SOS
SAVE OKLAHOMA'S SKIN

A SYSTEMS APPROACH TO QUALITY IMPROVEMENT IN HEALTH CARE
TOOLKIT FOR PRESSURE ULCER PREVENTION AND TREATMENT

OFMQ
ADVANCING QUALITY » IMPROVING LIVES
A Systems Approach to Quality Improvement in Health Care: Toolkit for Pressure Ulcer Prevention and Treatment

(REVISION DATE JUNE 2009)

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This material was prepared by Oklahoma Foundation for Medical Quality, the Medicare Quality Improvement Organization for Oklahoma, under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily represent CMS policy. 962-PU-856-0409
Introduction

In Oklahoma, pressure ulcers (bed sores decubitis) impact thousands of lives across all health care settings. Pressure ulcers cause pain and suffering, are expensive to treat and can be life-threatening. The elderly, immobile and chronically ill are at risk. The incidence of pressure ulcers can be minimized with proper prevention practices. Health care workers and caregivers should know how to prevent and effectively treat pressure ulcers.

This toolkit is intended to provide health care facilities and caregivers with guidelines and resources to develop and improve systems for the prevention and treatment of pressure ulcers.

DISCLAIMER

This material is provided by the Oklahoma Foundation for Medical Quality, the Medicare Quality Improvement Organization (QIO) for Oklahoma, under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health & Human Services. The contents presented do not necessarily reflect CMS policy.

Oklahoma Foundation for Medical Quality stresses that as medical knowledge increases, recommended guidelines are updated. This material is intended as general information and should only be used as a guide for implementing processes to improve pressure ulcer prevention and treatment. Any individual using the material must consider the possibility of human error, changes in medical sciences, and the need for appropriate clinical judgment in each specific case.

ACKNOWLEDGEMENTS

This toolkit includes many resources developed for CMS’s Nursing Home Quality Initiative (NHQI), as well as information obtained from other sources. The tools, resources and guidelines may be applicable to any health care setting. Recommendations from the Agency for Health Care Policy and Research (AHCPR) Clinical Practice Guidelines on Pressure Ulcers #3 and #15, the AMDA Pressure Ulcer Clinical Practice Guidelines and the National Pressure Ulcer Advisory Panel (NPUAP) are referenced throughout the toolkit.

HOW TO USE THIS TOOLKIT

This toolkit is designed to help health care providers thoroughly assess their current practices for prevention and treatment of pressure ulcers and identify areas needing improvement. Additionally, the toolkit offers action plans, practical guidance, tools and resources for improving care processes.

Scan the table of contents to see each of the major areas of focus divided into sections in the toolkit. At the beginning of each section, you will find a brief overview, a list of goals relevant to the section and a description of the tools that are included in the section for your use in your facility.

We recommend you work through each section, using action plan assessment tools to take a critical look at your current practices, and determine your facility’s greatest opportunities for improvement. Then, focus on the most important areas or systems that need revision or development. Use the clinical reference tools, sample worksheets and diagrams included in this toolkit, and adapt them to meet your individual needs. Regardless of where you start, improvement is continuous and can involve both the development of new practices as well as revisions of current practices.
PRESSURE ULCERS: OVERVIEW
A pressure ulcer is 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 number of contributing or confounding factors are associated with pressure ulcers. (National Pressure Ulcer Advisory Panel (NPUAP), 2007) The NPUAP developed a universal staging system for pressure ulcers based on the depth and type of tissue damage. This staging system is commonly used for assessment and care planning.

THE PROBLEM
Pressure ulcers have been documented as a significant problem across the lifespan and across all health care settings, as well as a significant source of pain and human suffering. The elderly may be at greater risk to develop pressure ulcers due to the changes in the skin related to aging as well as the many co-morbidity factors present in this population (Knox, et. al., 1994). Billions of dollars are spent annually (Reddy, 2006) on the prevention and treatment of pressure ulcers, with the cost of treating one pressure ulcer ranging from $2000 to $30,000 and as high as $70,000. (Young, 2003)

Pressure ulcers are among the most common conditions encountered in patients who are acutely hospitalized or require long-term institutional care. Critically ill patients admitted to intensive care units are at particularly high risk of developing pressure ulcers (de Latt, et. al., 2007). Two and a half million people in the U.S. develop a pressure ulcer in the acute care setting (IHI, 2007) and approximately 60,000 people die every year as a result of complications from pressure ulcers. (Nursing Center, 2007)

In addition, pressure ulcers have been used as an indicator of quality of care and their development has constituted grounds for litigation.

The Centers for Medicare & Medicaid Services (CMS) has long focused on helping nursing homes prevent pressure ulcers, and in 2008, they extended this effort across health care settings. CMS recently increased attention on multiple clinical topics, including the occurrence of pressure ulcers when patients move from one health care setting to another.

CMS data from 2007 to 2008 shows that overall, seven percent of Oklahoma’s nursing home residents developed a pressure ulcer. During this same time period, Oklahoma had the third highest rate of pressure ulcers for high-risk residents in the nation.

Oklahoma had the third highest rate of pressure ulcers for high-risk residents in the nation.

Hospitalizations involving patients with pressure ulcers - either developed before or after admission - increased by nearly 80 percent between 1993 and 2006. Among hospitalizations involving pressure ulcers as a primary diagnosis, about 1 in 25 admissions ended in death. The death rate was higher when pressure ulcers were a secondary diagnosis - about 1 in 8. Pressure ulcer-related hospitalizations are longer and more expensive than many other hospitalizations. While the overall average hospital stay is 5 days and costs about $10,000, the average pressure ulcer-related stay extends to between 13 and 14 days and costs between $16,755 and $20,430, depending on medical circumstances. (AHRQ 2008)

While the incidence of pressure ulcer occurrence in hospitals has not been previously reported, as of October, 2008, CMS required hospitals to begin collecting and reporting this data. Additionally, CMS has provided a financial incentive to hospitals to prevent the development of pressure ulcers.

Diligent efforts of care givers can reduce pressure to body areas, however, there are some inherent characteristics (e.g., co-morbidities, high-risk diagnoses, immobility) that cannot be removed, changed or modified. Occasionally, these additional factors can make the development of certain pressure ulcers unavoidable.
SECTION 1 ORGANIZATIONAL COMMITMENT AND POLICIES FOR PRESSURE ULCER PREVENTION AND TREATMENT

To improve care outcomes, it is important to start by assessing and/or developing your organizational commitment to a pressure ulcer prevention and treatment program. This commitment must start at the leadership level and input from an interdisciplinary team is essential for success.

Organizational commitment to pressure ulcer prevention and treatment is the foundation on which you can develop policies and procedures that direct the course of action. Your course of action should be clearly defined, approved by the organization’s leadership, and effectively communicated to staff.

GOALS FOR THIS SECTION:
1. Identify key staff to participate in an interdisciplinary workgroup.
2. Designate responsibility for program oversight.
3. Establish accountability for pressure ulcer prevention and treatment interventions.
4. Analyze, develop or revise your organization’s policies on pressure ulcer prevention and treatment.
5. Assess current pressure ulcer prevention and treatment practices in your organization.
6. Develop a system for evaluating the quality of the pressure ulcer prevention and treatment program.
7. Develop a plan to communicate pressure ulcer prevention and treatment policies with staff.

TOOLS IN THIS SECTION:

Action Plan: Organizational Commitment
Use this form to assess and develop your organizational commitment.

Action Plan: Pressure Ulcer Policies
Use this form to guide your team in assessing, developing or refining a pressure ulcer policy.
## Action Plan: Organizational Commitment

<table>
<thead>
<tr>
<th>Key Interventions/Tasks</th>
<th>Action Items</th>
<th>Who is responsible?</th>
<th>Target Date</th>
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</table>
| 1. Identify key staff to form your pressure ulcer committee.  
*Team should consist of members from various educational backgrounds and experiences. (e.g. nursing, rehab, dietician, speech, wound care, direct care staff, education coordinator, physician, administration, etc).* | | | |
| 2. Assign responsibility for program oversight. | | | |
| 3. Establish accountability for pressure ulcer prevention and treatment interventions. | | | |
| 4. Develop/articulate the organization’s commitment statement to preventing and treating pressure ulcers.  
(e.g. Our facility is committed to providing the resources, staff and education necessary to prevent and treat pressure ulcers.) | | | |
| 5. Communicate commitment statement to all staff. | | | |
# Action Plan: Pressure Ulcer Policies

<table>
<thead>
<tr>
<th>Key Interventions/Tasks</th>
<th>Action Items</th>
<th>Who is responsible?</th>
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<tr>
<td>1. Include the organizational commitment statement in the pressure ulcer prevention and treatment policy.</td>
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<tr>
<td>2. Ensure that policies require pressure ulcer risk assessment upon admission and at regular intervals. A policy that ensures regular re-assessment will help you effectively track changes in status.</td>
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<tr>
<td>*The frequency for risk assessment varies depending on the setting. (e.g. In long-term care, the policy may require a risk assessment to be completed within the first 24 hours and repeated weekly times 4. In acute care, the policy may be to assess all new admits within four hours then every shift until discharge.)</td>
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<tr>
<td>3. Clearly state that head-to-toe skin inspections be completed upon admission and at regular intervals thereafter (based upon risk assessment findings).</td>
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<tr>
<td>*As with risk assessment, the frequency for skin inspections will vary. (e.g. Persons at high risk for pressure ulcer development require daily skin inspections, while those at a lower risk may be done less frequently.)</td>
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<tr>
<td>4. Define responsibility for completion of the pressure ulcer risk assessment and the skin inspection.</td>
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<td>*While risk assessments must be completed by licensed staff, skin inspection (visual exam) may be done by other care staff whenever skin is exposed (bathing, toileting, clothing change).</td>
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### Action Plan: Pressure Ulcer Policies

<table>
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<tr>
<td>5. Identify specific tools to be used for:</td>
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<tr>
<td>• Risk assessment</td>
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<tr>
<td>• Skin inspection</td>
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<tr>
<td>• Wound assessment</td>
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<tr>
<td>• Monitoring treatment effectiveness</td>
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<tr>
<td>6. Ensure the policy states:</td>
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<td>• Steps will be taken when a pressure ulcer is not healing</td>
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<td>• Prevention interventions will be implemented for persons at risk</td>
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<tr>
<td>• The procedure for reporting suspicious skin areas</td>
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<tr>
<td>• The protocol for reporting pressure ulcer staging/healing to designated personnel to ensure correct coding</td>
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<td>7. Consider the following evaluation/monitoring components</td>
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<tr>
<td>• How will the program be evaluated for effectiveness</td>
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<td>• Who will monitor the program</td>
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<tr>
<td>• How frequently will the program be monitored</td>
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<tr>
<td><em>As medical knowledge is gained, and clinical guidelines are updated – it is imperative that programs be re-evaluated at regular intervals.</em></td>
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<tr>
<td>9. Include goals for pressure ulcer education:</td>
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<tr>
<td>• Reduce the occurrence of pressure ulcers</td>
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<tr>
<td>• Directed at all levels of health care providers, patients/resident, family</td>
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<tr>
<td>• Educate on policies and procedures</td>
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<tr>
<td>• Use principles of adult learning</td>
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<tr>
<td>• Establish competency of staff</td>
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</table>

*As medical knowledge is gained, and clinical guidelines are updated – it is imperative that programs be re-evaluated at regular intervals.*
SECTION 2
SCREENING, ASSESSING AND MONITORING PRESSURE ULCERS

All facilities or healthcare providers should have a process to screen individuals for pressure ulcer risk. A screening assessment consists of a series of questions to determine if a person is at risk for pressure ulcer development. Based on the care setting, pressure ulcer risk screening should be done upon admission and at regular intervals according to your organization’s policies.

When a pressure ulcer is found upon admission or develops during an episode of care, a comprehensive wound assessment should be completed and repeated at specific intervals thereafter based on the patient need and care setting.

In order to track healing, it is important to regularly monitor the status of the wound, and develop care planning based on changing status.

Screening for pressure risk, performing a comprehensive wound assessment, and ongoing monitoring are the basis for individualized care planning for pressure ulcers. Refer to Section 4 for more information on care planning.

