insufficiency, history of CABG with venous harvesting, varicose veins)	Decreased blood return to the heart, congestion	**History:** Varicose veins, edema*, right heart failure, history of CABG **Examination findings:** Lower-extremity edema, cool or ruddy lower extremities
Mobility		
Joint contractures (brain injury, CVA, cerebral palsy, protracted immobility, advanced dementia, vegetative state), health problems causing a need to sit upright (e.g., respiratory, cardiac, or G-tube)	Abnormal pressures, difficult to position, skin maceration in tight creases, inability to communicate pain or discomfort, inability to reposition self, use of mechanical lifts Nails can cause trauma Protective device risk	**History:** Contractures or associated diagnosis related to SCI, brain injury, CVA, cerebral palsy protracted immobility, advanced dementia; prior surgeries; protracted bed rest; pain; apathy; confusion; behavioral disturbance **Examination findings:** Contracted or immobile joints scarring at joints; pain with movement; lack of volitional movement in part or all of the body; unable to follow 3-step command
Muscle spasms Abnormal movements	Increased risk of shear or trauma Difficulty in pressure relieving repositioning	**History:** Involuntary movements, SCI, Huntington disease **Examination findings:** Spasticity, clonus, often induced by extension

TABLE 6 Continued
Assessing Risk Factors for Pressure Ulcers

Risk Factor	Mechanism	Assessment Findings
Lack of protective sensation (peripheral neuropathy, spinal cord injury, diabetic neuropathy, smoking)	Pressure from clothes, shoes, or other protective devices Lack of pressure sensation	**History:** SCI, CVA, diabetes or neuropathy, neuropathic pain syndrome **Examination findings:** Numbness, pressure/ temperature/pressure sensation testing
Moisture/Skin Issues		
Urinary incontinence	Moisture, maceration, poor functional status	**History:** Use of catheter, bladder accidents, surgery or diagnosis impacting continence **Examination findings:** Distended bladder, positive cough test, pad test, wearing incontinent device
Bowel incontinence ***Diarrhea***		**History:** surgery or diagnosis impacting continence (bowel diversion) **Examination findings:** Poor rectal tone, stool on perineal skin
Prior pressure ulcer, vascular ulcer, or surgery, scarring in area where pressure may develop	Impaired neurovascular system, impaired skin architecture, risk of deeper and more rapid breakdown, impaired healing	**History:** History of prior pressure ulcers, or other vascular ulcers, LE surgery **Examination findings:** Scarring over pressure ulcer or other vascular ulcer; impaired skin integrity
Rashes ***Incontinent dermatitis*** ***Candidiasis***	Moisture and skin maceration reduce skin integrity	**History:** incontinence of urine and or stool **Examination findings:** Rashes, pustules, redness, partial-thickness skin loss

TABLE 6 Continued
Assessing Risk Factors for Pressure Ulcers

Risk Factor	Mechanism	Assessment Findings
Autonomic instability Diaphoresis	Moisture, temperature dysregulation	**History:** Spinal cord injury, catheter placement **Examination findings:** moist skin; hyperhidrosis; fluctuating BP, HR
Psychosocial Issues		
Nonadherence to care	Engaging in behavior that worsens ulcers or ulcer risk, failing to engage in behavior to reduce risk or promote healing	**History:** Psychiatric illnesses, TBI, psychiatric or social work consultation **Examination findings:** Apathy, cognitive impairment, confusion, delirium, depression, disengagement
Dementia Cognitive loss	Poor memory, motivation and understanding of interventions; apraxia; inability to understand, recall instructions	**History:** Apathy, confusion, irritability, behavioral disturbance, inability to understand or recall information

BMI: body mass index; BP: blood pressure; BUN: blood urea nitrogen; CABG: coronary bypass artery graft; CAD: coronary artery disease; CHF: congestive heart failure; CVA: cerebrovascular accident; HR: heart rate; LE: lower extremity; PVD: peripheral vascular disease; SCI: spinal cord injury; TBI: traumatic brain injury

STEP 5

Characterize the pressure ulcer. The first steps in identifying that a lesion is a pressure ulcer are to search for potential cause(s) of unrelieved pressure, shear, or changes in skin microclimate as well as to differentiate the ulcer from other common causes of skin breakdown.[22] Once the ulcer is identified as probably due to pressure or having pressure as a major component, the next step is to stage the degree of skin damage using standardized definitions (**Table 7**). Staging is best accomplished with a clean wound without much slough*, in which the depth of the injury is clearly visible; however, visibility can be complicated by the presence of blisters (either clear or blood filled), slough, or eschar* that occlude examination of the wound base. If the base is not detectable, the wound is classified as Unstageable.

Examination and staging should inspect both visible open areas and the surrounding skin to look for sites of deeper tissue injury. If deeper tissue injury is present, the wound is likely to become larger and initial staging may be inaccurate. An initial staging is documented and justified, but serial examinations may reveal the initial staging to be wrong. Staging must take into account whether

the area of the wound had previous ulcers or surgical intervention, both of which affect the natural architecture of the skin and subcutaneous tissues. There is no reverse staging; that is, if a wound deemed a Stage 3 improves, it is ***not*** re-staged as a Stage 2. Likewise, if a new wound occurs at the site of a previous Stage 4 wound that healed, the new wound would also be deemed a Stage 4.

Documentation should cover all pertinent characteristics of existing pressure ulcers, including location; size; depth; maceration*; color of the ulcer and surrounding tissues; a description of any drainage, eschar, necrosis, odor*, tunneling*, or undermining*; tissue types covering the wound bed (e.g., epithelial, granulation, slough, eschar); and a description of the periwound* skin (including maceration and signs of infection*), including the type and amount of drainage.

TABLE 7

Pressure Ulcer Staging — Minimum Data Set and National Pressure Ulcer Advisory Panel Definitions

Definition	MDS – Pressure Ulcer†	NPUAP – Pressure Injury
Pressure ulcer/ pressure injury	A pressure ulcer is a localized injury to the skin and/or underlying tissue, usually over a bony prominence, as a result of pressure or pressure in combination with shear* and/or friction*.	A pressure ***injury*** is localized damage to the skin and/or underlying soft tissue usually over a bony prominence or related to a medical or other device. The injury can present as intact skin or an open ulcer and may be painful. The injury occurs as a result of intense and/or prolonged pressure or pressure in combination with shear. The tolerance of soft tissue for pressure and shear may also be affected by microclimate*, nutrition, perfusion, comorbidities and condition of the soft tissue.
Stage 1 pressure ulcer/injury	An observable, pressure-related alteration of intact skin, whose indicators as compared with an adjacent or opposite area of the body may include changes in one or more of the following parameters: skin temperature (warmth or coolness); tissue consistency (firm or boggy); sensation (pain, itching); and/or 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.	Intact skin with a localized area of non-blanchable erythema*, which may appear differently in darkly pigmented skin. Presence of blanchable erythema or changes in sensation, temperature, or firmness may precede visual changes. Color changes do not include purple or maroon discoloration; these may indicate DTPI.

TABLE 7 Continued
Pressure Ulcer Staging — Minimum Data Set and National Pressure Ulcer Advisory Panel Definitions

Definition	MDS – Pressure Ulcer†	NPUAP – Pressure Injury
Stage 2 pressure ulcer/injury	Partial thickness loss of dermis presenting as a shallow open ulcer with a red-pink wound bed, without slough*. May also present as an intact or open/ruptured blister.	Partial-thickness skin loss with exposed dermis. The wound bed is viable, pink or red, moist, and may also present as an intact or rupture serum-filled blister. Adipose (fat) is not visible and deeper tissues are not visible. Granulation tissue*, slough and eschar* are not present. These injuries commonly result from adverse microclimate and shear in the skin over the pelvis and shear in the heel. This stage should not be used to describe moisture associated skin damage (e.g., incontinence associated dermatitis), intertriginous dermatitis, medical adhesive related skin injury, or traumatic wounds (e.g., skin tears, burns, abrasions).
Stage 3 pressure ulcer/injury	Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon, or muscle is not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining* or tunneling*.	Full-thickness loss of skin, in which adipose (fat) is visible in the ulcer and granulation tissue* and epibole (rolled out edges) are often present. Slough and/or eschar may be visible. The depth of tissue damage varies by anatomical location; areas of significant adiposity can develop deep wounds. Undermining and tunneling may occur. Fascia, muscle, tendon, ligament, cartilage, and/or bone are not exposed. If slough or eschar obscures the extent of tissue loss this is an Unstageable Pressure Injury.
Stage 4 pressure ulcer/injury	Full thickness tissue loss with exposed bone, tendon, or muscle. Slough or eschar may be present on some parts of the wound bed. Often incudes undermining and tunneling.	Full-thickness skin and tissue loss with exposed or directly palpable fascia, muscle, tendon, ligament, cartilage, or bone in the ulcer. Slough and/or eschar may be visible. Epibole (rolled edges), undermining, and/or tunneling often occur. Depth varies by anatomical location. If slough or eschar obscures the extent of tissue loss this is an Unstageable Pressure Injury.

TABLE 7 Continued
Pressure Ulcer Staging — Minimum Data Set and National Pressure Ulcer Advisory Panel Definitions

Definition	MDS – Pressure Ulcer†	NPUAP – Pressure Injury
Deep-tissue pressure injury	Purple or maroon area of discolored intact skin due to damage of underlying soft tissue. The area may be preceded by tissue that is painful, firm, mushy, boggy, warmer, or cooler as compared with adjacent tissue.	Intact or non-intact skin with localized area of persistent non-blanchable deep red, maroon, purple discoloration or epidermal separation revealing a dark wound bed or blood filled blister. Pain and temperature change often precede skin color changes. Discoloration may appear differently in darkly pigmented skin. This injury results from intense and/or prolonged pressure and shear forces at the bone-muscle interface. The wound may evolve rapidly to reveal the actual extent of tissue injury, or may resolve without tissue loss. If necrotic tissue, subcutaneous tissue, granulation tissue, fascia, muscle or other underlying structures are visible, this indicates a full thickness pressure injury (Unstageable, Stage 3 or Stage 4). Do not use DTPI to describe vascular, traumatic, neuropathic, or dermatologic conditions.
Unstageable pressure injury	‡	Full-thickness skin and tissue loss in which the extent of tissue damage within the ulcer cannot be confirmed because it is obscured by slough or eschar. If slough or eschar is removed, a Stage 3 or Stage 4 pressure injury will be revealed. Stable eschar (i.e., dry, adherent, intact without erythema or fluctuance*) on an ischemic limb or the heel(s) should not be removed.
Medical-device–related pressure injury	‡	This describes the etiology of the injury. Medical device related pressure injuries result from the use of devices designed and applied for diagnostic or therapeutic purposes. The resultant pressure injury generally conforms to the pattern or shape of the device. The injury should be staged using the staging system.

TABLE 7 Continued
Pressure Ulcer Staging — Minimum Data Set and National Pressure Ulcer Advisory Panel Definitions

Definition	MDS – Pressure Ulcer†	NPUAP – Pressure Injury
Mucosal-membrane pressure injury	‡	Mucosal membrane pressure injury is found on mucous membranes with a history of a medical device in use at the location of the injury. Because of the anatomy of the tissue, these injuries cannot be staged.

DTPI: deep-tissue pressure injury; MDS: Minimum Data Set

† Nursing homes may adopt the NPUAP guidelines in their clinical practice and nursing documentation. However, because CMS has adapted the NPUAP guidelines for MDS purposes, the MDS definitions do not correlate perfectly with each stage as described by NPUAP. ***For this reason, the NPUAP definitions cannot be used to code the MDS. Follow the instructions in the MDS manual to code the MDS***.

‡ MDS does not define these terms

STEP 6

Identify priorities in managing the ulcer and the patient. Effective management of a pressure ulcer requires

- Identification and treatment of causative factors when feasible,
- Identification and treatment of modifiable comorbid conditions,
- Provision of optimal nutritional support,
- Determination of the best topical care to facilitate ulcer healing,
- Prevention and management of infection and colonization* of the ulcer,
- Appropriate use of consultation and more-invasive treatment modalities, and
- Pain control related to the ulcer and any comorbid conditions.

Certain steps may have a higher priority than others (e.g., addressing predisposing or related systemic factors, managing infection, removing necrotic tissue, preventing additional skin breakdown, and addressing psychosocial factors that influence treatment selection). If the care team identifies multiple priorities, it is important to address systemic, life-threatening complications first and other issues as soon as possible. Document risk factors, interventions, patient education, and the rationale for all decisions (including decisions not to intervene) in the medical record.

