Pressure ulcers can be devastating not only for patients but for caregivers as well. This practical, concise handbook will provide bedside nurses at all levels with vital information on assessment, treatment, and prevention of pressure ulcers. It also contains guidelines for establishing an ulcer reduction program and for increasing reimbursement.

The book discusses pressure ulcer risk assessment (including use of the Braden Scale), the incidence and underlying causes of pressure ulcers, planning patient care, equipment for mitigating pressure on susceptible tissues, nutrition, and issues concerning dressings and treatment. It discusses prevention tools that can be used in acute care, long-term facilities, and the home. Evidence-based strategies address the benefits of creating a skin care team, how to create documentation that will facilitate higher reimbursement, and working with outpatients. Nurses studying for Wound Ostomy Continence Nurse certification will find support material regarding identifying, preventing, and resolving pressure ulcers not readily available elsewhere.

**Key Features:**
- Provides speedy access to all aspects of assessment, treatment, and prevention
- Includes tips for care in the popular “Fast Facts in a Nutshell” format
- Includes care delivery parameters and documentation required for optimal Medicare and Medicaid reimbursement
- Delivers frequently used guidelines for assessing, measuring, and grading pressure ulcers, as well as documenting the findings
- Presents strategies for establishing an ulcer prevention program
- Authored by the coordinator of a successful wound ostomy program that reduced pressure ulcer occurrence by 54% in 1 year
FAST FACTS ABOUT PRESSURE ULCER CARE FOR NURSES
Mary Ellen Dziedzic, MSN, RN, CWOCN, has more than 27 years of nursing experience, from bedside care to nursing education, quality improvement, and management. She is currently the wound care coordinator at Geisinger Wyoming Valley, part of the Geisinger Health System in northeastern Pennsylvania. She graduated from King's College with a Bachelor's of Science in Social Work and then from Misericordia University with a Bachelor's and Master's of Science in Nursing.

In her current position, Mary Ellen is responsible for management of the wound, ostomy, and continence program at Geisinger Wyoming Valley for both inpatients and outpatients. Over the past 4 years she has successfully developed not only the wound ostomy department but also an intricate matrix of staff members who have key knowledge related to pressure ulcer prevention. Pressure ulcers in this facility have been decreased by 75% since 2009.

She writes frequently, and has authored several articles for Mosby's Nursing Consult, including Preventing Pressure Ulcers in the Acute Care Setting (2009, updated 2011), Managing Adverse Reactions in Medications (2008, updated 2010), and Minimally Invasive Surgery (2010, updated 2012). Mary Ellen presented at the Premier Group national conference in San Antonio, Texas, in 2013 as well as at several hospital- and community-based programs. She has also authored a poster for the Wound Ostomy Continence Nurse Society National Conference 2013. In addition she has developed a competency course on skin care and pressure ulcers for all personnel in the Geisinger Health System—all staff in six acute care hospitals must complete this course.
FAST FACTS ABOUT PRESSURE ULCER CARE FOR NURSES

How to Prevent, Detect, and Resolve Them in a Nutshell

Mary Ellen Dziedzic, MSN, RN, CWOCN
This book is dedicated to my loving family—my husband Mark and son Thaddeus. All things are possible with you. To my best four-legged friend Henry, thanks for sitting by my side as I wrote this book.
Contents

Preface ix

Part I: The Basics of Pressure Ulcers
1. The Problem of Pressure Ulcer Occurrence 3
2. Anatomy, Physiology, and Pathophysiology of the Skin 15
3. Risk Assessment 25
4. Back to Basics in Skin Care and Assessment 35

Part II: Preventing Pressure Ulcers
5. Pressure Ulcer Prevention 51
6. Nutrition and Pressure Ulcers 71
7. Mobility and Pressure Ulcers 79
8. Go to the Mattress: Mattresses and Specialty Beds 87