GOALS FOR THIS SECTION:
1. Use a validated risk assessment tool (Braden scale or Norton Plus).
2. Develop a process for skin inspection and evaluation.
3. Differentiate the stages of pressure ulcers.
4. Develop a process for monitoring wound status.
5. Develop appropriate documentation for wound assessment and monitoring.

TOOLS IN THIS SECTION:

Action Plan: Screening Pressure Risk

Pressure Ulcer Risk Scales:
- Braden Scale
- Norton Scales

Action Plan: Pressure Ulcer Assessment and Monitoring

Pressure Ulcer Staging
- Definitions and Illustrations

Pressure Ulcer Documentation Guidelines

Assessment and Tracking Tools
- Pressure Ulcer Record
- Pressure Ulcer Scale for Healing (PUSH) Tool 3.0
- Quick Assessment of Leg Ulcers
Screening, Assessing and Monitoring

UNDERSTANDING PRESSURE ULCER RISK

Many pressure ulcers result from a failure of microcirculation, impairing blood flow to the skin. This may occur in hypotension, sepsis, and shock (Braden and Bryant, 1990). Research discussed by Braden and Bryant (1990) looks at other factors that may also contribute to pressure risk. These include hemodynamic changes such as low blood pressure (systolic < 100, diastolic < 60), elevated body temperature and increased blood viscosity and high hematocrit, which contribute to tissue damage. Cigarette smoking is also cited as a contributing factor.

Scotts and Wipke-Trevis (1997) identify multiple simultaneous consider accompanying or occurring factors that impair healing, such as diabetes, dehydration, peripheral vascular disease, uremia and immune compromise. Treatments such as chemotherapy, radiation, and immune-suppressive therapy may also impede wound healing.

ASSESSING FOR PRESSURE ULCER RISK

Frequency for assessing pressure ulcer risk varies by health care setting:

- **Acute care**: assess on admission, reassess at least every 24 hours or sooner if the patient’s conditions changes.
- **Long-term care**: assess on admission, weekly for four weeks, then quarterly and whenever the resident’s condition changes.
- **Home care**: assess on admission and at every nurse visit.

Two commonly used, validated tools for assessing an individual’s risk for pressure ulcer development are the Braden Scale and the Norton Scale(s).

The Braden Scale assesses risk factors in six specific K areas: sensory perception, skin moisture, activity, mobility, nutrition, and friction/shear.

The Norton Scale assesses risk based on an individual’s physical condition, mental condition, activity level, mobility and continence. The Norton Plus adds to these areas by also looking at blood pressure, albumin, hemoglobin and hematocrit levels, and diagnosis of Diabetes, fever, currently taking more than five medications and recent changes in mental status.

A word of caution must be given to organizations that create their own risk assessment tool. Although they may provide some insight, there is no guarantee to their validity or reliability, due to a lack of research and testing.

Your pressure ulcer screening process should consider the following factors:

- advanced age
- ability to communicate
- comorbid conditions
- dehydration
- immobility
- incontinence
- inadequate nutrition
- altered level of consciousness
- altered sensory perception
- history of pressure ulcers
- circulatory abnormalities
- conditions that impair healing

Using a reliable, validated risk assessment tool produces a more accurate result than individual interpretation alone. However, it is important to note that any risk assessment tool can give false positives or negatives.
### Key Interventions/Tasks

<table>
<thead>
<tr>
<th>Action Items</th>
<th>Who is responsible?</th>
<th>Target Date</th>
</tr>
</thead>
</table>

1. Select a reliable, validated pressure ulcer risk assessment tool for your organization. The following areas should be included:  
   - Impaired mobility  
   - Skin moisture  
   - Nutritional status  
   - Sensory perception  
   - Activity level  
   - Friction/shear  
   - Fever  
   - Blood Levels (albumin, hemoglobin, hematocrit)  
   - History of pressure ulcer  

(*Organizations are cautioned against creating your own risk assessment too. Use validated tools, e.g., Braden Scale, Norton Scale, Norton Plus) Use of Braden Scale requires permission from author. Go to [www.bradenscale.com](http://www.bradenscale.com).  

2. Designate timeframe and staff responsibility for completion of risk assessment.  
   - Admission assessment  
   - Re-assessment  
     - Change in condition  
     - Every shift  
     - Weekly  
     - Quarterly  

(e.g. admission nurse will complete Braden Scale within 2 hours of arrival, floor nurse will complete re-assessment Q shift)  

3. Report risk assessment findings to appropriate staff.  
   (e.g. care plan team, wound nurse, dietician, charge nurse, etc)  

4. Care plan for areas of identified risk.  
   Refer to Section 4 for further information on care planning.
# Braden Scale for Predicting Pressure Sore Risk

Use of Braden Scale requires permission from author. Go to www.bradenscale.com.

<table>
<thead>
<tr>
<th>Sensory Perception</th>
<th>Sensory Impairment</th>
<th>Physical Activity</th>
<th>Fabrication</th>
<th>mobility</th>
<th>Friction and Shear</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.)</td>
<td>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 over ½ of body surface.</td>
<td>Ability to walk severely limited or nonexistent. Cannot bear own weight and/or must be assisted into chair or wheelchair.</td>
<td>Ability to walk or be lifted without assistance.</td>
<td>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.</td>
<td></td>
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<tr>
<td>Painfulness</td>
<td>Sensory deficit which would limit ability to feel or voice pain or discomfort.</td>
<td>Ability to stand or be transferred while using maximum assistance.</td>
<td>Maintains good position in bed or chair at all times.</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Painfulness</td>
<td>Responds only to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort.</td>
<td>Ability to walk occasionally during day, but for very short distances, with or without assistance.</td>
<td>Has a sensory impairment which limits the ability to feel pain or discomfort in 1 or 2 extremities.</td>
<td>Requires moderate to maximum assistance in moving. Requires minimum assistance.</td>
<td></td>
</tr>
<tr>
<td>Painfulness</td>
<td>Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.</td>
<td>Ability to walk occasionally during day, but for very short distances, with or without assistance.</td>
<td>Has a sensory impairment which limits the ability to feel pain or discomfort in 1 or 2 extremities.</td>
<td>Requires moderate to maximum assistance in moving. Requires minimum assistance.</td>
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<tr>
<td>Painfulness</td>
<td>Skin is usually dry; linen only requires changing at routine intervals.</td>
<td>Ability to walk occasionallly during day, but for very short distances, with or without assistance.</td>
<td>Has a sensory impairment which limits the ability to feel pain or discomfort in 1 or 2 extremities.</td>
<td>Requires moderate to maximum assistance in moving. Requires minimum assistance.</td>
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<tr>
<td>Painfulness</td>
<td>Skin is often but not always moist. Linen must be changed at least once a shift.</td>
<td>Ability to walk occasionallly during day, but for very short distances, with or without assistance.</td>
<td>Has a sensory impairment which limits the ability to feel pain or discomfort in 1 or 2 extremities.</td>
<td>Requires moderate to maximum assistance in moving. Requires minimum assistance.</td>
<td></td>
</tr>
<tr>
<td>Painfulness</td>
<td>Skin is occasionally moist, requiring an extra linen change approximately once a day.</td>
<td>Ability to walk occasionallly during day, but for very short distances, with or without assistance.</td>
<td>Has a sensory impairment which limits the ability to feel pain or discomfort in 1 or 2 extremities.</td>
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<tr>
<td>Painfulness</td>
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<td>Ability to walk occasionallly during day, but for very short distances, with or without assistance.</td>
<td>Has a sensory impairment which limits the ability to feel pain or discomfort in 1 or 2 extremities.</td>
<td>Requires moderate to maximum assistance in moving. Requires minimum assistance.</td>
<td></td>
</tr>
<tr>
<td>Painfulness</td>
<td>Skin is never moist.</td>
<td>Ability to walk occasionallly during day, but for very short distances, with or without assistance.</td>
<td>Has a sensory impairment which limits the ability to feel pain or discomfort in 1 or 2 extremities.</td>
<td>Requires moderate to maximum assistance in moving. Requires minimum assistance.</td>
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<td>Degree to which skin is exposed to moisture</td>
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</tr>
<tr>
<td>1. Constantly moist – Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.</td>
<td>2. Often moist – Skin is often but not always moist. Linen must be changed at least once a shift.</td>
<td>3. Occasionally moist – Skin is occasionally moist, requiring an extra linen change approximately once a day.</td>
<td>4. Rarely moist – Skin is usually dry; linen only requires changing at routine intervals.</td>
<td>5. Occasionally moist – Skin is occasionally moist.</td>
</tr>
<tr>
<td>1. Continuous moisture – Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.</td>
<td>2. Often moist – Skin is often but not always moist. Linen must be changed at least once a shift.</td>
<td>3. Occasionally moist – Skin is occasionally moist, requiring an extra linen change approximately once a day.</td>
<td>4. Rarely moist – Skin is usually dry; linen only requires changing at routine intervals.</td>
<td>5. Occasionally moist – Skin is occasionally moist.</td>
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<td>Usual food intake pattern</td>
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<tr>
<td>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 fluids poorly. Does not take a liquid dietary supplement, or is NPO and/or maintained on clear liquids or IV for more than 5 days.</td>
<td>2. Probably inadequate – Rarely eats a complete meal and generally eats only about 1/3 of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement if offered, OR receives less than optimum amount of liquid or tube feeding.</td>
<td>3. Adequate – Eats over half of most meals. Eats a total of 8 servings of protein (meat, dairy products) daily. Occasionally refuses a meal, but will usually take a supplement if offered, OR is on a tube feeding or TPN regimen, which probably meets most of nutritional needs.</td>
<td>4. Excellent – Eats most of every meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.</td>
<td>5. Adequate – Eats over half of most meals. Eats a total of 8 servings of protein (meat, dairy products) daily. Occasionally refuses a meal, but will usually take a supplement if offered, OR is on a tube feeding or TPN regimen, which probably meets most of nutritional needs.</td>
</tr>
<tr>
<td>1. 极差 – 从不吃完整餐。很少吃超过三分之一的任何食物。每天只吃2份或少于肉或奶制品的蛋白质。在不接受液体膳食补充的情况下，或者NPO且/或维持在清液或IV中超过5天。</td>
<td>2. 比较差 – 几乎不吃整餐，一般只吃三分之一的任何食物。蛋白质摄入量只包含3份肉或奶制品。偶尔可能会接受膳食补充剂，或者接收不足最佳量的液体或管饲。</td>
<td>3. 良好 – 吃了大部分的餐。平均每天吃8份蛋白质（肉或奶制品）。偶尔拒绝一顿饭，但如果有必要，会接受膳食补充剂，或者在管饲或TPN中，可能满足大部分的营养需求。</td>
<td>4. 优秀 – 吃了大多数的餐。通常一天吃4份以上肉和奶制品。偶尔在餐之间吃饭。不需要补充。</td>
<td>5. 良好 – 吃了大部分的餐。平均每天吃8份蛋白质（肉或奶制品）。偶尔拒绝一顿饭，但如果有必要，会接受膳食补充剂，或者在管饲或TPN中，可能满足大部分的营养需求。</td>
</tr>
<tr>
<td>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 fluids poorly. Does not take a liquid dietary supplement, OR is NPO and/or maintained on clear liquids or IV for more than 5 days.</td>
<td>2. Probably inadequate – Rarely eats a complete meal and generally eats only about 1/3 of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement if offered, OR receives less than optimum amount of liquid or tube feeding.</td>
<td>3. Adequate – Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) each day. Occasionally refuses a meal, but will usually take a supplement if offered, OR is on a tube feeding or TPN regimen, which probably meets most of nutritional needs.</td>
<td>4. Excellent – Eats most of every meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.</td>
<td>5. Adequate – Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) each day. Occasionally refuses a meal, but will usually take a supplement if offered, OR is on a tube feeding or TPN regimen, which probably meets most of nutritional needs.</td>
</tr>
</tbody>
</table>

1. NPO: Nothing by mouth. 2. IV: Intravenously. 3. TPN: Total Parenteral Nutrition.

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### Screening, Assessing and Monitoring

#### AT RISK (15-18)*
- **FREQUENT TURNING**
- **MAXIMAL REMOBILIZATION**
- **PROTECT HEELS**
- **MANAGE MOISTURE, NUTRITION AND FRICTION AND SHEAR**
- **PRESSURE-REDUCTION SUPPORT SURFACE IF BED- OR CHAIR-BOUND**