In most cases, weekly reassessment and documentation of ulcer characteristics is recommended. More frequent reassessment may be necessary for ulcers that are not responding to treatment or are worsening despite treatment. Consider photographing the ulcer as part of the assessment (see **Table 16** and **Appendix 4**). As previously noted, photographs must always be used within the scope of a consistent policy and procedure.

Preferred treatment intensity. Review any advance directives or other care instructions (e.g., living will) that may limit the scope of ulcer-related or adjunctive treatments. For example, a prior decision by a patient or legally authorized representative to forgo artificial nutrition and hydration may reduce the likelihood of ulcer healing. If a patient does not have advance directives in place at the time he or she develops a pressure ulcer, this would be an appropriate time for the practitioner, nurse,

or social worker to discuss the importance of these documents with the patient and family and define the patient's wishes for end-of-life care. (See PALTmed's Physician Information Series tool kit, *Palliative Care in the Long-Term Care Setting*[c]).

Systemic factors. The scope of a treatment plan and the urgency with which it is implemented will depend on conclusions about the patient's condition and prognosis and on the likelihood of ulcer healing. The same factors that increase a patient's susceptibility to developing pressure ulcers (see **Table 2**) may also impair the healing of an existing pressure ulcer.

Environmental factors. Identify environmental factors (e.g., excess pressure and shear) and problematic care processes (e.g., inconsistent or inadequate turning and positioning). Correcting these factors promptly may have a significant positive impact on preventing further ulcer development and promoting healing of existing ulcers.

PREVENTION AND TREATMENT

Prevention is the cornerstone of pressure ulcer management. The purpose of the recognition and assessment phases for patients who have not yet developed a pressure ulcer is to provide the framework for implementation of a prevention strategy (**Table 8**) that reduces the risk of pressure-ulcer occurrence.

TABLE 8
Pressure Ulcer Prevention Measures

- Create a turning and positioning schedule based on the patient's individual risk factors
- Do not massage reddened areas over bony prominences
- Evaluate and manage urinary and fecal incontinence
- Initiate a plan to prevent or manage a contracture
- Inspect skin during bathing or daily personal care
- Maintain adequate nutrition and hydration to the extent possible
- Maintain the lowest possible head elevation to reduce the impact of shear* (may not be possible if patient is tube fed or on ventilator support)
- Position the patient to minimize pressure over bony prominences and shearing forces over the heels, sacrum, elbows, base of head, and ears
  - Use appropriate offloading or pressure-redistribution devices
  - Use lifting devices such as draw sheets or a trapeze
  - Use proper transferring techniques

[c] Ordering information available at hhttps://paltmed.org/products/pressure-ulcers-other-wounds-cpg

For patients who have pressure ulcers and other wounds, treatment choices are generally not stage-specific alone—that is, the stage of the ulcer should not always determine the choice of treatment. Some treatments are more appropriate for some stages, whereas some are appropriate for all stages. Factors relevant to treatment selection include

- Ulcer location, size, and depth (full or partial thickness);
- Presence of undermining or tunneling;
- Presence of necrotic tissue;
- Type and amount of drainage;
- Presence of granulation or epithelialization*;
- Presence of surrounding skin erythema*, edema, or induration*; and
- Presence and severity of ulcer-related pain.

Physical factors that may influence pressure-ulcer treatment choices are described in more detail in **Table 9**. When ulcer treatment is initiated, it is important that the practitioner and IPT determine how long treatment should be implemented (e.g., 2 weeks) before it is re-evaluated.

TABLE 9
Physical Factors That May Influence Pressure-Ulcer Treatment Choices

Factor	Concern	Treatment Considerations
Ulcer-related factors		
Location	Location in the pelvic region will make it more difficult to keep the ulcer free of contamination from urine or feces and keep surrounding intact skin from breaking down	■ Identify and when feasible try to treat causes of fecal or urinary incontinence ■ Try to limit the effects of fecal or urinary incontinence (e.g., by using a catheter). When weighing the use of indwelling catheters, consider whether the benefit outweighs the increased risk of infection*. ■ Institute appropriate approaches to try to control incontinence, review perineal care, and prevent or improve skin maceration.
	Presence of multiple ulcers will make it more difficult to position the patient to avoid pressure	■ Modify turning and positioning schedule or use of positioning devices if necessary ■ Consider other offloading or pressure-redistribution devices (e.g., low–air-loss or air-fluidized bed)

TABLE 9 Continued
Physical Factors That May Influence Pressure-Ulcer Treatment Choices

Factor	Concern	Treatment Considerations
	Lower-extremity ulcer may be vascular in origin	■ Assess ABI ■ A vascular ulcer may require specific treatments in addition to those used to treat a pressure ulcer ■ Healing may be delayed, despite appropriate treatment, because of insufficient blood supply
	Heel ulcers present unique management considerations	■ In general, do not debride* heel ulcers with dry, hard, nondraining eschar* unless there is evidence of infection.[29] Soft, draining eschar should be debrided or cleansed with appropriate agents. ■ May need to determine arterial blood flow to gauge healing potential
Status of ulcer bed	Careful assessment of the ulcer bed is critical to determine the progress of ulcer healing and the goals of topical therapy	■ Presence of eschar, necrotic tissue, or slough* usually indicates need for debridement ■ Presence of granulation tissue* or new epithelium (red/pink) indicates progress in ulcer healing ■ Presence of excess moisture / exudate*/excessive bacterial burden ■ These factors will influence treatment priorities, ulcer cleansing* methods, choice of debridement method, and dressing choices

TABLE 9 Continued
Physical Factors That May Influence Pressure-Ulcer Treatment Choices

Factor	Concern	Treatment Considerations
	Size, stage, and depth ■ Ulcer size and characteristics will influence topical therapy ■ Stage alone is not a sufficient measure of the ulcer or a basis for treatment ■ Deep ulcers may be more likely to develop sinus tracts*, tunneling*, or undermining* ■ Larger and full-thickness ulcers (Stages 3 and 4) and ulcers with tunneling or undermining will heal more slowly	■ Deep ulcers may require surgical or enzymatic debridement of necrotic tissue before other topical agents are used ■ Loose packing of undermined and tunneled areas may help to ensure adequate drainage and prevent abscess formation ■ Presence of sinus tracts, undermining, or tunneling indicates increased potential for underlying infection (e.g., osteomyelitis or abscess formation), and may require surgical or mechanical debridement
	Exudate* ■ Large volume or malodorous exudates may indicate infection	■ Treat associated causes ■ For patients with large amounts of exudate, adjustment of protein and fluid requirements may be necessary; seek dietary consultation ■ Manage exudates with absorptive dressings to eliminate excessive or pooled exudates while maintaining a clean, moist ulcer surface
	Necrotic tissue ■ Associated with slower healing ■ May need to be removed to enable ulcer healing (unless wound care is determined to be palliative) ■ Heel eschar should be left intact unless evidence of infection is present	■ Select debridement approach based on size of ulcer, amount of necrotic tissue, presence of eschar, patient condition and cooperation, availability of surgical methods, degree of pain, and available resources
	*Presence or absence of granulation tissue or epithelialization** ■ Indicative of degree of ulcer healing	■ Absence of significant granulation or epithelialization requires assessment of factors inhibiting ulcer healing

TABLE 9 Continued
Physical Factors That May Influence Pressure-Ulcer Treatment Choices

Factor	Concern	Treatment Considerations
Pain	Unresolved pain may adversely affect healing.[30] Pain may be related to the ulcer, surrounding infection, or other directly or indirectly related factors, alone or in combination	■ Presence of pain may influence choice of cleansing, debridement, and dressing approaches ■ Identify and manage underlying causes of pain ■ Treat pain with adequate analgesia
Factors related to the surrounding skin		
Erythema (or discoloration compared with other areas), edema, or induration*	■ May indicate fungal or bacterial infection ■ May be early indicator of further skin breakdown (Stage 1)	■ Presence of infection in periwound* tissues is a treatment priority ■ Review of pressure reduction approaches may be indicated
Maceration	Makes surrounding skin more susceptible to additional breakdown	■ Control ulcer exudates ■ Use protective measures to reduce pressure and moisture
Dryness, fragility	Excessively dry, thick, or fragile skin may be more prone to breakdown	■ Moisturize skin, but not excessively ■ May affect approaches to handling skin and moving patient
Shear, friction* (or both)	■ Predisposes to skin breakdown ■ May cause trauma to an existing wound or begin a new wound in a susceptible area ■ Risk factors for further pressure ulceration or impaired healing	■ Minimize shear* and friction* by educating staff about appropriate methods of handling and transferring patients

ABI: ankle-brachial index

Facilities must make every reasonable effort to prevent and treat pressure ulcers. However, clinical circumstances including but not limited to the following may impede or prevent healing or result in additional ulcer development:

- Cachexia;
- Sarcopenia;
- Obesity;
- Metastatic cancer;
- Multisystem organ failure;

- Sarcopenia;
- Vascular compromise;
- Terminal illness;
- Edema, anasarca, anemia, and hypoxia;
- Gastrointestinal pathology causing nutrient malabsorption; and
- Resistance to a prevention plan.

PA/LTC facilities are justifiably concerned about legal liability related to pressure-ulcer care. For a concise discussion of risk management issues in pressure ulcer care, see **Appendix 4**.

STEP 7

Establish a realistic, individualized, interprofessional care plan. Practitioners and caregivers can help to access and document information related to a patient who has or is at risk of a pressure ulcer. Subsequently, all participants in the patient's care should proceed according to a unified interprofessional care plan. The care plan must be developed on the basis of assessment of the patient (as discussed in the preceding sections) and the use of pertinent treatment protocols and guidelines. For patients at risk of developing pressure ulcers, the care plan should address prevention. For patients with pressure ulcers, the care plan should address both prevention and treatment. The patient, family, or legally authorized representative must be informed early, in a kind and empathetic manner, about the patient's pressure ulcer, the risk factors for pressure ulcers, and the care plan.

Patients have the right to make informed choices about care and treatment and to decline treatment. In order for patients to appropriately exercise these rights, it is important that the practitioner and care team communicate clearly with the patient and family about the factors influencing the development and healing of pressure ulcers, the patient's prognosis and goals of care, treatment options, the likelihood of healing, and potential negative outcomes. The wishes of the patient and family should be identified and respected, but it is also important to establish realistic expectations for healing. If the patient declines specific treatments or does not adhere to the prescribed treatment, the facility must offer relevant alternatives and ensure that the declination is addressed in the medical record. If pressure ulcer treatment is determined to be palliative, then the goal is no longer wound resolution but wound maintenance and care to prevent further deterioration to the extent feasible.

Unavoidable Pressure Ulcers. At times a pressure ulcer forms even when preventive measures are in place. CMS has termed these pressure ulcers unavoidable. According to the surveyor guidance accompanying F314, an unavoidable pressure ulcer is a pressure ulcer that develops even though a facility has done the following[11]:

- Evaluated the patient's clinical condition and risk factors;
- Defined and implemented interventions consistent with patient needs, goals, and recognized standards of practice;
- Monitored and evaluated the impact of these interventions; and
- Revised the approaches as appropriate.

Some retrospective and anecdotal reports have described a sudden-onset sacrococcygeal wound that may appear within hours or weeks of death.[31] This phenomenon, termed the Kennedy Terminal Ulcer* (KTU), has had little formal study. Diagnosis is difficult because of the varied length of life following appearance of the wound; whether intensive medical care has a role in changing the length of life is unknown.[32] CMS has determined that the KTU should not be classified as a pressure ulcer in the long-term acute-care hospital setting; it has not made a similar ruling for the PA/LTC setting.[33]

STEP 8

Provide general support for the patient. Ulcers do not occur in isolation. The patient's other medical and situational issues that have led to the ulcer occurrence need to be addressed. To the extent possible, address medical conditions and problems (e.g., altered level of consciousness, diarrhea, fever, heart failure) that may be causing or contributing to ulcer development or impeding ulcer healing. Also, as soon as possible, define and address a patient's hydration and nutritional status. (See PALTmed's clinical practice guidelines *Altered Nutritional Status*[d] and *Dehydration and Fluid Maintenance*[e]).

General support includes the assessment and management of coexisting conditions (e.g., anemia, chronic obstructive pulmonary disease, diabetes, heart failure, peripheral vascular disease) that contribute to pressure ulcer risk, influence quality of life, and affect the healing process. Impaired mobility and activity level may respond to appropriate rehabilitation interventions and restorative nursing care. Psychological issues (e.g., mood disorders that may affect adherence to treatment) should also be addressed. Consider psychiatry, psychology, or social work consultation.