Part III: Pressure Ulcer Treatment
9. What Happens When a Patient Does Acquire a Pressure Ulcer? 99
10. Treatment: Creating an Environment of Healing 109
11. Debridement of Wounds 121
CONTENTS

Part IV: Establishing the Environment of Skin Care Safety

12. Creating an Environment of Skin Safety Throughout the Health Care Facility 129

Appendices

I. Elder Abuse Hotlines 141
II. Support Services Available and Manufacturers 153
III. Chair Services Available and Manufacturers 157
IV. Choosing the Appropriate Dressing 159
V. E-Resources 169

References 171

Index 179
Throughout my 28 years as a nurse I have had many different roles, including labor and delivery nurse, cardiac nurse, manager, educator, and eventually a wound care nurse. All the patients I cared for had the potential for skin issues and developing pressure ulcers. I did not realize how serious the issue was until I cared for a young man who seemed relatively healthy but had had surgery. This patient, though large, appeared as if he could move himself and shift his weight. Normally people will shift positions if they are in one position for a long time. Think about how many times you shift your weight when on a long trip in a car.

The patient was not moved by the nurses caring for him nor was he encouraged to move. He was walked per post-operative instructions but when he was in bed or in the chair, he essentially stayed in one position because it was too painful to move. The patient developed a very large pressure ulcer to his buttocks. The wound measured 15 cm by 15 cm. The ulcer initially started as a large purple area but eventually started to slough and became covered with thick black tissue. Once the ulcer was noted, treatment and further prevention were initiated but the ulcer was bone deep. Because the man was young, no one wanted to disturb him or offensively look at his buttocks. This young man had to have several additional surgeries to clean the wound and plastic surgery to close the
wound after several months, and he had to go to a short-term rehabilitation facility as his mobility was further impeded.

This ulcer was an eye-opener—it was large and odorous, and caused the patient additional pain and discomfort, all of which could have been avoided if simple steps had been taken. It is possible to decrease facility-acquired pressure ulcers and develop an environment of safety when it comes to skin care. Through a concerted effort by all levels of employees at Geisinger Health System where I am a CWOCN and coordinator of the wound ostomy program, pressure ulcers have decreased by more than 75% with the incidence of Stage III and Stage IV ulcers decreasing to zero.

This book provides simple methods to prevent and treat pressure ulcers. The reader will have a toolbox to use to truly understand pressure ulcers. Evidence-based strategies will be noted as well as practical measures, not simply textbook findings. These measures will include important prevention mechanisms; how to identify, detect, and assess pressure ulcers; and basic treatment modalities that can be used in any setting.

Mary Ellen Dziedzic
PART

The Basics of Pressure Ulcers
The Problem of Pressure Ulcer Occurrence

Pressure ulcers can cause patients serious harm and can affect their ability to function. Caused by pressure most often over a bony prominence, these ulcers can cause serious infection and require plastic surgery as well as long-term intervention. Chronic ulcers can take months to years to heal and may require long-term nursing care. It is therefore important for the nurse to understand how pressure ulcers occur, to have a clear means of identification, and to understand why prevention is necessary.

Upon completion of this chapter, the reader will be able to:

1. Define and properly describe pressure ulcers
2. Discuss current staging and identification guidelines
3. Identify the importance of prevention as it is related to the cost of pressure ulcer care
WHAT IS A PRESSURE ULCER?

Before pressure ulcers can be cared for or prevented, it is first necessary to understand what they are. Pressure ulcers, also called decubitus ulcers or bed sores, are essentially that—pressure ulcers. Once this fact is understood, everything else required for assessment and treatment will fall into place. According to the International National Pressure Ulcer Advisory Panel (NPUAP)–European Pressure Ulcer Advisory Panel (EPUAP) Pressure Ulcer Classification System (2009): “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. A number of contributing or confounding factors are associated with pressure ulcers; the significance of these factors is yet to be elucidated.” When analyzed this makes sense: Bones protruding at these sites cause pressure to the skin and tissue; when a person is positioned on these areas for a period of time (often 2 hours or less; EPUAP and NPUAP, 2009), damage to tissue above the bone can occur simply because of the person's body weight. This is truly pressure and is how a pressure ulcer can begin.