*If other major risk factors are present (advanced age, fever, poor dietary intake of protein, diastolic pressure below 60, hemodynamic instability) advance to next level of risk

#### MANAGE MOISTURE
- **USE COMMERCIAL MOISTURE BARRIER**
- **USE ABSORBANT PADS OR DIAPERS THAT WICK & HOLD MOISTURE**
- **ADDRESS CAUSE IF POSSIBLE**
- **OFFER BEDPAN/URINAL AND GLASS OF WATER IN CONJUNCTION WITH TURNING SCHEDULES**

#### MANAGE NUTRITION
- **INCREASE PROTEIN INTAKE**
- **INCREASE CALORIE INTAKE TO SPARE PROTEINS**
- **SUPPLEMENT WITH MULTI-VITAMIN (SHOULD HAVE VIT A, C & E)**
- **ACT QUICKLY TO ALLEVIATE DEFICITS**
- **CONSULT DIETITIAN**

#### MANAGE FRICTION & SHEAR
- **ELEVATE HOB NO MORE THAN 30°**
- **USE TRAPEZE WHEN INDICATED**
- **USE LIFT SHEET TO MOVE PATIENT**
- **PROTECT ELBOWS & HEELS IF BEING EXPOSED TO FRICTION**

#### OTHER GENERAL CARE ISSUES
- **NO MASSAGE OF REDDENED BONY PROMINENCES**
- **NO DO-NUT TYPE DEVICES**
- **MAINTAIN GOOD HYDRATION**
- **AVOID DRYING THE SKIN**

#### MODERATE RISK (13-14)*
- **TURNING SCHEDULE**
- **USE FOAM WEDGES FOR 30° LATERAL POSITIONING**
- **PRESSURE-REDUCTION SUPPORT SURFACE**
- **MAXIMAL REMOBILIZATION**
- **PROTECT HEELS**
- **MANAGE MOISTURE, NUTRITION AND FRICTION AND SHEAR**

*If other major risk factors present, advance to next level of risk

#### HIGH RISK (10-12)
- **INCREASE FREQUENCY OF TURNING**
- **SUPPLEMENT WITH SMALL SHIFTS**
- **PRESSURE REDUCTION SUPPORT SURFACE**
- **USE FOAM WEDGES FOR 30° LATERAL POSITIONING**
- **MAXIMAL REMOBILIZATION**
- **PROTECT HEELS**
- **MANAGE MOISTURE, NUTRITION AND FRICTION AND SHEAR**

#### VERY HIGH RISK (9 or below)
- **ALL OF THE ABOVE**
- **USE PRESSURE-RELIEVING SURFACE IF PATIENT HAS INTRACTABLE PAIN OR SEVERE PAIN EXACERBATED BY TURNING OR ADDITIONAL RISK FACTORS**

*low air loss beds do not substitute for turning schedules

©Copyright Barbara Braden, 2001
The Norton Scale

*Note: Scores of 14 or less rate the patient as ‘at risk’*

<table>
<thead>
<tr>
<th>Physical Condition</th>
<th>Mental Condition</th>
<th>Activity</th>
<th>Mobility</th>
<th>Incontinence</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good 1</td>
<td>Alert 1</td>
<td>Ambulant 1</td>
<td>Full 1</td>
<td>Not 1</td>
<td></td>
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<tr>
<td>Fair 2</td>
<td>Apathetic 2</td>
<td>Walk/help 2</td>
<td>Slightly 2</td>
<td>Occasional 2</td>
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<tr>
<td>Poor 3</td>
<td>Confused 3</td>
<td>Chairbound 3</td>
<td>Limited 3</td>
<td>Usually-urine 3</td>
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<tr>
<td>Very bad 4</td>
<td>Stupor 4</td>
<td>Bedridden 4</td>
<td>Verylimited, 4</td>
<td>Doubly 4</td>
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</tr>
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</table>

Name: Date:

Name: Date:

Name: Date:

Name: Date:

Name: Date:

Name: Date:

Name: Date:

Name: Date:

Name: Date:

Name: Date:

Source: Doreen Norton, Rhonda McLaren and An Investigation of Geriatric Nursing Problems in the Hospital, London National Corporation for the Care of Old People (now the Centre for Policy on Aging): 1962. Adapted with permission of the publisher
## Norton Plus Pressure Ulcer Scale

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Score/Description</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<td>3</td>
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<td></td>
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<tr>
<td></td>
<td>3. Fair</td>
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<td></td>
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<tr>
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<td>2. Poor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Very Bad</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Mental Condition</td>
<td>4. Alert</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td>3. Apathetic</td>
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<tr>
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<td>2. Confused</td>
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<tr>
<td></td>
<td>1. Stupor</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td>4. Ambulant</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Walk-help</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>2. Chair-bound</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Bedridden</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobility</td>
<td>4. Full</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Slightly Limited</td>
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<tr>
<td></td>
<td>2. Very Limited</td>
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<tr>
<td></td>
<td>1. Immobile</td>
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</tr>
<tr>
<td>Incontinence</td>
<td>4. Not</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Occasional</td>
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<td></td>
<td>2. Usually</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Doubly</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Norton Plus Deductions (Check only if YES)

1. Diagnosis of Diabetes
2. Diagnosis of Hypertension
3. Hematocrit (M) <41% (F) <36%
4. Hemoglobin (M) <14g/dl (F) <12g/dl
5. Albumin Level <3.3g/dl
6. Febrile >99.6°F
7. 5 (or more) Medications
8. Changes in mental status to confused, lethargic within 24 hours

### Norton Plus Pressure Ulcer Scale

<table>
<thead>
<tr>
<th>Moderate Risk &lt;11 – 15</th>
<th>High Risk: 10 and below</th>
<th>Date of Assessment</th>
</tr>
</thead>
</table>

### Norton Scale Score (from above)

Total Norton plus Score (Score 10 or less = high risk)

<table>
<thead>
<tr>
<th>Assess</th>
<th>Date</th>
<th>Evaluator Signature/Title</th>
<th>Assess</th>
<th>Date</th>
<th>Evaluator Signature/Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>/</td>
<td>/</td>
<td>3</td>
<td>/</td>
<td>/</td>
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<tr>
<td>2</td>
<td>/</td>
<td>/</td>
<td>4</td>
<td>/</td>
<td>/</td>
</tr>
</tbody>
</table>
A comprehensive wound assessment and accurate documentation should be completed when a wound is initially identified and at specific intervals thereafter according to your facility’s protocol.

The following criteria should be included in wound assessment and documentation:

- **Site/Location** - Be specific. Draw pictures to clarify, if necessary.

- **Type of wound** - Distinguish between pressure ulcers and other types of wounds.

- **Stage of pressure ulcer** - Stage according to NPUAP guidelines. Wounds other than pressure ulcers are not staged.

- **Size** - Dimensions always include length, width and depth and are documented in that order using centimeters.

- **Appearance of wound base/bed** - Describe the tissue type(s) present. Identify all types of tissue present by percentage, e.g., 50% granulation and 50% slough. Describe characteristics of wound edges.

- **Appearance of periwound** - Describe the area immediately surrounding the wound. Identify maceration, redness, denudation and other characteristics.

- **Undermining/Tunneling** - Assess by gently probing the wound base with a cotton swab. Measure depth in centimeters and give location by the clock method.

- **Drainage/Exudate** - Describe by amount, color, consistency, odor.

- **Pain/Tenderness** - Document pain reported or observable signs.

- **Progress** - Improved, no change, stable, declined.

- **Dressings** - Describe the type of irrigation solution used and the dressing applied.

- **Pressure Redistribution Devices** - Describe the type of device(s) being used as a support surface or seating aid.

In addition, a comprehensive wound assessment also needs to include evaluation and management of the patient’s:

- **History and Physical Examination** - Perform a complete history and physical examination. A pressure ulcer should be assessed in the context of an individual’s physical and psychosocial health, behavior and cognition.

- **Assessing Complications** - Clinicians should be alert to the potential complications associated with pressure ulcers.

- **Nutritional Assessment and Management** - The goal of nutritional assessment and management is to ensure that the diet of the individual with a pressure ulcer contains nutrients adequate to support healing.

- **Pain Assessment and Management** - Pain assessment and management in the individual with a pressure ulcer is to eliminate the cause of pain, to provide analgesia, or both.

- **Psychosocial Assessment and Management** - The goal of a psychosocial assessment is to gather the information necessary to formulate a plan of care consistent with individual and family preferences, goals and abilities in addition to creating an environment conducive to patient adherence to the pressure ulcer plan.
### Action Plan: Pressure Ulcer Assessment and Monitoring

<table>
<thead>
<tr>
<th>Key Interventions/Tasks</th>
<th>Action Items</th>
<th>Who is responsible?</th>
<th>Target Date</th>
</tr>
</thead>
</table>
| 1. Include the following areas in your organization's wound assessment tool:  
  • Location  
  • Stage  
  • Size in centimeters  
  • Undermining/tunneling  
  • Wound bed  
  • Drainage/exudates (amount/color)  
  • Peri-wound tissue  
  • Pain  
  • Odor (other s/s of infection)  
  • Current treatment  
  • Healing progress | | | |
| 2. Verify wound assessment frequency  
  • Weekly if healing  
  • Daily if worsening | | | |
| 3. Use consistent wound documentation  
  • NPUAP staging system  
  • Size using the clock method  
  • Use centimeters  
  • State percentage for wound bed description | | | |
| 4. Ensure that clinical staff are able to differentiate between pressure ulcers and other chronic wounds  
  (*e.g.* arterial, diabetic or venous ulcers) | | | |
| 5. Monitor wound treatment effectiveness  
  • Track wound healing status over time  
  • PUSH tool  
  • If wound is not healing, consider modification of treatment plan | | | |
Screening, Assessing and Monitoring

**Pressure Ulcer Stages**

A universal staging system for pressure ulcers developed by the National Pressure Ulcer Advisory Panel (NPUAP) is based on the depth and type of tissue damage.

As revised in 2007, the definition of pressure ulcers is as follows:

A pressure ulcer is 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 number of contributing or confounding factors are also associated with pressure ulcers; the significance of these factors is yet to be elucidated (revealed).

In most cases, pressure ulcers are preventable. However, if they occur, stage pressure ulcers using the NPUAP’s 2007 revised pressure ulcer staging system. This staging system should only be used to describe pressure ulcers as:

- Suspected Deep Tissue Injury
- Stage I
- Stage II
- Stage III
- Stage IV
- Unstageable

The following pages contain the NPUAP’s photo and definition for each of the stages.
Screening, Assessing and Monitoring

Suspected Deep Tissue Injury:
Purple or maroon localized area of discolored intact skin or blood-filled blister due to damage of underlying soft tissue from pressure and/or shear. The area may be preceded by tissue that is painful, firm, mushy, boggy, warmer or cooler as compared to adjacent tissue.

Further description:
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.
Stage I:
Intact skin with non-blanchable redness of a localized area usually over a bony prominence. Darkly pigmented skin may not have visible blanching; its color may differ from the surrounding area.

Further description:
The area may be painful, firm, soft, warmer or cooler as compared to adjacent tissue. Stage 1 may be difficult to detect in individuals with dark skin tones. May indicate “at risk” persons (a heralding sign of risk).
Stage II:

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.

Further description:

Presents as a shiny or dry shallow ulcer without slough or bruising.* This stage should not be used to describe skin tears, tape burns, perineal dermatitis, maceration or excoriation.

*Bruising indicated suspected deep tissue injury
Stage III:

Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon or muscle are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunneling.

Further description:
The depth of a stage III pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have subcutaneous tissue and stage III ulcers can be shallow. In contrast, areas of significant adiposity can develop extremely deep stage III pressure ulcers. Bone/tendon is not visible or directly palpable.
Stage IV:

Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present on some parts of the wound bed. Often include undermining and tunneling.

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

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.

Further description:
Until enough slough and/or eschar is removed to expose the base of the wound, the true depth, and therefore stage, cannot be determined. 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.
**Pressure Ulcer**

A pressure ulcer is 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 number of contributing or confounding factors are also associated with pressure ulcers; the significance of these factors is yet to be elucidated (revealed).