Hydration. Although studies of hydration are confounded by the use of nutritional supplements, face validity assumes that overall body hydration is essential to optimize skin integrity. Studies have shown that some patients with pressure ulcers are under-hydrated, although they may not exhibit clinical signs of dehydration.[34, 35]

Decreased tissue perfusion that may result from dehydration can also impair ulcer healing.[35] Data suggest that, in patients with low subcutaneous tissue oxygen resulting from volume deficits, correcting those volume deficits will increase tissue oxygen.[35] A useful guide is to provide 30 to 35 mL of fluid per kilogram of body weight per day, or 1 mL of fluid per kilocalorie fed for persons receiving enteral tube feeding. Patients on air-fluidized mattresses may require additional fluids, as will patients with a fever.

Nutrition. Research supports an association between malnutrition and pressure ulcer development[34, 36] and a strong relationship between nutritional status and ulcer healing.[37, 38, 39] Evidence is weak, however, that any specific nutritional interventions beyond meeting basic calorie and protein requirements prevents the development of pressure ulcers and other wounds.

If weight loss and undernutrition are not already being addressed, this should be done within several days of the onset of an ulcer. Use appropriate protocols tailored to each patient's needs to manage unplanned weight loss and other nutritional risks. Calorie, protein, and vitamin supplementation may be needed in some cases, but oversupplementing patients who do not have protein, vitamin, or mineral deficiencies is not recommended. It is reasonable to tailor supplementation to each patient's specific needs, medical condition, and prognosis.[40]

See **Table 10** for recommendations on supplementation of specific nutrients to promote skin integrity and healing.

Although knowledge of protein status may be theoretically important, its direct relationship to pressure ulcers is unknown. Albumin and pre-albumin levels have been used to estimate nutritional status in patients with pressure ulcers, although evidence for this use is lacking.[41] The usefulness of albumin levels in assesing nutritional status is limited by factors that include concurrent chronic disease(s), acute or chronic illness, and degree of inflammation present. In addition, albumin levels can remain normal for long periods of time and may not accurately reflect current nutritional status.

[d] Ordering information available at https://paltmed.org/products/pressure-ulcers-other-wounds-cpg

[e] Ordering information available at https://paltmed.org/products/pressure-ulcers-other-wounds-cpg

The pre-albumin level provides a more accurate picture of current conditions than the albumin level but is also influenced by liver disease, renal disease, inflammation, and chronic illness.[42, 43]

No evidence exists to support the use of feeding tubes for either prevention or healing of pressure ulcers.[44]

TABLE 10
Nutritional Supplementation to Promote Skin Integrity and Healing

Nutritional Component	Recommendation	Discussion
Total calorie intake	30–35 kcal/kg	For nutritionally compromised patients who have or are at risk of pressure and other wounds. Malnutrition can significantly impair wound healing by extending the inflammatory phase and decreasing collagen synthesis and fibroblast proliferation
Total protein intake	1.2–1.5 g/kg of body weight	For nutritionally compromised patients who have or are at risk of pressure and other wounds
Zinc	Supplement above RDA/AI if deficient Men: 11 mg/day Women: 8 mg/day	A catalytic element for protein, DNA synthesis, and cellular growth. May offer benefit in a malnourished patient.
Vitamin C	Supplement above RDA/AI if deficient. Men: 90 mg/day Women: 75 mg/day	An antioxidant may decrease inflammation. May offer benefit in a malnourished patient.
L-arginine	17–24 g/day to benefit wound healing	Shown to improve protein building and cellular growth and strengthen collagen deposition, but unclear evidence of increased rate of healing
Vitamin A	Supplement above RDA/AI if deficient Men: 900 mcg/day Women: 700 mcg/day	Promotes cellular differentiation and proliferation, collagen synthesis, and epithelial development
Hydration	30–35 mL of fluid per kg body weight per day	Improves tissue perfusion
Enteral or parenteral support	30–35 kcal/kg body weight	No clear evidence of benefit is associated with enteral or parenteral nutritional interventions for either prevention or treatment

AI: adequate intake; RDA: recommended daily allowance

Pain Management. Having established that a patient is in pain, the next step is to determine if the pain is chronic from the ulcer or episodic (e.g., during dressing or position changes). Next, determine if the pain has a neuropathic component. After assessing pain and defining its characteristics (e.g., frequency, intensity, possible aggravating factors) and causes, treat it aggressively by using appropriate pain management protocols. (See PALTmed's clinical practice guideline, *Pain Management in the Long-Term Care Setting* [f]). The first step may be to move the patient to a more comfortable position.

When initiating medication for pain, begin with non-opioid agents (e.g., acetominophen, aspirin, non-steroidal anti-inflammatory drugs as clinically indicated). Progress to mild opioids (e.g., codeine) and strong opioids (e.g., morphine, diamorphine, fentanyl) as needed. Administer opioids in conjunction with adjuvants that treat opioid side effects (e.g., antiemetics, laxatives) or other symptoms associated with pain (e.g., anxiolytics). Analgesics may be given routinely before dressing changes and as needed after dressing changes or debridement*.[45]

Psychosocial Support. Treat clinically significant depression to address related complications such as inadequate fluid and nutritional intake, patient participation in treatment, and rehabilitative efforts. Arrange for appropriate nonpharmacologic interventions or medications as indicated. (See PALTmed's Depression clinical practice guideline.[8])

STEP 9

Manage pressure. Proper positioning, turning, and transferring techniques are important to manage pressure and shearing forces, ensure weight redistribution on support surfaces, and protect uninvolved skin.

Assessment of skin integrity. To assess the skin for tissue integrity, look for discoloration and changes in temperature or consistency. In light-skinned patients, relief of prolonged pressure from any area of the body will result in reddening as blood rushes back into the tissues; this phenomenon, known as reactive hyperemia, is the earliest sign of tissue compromise.[46] In healthy tissue, the skin will blanch when pressure is applied to a hyperemic area; in compromised tissue, the hyperemic area will not blanch. This is a valid way of determining whether the pressure-relieving care plan of turning, repositioning, and support surfaces is effective. If the skin surrounding the ulcer or over bony prominences does not blanch, the care plan should be re-evaluated. Nonblanching erythema is indicative of a Stage 1 pressure ulcer (see Table 7 above). In darker-skinned patients, blanching may not occur when pressure is applied to hyperemic tissue; the skin should be inspected for darkening, warmth, swelling, or other changes in texture or consistency.

Turning frequency. Evidence does not support any specific time interval for turning patients as a preventive or healing strategy for pressure ulcers. In a randomized clinical trial, repositioning patients lying on a pressure-reducing mattress alternately for 2 hours in a lateral position and 4 hours in a supine position did not reduce the incidence of pressure ulcers compared with repositioning every 4 hours.[47] A Cochrane systematic review identified no randomized or controlled trials of the role of repositioning in pressure-ulcer healing rates; the authors concluded that, although repositioning has face validity, no evidence from randomized controlled trials exists to support it.[48] In the TURN study, there was no difference in pressure ulcer incidence over 3 weeks between those turned at 2-, 3- or 4-hour intervals. All study participants had high-density foam mattresses and were at moderate to high risk for developing a pressure ulcer.[49]

[f] Ordering information available at https://paltmed.org/products/pressure-ulcers-other-wounds-cpg

[g] Ordering information available at https://paltmed.org/products/pressure-ulcers-other-wounds-cpg

Repositioning schedules should be individualized according to a patient's needs, care goals, tissue tolerance, and response to treatment. Tissue tolerance is the ability of the skin and its supporting structures to endure the effects of pressure without adverse effects; it varies among individuals.[50] Nursing staff should document when turning and positioning occurs. The documentation should note whether the presence of multiple ulcers complicates positioning and when conditions or risk factors (e.g., aspiration risk requiring head elevation, the patient's inability to cooperate, the presence of contractures) affect the desired positioning.

Support surfaces. The characteristics of available support surfaces are summarized in **Table 11**. A systematic review of support surfaces for pressure ulcer prevention found that ordinary foam mattresses (less than 4 inches thick) presented a higher risk for pressure-ulcer development than did higher-specification mattresses and that the use of sheepskin overlays reduced pressure ulcer incidence; however, evidence for the merits of higher-specification constant low-pressure and alternating-pressure support surfaces for preventing pressure ulcers was unclear.[51] Patients at risk of skin breakdown should be placed on a static support surface (e.g., foam overlay, foam mattress, static flotation device) rather than on a standard mattress. A dynamic surface is recommended in the following circumstances[51, 52, 53]:

- When the patient cannot assume a variety of positions without bearing weight on a pressure ulcer,
- If the patient fully compresses a static surface, or
- If the pressure ulcer is not healing as expected and other remediable factors are not identified as the cause of nonhealing.

A systematic review found that air-fluidized beds improve pressure ulcer healing. There was low-strength evidence that alternating-pressure surfaces improved healing.

Select a support surface that meets the individual patient's needs. Consider the patient's need for pressure redistribution based on following factors:

- Level of immobility and inactivity;
- Need for microclimate control and shear reduction;
- Size and weight of the individual;
- Risk for development of new pressure ulcers; and
- Number, severity, and location of existing pressure ulcers.

Management of heel ulcers. Patients who have or are at risk for heel ulcers (e.g., postoperative hip- or knee-surgery patients) will require offloading or pressure-redistribution devices (e.g., heel boot, heel elevator, heel lift, suspension boot, or a device that "floats" the heel) to relieve pressure on the heels and prevent skin breakdown. Because these devices themselves may be a source of pressure, care should be taken to ensure that they are fitted and used properly. If a heel ulcer develops, the decision to debride should be made in consultation with podiatry and/or vascular surgery.

Seating. Seats should be padded with foam, gel, or air cushions. Do not use donut-shaped devices for reduction or relief of pressure. Obtain a seating and posture evaluation by a physical or occupational therapist if appropriate for referral for a specialty cushion or seating and positioning device.

Bed linens. In conjunction with turning and positioning, the use of silk-like fabrics instead of cotton or cotton-blend linens may reduce shear and friction*. Four studies described by NPUAP[22] show evidence that use of silk-like bed linens may be a preventive measure in reducing pressure ulcer development.

Other issues in managing pressure. Use appropriate positioning devices (e.g., pillows, foam padding) between the knees and ankles. Maintain the lowest possible head elevation to manage pressure and shear on the elbows, heels, and sacrum, while being attentive to the patient's risk of aspiration. Use lifting devices such as draw sheets, sliding sheets, or a trapeze. Avoid sliding or dragging the patient across the sheets. Raising the HOB may be necessary for comfortable positioning and to prevent aspiration; however, when the HOB is raised, gravity can cause the patient to slide down in the bed, resulting in increased pressure in the sacral and heel areas and additional monitoring is necessary.[55]

TABLE 11
Characteristics of Available Support Surfaces

Type of Support Surface	Description	Goal	Selection
Reactive	Provides ability to change its lead distribution properties only in response to applied loads. Surface deforms in response to the load (individual's weight or morphology)	Provide deep immersion and a high degree of envelopment to reduce sustained deformation caused by pressure concentrations over bony prominences	Patients at low risk for pressure injury. Review the characteristics of foam mattresses to ensure they are high specification.
Active	Produces alternating pressure through mechanical means and has the ability to change its load distribution properties with or without an applied load	Reduce the risk of pressure ulcer development by periodically shifting the areas of support from between anatomical locations so that deformation is not sustained over any one area. The weight-shifting feature is typically achieved by cycling air into and out of bladders within the support surface (alternating pressure).	Use overlay or mattress for individuals at higher risk of pressure ulcer when frequent manual reposition is not possible. Select a support surface that provides enhanced pressure redistribution, shear reduction, and microclimate control for individuals with Stage 3, 4, and Unstageable pressure ulcers.

Adapted from NPUAP, 2014 [22]

STEP 10

Manage colonized or infected ulcers. It is important to differentiate systemic infection from colonization or critical colonization*. Because bacteria are present on all skin surfaces and in any wound (pressure, arterial, venous, or neuropathic), wound cultures have limited clinical significance. The presence of odor, necrosis, or purulent* drainage at the ulcer site are not by themselves indications for the use of systemic antibiotics. In such cases, local cleansing*, topical antibiotics, or chemical or surgical debridement may be appropriate. Do not prescribe systemic antibiotics solely because of a report of a positive surface culture.

Differentiating Among Colonization, Critical Colonization, and Infection. It can be difficult to distinguish clinically between colonization, critical colonization, and infection of a wound. Furthermore, the signs and symptoms of infection may differ depending on the site or nature of the ulcer (diabetic, venous, arterial, pressure). Nonetheless, because healing cannot progress in the presence of bacterial overgrowth or infection, an effort must be made to determine the bacterial burden of a wound so appropriate treatment can be applied.[56]

Efforts have been made to aid in the bedside diagnosis of critical colonization versus infection. The mnemonic NERDS (**N**onhealing, inflammatory **E**xudate, **R**ed granulation tissue, **De**bris, and **S**mell) suggests critical colonization. STONEES (increased wound **S**ize, increased local wound **T**emperature, presence of b**ON**e, **E**xudate/**E**dema/**E**rythema, **S**mell) denotes infection.[57] **Table 12** lists wound characteristics that are suspicious for infection, as determined by the NPUAP. Not all wounds will exhibit all of these features; it is up to the clinician to judge the degree of infection and colonization of bacterial burden with biofilms* so that appropriate action can be taken.