**FAST FACTS in a NUTSHELL**

Injury to the skin and underlying tissue most commonly occurs at the sacrum, ischium, heel, or trochanter (Wound Ostomy and Continence Nurses Society, 2006–2011). Positioning patients so that pressure is off these sites is important to prevention.

Essentially all pressure ulcers are caused by pressure of some sort, whether internal, external, or from a medical or personal device. Shear, friction, and moisture do play a part in the development of pressure ulcers. These forces alone or in combination can cause tissue damage.
Friction

Friction occurs when two forces rub together (Sibbald, 2011); for example, when a patient with heavy thighs increases the amount of walking or running on a hot day. Think about the rubbing and the red raw appearance of the skin on the inner thighs; that is from friction. Friction causes skin damage and usually alone does not cause pressure ulcers but can in combination with other forces.

Shear

Shear is defined as the applied force that can cause an opposite, parallel sliding motion in the planes of an object. Shear is affected by the amount of pressure that is exerted on the underlying tissue (Wound Ostomy and Continence Nurses Society, 2006–2011). An example is a patient in a wheelchair who slips out of the chair. Damage to the skin often occurs to the posterior thighs: Skin is soft, the chair is not, and bone is not. Such forces can cause damage, especially over time. This type of damage is often evident from thigh to knee where the skin can actually become sheared. Another common area where shear can occur is when a patient is sitting in bed with the head elevated to the highest level. The body often slips down. Here damage often occurs to the sacrum or heel of the foot.

**FAST FACTS in a NUTSHELL**

When a patient sits in bed with the head above a 30-degree angle, serious skin injury can occur to the sacrum and heels. This position should be reserved for meals and the patient lowered as soon as possible. If the patient’s head must remain above 30 degrees for medical reasons, it is important to reposition the patient frequently to decrease the pressure on soft tissue.
Moisture

Moisture itself causes tissue damage and can lead to pressure ulcers in combination with the other forces of shear and friction. A patient’s skin can be moist from perspiration, incontinence of bowel and bladder, and external moisture such as from leaking intravenous fluids, drainage from wounds, and leaking tubes. Moisture changes the balance of the skin, removing protective oils. If the moisture is acidic—such as from incontinence or other body fluid—damage can occur even in a brief amount of time. Bowel incontinence is one of the highest predictors in patients for developing pressure ulcers in the home (Bergquist-Beringer, 2011). Again moisture alone does not cause a pressure ulcer; moisture in combination with the above forces can cause a pressure ulcer.

This may seem confusing. Simple incontinence causing dermatitis can be improved by adding a toileting regimen or a consistent use of a barrier cream. When there is pressure and moisture, serious damage to the skin and underlying structures can occur. Moisture is an important concept in preventing pressure ulcers and skin damage and will be discussed in more detail in upcoming chapters.

CURRENT STAGING GUIDELINES: NPUAP-EPUAP

The first step in understanding pressure ulcers is to identify them. Pressure ulcers are most often graded or staged based on severity. The term “staging” might commonly mean that something must go through stages—as a caterpillar to a butterfly. Not true with pressure ulcers. An ulcer is staged on specific characteristics of the ulcer. Ulcers, like the human body, do not follow a specific pattern or gradient (Sibbald, 2011). Just as human beings are different, pressure ulcers are different.
The International NPUAP-EPUAP Pressure Ulcer Classification System (2009) is the most widely accepted classification system for identifying pressure ulcers and provides a simple means of identifying the severity of pressure ulcers. The key to identification of an ulcer’s severity is to clearly match the characteristics to those of the classification system. Classifying ulcers is not black and white and nurses often differ on how an ulcer is staged; it is therefore important to focus on current evidence.