This staging system should be used only to describe pressure ulcers. Wounds from other causes, such as arterial, venous, diabetic foot, skin tears, tape burns, perineal dermatitis, maceration or excoriation should not be staged using this system. Other staging systems exist for some of these conditions and should be used instead.

---

**Pressure Ulcer Stages**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Intact skin with non-blanchable redness of a localized area usually over a bony prominence. Darkly pigmented skin may not have visible blanching; its color may differ from the surrounding area.</td>
</tr>
<tr>
<td>II</td>
<td>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.</td>
</tr>
<tr>
<td>III</td>
<td>Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon or muscle are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunneling.</td>
</tr>
<tr>
<td>IV</td>
<td>Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present on some parts of the wound bed. Often include undermining and tunneling.</td>
</tr>
<tr>
<td>UN</td>
<td>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.</td>
</tr>
<tr>
<td>DTI</td>
<td>Purple or maroon localized area of discolored intact skin or blood-filled blister due to damage of underlying soft tissue from pressure and/or shear. The area may be preceded by tissue that is painful, firm, mushy, boggy, warmer or cooler as compared to adjacent tissue.</td>
</tr>
</tbody>
</table>

**Further description:**
- 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.
- The depth of a stage III pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have subcutaneous tissue and stage III ulcers can be shallow. In contrast, areas of significant adiposity can develop extremely deep stage III pressure ulcers. Bone/tendon is not visible or directly palpable.
- The depth of a stage IV pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have subcutaneous tissue and these ulcers can be shallow. Stage IV ulcers can extend into muscle and/or supporting structures (e.g., fascia, tendon or joint capsule) making osteomyelitis possible. Exposed bone/tendon is visible or directly palpable.

*Bruising indicates suspected deep tissue injury

Information based on the National Pressure Ulcer Advisory Panel (NPUAP) update on 2/2007.
When charting a description of a pressure ulcer, the following components should be a part of your weekly charting.

1. **LOCATION**
2. **STAGE** per NPUAP Definitions on previous page
3. **DIMENSIONS**: Is measured by gently inserting a cotton-tipped applicator pre-moistened with saline into the deepest part of the wound. Always recorded in centimeters.
   - Length: Longest head-to-toe measurement.
   - Width: Longest hip-to-hip measurement.
   - Depth: Is measured by gently inserting a pre-moistened cotton tipped applicator into the deepest pan of the wound. The measurement from the tip of the applicator to the level of the skin surface is the depth. If too shallow to measure record as "superficial".
4. **UNDERMINING/TUNNELING**: Recorded in centimeters. Measurement done as if the resident is on a clock with the resident's head at 12 noon.
   - Undermining: Measure the extent of the undermining clockwise, then the deepest part of the undermining (i.e., 1.5cm from 2-7 o'clock).
   - Sinus tracts/Tunneling: Measure the depth of the sinus tract/tunnel and give direction of the sinus tract/tunnel by the clock method (i.e. 3cm at 3 o'clock). If there is more than one sinus tract/tunnel, number each clockwise.
5. **WOUND BASE DESCRIPTION**: describe the wound bed appearance. If the wound base has a mixture of these, use the percentage of its extent (i.e. the wound base is 75% granulation tissue with 25% slough tissue).
   - Granulation: Pink or beefy red tissue with a shiny, moist, granular appearance.
   - Necrotic Tissue: Gray to black and moist.
   - Eschar: Gray to black and dry or leathery in appearance.
   - Slough: Yellow to white and may be stringy or thick and may appear as a layer over the wound bed.
   - Epithelial: New or pink shiny tissue that grows in from the edges or as islands on the wound surface.
6. **DRAINAGE**:
   - Amount: Scant, moderate, or copious (small, medium, or heavy)
   - Color/Consistency: Serous, serosanguineous, purulent, or other.
   - Odor: If present or not
7. **WOUND EDGES**: Describe area up to 4cm from edge of the wound. Measure in centimeters. Describe its characteristics (light pink, deep red, purple, macerated, calloused, rolled edges, etc.).
8. **ODOR**: Present or not
9. **PAIN**: Associated with the wound. Interventions
10. **PROGRESS**: Improved, No Change, Stable, or Declined.
## Pressure Ulcer Record
### Weekly Pressure Ulcer Assessment
(Use a separate sheet for each pressure ulcer site)

**Patient Information**

Name _________________________  
Room # ________________________

**Risk Factors**

- Incontinence/moisture  
- Altered nutritional status  
- Impaired mobility bed/chair  
- Activity limitation  
- Other (describe) ____________

<table>
<thead>
<tr>
<th>Date Acquired</th>
<th>Date</th>
<th>Stage</th>
<th>Size (cm)</th>
<th>Tissue Appearance</th>
<th>Wound Appearance</th>
<th>Periwound Appearance</th>
<th>Drainage Type/amt/color</th>
<th>Wound pain (Y/N)</th>
<th>Response to treatment</th>
<th>Nurse’s Signature</th>
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<td></td>
</tr>
</tbody>
</table>

**Anterior**

- Head  
- Upper Ext.  
- Trunk  
- Sacrum  
- Trochanter  
- IShial Tuberosity

**Site Key**

- Head  
- Upper Ext.  
- Lower Ext.  
- Lateral Ankle  
- Medial Ankle  
- Heel  
- Other (specify)

**Tissue Appearance**

- Granulation  
- Epithelialization  
- Necrotic  
- Slough/Eschar  
- Other (describe)

**Wound Appearance**

- S–Sinus tract  
- T–Tunneling  
- U–Undermining  
- Include depth (cm.), location (face of clock)

**Periwound Appearance**

- E–Erythemia  
- I–Induration  
- M–Maceration  
- Other (describe)

**Suspected Deep Tissue Injury:** Intact skin with non-blanchable redness of a localized area. Darkly pigmented skin may not have visible blanching.

**Stage 1:** A persistent area of skin redness (without a break in the skin) that does not disappear when pressure is relieved.

**Stage 2:** A partial thickness loss of skin layers that presents clinically as an abrasion, blister or shallow crater.

**Stage 3:** A full thickness of skin is lost, exposing the subcutaneous tissues presents as a deep crater with or without undermining adjacent tissue.

**Stage 4:** A full thickness of skin and subcutaneous tissue is lost, exposing muscle or bone.

**Unstageable:** Full thickness tissue loss in which the base of the ulcer is covered by slough and/or eschar in the wound bed.

**Drainage Key**

- S–Serous  
- SS–Serosanguineous  
- P–Purulent  
- Amt–Sm, Med, Lg  
- Color-(describe)  
- Odor-(describe)
Pressure Ulcer Scale for Healing (PUSH)

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 tissue. 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.

<table>
<thead>
<tr>
<th>LENGTH X WIDTH (in cm²)</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Sub-score</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>0.3 - 0.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>0.7 - 1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>8</td>
</tr>
<tr>
<td>1.1 - 2.0</td>
<td></td>
<td></td>
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<td>9</td>
</tr>
<tr>
<td>2.1 - 3.0</td>
<td></td>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>EXUDATE AMOUNT</th>
<th>0</th>
<th>1</th>
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<th>Sub-score</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light</td>
<td></td>
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</tr>
<tr>
<td>Moderate</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Heavy</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TISSUE TYPE</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Sub-score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Epithelial Tissue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granulation Tissue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slough</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Necrotic Tissue</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

| 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 granular 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.

<table>
<thead>
<tr>
<th>Pressure Ulcer Healing Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
</tr>
<tr>
<td>Length x Width</td>
</tr>
<tr>
<td>Exudate Amount</td>
</tr>
<tr>
<td>Tissue Type</td>
</tr>
<tr>
<td>PUSH Total Score</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>PUSH Total Score</th>
<th>Pressure Ulcer Healing Graph</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
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<tr>
<td>15</td>
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<td>13</td>
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<td>12</td>
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<td>10</td>
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<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Healed = 0

Date
PUSH TOOL USER REGISTRATION FORM

Yes, I plan to use the PUSH Tool and agree to abide by the copyright restrictions as noted above.

Signature: __________________________________________________________________________________

To register as a PUSH Tool User and receive tool revisions, please print this form, fill out the information, and mail to:

NPUAP
12100 SUNSET HILLS ROAD, SUITE 130
RESTON, VIRGINIA 20190

OR

FAX completed form to (703) 435-4390

Name: ___________________________________________________________________________________

Title: ___________________________________________________________________________________

Institution: _______________________________________________________________________________

Address: __________________________________________________________________________________

City: ___________________________ State: ___________ Zip: ___________

Work Phone: ___________________________ E-mail: ___________________________

I plan to use the PUSH Tool for (check all that apply):

☐ Clinical Practice    ☐ Education    ☐ Research    ☐ Other (Please specify) ___________________________

I plan to use the PUSH Tool in a (check all that apply):

☐ Long Term Care Facility     ☐ Skilled Nursing Facility    ☐ Rehabilitation Facility

☐ Subacute Care Facility   ☐ Acute Care Facility    ☐ Ambulatory Care Setting

☐ Wound Care Center     ☐ Home Care    ☐ Other (Please specify) ___________________________

Signature: __________________________________________________________________________________