TABLE 12
Local or Systemic Wound Characteristics That Are Suspicious for Infection

- Lack of signs of healing for two weeks
- Friable granulation tissue*
- Malodor
- Increased pain in the ulcer
- Increased heat in the tissue around the ulcer
- Erythema* extending from the ulcer edge
- Induration
- New or increasing pain or warmth
- Purulent drainage
- Increase in size
- Crepitus, fluctuance*, or discoloration in the surrounding skin
- Fever, malaise, and lymph node enlargement
- Confusion, delirium, anorexia

Source: NPUAP, 2014[22]

Treating Colonization, Critical Colonization, and Infection. Consider the following measures when treating a pressure ulcer deemed colonized or infected:

- Use of nontoxic topical antiseptics for a limited time,
- Use of topical antibiotics,
- Use of systemic antibiotics when there is clinical evidence of systemic infection.

Topical antiseptics. Evidence for treating local colonization or infections with antiseptics (e.g., povidone iodine, chlorhexidine, Dakin's solution, acetic acid) is lacking.[58]

In recent years, with the rise of antibiotic resistance and concerns about antiseptic cytotoxicity, interest in the use of solutions of hypochlorous acid (HOCL) to treat wound infection has re-emerged. **Table 13** presents recommendations for the use of hypochlorous solution made by an expert panel in 2015.

Both topical antiseptics and topical antimicrobials (see below) are appropriate treatment in palliative wound care near the end of life. Povidone-iodine 10% solution is used ("painted on") on dry gangrene, necrotic heel, and other pressure ulcers to promote desiccation when healing is not expected at the end of life.

TABLE 13
Recommendations for the Use of Hypochlorous Solution in Ulcer Care

1. If necessary, cleanse the wound with HOCL, followed by debridement*. Follow a standard algorithm to prepare the wound bed– for example, TIME; address each item to maximize healing potential.[59]
2. Treat infected wounds with HOCL by integrating into best practices according to wound etiology (e.g., diabetic foot ulcer, venous foot ulcer, pressure ulcer).
3. Treat infected wounds with HOCL 15 minutes either intralesionally or by ensuring the wound is covered with the solution.

Notes:

1. Hydrogen peroxide is highly toxic and should not be used.[22]
2. Iodine products should be avoided in patients with impaired renal failure, history of thyroid disorders, or known iodine sensitivity*.
3. Dakins solution is cytoxic and should be used with caution at concentrations no greater than 0.025%.

HOCL: hydrochlorous acid; TIME: **T**issue debridement, **I**nfection or inflammation, **M**oisture balance, and **E**dge effect

Source: Armstrong et al, 2015[60]

Topical antimicrobials. Evidence is lacking for the use of topical antimicrobials in the treatment of pressure ulcers and other wounds, including venous, diabetic, or arterial wounds.[61]

Evidence is limited that topical or systemic antibiotics (discussed below) prevent invasive wound infection. In practice, debridement and topical antimicrobial agents are commonly used together.

Despite the lack of reliable evidence, expert opinion does not recommend discontinuation of any of the commonly used FDA-approved topical antimicrobial agents. Limited evidence supports the use of cadexomer iodine[62, 63]

In light of the increasing problem of bacterial resistance, current clinical practice guidelines recommend using antibacterial preparations only in cases of defined infection and not for bacterial colonization.[22, 64]

Silver dressings have been promoted to decrease bacteria in an ulcer, although the data have been insufficient to recommend their use. However, in 2011, a consensus document recommended a 2-week trial of silver dressing followed by reassessment to ascertain effectiveness.[65]

Alleviating wound odor can enhance patients' quality of life. Odor occurs from bacterial overgrowth. Topical metronidazole 1% can be effective in eliminating wound odor in necrotic or fumigating wounds when debridement is not indicated.66 Charcoal dressings can also decrease odor.

Wound culturing. In the presence of evidence (e.g., erythema, edema, warmth, tenderness, fluctuance*, induration, malodorous drainage) of a soft-tissue infection (e.g., cellulitis, abscess, necrosis) or osteomyelitis, obtain an appropriate deep-tissue culture if it would help with treatment decision-making. Surface swab cultures are not recommended because they cannot differentiate infection from contamination or colonization. Additional laboratory testing (e.g., complete blood count, erythrocyte sedimentation rate, X-ray, C-reactive protein) or radiological testing (e.g., computerized tomography scan, magnetic resonance imaging) may be helpful in detecting the presence of osteomyelitis.

Agreement on the usefulness of wound cultures in the management of chronic wounds is limited. Culture samples detect surface bacteria only (and are unlikely to identify anaerobic bacteria) and may not be an effective measure of wound infection vs contamination.

If used, a wound culture should be done prior to initiating antibiotic therapy for a wound exhibiting signs or symptoms of infection. Tissue biopsy, needle aspiration of wound fluid, and tissue swabbing are three methods of culturing infected wounds. Tissue biopsy and needle aspiration are invasive and should be performed by a skilled clinician. The swab technique is by far the most practical and widely available method of wound culture.

Wounds must be thoroughly cleaned with normal saline prior to any wound culture. Do not culture purulent drainage, necrotic debris, or drainage over eschar. For best results, moisten the swab with normal saline.

The Levine technique and the Broad Z-stroke are two methods of obtaining a swab specimen. The Broad-Z stroke uses a swab to cover the entire wound and may lead to culture of contamination rather than infection. The Levine technique is the most recommended method of wound culture. To perform the Levine technique: (1) cleanse the wound with sterile saline, and (2) rotate the tip of the moistened swab over a 1- inch area in the center of an open wound for 5 seconds, this causes fluid to be expressed from the wound.

Managing infection with systemic antibiotics. Expert opinion advises keeping the wound clean with local measures to decrease bacterial burden. If the would becomes infected (e.g., cellulitis, osteomyelitis) and cannot be controlled by local treatment, systemic antibiotics should be used.[67]

When a patient has symptoms of systemic infection and other causes have been ruled out, the presence of at least one of the following may indicate the need for systemic antibiotic treatment for pressure-ulcer–associated infection:

- Change in the patient's level of consciousness,
- Fever,
- Surrounding cellulitis or abscess, or
- Suspicion of osteomyelitis.

The rationale for a decision to use systemic antibiotics or more limited interventions should be documented in the medical record and explained to the patient and the family as part of the discussion about care of the pressure ulcer.

As with any case of infection, the decision to hospitalize a patient who has a pressure ulcer with systemic infectious complications should take into consideration such factors as the facility's ability to administer antibiotics appropriately and the patient's overall condition, treatment goals, directives concerning the desired scope and intensity of treatment, and the relative risks and benefits of hospitalization for that patient.

Wounds are often infected with more than one microorganism. Before an antibiotic is prescribed, facility staff should attempt to obtain a culture and sensitivity test. The results of the culture will influence the choice of antibiotic, the dose and duration of therapy, and whether an oral antibiotic is suitable. This may limit antibiotic resistance as part of the facility's antibiotic stewardship program.[68]

Infection control. Use standard infection control techniques and precautions to manage and debride all ulcers. To the extent possible, protect pressure ulcers from sources of contamination (e.g., feces) and cleanse promptly if contamination occurs. In most cases, adequate cleansing and debridement will prevent colonization from progressing to clinical infection.

STEP 11

Debride necrotic tissue from the ulcer. Pressure ulcer healing may be delayed by the presence of necrotic tissue, which also provides a medium for bacterial growth. Any necrotic tissue observed during assessment of the ulcer should be debrided, provided that this intervention is consistent with overall patient care goals. Because several methods of debridement are available, the practitioner should select the method most appropriate to the ulcer's condition and characteristics). When debriding an ulcer, consider the need to assess and control pain.

Several methods of removing damaged tissue are available; each has both advantages and drawbacks (**Table 14**). In a systematic review, Bradley et al[69] found insufficient evidence to promote the use of one debriding agent over another. When choosing a debridement method, consider

- Ulcer size,
- Amount of slough and exudate*,
- Presence and severity of pain associated either with the ulcer or the method of debridement,
- Feasibility of performing sharp or surgical debridement,
- Risks of transporting the patient outside the facility vs the benefits of surgical debridement.

It is generally recommended that stable heel blisters or heel ulcers with dry, hard eschar not be debrided unless drainage, edema, erythema, or fluctuance are present. Monitor heel ulcers closely for evidence of infection, at which time debridement should occur.

Discussions with the patient and family about debridement should communicate that ulcers usually measure larger after debridement of nonviable tissue than they did before.

TABLE 14
Methods of Debridement

Type of Debridement	Description	Comments
Autolytic	Moisture-retentive dressing (e.g., a hydrocolloid dressing) allows the eschar damaged tissue to self-digest through action of enzymes present in ulcer fluid.	■ Slower than other methods ■ Appropriate for ulcers with little damaged tissue ■ Appropriate for patients who cannot tolerate other methods ■ Contraindicated in ulcers with local infection of surrounding tissue
Enzymatic	Apply topical enzymatic debriding agents to devitalized tissue on ulcer surface	■ Contraindicated in ulcers with local infection of surrounding tissue ■ Several studies support the effectiveness of collagenase, a biologic[70]
Mechanical	Use wet-to-dry dressings at select intervals (usually every 4 to 6 hours) to remove adherent tissue. Hydrotherapy, ulcer irrigation and dextranomers are useful in softening eschar and in debriding ulcers that contain thick exudate, slough, or necrotic tissue.	■ Wet-to-dry dressings adhere to vital tissue as well as eschar, removing tissue nonselectively when the dry dressing is removed ■ Wet-to-dry dressings tend to be painful ■ Hydrotherapy and ulcer irrigation should be discontinued when the ulcer bed is clean
Surgical	Surgical removal of necrotic, devitalized tissue	■ May be necessary in the presence of signs of advancing cellulitis in the periwound tissue or secondary to wound-related infection. ■ Use with caution with lower-extremity ulcers if vasculature is compromised. ■ Surgical procedures should always be decided in the context of overall goals or care and preceded by written informed consent.

Managing excessively draining wounds. Although a wound bed needs to be kept moist, excessive moisture creates an ideal environment for bacterial growth. The cause of excessive drainage (e.g., infection, increase in lymphatic fluid, decrease in protein, decrease in diuretic leading to an increase in third spacing [fluid shift from the intravascular space to other body tissues]) must be determined. The goals of care should be to contain drainage for assessment, monitoring intake and output, or infection control; protect periwound skin; control odor; and enhance quality of life.

Use an absorbent dressing (e.g., alginate, collagen, foam, hydrofiber, super-absorbent pads) to contain and remove excess exudate. Pouches, wound containment devices, suction, and negative pressure wound therapy (used alone or in combination with other treatment modalities) may also be useful for managing draining wounds and fistulas.[71, 72]

If the skin around an ulcer is macerated, try to reduce the amount and duration of local moisture by addressing underlying causes. Address bowel and bladder incontinence when it may contaminate an ulcer.

Use of an indwelling urinary catheter. Frequent incontinence care may not provide adequate moisture control in the presence of an ulcer. In the presence of a Stage 3 or 4 ulcer, indwelling catheterization may be indicated to control moisture related to urinary incontinence, if the incontinence and its causes cannot be addressed adequately by other means. (Please refer to PALTmed's clinical practice guideline, *Urinary Incontinence* [h]). Although a catheter can keep the perianal area free from urine, it presents its own risks. Nonetheless, in some cases it is appropriate to place an indwelling catheter because of a Stage 3 or 4 pressure ulcer. The decision to do so must be individualized and patient centered; a catheter should not be placed for staff convenience. Some patients request a catheter; provided they understand the risks, they should be permitted that autonomy.

Protection of overly dry intact skin. Intact skin adjacent to a pressure ulcer should be protected from excessive moisture as well as from superficial injury from adhesives or tape used to secure a wound dressing. Paper tape is an alternative that may avoid tissue injury and minimize allergic reactions to adhesive. Use moisturizers sparingly so the skin does not remain damp for extended periods.

Wound Cleansing Techniques. Basic pressure ulcer cleansing techniques remove loose necrotic debris and remnants from dressings. Pressure ulcers should be cleansed initially and at each dressing change. It is important to note, however, that studies of wound cleansing have not definitively shown that this practice is effective or that it improves healing.