Following is the International NPUAP-EPUAP Pressure Ulcer Classification System. (Used with permission, photos courtesy of Convatec.)

**Category/Stage I: Nonblanchable Erythema**

Category/Stage I involves intact skin with nonblanchable redness of a localized area usually over a bony prominence (Figure 1.1). Darkly pigmented skin may not have visible blanching; its color may differ from the surrounding area.

The area may be painful, firm soft, warmer or cooler as compared to adjacent tissue. Category/Stage I may be difficult to detect in individuals with dark skin tones. May indicate “at risk” persons (a heralding sign of risk).

**FIGURE 1.1**
Category/Stage I ulcer.  
*Source:* National Pressure Ulcer Advisory Panel Resources.
Category/Stage II: Partial Thickness Skin Loss

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 serum-filled blister. Presents as a shiny or dry shallow ulcer without slough or bruising (Figure 1.2). This category/stage should not be used to describe skin tears, tape burns, perineal dermatitis, maceration, or excoriation. Bruising indicates suspected deep tissue injury.

Category/Stage III: Full Thickness Skin Loss

In 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. It may include undermining or tunneling.

The depth of a Category/Stage III pressure ulcer varies by anatomical location (Figure 1.3). The bridge of the nose, ear, occiput, and malleolus do not have subcutaneous issue and Category/Stage III ulcers can be shallow. In contrast, areas of significant adiposity can develop extremely deep Category/Stage III pressure ulcers. Bone/tendon is not visible or directly palpable.
Category/Stage IV: Full Thickness Tissue Loss

Category IV is full thickness tissue loss with exposed bone, tendon, or muscle. Slough or eschar may be present on some parts of the wound bed. It often includes undermining or tunneling.

The depth of a Category/Stage IV pressure ulcer varies by anatomical location (Figure 1.4). The bridge of the nose, ear, occiput, and malleolus do not have subcutaneous tissue and these ulcers can be shallow. Category/Stage IV ulcers can extend to muscle and/or supporting structures (e.g., fascia, tendon, or joint capsule) making osteomyelitis possible. Exposed bone/tendon is visible or directly palpable.
Unstageable: Depth Unknown

This is full thickness tissue loss in which the base of the ulcer is covered by slough (yellow, tan, gray, green, or brown) and/or eschar (tan, brown, or black) in the wound bed.

Until enough slough and/or eschar is removed or exposed, the base of the wound, the true depth, and, therefore, the category/stage cannot be determined (Figure 1.5). Stable (dry, adherent, intact without erythema or fluctuance) eschar on the heels serves as “the body’s natural (biological) cover” and should not be removed.

![Unstageable ulcer. Source: National Pressure Ulcer Advisory Panel Resources.](image)

Suspected Deep Tissue Injury: Depth Unknown

This is a purple- or maroon-colored localized area of discolored, intact skin or blood-filled blister due to damage of underlying soft tissue from pressure and/or shear (Figure 1.6). The area may be preceded by tissue that is painful, firm, mushy, boggy, and warmer or cooler as compared to adjacent tissue.

Deep tissue injury may be difficult to detect in individuals with dark skin tones. Evolution may include a thin blister over a dark wound bed. The wound may further evolve and become covered by thin eschar. Evolution may be rapid, exposing additional layers of tissue even with optimal treatment.
Pressure ulcers are not back staged; that is, as they heal they do not become a Stage II from a Stage III. The ulcer is then always a Stage III; a healing Stage III will fill in with granulation tissue but not muscle. When the patient has a suspected deep tissue injury, the results may be devastating. The damage can be bone deep even though it may appear as ecchymotic to the untrained eye. That is why it is important to clearly identify and quickly act to prevent further damage and to treat what is already there (Sibbald, 2011). The rest of this book focuses on additional tools for assessing risk for pressure ulcer development, tips for prevention and care, treatment, and finally the development of a pressure ulcer prevention program.