WELCOME TO THE GROWING COMMUNITY OF HEALTH CARE PROFESSIONALS USING THE PUSH TOOL!
<table>
<thead>
<tr>
<th><strong>HISTORY</strong></th>
<th><strong>VENOUS INSUFFICIENCY (STASIS)</strong></th>
<th><strong>ARTERIAL INSUFFICIENCY</strong></th>
<th><strong>PERIPHERAL NEUROPATHY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Age</td>
<td>Arterial Disease</td>
<td>Advanced age</td>
<td></td>
</tr>
<tr>
<td>CHF</td>
<td>Cardiovascular Disease</td>
<td>Alcoholism</td>
<td></td>
</tr>
<tr>
<td>Lymphedema</td>
<td>Diabetes</td>
<td>Chemotherapy</td>
<td></td>
</tr>
<tr>
<td>Obesity</td>
<td>Dyslipidemia</td>
<td>Diabetes</td>
<td></td>
</tr>
<tr>
<td>Orthopedic Procedures</td>
<td>Hypertension</td>
<td>Hansen’s Disease</td>
<td></td>
</tr>
<tr>
<td>Pain Reduced by elevation</td>
<td>Increased pain with activity and/or elevation</td>
<td>Heredity</td>
<td></td>
</tr>
<tr>
<td>Pregnancy</td>
<td>Intermittent Claudication</td>
<td>HIV, AIDS and related drug therapies</td>
<td></td>
</tr>
<tr>
<td>Previous DVT with Phlebitis</td>
<td>Obesity</td>
<td>Hypertension</td>
<td></td>
</tr>
<tr>
<td>Pulmonary Embolus</td>
<td>Painful Ulcer</td>
<td>Impaired glucose tolerance</td>
<td></td>
</tr>
<tr>
<td>Reduced mobility</td>
<td>Sickle Cell Anemia</td>
<td>Obesity</td>
<td></td>
</tr>
<tr>
<td>Sedentary Lifestyle</td>
<td>Smoking</td>
<td>Raynaud’s Disease, Scleroderma</td>
<td></td>
</tr>
<tr>
<td>Traumatic Injury</td>
<td>Vascular procedures/surgeries</td>
<td>Smoking</td>
<td></td>
</tr>
<tr>
<td>Vascular Ulcers</td>
<td></td>
<td>Spinal Cord Injury and neuromuscular diseases</td>
<td></td>
</tr>
<tr>
<td>Work History</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>LOCATION</strong></th>
<th><strong>VENOUS INSUFFICIENCY (STASIS)</strong></th>
<th><strong>ARTERIAL INSUFFICIENCY</strong></th>
<th><strong>PERIPHERAL NEUROPATHY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Malleolus</td>
<td>Areas exposed to pressure or repetitive trauma, or rubbing of footwear</td>
<td>Altered pressure points/sites of painless trauma/repetitive stress</td>
<td></td>
</tr>
<tr>
<td>Medial aspect of leg superior to medial malleolus</td>
<td>Lateral malleolus</td>
<td>Dorsal and distal toes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mid tibial</td>
<td>Heels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phalangeal heads</td>
<td>Inter-digital</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Toe tips or web spaces</td>
<td>Metatarsal heads</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mid-foot (dorsal and plantar)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Toe interphalangeal joints</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>WOUND</strong></th>
<th><strong>VENOUS INSUFFICIENCY (STASIS)</strong></th>
<th><strong>ARTERIAL INSUFFICIENCY</strong></th>
<th><strong>PERIPHERAL NEUROPATHY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Base: ruddy red; yellow adherent to loose slough; granulation tissue present, undermining or tunneling are uncommon</td>
<td>Base: Pale; granulation rarely present; necrosis, eschar, gangrene (wet or dry) may be present</td>
<td>Base: Pink/pale; necrotic tissue variable;</td>
<td></td>
</tr>
<tr>
<td>Depth: usually shallow</td>
<td>Depth: may be deep</td>
<td>Depth: variable</td>
<td></td>
</tr>
<tr>
<td>Margins: irregular</td>
<td>Margins: edges rolled; punched out, smooth and undermining</td>
<td>Edges well defined</td>
<td></td>
</tr>
<tr>
<td>Exudate: moderate to heavy</td>
<td>Exudate: Minimal</td>
<td>Exudate: usually small to moderate</td>
<td></td>
</tr>
<tr>
<td>Infection: less common</td>
<td>Infection: frequent (signs may be subtle)</td>
<td>Wound shape: usually rounded or oblong and found over bony prominence</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>SURROUNDING SKIN</strong></th>
<th><strong>VENOUS INSUFFICIENCY (STASIS)</strong></th>
<th><strong>ARTERIAL INSUFFICIENCY</strong></th>
<th><strong>PERIPHERAL NEUROPATHY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Venous dermatitis (erythematous, weeping, scaling, crusting)</td>
<td>Pallor on elevation</td>
<td>Normal skin tones</td>
<td></td>
</tr>
<tr>
<td>Hemosiderosis (brown staining)</td>
<td>Dependant rubor</td>
<td>Trophic changes</td>
<td></td>
</tr>
<tr>
<td>Lipodermatosclerosis; Atrophy</td>
<td>Shiny, taut, thin, dry</td>
<td>Fissuring or callus formation</td>
<td></td>
</tr>
<tr>
<td>Blanche</td>
<td>Hair loss over lower extremities</td>
<td>Edema: with erythema may indicate high pressure</td>
<td></td>
</tr>
<tr>
<td>Temperature: normal; warm to touch</td>
<td>Atrophy of subcutaneous tissue</td>
<td>Temperature: warm</td>
<td></td>
</tr>
<tr>
<td>Edema: pitting or non-pitting; possible induration and cellulitis</td>
<td>Edema: variable; atypical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scarring from previous ulcers, ankle flare, tinea pedis</td>
<td>Temperature: decreased/cold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infection: Induration, cellulitis, inflamed, tender bulla</td>
<td>Infection: Cellulitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Necrosis, eschar, gangrene may be present</td>
<td>Necrosis, eschar, gangrene may be present</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>NAILS</strong></th>
<th><strong>VENOUS INSUFFICIENCY (STASIS)</strong></th>
<th><strong>ARTERIAL INSUFFICIENCY</strong></th>
<th><strong>PERIPHERAL NEUROPATHY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dystrophic</td>
<td></td>
<td>Onychomycosis; dystrophic nails; paronychia, hypertrophy</td>
<td></td>
</tr>
</tbody>
</table>
## Clinical Factsheet: Quick Assessment of Leg Ulcers

### Venous Insufficiency (stasis)

- **Pain**
  - Minimal unless infected or dessicated
  - Described as throbbing, sharp, itchy, sore tender, heaviness
  - Worsens with prolonged dependency
- **Perfusion**
  - Present/palpable
- **Non-Invasive Vascular Testing**
  - Capillary Refill: normal (less than 3 seconds)
  - ABI to rule out arterial component
- **Measures to Improve Venous Return**
  - (Provided vascular studies have ruled out significant arterial disease)
    - Surgical obliteration of damaged veins
    - Elevation of legs
    - Medications
    - Exercise
    - Education
    - Compression therapy to provide at least 30mm Hg compression at ankle*
  - **See WOCN Clinical Practice Guideline for compression Therapy**

### Arterial Insufficiency

- **Pain**
  - Intermittent claudication
  - Resting; positional; nocturnal
  - Painful Ulcer
  - Paresthesias
- **Perfusion**
  - Absent or diminished
- **Non-Invasive Vascular Testing**
  - Capillary refill: Delayed (more than 3 seconds)
  - ABI <0.9
  - TCPO2 <40mmHg
  - TP >30mmHg
- **Measures to Improve Venous Return**
  - Revascularization if possible
  - Medications to improve RBC transit through narrowed vessels
  - Lifestyle changes (avoid tobacco, caffeine, restrictive garments, cold temperature)
  - Hydration
  - Measures to prevent trauma to tissues (appropriate foot wear)
  - Maintain legs in neutral or dependent position
  - Pressure reduction for heels and toes

### Peripheral Neuropathy

- **Pain**
  - Decreased sensitivity to touch; if present, pain may be superficial, deep, achy, stabbing, dull, sharp, burning or cool; altered sensation not described as “pain” (numbness, warmth, pricking, tingling)
- **Perfusion**
  - Palpable/present
- **Non-Invasive Vascular Testing**
  - Capillary refill: Normal
- **Note:** LEAD may coexist with neuropathic disease
- **Measures to Improve Venous Return**
  - Reduction of shear stress and offloading of neuropathic wounds (bedrest, contact casting, orthopedic shoes)
  - Use of assistive devices to provide support, balance and additional offloading
  - Appropriate footwear
  - Tight glucose/glycemic control
  - Aggressive prevention/treatment of infection (debridement of callus and necrotic tissue; pharmacologic treatment when appropriate)
  - Revascularization if ischemic
  - Complications: cellulitis, osteomyelitis, gangrene, Charcot fracture

### Topical Therapy

- **Dry, Non-infected, Necrotic Wound**
  - Keep dry
- **Infected Wound/Dry or Moist Necrosis**
  - Referral for potential surgical debridement/antibiotic therapy
- **Open Wound/Non-Necrotic**
  - Moist wound healing:
  - Non-occlusive dressings
  - Aggressive treatment of any infection

- **Use dressings that maintain a moist surface, absorb exudates and allow easy visualization**
- **Cautious use of occlusive dressings**

---

This fact sheet was created by the WOCN Society’s Clinical Practice Committee

Revised: October 2006
A formal, comprehensive pressure ulcer prevention program should be developed from evidence-based research and interventions. By implementing preventive interventions right away based on an individual’s risk assessment findings, the likelihood of developing a wound decreases significantly.

Prevention interventions may include a variety of products, such as specialized seating surfaces and mattresses designed to redistribute pressure. The information in this toolkit is not intended to endorse any product. However, general information about product categories is presented to help assist facilities in appropriate product selection.

The information in this section is fundamental to understanding pressure ulcer prevention, healing and treatment, and can be used as a guide to assist in the development of an effective pressure ulcer prevention and treatment plan.

**GOALS FOR THIS SECTION:**

1. Establish appropriate preventive interventions for pressure ulcers based on an individual’s risk assessment
2. Identify phases of wound healing
3. Discuss the concept of moist wound healing
4. Differentiate various forms of debridement for pressure ulcers
5. Identify appropriate pressure ulcer treatment strategies
PREVENTION

The goal of any pressure ulcer program should be to maintain skin integrity by keeping skin healthy. Healthy skin needs adequate cleansing promptly after each soiling. Products that are gentle and not harmful to the skin should be used. Skin should be kept moist by using emollients, humectants and lubricants as indicated. Other areas to consider when maintaining adequate hydration of the skin include controlling room humidity, monitoring fluid intake and avoiding use of alcohol and acetone on the skin.

A person’s age is another important component to factor in for skin integrity. Over time skin becomes thinner and wrinkles occur. There is reduced oil and sweat gland activity that leads to drying of the skin. Reduced blood flow and more fragile capillaries lead to slower wound healing and easier bruising.

The most common prevention interventions come from basic nursing skills: implement a turning schedule, keep head of bed elevated less than 30° unless contraindicated, use lift sheets, DO NOT use donut type devices, raise or float heels off of the bed, inspect skin at least once every day, manage incontinence episodes, educate the patient/resident and family of risk factors and prevention measures.

An organization’s policies and procedures will address items such as pressure redistribution devices, specific treatment and dressing products to use.

Recognizing and care planning for an individual’s specific risk factors for skin breakdown is a crucial piece to pressure ulcer prevention. Assessing for risk of breakdown is covered in Section 2 of this toolkit and care planning is discussed in Section 4.
<table>
<thead>
<tr>
<th>Key Interventions/Tasks</th>
<th>Action Items</th>
<th>Who is responsible?</th>
<th>Target Date</th>
</tr>
</thead>
</table>
| 1. Review risk assessment findings to identify measures that should be taken to prevent pressure ulcers.  
  - Use most recent risk assessment  
  - Determine if new risk assessment needs to be performed  
    - Significant change in condition  
    - Time for scheduled assessment |              |                     |             |
| 2. For risk due to **sensory perception**, consider the following:  
  - Teach patient/family importance of turning/repositioning  
  - Avoid constrictive clothing  
  - Elevate(float) heels off of bed  
  - Keep head of bed at or below 30 degrees unless contraindicated  
  - Provide cushion for chair/wheelchair  
  - Encourage/assist with position change every 15 minutes while in chair  
  - Limit time in chair/wheelchair to intervals of no more than 1-2 hours |              |                     |             |
| 3. For risk due to **moisture**, consider the following:  
  - Assess moisture cause and address  
  - Keep skin clean and dry  
  - Provide incontinence care  
  - Use commercial moisture barrier  
  - Use absorbent pads or briefs that wick and hold moisture  
  - Treat fungal dermatitis if indicated  
  - Apply fecal/urinary incontinence containment device if indicated  
  - Do not use synthetic sheepskin or eggcrate overlay as these may contribute to moisture  
  - Consider a specialty bed for excessive perspiration |              |                     |             |
4. For risk due to activity level, consider the following:
   - Encourage activity as tolerated
   - Obtain PT/OT consult
   - Teach patient/family importance of turning/repositioning
   - Provide cushion for chair/wheelchair
   - Limit time in chair/wheelchair to intervals of no more than 1-2 hours
   - Encourage/assist to shift weight every 15 minutes while in chair/wheelchair
   - Establish clinical criteria for selecting pressure reducing support surfaces
   - Obtain appropriate support surface device
   - Optimize ability to perform ADL’s and participate in activities/therapy

5. For risk due to mobility level, consider the following:
   - Teach patient/family importance of turning/repositioning
   - Elevate (float) heels off of bed
   - Foam wedges to maintain position
   - Draw sheet for lifting or turning
   - Implement turning/repositioning schedules
     - Every two hours while in bed
     - Every 15 minutes while in wheelchair
   - Tip the Waiter pressure relieving technique (instructions included)
   - Keep head of bed at or below 30 degrees unless contraindicated
   - Assistive device for repositioning (trapeze)
   - Obtain PT/OT consult
   - Limit time in chair/wheelchair to intervals of no more than 1-2 hours
   - Establish clinical criteria for selecting pressure reducing support surfaces
   - Pressure redistribution device for bed/wheelchair
### Key Interventions/Tasks

<table>
<thead>
<tr>
<th>Action Items</th>
<th>Who is responsible?</th>
<th>Target Date</th>
</tr>
</thead>
</table>

6. For risk due to nutrition/hydration, consider the following:
   - Encourage/assist with meals as needed
   - Feed meals when necessary
   - Obtain/review pre-albumin or albumin level
   - Dietary consult
   - Offer foods preferred by individual within dietary restrictions
   - Offer supplements as ordered
   - Assess oral care needs

7. For risk due to friction and shear, consider the following:
   - Use draw sheet to lift or turn
   - Keep head of bed at or below 30 degrees unless contraindicated
   - Apply heel/elbow pads or socks
   - Assistive device for repositioning (trapeze)

8. Implement positioning and repositioning schedules.
   - Follow NPUAP guidelines
   - Perform tissue tolerance test
   - Develop individualized turning schedule
   - Recheck any reddened area within 30 minutes of repositioning. Notify nurse if redness persists.