The process of cleansing a pressure ulcer involves selecting both an ulcer-cleansing solution and a mechanical means of delivering that solution to the ulcer bed. Saline irrigation is a safe and appropriate cleansing method for most pressure ulcers. The use of cytotoxic antiseptic solutions (e.g., povidone iodine, acetic acid, Dakin's solution) should be discouraged because these agents may retard ulcer healing and increase resistance to subsequent antibiotic treatments. Certain clinical situations, however, allow their use on a short-term basis.

Commercial ulcer cleansers that do not contain harmful chemicals may be used at the practitioner's discretion. An effective antiseptic should

- Act quickly;
- Be nonirritating;
- Be nontoxic to viable tissue;
- Have a broad spectrum of activity;
- Have low resistance potential; and
- Work in the presence of blood, fibrin, pus, and slough.

[h] Ordering information available at https://paltmed.org/products/pressure-ulcers-other-wounds-cpg

To avoid traumatizing viable tissue, apply a minimum amount of mechanical force when cleansing with gauze, cloth, or sponges. Whirlpool treatment (using a low setting to minimize the risk of trauma to granulating tissue) should be considered for multiple or larger pressure ulcers or those that contain thick exudate, slough, or necrotic tissue. If the ulcer is malodorous due to necrotic tissue or has excessive debris that cannot be readily removed by other means, consider a more aggressive form of debridement (e.g., surgical or sharp debridement).

STEP 12

Cover and protect the ulcer and surrounding skin. The goals of dressing an ulcer are to

- Keep the ulcer bed moist and the surrounding skin dry
- Protect the ulcer from contamination, and
- Promote healing.

Hundreds of ulcer care products are available, and evidence of comparative effectiveness is limited because of multiple small studies involving products that often lack comparators. Some factors to consider when selecting ulcer care products are suggested in **Table 15**; options for pressure ulcer dressings are outlined in **Table 16**. Under the direction of the wound care team, each facility should develop a treatment formulary and product utilization protocols to streamline product selection, minimize duplication, and maximize consistency.

Although the cost of ulcer care products is a relevant consideration, choosing products and devices primarily on the basis of cost may result in inadequate ulcer care. The use of a more expensive product may be justified if it facilitates or accelerates healing more effectively than a less expensive alternative.

Dressings and wound fillers are chosen to maintain a moist wound environment and protect the skin surrounding the wound from drainage. Ulcers that have depth or dead space (i.e., tunnels or undermined areas) should be lightly filled with continuously moistened gauze, hydrofibers, alginates, pastes, or beads. Calcium alginate is appropriate primarily for moderately to heavily draining ulcers. Other substances may be applied on top of the initial layer to absorb exudate or to try to reduce the odor associated with ulcer colonization.

Change the filling with each dressing change to limit bacterial growth, but avoid traumatizing viable tissue by moistening gauze before removal. Avoid use of gauze dressings for clean, open pressure ulcers because they are labor intensive to use, cause pain if dry when removed, and lead to desiccation of viable tissue if they dry. When changing dressings, it is important to check the areas around the ulcer for signs of infection or maceration.

Use cover dressings that provide sufficient protection against contamination. For example, in incontinent patients, cover sacral and ischial ulcers with waterproof tape, a transparent adhesive dressing, or another impermeable dressing. Minimize trauma to the surrounding skin when applying and removing tape by using skin preparations, protectant, or other means of attaching the dressing.

TABLE 15
Factors to Consider When Selecting Ulcer Care Products

- Burden to patient (i.e., number of daily dressing changes required)
- Cost-effectiveness of product
- Costs of ancillary supplies and equipment associated with treatment
- Ease of use and cost of staff time to use the product
- afety, efficacy, and likelihood and potential severity of complications
- Ulcer characteristics (e.g., depth, condition of surrounding skin, location near sources of contamination, presence and amount of exudate)

STEP 13

Recognize and manage ulcer complications. Monitor the patient for possible complications (e.g., increasing necrosis of the ulcer base or edges, infection, cellulitis, sinus tract* development, dermatitis of the surrounding skin, increase in odor or exudate from the ulcer). Document the presence or absence of complications in the medical record.

The urgency of reporting and addressing complications depends on the problem's cause and severity and on the risk it presents to the patient. Nursing staff and the practitioner should discuss findings related to the condition change or apparent complication in enough detail to try to identify a likely cause. Address complications by reviewing the care plan, using the same steps that were followed for initial assessment and management, and modifying the plan as appropriate.

Stalled Wounds. Healing wounds generally progress through a series of steps (inflammatory, proliferation with angiogenesis, maturation with remodeling) that occur within weeks to months. In some cases, however, healing of a wound may stall. The reason for the stalling must be ascertained. One reason may be that the local milieu of the wound has changed from acute to chronic, and the visible cells resemble senescent rather than proliferative cells.[73]

Biofilms can cause a wound to stall. For example, bacteria lay down a protective layer so that they can multiply and protect themselves against an antibiotic-initiated immune response. Physical debridement may be the most efficient way to reduce a biofilm.[74, 75, 76]

The goal of care for a stalled wound is to try to convert it to an acute, healing wound. This can be done by standard means such as debridement. Evidence is limited for the effectiveness of advanced modalities compared with standard care. For diabetic ulcers, there is moderate-strength evidence for biological skin equivalents and negative pressure wound therapy (NPWT) compared with standard care. The level of evidence for platelet-derived growth factor and silver cream is low. For venous ulcers, evidence for keratinocyte therapy is moderate; for biological dressings, low.[77]

When a wound has stalled, consider malignant transformation of the ulcer and obtain a tissue biopsy. If the wound edges become rolled or calloused, use sharp debridement or silver nitrate sticks to remove the hardened tissue. However, attempts to turn a stalled wound into one that is progressing may fail. In this situation, "skin failure" needs to be considered.[33]

TABLE 16
Options for Pressure Ulcer Dressings

Ulcer Type	Description	Objective(s)	Options	Use
Intact skin	Nonblanchable redness of a localized area, usually over a bony prominence. In darkly pigmented skin, color may differ from surrounding skin	Protect skin and assist with healing	Moisturizer Hydrocolloids	Cover with thin hydrocolloid or thin polymer foam as a protectant Alleviate pressure
Shallow (Stage 2)	Dry with nominal exudate*	Create or retain moisture; protect from infection*	Transparent films or hydrocolloids	Cover with transparent film, thin hydrocolloid, or thin polyurethane foam
	Wet with moderate to heavy exudate	Absorb exudate, facilitate autolysis, maintain adequate but not excessive moisture, protect from infection	Hydrocolloid or foam dressings or alginate	Cover with gauze dressing or absorptive contact layer
Deep (Stage 3 or 4)	Dry with nominal exudate	Fill cavities, create or maintain moisture, protect from infection	Hydrocolloids, alginates, or foam dressings	Fill with copolymer starch, hydrogel, or damp gauze Cover with transparent thin film, polyurethane foam, or gauze pad
	Wet with moderate to heavy exudate	Fill cavities, absorb exudate, maintain moisture, protect from infection	Alginates or foam dressings	Fill with copolymer starch, dextranomer beads, calcium alginates, hydrofibers, or hydrocellular gauze or foam Cover with transparent thin film, polyurethane foam

STEP 14

Consider other options when standard treatments are ineffective. Interventions such as surgery and the use of adjunctive therapies may be appropriate when standard treatments have not resulted in improvement of a patient's pressure ulcer.

Surgery. Surgical intervention (e.g., a graft or flap) may be an option when a clean, uncomplicated Stage 3 or 4 ulcer does not respond to standard treatments. A retrospective review of 20 years' experience with surgical reconstruction of pressure ulcers found, however, that such procedures have a high failure rate.[78, 79] Base the decision to consider surgery on such factors as the patient's overall burden of illness and prognosis, care goals, and the expected functional outcomes.

Adjunctive Therapies.

Negative pressure wound therapy. NPWT uses negative pressure to the ulcer surface and margins. It has been used as adjunctive therapy to manage Stage 3 and 4 pressure ulcers with extensive drainage; some practitioners also use NPWT for postoperative and other wounds.

Although systematic reviews of chronic ulcers (not exclusively pressure ulcers) have shown that NPWT has potential for benefit, its use remains controversial.[78, 80] A 2008 Cochrane review found no valid or reliable evidence that NPWT increased healing of chronic wounds.[81] In 2013, however, another Cochrane review found preliminary evidence that NPWT may be more effective than usual treatment for diabetic foot ulcers.[82] Whether NPWT is more effective than current standard care in reducing healing times, cost, or pain or improving quality of life remains largely undetermined.

NPWT should not be used in the presence of osteomyelitis, in necrotic ulcers with eschar, if there is a fistula within the ulcer cavity, or if the ulcer is bleeding more than minimally. CMS requirements for the use of NPWT include documentation that a patient has a chronic Stage 3 or 4 pressure ulcer, diabetic ulcer, venous or arterial ulcer, or a chronic mixed-etiology ulcer of at least 30 days' duration. Evaluation, care, and wound measurement must be documented in the medical record along with dressing used, debridement if needed, and evaluation of nutritional status, positioning program, and use of support surfaces and compression if needed. The status of the ulcer must be re-evaluated monthly; if there is no improvement in 30 days or 4 months from initial application, therapy is no longer covered by Medicare.[83]

Other adjunctive therapies. Several other adjunctive therapies may be considered when standard treatments have failed (**Table 17**). No definitive evidence supports the use of electrical stimulation, ultrasound, or growth factors as adjunctive therapies for pressure ulcers in the PA/LTC setting.

TABLE 17
Other Adjunctive Therapies for Pressure Ulcers

Allograft
Electrical stimulation
Growth factors
Hyperbaric oxygen therapy
Infrared light
Ultrasound
Ultraviolet light

Source: Bolton et al, 2013[84]

STEP 15

Manage venous, arterial, neuropathic, and other ulcers. Although there are specific differences in the treatment of arterial, venous, and diabetic ulcers, common features also exist. Moreover, for patients in the PA/LTC setting, lower-extremity ulcers may be caused by combined pathologies.

Venous Stasis Ulcers. Lower-extremity venous disorders include chronic venous disease and chronic venous insufficiency, which may result in moderate to severe edema, chronic skin changes, or the development of venous ulcers. Patients with lower-extremity venous disease benefit from IPT management in the assessment and treatment of their wounds.

Compression is the mainstay of treatment for venous ulcers with lower-extremity edema.[85] Prior to instituting compression, arterial flow should be assessed by a measurement technique such as the ankle-brachial index.[86, 87, 88]

Several types of compression therapies are available, including elastic and nonelastic static compression therapies. Elastic static compression products include layered wraps and therapeutic compression stockings. Adding an elastic component (e.g., a multi-layer compression bandage) increases effectiveness.[89] Single-layer elastic wraps do not provide sufficient compression. Graded stockings providing at least 20–30 mm Hg to 44 mm Hg of compression could be used. Nonelastic static compression includes products such as the Unna Boot, which relies on muscle contraction and therefore are not suitable for nonambulatory patients. After an ulcer has healed, compression may be needed to prevent recurrence.

To decrease edema, leg elevation needs to be combined with compression. Other adjunctive therapies (e.g., aspirin, pentoxifylline) are effective when used with compression. No robust evidence supports the use of NPWT or hyperbaric oxygen therapy to decrease edema.[90]

Arterial Wounds. Lower-extremity arterial disease is linked to atherosclerosis; patients at risk for arterial ulcers are generally those who use tobacco products; are older; have a family history of cardiovascular disease; have comorbid hyperlipidemia, diabetes, or hypertension; or are obese. Assessment begins with a bedside evaluation of arterial flow, including evaluation of palpable pulses or using the ABI. For non-healing ulcers or in patients with poorly compressible arteries or previous

amputations, assessment of tissue perfusion with transcutaneous oxygen measurement (TcPO2) is recommended.[91] Treatment options for arterial wounds include compression, debridement, topical dressing, medications, and possible surgical correction.

Neuropathic and Diabetic Wounds. Lower-extremity neuropathic disease may lead to autonomic dysfunction and loss of sensation, which may result in lower-extremity ulceration. The most common cause of neuropathic wounds is diabetes. Diabetes is the most common cause of neuropathic wounds. **Table 18** provides an overview of current recommendations for the care and treatment of neuropathic ulcers.

TABLE 18
Recommendations on the Use of Interventions to Enhance the Healing of Chronic Diabetic Foot Ulcers

- Clean ulcers regularly with water or saline, debride* them when possible to remove debris from the wound surface, and apply appropriate dressing that controls excessive exudate*.
- Select dressings principally on the basis of exudate control, comfort, and cost.
- Do not use antimicrobial dressings with the goal of improving wound healing or preventing secondary infection.
- Consider the use of systemic hyperbaric oxygen therapy, even though further blinded and randomized trials are required to confirm its cost effectiveness, as well as to identify the population most likely to benefit from its use.
- Topical negative pressure wound therapy may be considered in post-operative wounds even though the effectiveness and cost-effectiveness of the approach remains to be established.