**TIPS FOR IDENTIFICATION OF PRESSURE ULCERS**

The skin is the largest organ of the body and organs can fail. It is therefore important to conduct a thorough skin survey not only on admission, but also with every patient contact. Every time you assist a patient with basic care, inspect the skin for changes. When you help a patient to the toilet, dress, bathe, transfer, and/or position the patient, take the opportunity to check and provide skin care. Skin assessment will be
discussed in more detail later in this book but skin inspection should be conducted routinely and in a specific time frame—for example, every 8 hours.

An important aspect in identifying skin issues is to become attuned to changes. A pressure area is obviously different from surrounding skin. Skin may be red because of irritation or moisture but if the area does not fade when touched and then released (blanching), this may be an indication of a Stage I pressure ulcer.

For people with darker skin, the skin may look darker or lighter than the surrounding skin. Skin may look red, purple, or blue in color. Become accustomed to feeling a patient’s skin especially if a change is noted. Feel the temperature of the skin; just as with the appearance, the temperature may be different in the problem area. It may be cooler or warmer. In addition to temperature, a pressure ulcer may feel firmer, raised, or boggy (spongy). When an area of pressure is noted, feel for changes (University of Texas School of Nursing, n.d.).

Skin inspection is done from head to toe. Step by step, carefully look at all parts of the patient:

• Check the head for pressure areas from lying in one position.
• Assess ears, nose, cheeks, and chin especially if the person tends to favor one side when in bed.
• Check the shoulders, scapula, and elbows.
• Look at the fingers and hands if the patient clenches the fingers.
• Look at the hips, buttocks, sacrum, and abdomen.
• Check under folds, and look in the gluteal cleft as ulcers often occur at the coccyx or a split may occur due to moisture and incorrect movement.
• Carefully look at the thighs, groin, perianal area, and behind and between the knees.
• Look at the heels by actually lifting the leg to visualize or use a mirror. Touch can be important for heels as the heel may feel soft, boggy, or blistered.
• Finally check the bottoms and tops of the feet, toes, and between the toes if they rub together.

**FAST FACTS in a NUTSHELL**

When checking a patient’s skin for pressure ulcers or other problems, it is important to be thorough and consistent. This is an area where continuity of nursing care plays an important role. Subtle changes can then readily be detected.

When doing a careful skin inspection, remember to look at areas that are under clothing or equipment. Clothing can be constricting and the patient may not even be aware. This can occur often in the groin, feet, or at the waist. In addition, if a tube is allowed to lie between skin folds or on the skin for prolonged periods, pressure ulcers can occur. For example, a urinary catheter can cause an ulcer in the labia.

**THE COST OF PRESSURE ULCER CARE**

It is clear that skin care is an important part of a patient’s care. Pressure ulcers can be devastating to patients and families. If the pressure ulcer is significant it can cause infection, often to the bone (osteomyelitis). This type of infection can require expensive treatment, surgery, long-term hospitalization, prolonged rehabilitation, and sometimes amputation of the affected part or death. Every part of a patient’s life can be affected.
Pressure ulcer care is expensive. In the United States, these ulcers cost over $1 billion annually and add an additional $2.2 million Medicare hospital days to the United States health care system. The cost of treatment can be anywhere from $6,000 to $60,000 depending on the stage. Some sources indicate that the cost of care per ulcer can be up to $90,000. Plastic and reconstructive surgery for pressure ulcers can cost $25,000 or more per patient (Wake, 2010). These costs alone indicate the importance of pressure ulcer prevention and care. Add the human suffering factor and the importance of prevention becomes even more significant.

This book focuses on pressure ulcer identification, care, and prevention. The next section reviews the anatomy, physiology, and pathophysiology of the skin to assist in further understanding pressure ulcer development.