9. Reminder:
   - Avoid massage on bony prominences
   - Avoid positioning on greater trochanter
   - Do not use donut shaped pillows
   - Do not use baby powder as it impairs absorptive ability of briefs
   - Avoid using multiple incontinence pads or linens under individual
   - Use pillows lengthwise under the calf to offload heels
PRESSURE REDISTRIBUTION

Pressure redistribution is a key component to the management and treatment of pressure ulcers. It is important to recognize that pressure redistribution is different than pressure reduction and pressure relief.

While pressure reducing or reliving techniques alleviate pressure in one area, they increase pressure in another area, thereby simply moving the pressure problem from one spot to another. Pressure redistribution is a balancing out of pressure so that no one specific spot on the body is overloaded with damaging pressure.

Specialty equipment, such as mattresses, beds and seating devices may be used to help redistribute pressure. Even when such equipment is used, facilities and caregivers should also practice the following:

- Ensure the individual is repositioned at least every two hours.
- If pillows are used to reduce pressure on the heels, they should be placed under the legs vertically vs. horizontally to avoid undue pressure on the heels.
- Monitor the condition of the equipment to ensure they are safe and therapeutic.

A large volume of products exists in the marketplace, and product selection can be challenging for several reasons, including cost, facility space and patient medical complexity. This information in this toolkit is not intended to recommend or endorse any product or product category over another. The appropriate product(s) to purchase and use will depend on the patient’s/resident’s and facility’s circumstances. Your facility’s pressure ulcer prevention and treatment team and champions should identify and compare products and equipment that will best suit your facility’s needs and budget.

Product features to consider when purchasing pressure redistribution equipment are:

- Powered - Surface dependent on electrical power to operate and provide functionality.
- Non-powered - Pressure redistribution surface that can also be referred to as static. Therapeutic benefit is built into mattress/surface component (gel, foam, microfluid) without electricity.
- Turn Assist - Mattress replacement or composite bed/frame that is equipped with computerized turning of the patient surface. Twenty degrees to the right and twenty to the left is standard with the added capability to set time intervals for each direction.
- Wound Care Turn/Assist - Mechanically same principle as Turn Assist. Goal is for minor shifts in pressure adjustment to be mechanically initiated with nursing personnel participating to reposition patient at the same time. (i.e. mechanical turn assists with movement of heavier, longer patients or those with serious inability to assist caregiver in movement.
- Shear Relief Therapy - Typically a non-powered device with special cover designed to minimize shear injury.
- Air Cycle Therapy - Provides pressure redistribution through the gentle massaging action of adjusting air cycles.
- Pulsating Air Therapy- Combination of low air loss therapy and alternating pressure therapy to enhance capillary/lymph flow.
- Self Adjusting Therapy- Dynamic air chambers and cut-off valves which work to help maximize body weight displacement and minimize tissue interface pressure through a reaction to body movement by adjusting the internal air pressure.
SEATING DEVICES FOR PRESSURE DISTRIBUTION

Therapeutic seating devices, made of foam, gel, air, micro-fluid or a combination of these items and others, are indeed an essential category of pressure redistribution. Indications for use range from high-risk elderly clients who spend large amounts of time in wheelchairs to younger clients who are paraplegic or have other impairments. Product characteristics to consider are depth and size of wheelchair cushion, validated pressure relief provided, comfort, cost and ease of cleaning. Some devices are equipped to provide alternating pressure.

REPLACEMENT MATTRESSES

Mattresses made of foam and gel combinations are not to be considered appropriate for any aspect of treatment as they are therapeutically categorized as preventive/comfort items. These mattresses have varying layers of different foam densities some with gel sections as well. These models are covered with a comfortable, water-repellent, bacteriostatic cover that can be maintained with routine cleaning. Mattresses with foam should be antimicrobial and have appropriate foam ILD with high resiliency.

Physical therapy professionals, certified wound care nurses as well as specially trained rehab professionals are often excellent resources for safe selection and maintenance of therapeutic seating devices.

To help your selection process, below is a brief explanation of generic product categories along with the clinical benefit as it applies to the patient’s/resident’s assessment.

MATTRESS PRODUCT CATEGORIES:

Pulsation Therapy (air):

Products in this category are indicated when skin circulation is impaired or when increased circulation will increase the treatment process. Air support surfaces combine low air loss therapy with alternating pressure therapy to provide enhanced capillary circulation/lymph flow and increased tissue oxygenation. These items can be indicated for prevention and treatment of pressure ulcers, treat severe or extensive burns and pain management.

Air Fluidization:

Framed air surface that uses fluidized microspheres (beads) to help provide pressure relief and assist in treating pressure ulcers, flaps and grafts. This therapy is indicated for treatment of severe and extensive burns and to aid circulation. The silicone bead is helpful in the absorption of copious wound drainage and incontinence. Turn schedules remain essential as well as additional repositioning due to patient shifting with the floatation environment this therapy provides. Careful attention to body temperature is important as the heat requirements of the bed may cause fluctuation in body temperature.

Low Air Loss

Low air loss therapy is pressure relief provided through a series of interconnected fabric air cushions which allow some air to escape from the support surface. This process removes excess moisture vapor through evaporation or transmission. Removing excess moisture vapor from the wound surface area without over drying the wound area is an important factor when moist wound healing is the goal.

Fluid Therapy

Non-powered therapy that provides combined pressure and shear relief through immersion into a viscous fluid and anti-shear layers. This therapy is designed for patients at risk of pressure ulcers as well as existing Stage 1-4 pressure ulcers.

Air Cycling and Atmospheric

These therapies provide pressure relief through dynamically adjusting air systems. Some examples are systems built around a gentle massaging action of a section or areas of the system that “self adjust”.

The following Therapeutic Surfaces Product Decision Tree can be used as a guide for facilities and Clinicians working with individual protocols and availability of product.
### SELECTED CHARACTERISTICS FOR CLASSES OF SUPPORT SURFACES

<table>
<thead>
<tr>
<th>Performance Characteristics</th>
<th>Support Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Air-Fluidized</td>
</tr>
<tr>
<td>Increased support area</td>
<td>Yes</td>
</tr>
<tr>
<td>Low moisture retention</td>
<td>Yes</td>
</tr>
<tr>
<td>Reduced heat accumulation</td>
<td>Yes</td>
</tr>
<tr>
<td>Shear reduction</td>
<td>Yes</td>
</tr>
<tr>
<td>Pressure reduction</td>
<td>Yes</td>
</tr>
<tr>
<td>Dynamic</td>
<td>Yes</td>
</tr>
<tr>
<td>Cost Per Day</td>
<td>High</td>
</tr>
</tbody>
</table>


### CHAIR SUPPORT SURFACES

<table>
<thead>
<tr>
<th>Support Surface</th>
<th>Characteristics</th>
<th>Cost</th>
<th>Concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foam Cushion</td>
<td>Provides some pressure reduction, depending upon the thickness of the foam (a thickness of no less than four inches is recommended)</td>
<td>Low Cost</td>
<td>After laundering, this surface is no longer useful for pressure reduction. A slip cover that can be separately laundered keeps the cushion clean and dry</td>
</tr>
<tr>
<td>Gel Cushion</td>
<td>Reduces pressure by spreading pressure across contact surface</td>
<td>Low to Moderate Cost</td>
<td>Pressure reduction depends on the cushion’s condition (watch for breaks in the integrity of the cushion, which renders this product ineffective) – do not mend</td>
</tr>
<tr>
<td></td>
<td>Does not replace repositioning</td>
<td></td>
<td>User error</td>
</tr>
<tr>
<td>Air-Filled Cushion</td>
<td>Reduces pressure by evenly distributing weight</td>
<td>High Cost</td>
<td>Compromised integrity can render this product ineffective, and should be replaced, user error can be a concern</td>
</tr>
<tr>
<td></td>
<td>Cells fill with air and deflate as pressure is applied</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SUPPORT SURFACES FOR WOUND PREVENTION AND EARLY INTERVENTION

(Includes Stage I wounds)

Braden Score 16 or greater

Requires moisture control for incontinence or perspiration

A. Overlay Mattress
B. Self adjusting* MRS
C. Gel Mattress or Overlay
D. Powered therapeutic massage surface

For persons who score <3 on the Moisture Subscale of the Braden risk assessment, a low air loss surface is recommended.

A. Low air loss* MRS
B. First Step Select Heavy Duty Mattress
C. BariAir System
D. MaxAir ETS Mattress

*MRS - Mattress Replacement System
# Mattress Selection Reference

<table>
<thead>
<tr>
<th></th>
<th>Prevention</th>
<th>Trunk Stage I</th>
<th>Multiple Trunk Stage I</th>
<th>Trunk Stage II</th>
<th>Multiple Trunk Stage II</th>
<th>Trunk Stage III</th>
<th>Trunk Stage IV</th>
<th>Multiple Trunk Stage IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mattress Overlay</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>(alternating pressure-massage, self adjusting mattress)</td>
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<td></td>
<td>●</td>
<td>●</td>
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<tr>
<td>Low Air Loss * MRS</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<td></td>
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<tr>
<td>(powered-often requires special sheets)</td>
<td>●</td>
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<td>●</td>
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<tr>
<td>Gel Overlay * MRS</td>
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<td>●</td>
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<td>●</td>
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<tr>
<td>(often classified as fluid mattress, non-powered)</td>
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<td></td>
<td>●</td>
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<tr>
<td>Low Air Loss Framed Specialty Bed</td>
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<tr>
<td>(total bed system, deep cushions for complex needs)</td>
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<tr>
<td>Air Fluidized</td>
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<tr>
<td>(also known as bead or sand bed)</td>
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</table>

*Mattress Replacement System

This grid is provided as a resource to assist your team to determine the appropriate mattress selection. There are many factors affecting product choice ranging from complex co morbidities, patient size, product cost to user environment. For specific product selection guidance, contact your facility vendor/product supplier. Heels and elbows can be elevated and managed with correct positioning.
PRESSURE RELIEF TECHNIQUE “TIP THE WAITER”

Like a 3 legged stool, when we sit, our weight rests on 3 bones: the left ischial tuberosity, the right ischial tuberosity, and the coccyx. People who sit for long periods of time, and who are unable to effectively shift their weight, such as those with severe cognitive or neurological impairment, are at risk for developing pressure ulcers in these areas.

**TIP THE WAITER** is a simple repositioning technique that not only provides temporary pressure relief in these areas, but can also increase capillary blood flow to the tissue. **TIP THE WAITER** is very easy for health care staff and family to do without fear of injury, if done correctly.

The term “**TIP THE WAITER**” can help you remember the technique. Any time a person cannot effectively reposition themselves, they are waiting to be repositioned by someone else, and thus they are the **waiter**. By **tipping** the person forward and holding them in a tipped-forward position for a period of time (one to two minutes), a caregiver can provide pressure relief to the Ischial tuberosity area. Caregivers should hold the person as necessary to prevent them from falling.

The caregiver may employ therapeutic touch and therapeutic communication with the patient or resident, while holding them in a tipped position. Remember this practice with **Three Ts** (tip, touch, talk).

**TIP THE WAITER** is a simple technique that can be employed by health care staff, family and other caregivers to help relieve pressure from an area highly susceptible to pressure ulcers. This technique does not replace the need for total repositioning at least every two hours.

Note: Tip the Waiter is a recommendation to help relieve pressure, which is a method for pressure ulcer prevention. Currently, there is no scientific evidence of the effectiveness of this technique in the prevention of pressure ulcers.
Tissue Tolerance and Individualized Turning Schedule

Recommended times for change in position are noted with desired position.

Codes: RS (right side), LS (left side), B (back), OOB (lift/shift in chair), W/C, HOB (head of bed, raised seating), T (toileted)

When repositioning check after 30 minutes to see if the bony prominence is still red. Report to nurse.

Change every hour in W/C and at least every 2 hours in bed. Do not raise HOB higher than 30 degrees unless directed by nurse.