Adapted from: Jones et al, 2015[92]

Skin Tears. Little evidence exists regarding the treatment of skin tears; the following guidance is based on expert opinion. The most important issue with skin tears is to prevent the formation of scar tissue* if possible. If a scar forms, the resolved skin tear is at high risk for re-ulceration caused by everyday movement. Reapproximate the skin edges if possible. Remove nonviable tissue, keep the skin moist but not wet, and debride necrotic areas. Do not use steristrips, which have not been found to be effective.[93]

MONITORING

Ulcer healing may not be achievable in all cases; however, in the absence of complications, some improvement in ulcer characteristics should be expected in most patients. Regular reassessment of ulcer healing should be based on the patient's overall condition; the number, nature, causes, severity, and complications of existing wounds; and current standards of practice. Monitoring considerations in the surveyor guidance accompanying F314 are itemized in **Table 19**. Care plans need to be concordant with the clinical documentation in the patient's chart in both the nursing and IPT notes.

Some ulcers will heal readily with routine care. When a crater forms and the edges of an ulcer are intentionally left open, bumpy granulation tissue* grows from the exposed tissue. The granulation

tissue is eventually covered by skin that grows over the ulcer from the edges to the center. When healing is complete, the granulation tissue develops into scar tissue, which does not have the same properties as normal skin and is a risk factor for further skin breakdown.

TABLE 19
F314 Surveyor Guidance: Monitoring Considerations

F-Tag 314 provides extremely detailed monitoring guidance. In summary, PA/LTC facilities are expected to have systems and procedures in place to ensure the following:

- Assessments are timely and appropriate;
- Interventions are implemented, monitored, and revised as appropriate;
- Changes in condition are recognized, evaluated, and reported to the IPT;
- Changes in condition are addressed;
- Quality assessment and assurance committees evaluate existing strategies to reduce the development and/or progression;
- Monitor incidence and prevalence; and
- Ensure facility policies, procedures, and practice are consistent with current standards.

Use of Photography in Pressure Ulcer Monitoring. Photography can be a useful adjuvant to documentation and measurement as part of a facility's compliance effort. Photographic techniques and equipment should be standardized to ensure accurate representation of wounds.[22] Strict protocols, which may include the following, need to be developed and followed:

- Photos are taken at a consistent distance from the wound;
- A consistent type of photographic equipment is used;
- Measures are in place to ensure that digital images are accurate and are not modified;
- Patient identification, ulcer location, date photo was taken, etc., are included within the photographic image; and
- Parameters are specified for comparison of photos over time.

IPT: interprofessional wound care team; PA/LTC; post-acute long-term care

Adapted from: CMS, 2014[11]; AHCA, 2014[94]

STEP 16

Monitor the progress of both patient and ulcer. Monitor and document the patient's overall progress and that of wound healing at least weekly and more frequently if the ulcer does not heal as anticipated or complications develop. Related documentation should reflect the status of ulcer healing and contributory factors (**Table 20**).

Wounds heal through a process of granulation, wound contraction, re-epithelialization, and scar formation. The NPUAP advises classifying a healed ulcer by its highest stage of development (e.g., healed Stage 4 or Stage 3 pressure ulcer).[95] Facilities are encouraged to also document the healing of a pressure ulcer in the medical record by using either descriptive characteristics of the wound (i.e.,

depth, width, presence of granulation tissue) or a validated pressure-ulcer healing tool, such as the Pressure Ulcer Scale for Healing (see **Appendix 5**).

Nursing staff should keep the IPT aware of the progress of all ulcers, especially those in higher-risk patients, those that do not heal as anticipated, and those that develop complications. The IPT should evaluate complicated, extensive, or non-healing ulcers in a timely fashion. This is particularly important when the patient's overall condition is affecting or is affected by the ulcer, when the ulcer is not improving as anticipated, when the priorities for treating the ulcer are unclear, or when the nursing staff is not clear about the selected treatments or goals of care. Reconsider care goals and approaches after a significant change in the patient's status and when progress toward care goals is not apparent.

TABLE 20
Recommended Components of Pressure Ulcer Documentation

Although no consensus exists on the content of pressure ulcer documentation, it is generally recommended that such documentation include the following components:

- ***Type*** of ulcer, how long it has been present, and in what setting it occurred;
- ***Size*** of ulcer, measured as length × width × depth in centimeters (area of the wound bed that is deepest, without a tract);
- ***Color***, as percentage, with red indicating amount of granulation tissue*, yellow indicating the amount of slough* present, and black indicating necrotic tissue or eschar*;
- Description of ***exudate*** (serous*, serosanguineous*, sanguineous*, or purulent*);
- Presence or absence of ***odor*** *in the wound (determined after the wound is thoroughly cleaned);
- Description of ***periwound* tissues*** (e.g., viable, macerated, inflamed, hyperkeratotic*); and
- Evidence of wound ***undermining**,* tunneling*, or sinus tracts*.

STEP 17
Decide whether to change approaches to managing the ulcer. Reassess current treatments to ensure that they are being properly implemented and are still necessary. As an ulcer heals, it may be appropriate to change or discontinue treatments.

STEP 18
Monitor the facility's management of pressure ulcers. Review the management of patients with pressure ulcers through the facility's quality improvement processes. Indicators that a facility may wish to use (selecting those most relevant to its population) to measure the success of its efforts to prevent and manage pressure ulcers are suggested in **Table 21**.

TABLE 21
Sample Performance Measurement Indicators

Process Indicators

- Implementation of facility protocols consistent with current standards of practice for pressure ulcer prevention, recognition, assessment, and treatment
- Percentage of patients assessed for risk factors for the development of pressure ulcers
- Percentage of patients with risk factors for the development of pressure ulcers who are placed on a preventive regimen consistent with current standards of practice
- Percentage of patients with pressure ulcers who receive interventions consistent with current standards of practice

Outcome Indicators

- Incidence of facility-acquired pressure ulcers above Stage 2
- Incidence of facility-acquired pressure ulcers above Stage 2 in low-risk patients
- Incidence of facility-acquired heel ulcers in patients admitted with recent hip fracture
- Percentage of established pressure ulcers that heal fully

SUMMARY

Pressure ulcers are most likely to be effectively prevented and treated by following essential steps and providing appropriate care of both the patient and the wound. Although some pressure ulcers may be unavoidable, the interprofessional care team must make every reasonable effort to prevent them and to promote healing within the limits of patients' condition and prognosis. Consistent and correct performance of the basic measures discussed in this guideline can help facilities to demonstrate that they did everything reasonable to try to prevent pressure ulcers and heal existing ones. Facilities must ensure that documentation of skin wounds and ulcers is consistent with both the treatment administration record and the medical record (including nursing, consultant, and primary medical team notes).

RECOMMENDATIONS

Pressure Ulcers and Other Wounds in the Post-Acute and Long-Term Care Setting

See *Grading System for Recommendations in PALTmed Clinical Practice Guidelines* immediately after this table (pp 46-47).

Recommendation	Quality of Evidence	Strength of Recommendation
Recognition		
1. Select and consistently use one predictive scale to identify patients at high risk for the development of pressure ulcers or other wounds. Although predictive scales vary in their predictive value, the consistent use of one scale is the most reliable way to detect change over time.	Moderate	Strong
2. Write a care plan to address identified risk factors based on MDS variables.	Moderate	Weak
Assessment		
3. Develop a structured program for timely skin assessment.	High	Strong
4. Assess nonhealing wounds for infection or biofilm using a tool such as NERDS or clinical observation.	Low	Insufficient
5. Classify/characterize pressure ulcers based on MDS criteria.	Low	Weak
Treatment/Prevention/Monitoring		
6. Employ preventive measures such as promoting hydration and avoiding excessive skin moisture.	Moderate	Strong

7. Employ repositioning or offloading measures as needed (includes support surfaces).
PREVENTION
• Repositioning
• Support surfaces:
  • Advanced static mattress
  • Alternating air
  • Sophisticated wheelchair cushion
TREATMENT
• Support surfaces:
  • Air-fluidized bed
  • Alternating-pressure bed
  • Low-air-loss mattress
	Moderate	Strong

8. Cleanse wounds with nontoxic products.	Low	Insufficient

RECOMMENDATIONS Continued

Pressure Ulcers and Other Wounds in the Post-Acute and Long-Term Care Setting

Recommendation	Quality of Evidence	Strength of Recommendation
9. When managing pressure ulcers in a patient who is near the end of life, balance best practice in wound prevention and treatment with promotion of the patient's dignity, self worth, and quality of life. Educate the patient and family and provide counseling and psychological support related to pressure ulcers that occur near the end of life.	Low	Strong
10. Write a facility policy for assessment and treatment of PUOW with the goal of using it to develop realistic, individualized, interdisciplinary care plans.	Low	Strong

GRADING SYSTEM FOR RECOMMENDATIONS IN AMDA CLINICAL PRACTICE GUIDELINES

The system PALTmed has adopted for grading clinical practice guidelines is based on the GRADE Working Group Approach.[96]

Judgments about the quality of evidence require assessing the validity of results for important outcomes in individual studies. Explicit criteria should be used in making these judgments. In the GRADE Working Group approach, a systematic review of available evidence guides these judgments. Sequential judgments are made concerning the following factors:

- The quality of evidence across studies for each important outcome,
- Which outcomes are critical to a decision,
- The overall quality of evidence across these critical outcomes,
- The balance between benefits and harms, and
- The strength of recommendations.

Reviewers consider four key elements: study design, study quality, consistency, and directness.

Definitions

The **quality of evidence** indicates the extent to which one can be confident that an estimate of effect is correct.

The **strength of a recommendation** indicates the extent to which one can be confident that adherence to the recommendation will do more good than harm.

Study design refers to the basic study design (broadly, observational studies and randomized trials).

Study quality refers to the detailed study methods and execution. Appropriate criteria are used to assess study quality for each important outcome. For randomized trials, for example, these criteria might include the adequacy of allocation concealment, blinding, and follow-up. Reasons for downgrading a quality rating must be explicit (e.g., failure to blind patients and physicians reduced the quality of evidence for an intervention's impact on pain severity, a serious limitation).

Consistency refers to the similarity of effect estimates across studies. If there is important unexplained inconsistency in study results, confidence in the effect estimate for that outcome is reduced.

Directness refers to the extent to which the people, interventions, and outcome measures in the studies are similar to those of interest. For example, the directness of the evidence may be uncertain if the people of interest are older, sicker, or have more comorbidity than those in the studies. To determine whether important uncertainty exists, one can ask whether there is a compelling reason to expect important differences in the effect size. Because many interventions have more or less the same relative effects across most patient groups, reviewers should not use overly stringent criteria in deciding whether evidence is direct.

Criteria

PALTmed's Clinical Practice Committee has chosen to use the following criteria for assigning a grade of evidence:

Quality of Evidence

High: At least 1 randomized controlled trial (RCT) ***or*** 3 pre / post interventions or other prospective interventions or 3 well-structured, relevant observational studies.

Moderate: Studies that use well-tested methods to make comparisons in a fair way, but where the results leave room for uncertainty (e.g., because of the size of the study, losses to follow-up, or the method used for selecting groups for comparison).
Low: Studies in which the results are doubtful because the study design does not guarantee that fair comparisons can be made.

Strength of Recommendation

Strong: Benefits clearly outweigh risks.
Weak: Benefits are balanced with risks.
Insufficient: Evidence is inadequate to make a recommendation.

Criteria for *decreasing* the grade of a recommendation:

- Serious (- 1) or very serious (- 2) limitation to study quality,
- Important inconsistency (- 1),
- Some (- 1) or major (- 2) uncertainty about directness,
- Imprecise or sparse data (- 1),
- High probability of reporting bias (- 1).

Criteria for *increasing* the grade of a recommendation:

- Strong evidence of association: Significant relative risk greater than 2 (less than 0.5), based on consistent evidence from two or more observational studies, with no plausible confounders (+1);
- Very strong evidence of association: Significant relative risk greater than 5 (less than 0.2), based on direct evidence with no major threats to validity (+2);
- Evidence of a dose-response gradient (+1);
- All plausible confounders would have reduced the effect (+1).

These criteria are cumulative – e.g., if RCTs have serious limitations ***and*** there is uncertainty about the directness of the evidence, the grade of evidence would drop from high to low.