<table>
<thead>
<tr>
<th>Time</th>
<th>Desired position &amp; initials</th>
<th>Check back after turned, red after 30 min? Indicate “no” or Location that is still red</th>
<th>Desired position &amp; initials</th>
<th>Check back after turned, red after 30 min? Indicate “no” or Location that is still red</th>
<th>Desired position &amp; initials</th>
<th>Check back after turned, red after 30 min? Indicate “no” or Location that is still red</th>
<th>Desired position &amp; initials</th>
<th>Check back after turned, red after 30 min? Indicate “no” or Location that is still red</th>
</tr>
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<tr>
<td>11:30 pm</td>
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<td>5:30 am</td>
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<td>9:30 pm</td>
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</tbody>
</table>

Initial Name

Initial Name

Initial Name

Initial Name
## Key Interventions/Tasks

<table>
<thead>
<tr>
<th>1. Individualize pressure ulcer treatment goals</th>
<th>Action Items</th>
<th>Who is responsible?</th>
<th>Target Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Involve patient/resident when possible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Explain risk factors leading to current pressure ulcer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Explain treatment method</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Address pain management</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Accurately identify wound</th>
<th>Action Items</th>
<th>Who is responsible?</th>
<th>Target Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Pressure vs. non-pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Only Stage Pressure Ulcers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Accurate coding/billing/reimbursement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Establish communication between wound team and coding/reimbursement staff</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

(See Section 2 Assessment for tools)

<table>
<thead>
<tr>
<th>3. Assess wound</th>
<th>Action Items</th>
<th>Who is responsible?</th>
<th>Target Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Determine assessment frequency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Use consistent documentation</td>
<td></td>
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</table>

(For more detailed information, refer to Section 2 Action Plan-Pressure Ulcer Assessment and Monitoring)

<table>
<thead>
<tr>
<th>4. Initiate treatment</th>
<th>Action Items</th>
<th>Who is responsible?</th>
<th>Target Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Obtain treatment orders promptly</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>• Ensure treatment is consistent with current clinical guidelines</td>
<td></td>
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</tr>
</tbody>
</table>

(Links to guidelines such as NPUAP, and AMDA are included in Appendix B: Pressure Ulcer Guidelines)

<table>
<thead>
<tr>
<th>5. Select and carry out treatment strategies</th>
<th>Action Items</th>
<th>Who is responsible?</th>
<th>Target Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Pressure redistribution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Support surfaces</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cleaning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Saline or gentle commercial wound cleanser</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>• Avoid cytotoxic agents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dressing (See Pressure Ulcer Treatment and Dressing Decision Trees in this section)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>• Prevent evaporation/drying of wound</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>• Absorb excess drainage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Maintain moisture balance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Maintain appropriate bacteria balance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Avoid/limit use of wet to dry dressing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Key Interventions/Tasks

### 6. Manage pain
- Assess pressure ulcer pain
  - Intensity, duration, descriptors
- Pain medication
  - Administer prior to treatment/dressing change if indicated
  - Monitor effectiveness of medication

### 7. Consider other treatment components
- Temperature
- pH Balance
  - Should be similar to bloodstream

### 8. Monitor wound treatment effectiveness
- Track wound healing status over time
- Utilize PUSH tool (sample include in Section 2)
- If wound is not healing after two weeks,
  - consider modification of treatment plan
  - refer to certified wound care consultant

### 9. Specify steps to take when a pressure ulcer is not healing
- Assess wound for signs and symptoms of infection
  - Red, swollen or painful
  - Foul odor, greenish drainage
- Internal wound team
  - Review all components of current treatment plan
    - Nutrition
    - Support surface
    - Moisture
  - Reassess clinical condition of individual
    - Decline/change in status
    - New diagnosis
- Consult physician/wound care specialist
WOUND HEALING CONCEPTS
Pressure ulcers require a focused wound treatment regime and a review of the pressure ulcer care plan, which includes a critical look into preventive measures. Upon discovery of a pressure ulcer, the individual’s medical status should be reassessed, looking for pressure ulcer risk factors e.g., poorly treated diabetes, hypothyroidism, anemia, use of drugs that impair healing or affect cognition, impaired nutritional status and infection. The prevention-focused care plan should be reviewed and intensified when a pressure ulcer develops to help ensure the best healing environment and to prevent additional wound development. The abundance of wound care products available can make the treatment choice confusing, however, a basic understanding of the physiology of wound healing, can help guide treatment choices. The information that follows will provide basic concepts of wound healing.

PHASES OF HEALING IN PARTIAL THICKNESS PRESSURE ULCERS (STAGE I AND II)
Inflammatory Phase
The inflammatory phase is short in partial thickness wounds, beginning at the time of injury and typically subsiding in less than four hours (Winter, 1979). This phase can include mild erythema (redness), edema and pain because of nerve ending exposure. A serous exudate containing leukocytes is produced and IF allowed to dry will form an unwanted scab.

Proliferation and Migration Phase
Epidermal resurfacing begins within hours of the injury in response to cytokines and growth factors in the wound fluid. Partial-thickness wounds left open to air take six to seven days to resurface, whereas moist wounds re-epithelialize (regrowth of epidermis) in four days (Winter, 1979). When a wound forms an unwanted scab, migration is delayed while the epithelial cells secrete enzymes to loosen the scab covering, and create a moist vascular pathway for resurfacing to continue.

In wounds involving epidermal and dermal loss, repair occurs at the same time. By the ninth day, collagen fibers appear in the wound bed of a Stage II pressure ulcer, and collagen synthesis continues to produce new connective tissue until about 10 to 15 days after injury. Cells in the sheath surrounding the hair follicles to contribute significantly to dermal repair in partial thickness wounds, a hypothesis supported by observations of faster healing in wounds involving hairy areas of the body.

PHASES OF HEALING IN FULL SKIN THICKNESS PRESSURE ULCERS (STAGE III AND IV)
Secondary Intention
Healing by secondary intention occurs when a wound is left open and closes naturally. During this phase of the healing process, granulation tissue helps fill the wound and results in significant scar tissue. The involved tissue (i.e., muscle) will never achieve a tensile strength greater than 80% of what it was prior to injury, and the involved tissue will always be more susceptible to future breakdown. Therefore, full thickness pressure ulcers (Stage III or IV) cannot revert to a partial thickness wound (Stage I or II).

Hemostasis Phase
Hemostasis occurs when clotting causes platelet degranulation, which releases growth factors stored in the platelets, and in full skin injury, can trigger the natural wound healing process. In acute full-thickness wounds, such as those resulting from surgery, bleeding is significant enough for hemostasis to occur. In a full thickness pressure ulcer healing by secondary intention, hemostasis does not occur, and the normal wound repair process is compromised. The absence of hemostasis, as well as repeated and prolonged insult to the tissue, significantly deters healing. Therefore, deep tissue
pressure ulcers are considered chronic wounds. Surgical debridement may activate (or reactivate) the repair process because it causes bleeding. Surgical debridement is discussed in detail later in this section.

**Inflammatory Phase**
Healing of chronic full thickness pressure ulcers is commonly complicated by challenges such as necrotic (dead) tissue called eschar and high levels of bacteria in the wound. These factors prolong the inflammatory phase (Goldman, 2004). Studies indicate that the level of inflammatory substances in chronic wounds is 100 times higher than the levels in acute wounds (Berg and Robson, 2003). Therefore, the inflammation phase generally lasts longer than the three days that are typical of the acute wound with an approximated incision. Fortunately, this cycle of inflammation can be interrupted by the debridement of necrotic tissue and control of the bacteria burden (Goldman, 2004). In most cases achieving and maintaining a clean, moist wound bed free from eschar and slough, along with bacterial control is the best approach to redirect non-healing or slow-to-heal pressure ulcers to a healthy healing in track.

**Proliferation Phase**
In the proliferation phase, an acute wound with well approximated edges forms a protective epithelial barrier, and new connective tissue fills in the wound within four to 20 days (P. Bonham 2008). During this process a new capillary-arterial vessel network grows to support collagen synthesis, which requires high oxygen levels, and the wound edges contract and pull together to close the wound. However, in the chronic full thickness pressure ulcer, the proliferation phase is prolonged and the sequence of healing is different.

For example, epitheliazation (regrowth of the epidermis across the wound surface) occurs first in wounds healing by primary-intention (surgery), followed by capillary-arterial vessel network development, a small amount of granulation tissue formation and then contraction. In full thickness pressure ulcer healing by secondary-intention, the proliferation phase begins with a granulation tissue formation to fill in the wound gap, followed by contraction to minimize the defect. Epitheliazation occurs as the final phase when the wound is smaller and easier to cover with epithelial cells. One potential consequence of this altered healing sequence is a phenomenon called epibole (rolled edges) wound (Bryant, 2007).

Epibole occurs when the wound edges stop proliferating (advancing) and roll under, stopping cells from migrating across the wound surface. These closed edges must be opened by surgical excision or chemical cauterization, before epithelial migration can be re-established and wound closure completed.

**Maturation Phase**
The final phase of wound healing, maturation, can take between three weeks and a year to complete.

It involves the continuous remodeling of collagen fibers. Throughout this phase the new collagen that is formed is more orderly and strong, thereby providing more tensile strength to the wound. However, subsequent scar tissue will never be more than 80% of the tensile strength in the non-wounded tissue. Clinicians and caregivers must be acutely aware that newly healed pressure ulcers initially lack tensile strength and stress on the remodeling wound should be minimized until reasonable tensile strength has developed, about two to three months after closure. For example, the person with a newly healed pressure ulcer should remain on a therapeutic support surface and should minimize time spent lying on the affected area. NOTE: The same pressure reducing measures that were needed to heal the newly healed pressure ulcers initially lack tensile strength and stress on the remodeling wound should be minimized.
wound must be continued to prevent reoccurrence of wounds.

**Lack of Healing**

Failure to heal may be due to systemic or local factors, or both. Examples of system factors are low blood pressure, edema, cardiac/pulmonary disorders, hyperglycemia (high blood glucose), malnutrition, and use of cortical steroids. Local factors include dried out wound bed, cytotoxic antiseptics, disinfectives in wound, osteomyelitis (infection of the bone), too frequent dressing changes, epibole and wound infection. Wound infection may be obvious with symptoms such as redness, edema, pain, heat or purulent drainage. The cause, systemic and/or local, needs to be identified and treated accordingly. For example, glucose levels need to be controlled, nutritional status improved, epibole may need to be surgically excised or chemically cauterized (burned) with silver nitrate and an infection may need to be treated locally and systemically, depending on bioburden of the wound.

Occasionally a wound will not heal even when there is no apparent reason (for example no observable symptoms of infection). If a wound fails to heal even after debridement or is free from necrosis and appropriate therapy, a two-week trial of topical antibiotic such as silvadene or triple antibiotic (broad spectrum), should be considered. It should be noted that there is some controversy about the use of topical antibiotics due to sensitivity and resistance. Therefore, topical antibiotics should be used with discretion. If no response (healing) occurs within two weeks of topical antibiotic use, consider obtaining an order for culture and sensitivity to determine if there is an infection and the most appropriate antibiotic.

Systemic antibiotics are needed in the treatment of pressure ulcers with bacteremia, sepsis, advancing cellulitis or osteomyelitis.

**Wound Assessment**

A comprehensive wound assessment and documentation of this assessment should be done when the wound is initially identified and at specific intervals thereafter. Refer to Section 2 – Screening, Assessing and Monitoring Pressure Ulcers for details on pressure ulcer assessment criteria. Treatment strategies will be determined in part by the results of the wound assessment(s).

**COMPONENTS OF PRESSURE ULCER TREATMENT**

Three essential components of local pressure ulcer care, identified by Maklebust and Sieggreen (1996), include cleaning, debridement and dressings. Dressing choice is often very important in maintaining healthy moisture and bacterial balance in the wound. Some dressings can actually achieve partial or complete debridement.

Standard local wound care for a healable pressure ulcer, i.e., one with reversible underlying factors, should satisfy three criteria of moisture balance, bacterial balance and debridement (JAMA, 2008). Other wound environmental factors to consider include pH balance and temperature.