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APPENDIX 1

Suggested Components of a Staff Training Program in Pressure Ulcer Prevention and Management

At a minimum, education and training related to the prevention of pressure ulcers should cover the following topics:

- Accurate and consistent documentation of pertinent information about the patient and the ulcer;
- Assessment of infection, including differentiation from colonization;
- Development and implementation of an individualized program of skin care;
- How to
  - Describe, stage, and document stages of pressure ulcers using uniform terminology;
  - Ensure continuity of care, including wound documentation and transfer of the patient between institutions or locations;
  - Dress and care for pressure ulcers;
  - Ensure that wound care is consistent with patient wishes and goals;
  - Position a patient to decrease risk of tissue breakdown;
  - Use and interpret pressure ulcer risk assessment tools.
- Patient and family involvement in the plan of care;
- Pain management related to wounds;
- Principles of cleansing and infection control;
- Principles of nutritional support in pressure ulcer healing;
- Principles of pressure ulcer prevention and management;
- Principles of positioning and support surfaces to prevent and manage pressure ulcers;
- Product selection (i.e., categories of and indications for support surfaces, dressings, topical antibiotics, or other agents);
- Risk factors for and causes of pressure ulcers;
- Skin assessment and related documentation.

Patient's Name:
Evaluator's Name:

					Date of Assessment		
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 surface.	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 1/2 of body.	3. **Slightly Limited:** Responds to verbal commands but cannot always communicate discomfort or 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.			
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. **Moist:** Skin is often but not always moist. Linen must be changed at least once a shift.	3. **Occasionally Moist:** Skin is occasionally moist, requiring an extra linen change approximately once a day.	4. **Rarely Moist:** Skin is usually dry; linen requires changing only at routine intervals.			
Activity degree of physical activity	1. **Bedfast:** Confined to bed.	2. **Chairfast:** Ability to walk severely limited or nonexistent. Cannot bear own weight and/or must be assisted into chair or wheel chair.	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 the room at least twice a day and inside room at least once every 2 hours during waking hours.			
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.	3. **Slightly Limited:** Makes frequent though slight changes in body or extremity position independently.	4. **No Limitations:** Makes major and frequent changes in position without assistance.			

Patient's Name:
Evaluator's Name:

					Date of Assessment		
Nutrition usual food intake pattern	1. **Very Poor:** Never eats a complete meal. Rarely eats more than 1/3 of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluid poorly. Does not take a liquid dietary supplement. OR is NPO[1] and/or maintained on clear liquids or IV[2] for more than 5 days.	2. **Probably Inadequate:** Rarely eats a complete meal and generally eats only about 1/2 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.	3. **Adequate:** Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) each day. Occasionally will refuse a meal, but will usually take a supplement if offered, OR is on a tube feeding or TPN[3] 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.			
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.	3. **No Apparent Problem:** Moves in bed and chair independently and has sufficient muscle strength to list up completely during move. Maintains good position in bed or chair at all times.				
				Total Score			

[1]NPO: Nothing by mouth [2]IV: Intravenously [3]TPN: Total parenteral nutrition
Total score indicates risk of pressure ulcer development:
15-16 Low risk 13-14 Moderate risk <12 High risk

Appendix 3
Norton Pressure Sore Risk Assessment Scale

Patient's Name: Evaluator's Name:
Date of Assessment:

Physical condition	Good	4						
	Fair	3						
	Poor	2						
	Very bad	1						
Mental condition	Alert	4						
	Apathetic	3						
	Confused	2						
	Stupor	1						
Activity	Ambulant	4						
	Walks with help	3						
	Chairbound	2						
	Bedbound	1						
Mobility	Full	4						
	Slightly limited	3						
	Very limited	2						
	Immobile	1						
Incontinent	Not	4						
	Occasionally	3						
	Usually (urine)	2						
	Doubly	1						
TOTAL SCORE								

Highest possible score: 20 (minimal risk)
Lowest possible score: 5 (maximum risk)
Score higher than 18: Low risk
14-18: Medium risk
10-14: High risk
Less than 10: Very high risk

Adapted from:

Norton D, McLaren R, Exton-Smith AN. An investigation of geriatric nursing problems in the hospital. 1962. London, England: National Corporation for the Care of Old People (now the Centre for Policy on Ageing).
Qaseem A, Mir TP, Starkey M, Denberg TD. Risk assessment and prevention of pressure ulcers: A clinical practice guideline from the American College of Physicians. Ann Int Med 2015; 162; 359-369.

APPENDIX 4
Risk Management Issues in Pressure Ulcer Care

Post-acute and long-term care (PA/LTC) facilities are justifiably concerned about legal liability related to pressure ulcer care. Failure to prevent pressure ulcers and failure to heal existing pressure ulcers are common bases for claims against PA/LTC facilities and staff. Facilities can protect themselves against such claims by implementing a comprehensive, interdisciplinary pressure-ulcer prevention and treatment program and by accurately documenting each step in the care process. Claims can often be avoided by attention to the following principles:

- Always develop an ulcer plan of care that is individualized and consistent with the patient's overall plan of care.
- Communicate the ulcer plan of care clearly and in a timely manner to the patient, family or legally authorized representative, and relevant members of the patient's health care team.
- Always document the plan of care, interventions, changes in the condition of the ulcer, and changes in the plan of care.
- Document specific patient factors that might retard or prevent wound healing (e.g., weight loss, diabetes, current illness, multiple wounds, incontinence).

Appropriate pressure ulcer care requires the implementation of a correct process that is consistent both with current standards of care and with the goals of the individual patient's care. Appropriate care does not require exhausting all possible approaches, nor does it necessarily ensure that development of an ulcer will be avoided or that an ulcer will heal. When an ulcer is deemed unavoidable, the practitioner and the wound care team should document the rationale for this determination. Pressure ulcers may be a complication of other comorbidities and an indicator of underlying multisystem failure and clinical decline. The failure of an ulcer to heal as predicted should not necessarily imply that a facility should have chosen other treatment approaches. Rare deviations from a ulcer care plan should not be construed as an overall process failure or as a departure from the standard of care. However, the rationale for significant deviations from the treatment protocol should be documented in the patient's medical record.

Adapted from:

Brandeis GH, Berlowitz DR, Katz P. Are pressure ulcers preventable? A survey of experts. Adv Skin Wound Care 2001; 14(5): 244-248.

Levine JM. Skin failure: An emerging concept. J Am Med Dir Assoc 2016; 17: 666-669.

Thomas DR. Are all pressure ulcers avoidable? J Am Med Dir Assoc 2001; 2(6): 287-298.

Voss AC, Bender SA, Ferguson ML, et al. Long-term care liability for pressure ulcers. J Am Geriatr Soc 2005 Sep; 53(9): 1587-1592.

APPENDIX 5

Pressure Ulcer Scale for Healing (PUSH Tool 3.0)

Patient Name _____ Patient ID# _____
Ulcer Location_____ Date _____

Directions: Observe and measure the pressure ulcer. Categorize the ulcer with respect to surface area, exudate, and type of wound issue. Record a sub-score for each of these ulcer characteristics. Add the sub-scores to obtain the total score. A comparison of total scores measured over time provides an indication of the improvement or deterioration in pressure ulcer healing.

Length x Width (in cm^2)	**0** 0	**1** < 0.3	**2** 0.3 - 0.6	**3** 0.7-1.0	**4** 1.21-2.0	**5** 2.1-3.0	**Sub-score**
		6 3.1-4.0	**7** 4.1-8.0	**8** 8.1-12.0	**9** 12.1-24.0	**10** >24.0	
Exudate Amount	**0** None	**1** Light	**2** Moderate	**3** Heavy			**Sub-score**
Tissue Type	**0** Closed	**1** Epithelial Tissue	**2** Granulation Tissue	**3** Slough	**4** Necrotic Tissue		**Sub-score**
							TOTAL SCORE

Length x Width: Measure the greatest length (head to toe) and the greatest width (side to side) using a centimeter ruler. Multiply these two measurements (length x width) to obtain an estimate of surface area in square centimeters (cm2). Caveat: Do not guess! Always use a centimeter ruler and always use the same method each time the ulcer is measured.

Exudate Amount: Estimate the amount of exudate (drainage) present after removal of the dressing and before applying any topical agent to the ulcer. Estimate the exudate (drainage) as none, light moderate, or heavy.

Tissue Type: This refers to the types of tissue that are present in the wound (ulcer) bed. Score as a '4' if there is any necrotic tissue present. Score as a '3' if there is any amount of slough present and necrotic tissue is absent. Score as a '2' if the wound is clean and contains granulation tissue. A superficial wound that is reepithelializing is scored as a '1'. When the wound is closed, score as a '0'.

4 - Necrotic Tissue (Eschar): black, brown, or tan tissue that adheres firmly to the wound bed or ulcer edges and may be either firmer or softer than surrounding skin.
3 - Slough: yellow or white tissue that adheres to the ulcer bed in strings or thick clumps, or is mucinous.
2 - Granulation Tissue: pink or beefy red tissue with a shiny, moist, granulation appearance.
1 - Epithelial Tissue: for superficial ulcers, new pink or shiny tissue (skin) that grows in from the edges or as islands on the ulcer surface.
0 - Closed/Resurfaced: the wound is completely covered with epithelium (new skin).

Pressure Ulcer Healing Chart - to monitor trends in PUSH Scores over time
(Use a separate page for each pressure ulcer)

Patient Name _____ Patient ID# _____
Ulcer Location_____ Date _____

Directions: Observe and measure pressure ulcers at regular intervals using the PUSH Tool. Date and record PUSH Sub-scores and Total Scores on the Pressure Ulcer Healing Record below.

Pressure Ulcer Healing Record														
Date														
Length x Width														
Exudate Amount														
Tissue Type														
PUSH Total Score														

Graph the PUSH Total Scores on the Pressure Ulcer Healing Graph below.

PUSH Total Score	Pressure Ulcer Healing Graph													
17														
16														
15														
14														
13														
12														
11														
10														
9														
8														
7														
6														
5														
4														
3														
2														
1														
Healed = 0														
Date														

GLOSSARY

(Defined terms are indicated with * on first reference in both text and tables).

biofilm: Aggregate of microorganisms in which cells that are frequently embedded within a self-produced matrix of extracellular polymeric substance (EPS) adhere to each other and/or to a surface in order to provide a protective environment.

cleansing: The use of appropriate devices and solutions to clean the surface of a wound bed and remove loose foreign debris or contaminants in order to decrease microbial growth.

colonization: Presence of microorganisms on the surface or in the tissue of a wound without signs and symptoms of infection. (See ***infection.***)

critical colonization: A stage between colonization and infection when host defenses are unable to maintain healthy balance, with either too many microbes or too many species in the wound base, causing a

delay in healing.

debride/debridement: To remove/removal of devitalized or necrotic tissue and foreign matter from a wound to improve or facilitate the healing process.

edema: Excessive accumulation of fluid in body tissues, causing swelling.

epithelialization: Formation of epithelium (the topmost layer of skin).

erythema: Redness of the skin caused by dilation of the blood capillaries.

eschar: Thick, leathery, necrotic or devitalized tissue, frequently black or brown in color; skin that has lost its usual physical properties and biological activity. Eschar may be loose or may be firmly adhered to the wound.

exudate: Fluid that has been forced out of tissues or capillaries because of inflammation or injury. Also called drainage or discharge. Exudate may be

— ***purulent*** (product of inflammation that contains bacteria, leukocytes, or liquefied necrotic debris),

— ***sanguineous*** (containing blood),

— ***serosanguineous*** (containing blood and serum),

— ***serous*** (watery fluid that may be clear or pale yellow, tan, or pink in color).

fluctuance: A soft, "boggy" quality of skin that often indicates the presence of pus in a bacterial infection.

friction: External mechanical force exerted on skin that is dragged across a surface. Friction can irritate the skin and contribute to skin breakdown. (See shear/shearing.)

granulation tissue: Pink-red, moist tissue that fills an open wound when it begins to heal. Granulation tissue contains collagen, fibroblasts, inflammatory cells, and new blood vessels.

hyperkeratotic: Thickened (referring to the outer horny layer of the skin).

induration: Abnormal hardening of a tissue or organ.

infection: Invasion and multiplication of microorganisms in body tissues. Infection may remain localized or become systemic if microorganisms gain access to the lymphatic or vascular system. If infection persists or spreads, it may result in an acute, subacute, or chronic disease state.

Kennedy Terminal Ulcer: Usually presents as with sudden onset on the sacrum; shaped like a pear, butterfly or horseshoe; in colors of red, yellow, black or purple; borders of the ulcer are usually irregular. According to CMS, it occurs within 6 weeks of death.

maceration: A softening or breaking down of tissue from constant dampness, which can be caused by exposure to anything wet (e.g., perspiration, urine, wound exudate).

microclimate: The essentially uniform local climate of a usually small site or habitat.

odor: Odor can be described as absent, faint, moderate, or strong and often varies according to wound moisture, the type and density of microorganisms present, and the amount of nonviable tissue present. Infected wounds often have a sickly, sweet odor indicating excessive bacteria.

periwound: Near or around a wound.

purulent: See exudate.

positive predictive value: The probability that a person has a condition when a test for the condition is positive.

scar tissue: Fibrous tissue that replaces normal tissue destroyed by injury or disease.

sensitivity: A measure of the reliability of a screening test, based on the proportion of people with the condition who have a positive result on the test. (The higher the sensitivity of the test, the lower the number of "false-negative" results, i.e., people whose disease is missed by the test.) (See also specificity.)

shear/shearing: Interaction of gravity and friction against the surface of the skin. Shear occurs when layers of skin rub against each other or when the skin remains stationary while the underlying tissue moves, stretching and angulating or tearing blood vessels, causing tissue damage. (See friction.)

sinus tract: Passageway of tissue destruction under the skin surface, with an opening at skin level from the edge of the wound. Often used interchangeably with tunnel (see tunnel/tunneling).

slough: Necrotic or avascular tissue in the process of separating from viable tissue. Usually soft, moist, and light in color; may be stringy.

specificity: A measure of the reliability of a screening test, based on the proportion of people free of the condition who have a negative result on the screening test. (The higher the specificity of the test, the lower the number of "false-positive" results, i.e., people whom the test wrongly identifies as having the condition).

tunnel/tunneling: Passageway of tissue destruction under the skin surface, with an opening at skin level from the edge of the wound. Often used interchangeably with sinus tract (see sinus sinus tract).

undermining: Destruction of tissue or ulceration that extends under the skin edges, so that the pressure ulcer is larger at its base than at the skin surface. Undermining often develops from shearing forces (see shear/shearing). Undermining differs from tunneling (see tunnel/tunneling) in two ways: (1) undermining involves a larger extent of the wound edge than does tunneling; and (2) no channel or tract extends from the pressure ulcer under the adjacent intact skin, as is the case in tunneling.

Definitions adapted from:

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Bryant R, Nix D, Eds. Acute & Chronic Wounds: Current Management Concepts (4th edition). 2012. St. Louis, MO: Elsevier Mosby.

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Stedman's Concise Medical Dictionary for the Health Professions, Illustrated (4th edition). 2001. Baltimore, MD: Lippincott Williams & Wilkins.

MANAGEMENT OF PRESSURE ULCERS AND OTHER WOUNDS: INTERNET RESOURCES

Association for the Advancement of Wound Care www.aawconline.org. Accessed 1/29/2017.

Agency for Health Care Research and Quality www.ahrq.gov. Accessed 1/31/2017.

Cochrane Collaboration Library of Systematic Reviews. http://www.cochranelibrary.com/. Accessed 1/29/2017.

European Pressure Ulcer Advisory Panel www.epuap.org. Accessed 1/29/2017.

European Wound Management Association www.ewma.org. Accessed 1/29/2017.

Federal Guidance on Pressure Ulcers:

State Operations Manual Appendix PP–Guidance to Surveyors for Long Term Care Facilities (Rev. 157, 06-10-16). https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_pp_guidelines_ltcf.pdf. Accessed 1/31/2017.

Cross-Setting Pressure Ulcer Measurement & Quality Improvement

https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Post-Acute-Care-Quality-Initiatives/Cross-Setting-Pressure-Ulcer-Measurement-and-Quality-Improvement.html. Accessed 1/29/2017.

National Guidelines Clearinghouse www.guideline.gov. Accessed 1/29/2017.

National Pressure Ulcer Advisory Panel www.npuap.org. Accessed 1/29/2017.

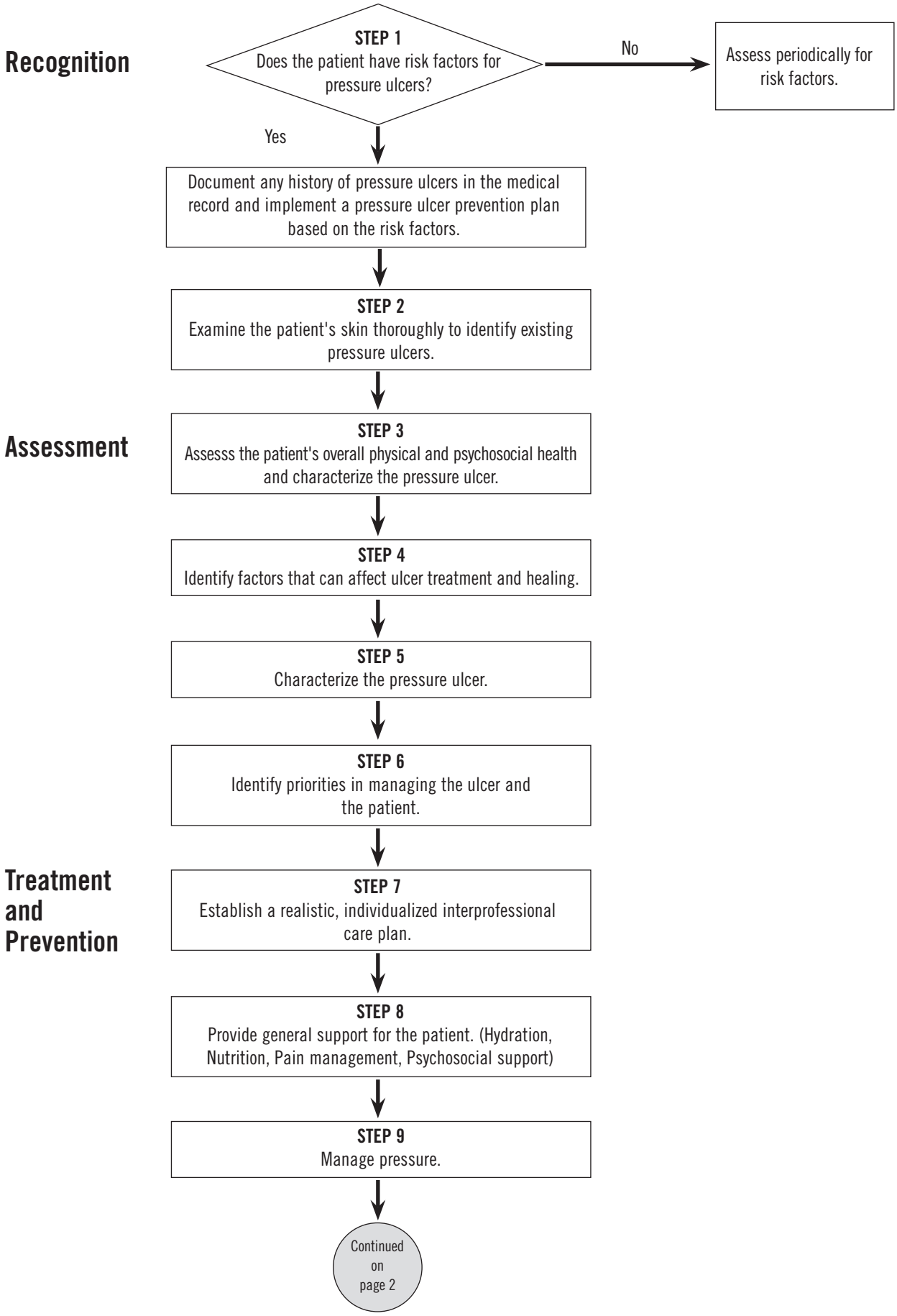
Wound Healing Society www.woundheal.org. Accessed 1/29/2017.

Wound, Ostomy, and Continence Nurses Society www.wocn.org. Accessed 1/29/2017.

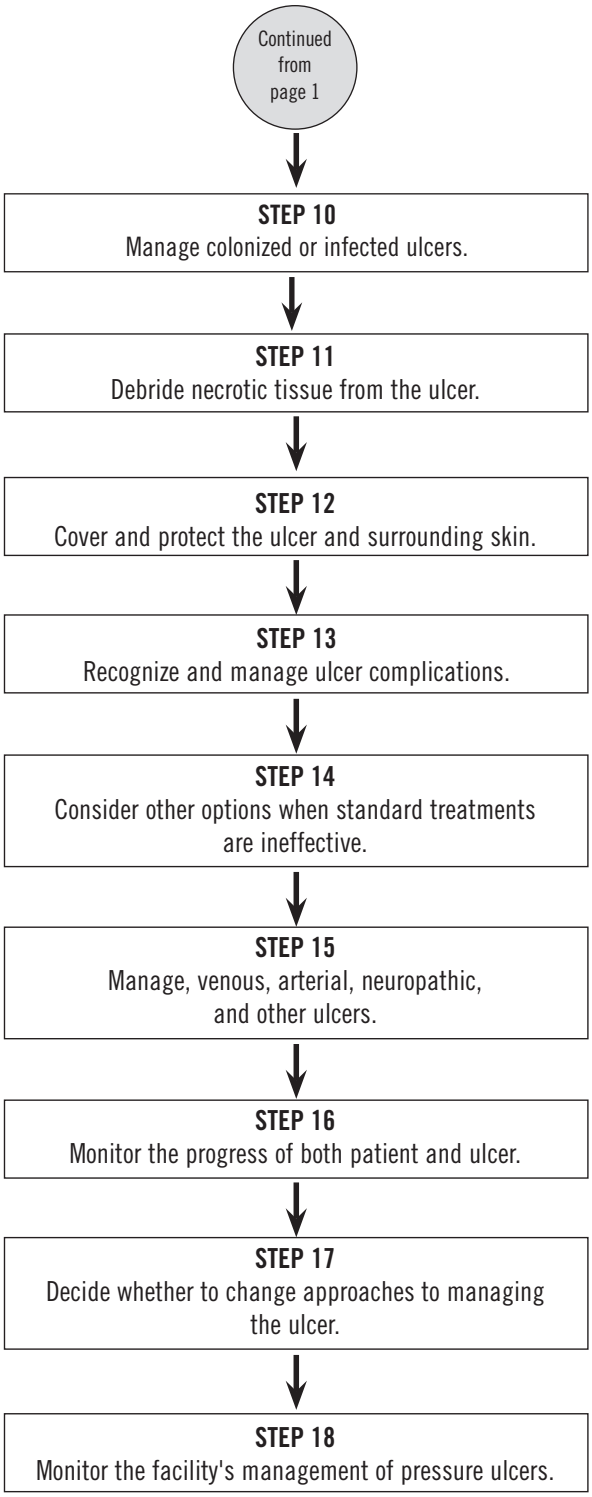
— *Notes* —

— *Notes* —

This is the Pressure Ulcers and Other Wounds in the Post-Acute and Long-Term Care Setting algorithm to be used in conjunction with the written text of this clinical practice guideline. The numbers next to the different components of the algorithm correspond with the steps in the text.


Recognition
STEP 1
Does the patient have risk factors for pressure ulcers?
No
Assess periodically for risk factors.
Yes
Document any history of pressure ulcers in the medical record and implement a pressure ulcer prevention plan based on the risk factors.
Assessment
STEP 2
Examine the patient's skin thoroughly to identify existing pressure ulcers.
STEP 3
Assesss the patient's overall physical and psychosocial health and characterize the pressure ulcer.
STEP 4
Identify factors that can affect ulcer treatment and healing.
STEP 5
Characterize the pressure ulcer.
STEP 6
Identify priorities in managing the ulcer and the patient.
Treatment and Prevention
STEP 7
Establish a realistic, individualized interprofessional care plan.
STEP 8
Provide general support for the patient. (Hydration, Nutrition, Pain management, Psychosocial support)
STEP 9
Manage pressure.
Continued on page 2

Monitoring


Continued from page 1
STEP 10
Manage colonized or infected ulcers.
STEP 11
Debride necrotic tissue from the ulcer.
STEP 12
Cover and protect the ulcer and surrounding skin.
STEP 13
Recognize and manage ulcer complications.
STEP 14
Consider other options when standard treatments are ineffective.
STEP 15
Manage, venous, arterial, neuropathic, and other ulcers.
STEP 16
Monitor the progress of both patient and ulcer.
STEP 17
Decide whether to change approaches to managing the ulcer.
STEP 18
Monitor the facility's management of pressure ulcers.

Post-Acute and Long-Term Care Medical Association (PALTmed) developed this guideline with the support and cooperation of the following individuals, organizations and associations:

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American Geriatrics Society
American Health Care Association
American Society of Consultant Pharmacists
National Association of Directors of Nursing Administration in Long-Term Care
National Association of Geriatric Nursing Assistants
National Conference of Gerontological Nurse Practitioners

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