**CLEANING**

The first principle of cleaning is to avoid further harm. Products such as hydrogen peroxide, acetic acid and povidone iodine have been identified as being cytotoxic (Bergstrom et. al., 1994). Cleaning agents should be gentle to newly proliferating cells, physiologic and safe, e.g., normal saline or a gentle commercial wound cleanser.
Necrotic tissue in the wound bed slows healing and increases the bacterial burden as organisms grow and multiply in devitalized tissue. Debridement is the removal of nonviable tissue and foreign matter from a wound. Eliminating the nonviable tissue significantly facilitates the wound healing process. Debridement may be accomplished through several methods (Bergstrom, 1997; Hess 1995; Kane and Krasner, 1997; Bryant and Nix 2007). Debridement methods are classified as either selective where only necrotic tissue is removed or nonselective which is when viable tissue is removed along with the nonviable necrotic tissue. More specifically, debridement is classified by the actual mechanism of action: Autolysis, chemical, mechanical or sharp. Although one method of debridement may be the primary approach selected to rid the wound of necrotic tissue, debridement often involves a combination of methods discussed below.

**Autolytic Debridement**

Autolytic debridement uses the body’s own ability to liquefy or digest devitalized tissue through autolysis. This method is selective to only necrotic tissue and leaves healthy tissue intact. The process is usually not painful but may take longer than other methods. Generally, progress should be observed within 72 to 96 hours and usually completely in 2 to 3 weeks (P. Bonham, 2008).

At first, the black leathery eschar will loosen from the edges, become soft, change to brown or gray in color and eventually transform into stringy yellow slough. Covering the wound with a transparent film dressing or a hydrocolloid dressing from example hastens the process. If the wound has a large amount of exudate, alginate can be used to absorb the excess. Conversely, if a wound is dry, hydrogel can be used to ensure adequate moisture is maintained for autolysis to occur.

Clinicians should note that autolysis is not the primary choice of debridement in persons with severely low white blood counts, advancing cellulitis or infected wounds. Logically, as nonviable tissue is liquefied, the volume of the exudate will increase and the potential for leakage onto the Periwound (healthy surrounding skin) and causing maceration increase as well. In addition to using an absorbent dressing such as calcium alginate or hydro-fiber, a liquid barrier film or skin barriers may be applied to the surrounding skin as protection. Also important to note is that wet to dry dressings are not autolytic.

**Chemical Debridement**

Necrotic wound tissue can also be removed through a chemical process such as with enzymes, maggots, or sodium hypochlorite (Dakin’s solution). The use of Dakin’s solution is controversial, and its effectiveness for debridement is questioned. If it is used, concentrations greater than 0.025% should be avoided, because higher concentrations may be toxic and pose a risk to fibroblast, resulting in impaired wound healing (R. Bryant and Nix 2008).

The technique of maggot therapy has also been referred to as biologic debridement or biosurgery. However, because of its mechanism of action is chemical in nature; it can be accurately referred to as a means of chemical debridement. This therapy involves the use of sterilized eggs of the green bottle fly. Once they hatch under sterile conditions, the larvae are introduced into the wound bed. It is theorized that the larvae secrete prolytic enzymes, including collagenase that breaks down the necrotic tissue.

**Enzymatic Debridement**

Enzymatic debridement requires moisture as enzymes are not active in dry surfaces. Topical application of enzymes in the pressure ulcer is
a selective method of debridement. Collagen
specific proteolytic enzymes act by dissolving the
collagen anchors that secure necrotic tissue to the
underlying wound bed without harming viable
tissue. Because these enzymes need to be applied at
least daily, dressings that are intended to remain for
several days are not cost effective in combination
with enzyme preparations.

Heavy metals, such as silver and zinc, that can be
found in many wound cleaners and other commonly
used topical wound products, deactivate enzymes.
Products containing heavy metals should be rinsed
thoroughly from the wound before applying an
enzyme.

**Sharp Wound Debridement**
There are two types of sharp debridement,
conservative and surgical. Both require the use of
sterile surgical instruments such as forceps or pick-
ups, scissors and scalpel.

**Conservative Sharp Debridement**
Conservative sharp wound debridement is a
selective debridement carried out within the
wound borders. It is not considered a surgical
procedure because it involves the removal of
only non-viable necrotic tissue. Conservative
sharp debridement can be performed by a
physician, certified wound care specialist or
other qualified health care professional.
Advantages to this method include the quick
removal of necrotic tissue compared to other
methods, it is carried out in a serial manner and
it can be combined with other debridement
techniques (autolytic or enzymatic) to shorten
the phase of wound care.

Ideally, this procedure produces little to no pain
or blood loss since only avascular, non-viable
tissue is removed. However, pain control
measures such as local or systemic anesthesia
can be used to manage any potential
discomfort. This procedure is the technique of
choice for individuals with a large amount of
necrotic tissue.

The physician should be consulted prior to
performing this type of debridement, and the
patient should be evaluated for a high risk of
bleeding, identifying factors such as impaired liver function, vitamin K deficiency, low
platelet count, presence of anticoagulant
therapy or high doses of nonsteroidal anti-
inflammatory drugs.

Additionally, this technique is can be used in
infected wounds to quickly reduce the
bioburden. Many times, systemic and topical
antibiotics are used in conjunction with this
type of debridement when infection is present
to prevent the infection from becoming
systemic and to reduce the wound bioburden
(Bryant and Nix 2007).

**Surgical Sharp Debridement**
Surgical sharp debridement is a procedure that
typically goes beyond the wound edges and is
done by a surgeon. In most cases, it is a one
time procedure performed in the operating
room under general anesthesia. When
indicated, the surgeon may choose to perform a
less aggressive debridement at the bedside
using a local anesthetic. This sterile procedure
is usually reserved for those cases involving a
very large amount of necrotic tissue, life-
threatening infections or advancing cellulitis.
Besides removing the bioburden of the wound,
this technique converts the chronic pressure
ulcer into an acute wound thereby increasing
the healing time in many individuals.

**Mechanical Debridement**
One of the oldest treatments available is mechanical
debridement through wet to dry (or wet to
Prevention and Treatment

moist) dressings. Gauze dressing moistened (not made dripping wet) with 0.9% normal saline is loosely packed into the wound, allowed to dry or almost dry (usually 4-6 hours after application) and then removed from the wound. Tissue debris and drainage will adhere to the gauze. Today, the use of wet-to-dry dressings is a controversial debridement method. Most experts in wound care agree that the use of wet-to-dry mechanical debridement should be restricted to heavily necrotic wounds and discontinued when viable tissue is present (Bryant 2007). Some wound care experts even consider gauze to be contraindicated as a wound contact dressing (Turner, 1997).

Mechanical debridement can be effective for removing dead devitalized tissue. However, it can also be damaging to viable healthy tissue, and it may also be a painful process for the individual. If the gauze is found to be very dry, slightly moistening the gauze prior to removal can reduce discomfort. Some practitioners soak the dry gauze with normal saline prior to removal; however, this can decrease the effectiveness of mechanical debridement.

Mechanical debridement via whirlpool is another fairly common method of treatment. It allows for the softening and loosening of adherent necrotic tissue and cleansing and removal of wound exudates as well as theoretical removal of bacteria and debris from the surface of large wounds. Water is the most common type of solution used, with an optimal temperature of 37°C (Sussman, 1998). Questions have been raised about the efficacy of whirlpool alone in removing bacteria and debris from the wound surface (Frantz, 1997; Sussman 1998). It may be the irrigation action rather than the whirlpool that decreases the surface bacteria (Neiderhuber, Stubley and Keopke 1975). Regardless, Burke and Colleagues 1998, examined the effects of hydrotherapy on pressure ulcer healing and found significant improvement in the treatment group when compared to the control group. Sharp debridement was performed on all study participants before initiation of treatment; nutrition was not addressed. Concerns exist about cross-contamination between whirlpool patients. According to Laurence (1997), wound bacteria readily contaminate bath water. Although it is commonplace to add antiseptic solution to the water, these additives may be cytotoxic and have a negative impact on the wound.

Dressings

Use of Gauze

Significant clinical evidence supports the use of semi-occlusive dressings such as films and hydrocolloids rather than gauze to better maintain an environment that facilitates wound healing. However, limited use of gauze as a pressure ulcer dressing may be cost-justified, for example, when a pressure ulcer requires frequent assessment. Most experts believe that it is best to use a multi-day dressing that maintains a moist wound environment that has a barrier function that protects the wound and periwound skin from microbial and physical insult.

Unfortunately, there is a misconception that gauze as a dressing is less expensive to heal a wound than using semi-occlusive, moisture retention dressings. Clinical studies have shown that infection rates are actually higher and healing time in general is slower in wounds dressed with gauze than in wounds.
dressed with transparent films or hydrocolloids. Additionally, if the gauze dressing needs to be changed multiple times daily rather than multiple times per week as with alternative dressings, the cost will be higher in the long run. These factors combined can increase the cost and reduce the safety of using gauze dressings to heal and treat pressure ulcers.

The Comparison of Cost and Effectiveness table shown next is based on a study in a home health care setting, and illustrates a higher cost and slower healing progress with saline and gauze treatment compared to advanced dressings.
Comparison of Cost and Effectiveness of Daily Wet-to-Dry Dressings Versus 3x/wk Frequency Using Advanced Product

<table>
<thead>
<tr>
<th>Dressing change frequency</th>
<th>Daily</th>
<th>3X per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price of dressing</td>
<td>$0.75</td>
<td>$10.00</td>
</tr>
<tr>
<td>Price of gloves</td>
<td>$0.10</td>
<td>$0.10</td>
</tr>
<tr>
<td>Price of irrigation syringe</td>
<td>$0.86</td>
<td>$0.86</td>
</tr>
<tr>
<td>Price of saline</td>
<td>$1.12</td>
<td>$0.56</td>
</tr>
<tr>
<td>Price of tape</td>
<td>$0.08</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$2.91</strong></td>
<td><strong>$11.52</strong></td>
</tr>
<tr>
<td>Materials cost/week</td>
<td>$20.37</td>
<td>$34.56</td>
</tr>
<tr>
<td>Cost of 1 nursing visit</td>
<td>$100.00</td>
<td>$100.00</td>
</tr>
<tr>
<td>Costs of 1 week visits</td>
<td>$700.00</td>
<td>$300.00</td>
</tr>
<tr>
<td>Weekly labor costs</td>
<td>$700.00</td>
<td>$300.00</td>
</tr>
<tr>
<td>Weekly costs: labor &amp; materials</td>
<td>$720.37</td>
<td>$334.56</td>
</tr>
<tr>
<td><strong>Amount of progress after 4 weeks</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% wound size reduction in 4 weeks</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>Costs for 4 weeks of care</td>
<td>$2881.48</td>
<td>$1338.24</td>
</tr>
<tr>
<td><strong>Cost per 1% reduction</strong></td>
<td><strong>$57.63</strong></td>
<td><strong>$13.38</strong></td>
</tr>
<tr>
<td>Supply cost per 1% healing with pt doing self-care*</td>
<td>$1.63</td>
<td>$1.38</td>
</tr>
</tbody>
</table>

*4-wk costs/% healing. L. Ovington, Home Healthcare Nurse, 2001

Comparison of Cost and Effectiveness of Twice Daily or Wet-to-Dry Versus 3x per week using Advanced Product

<table>
<thead>
<tr>
<th>Dressing change frequency</th>
<th>BID</th>
<th>3X per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price of dressing</td>
<td>$0.75</td>
<td>$10.00</td>
</tr>
<tr>
<td>Price of gloves</td>
<td>$0.10</td>
<td>$0.10</td>
</tr>
<tr>
<td>Price of irrigation syringe</td>
<td>$0.86</td>
<td>$0.86</td>
</tr>
<tr>
<td>Price of saline</td>
<td>$1.12</td>
<td>$0.56</td>
</tr>
<tr>
<td>Price of tape</td>
<td>$0.08</td>
<td>0</td>
</tr>
<tr>
<td>Cost per dressing change</td>
<td>$2.91</td>
<td>$11.52</td>
</tr>
<tr>
<td>Materials cost per week</td>
<td>$40.74</td>
<td>$34.56</td>
</tr>
<tr>
<td>Cost of 1 nursing visit</td>
<td>$100.00</td>
<td>$100.00</td>
</tr>
<tr>
<td>Cost of 1 week of visits</td>
<td>$1400.00</td>
<td>$300.00</td>
</tr>
<tr>
<td>Weekly labor costs</td>
<td>$1400.00</td>
<td>$300.00</td>
</tr>
<tr>
<td>Total weekly costs: labor &amp; materials</td>
<td>$1440.74</td>
<td>$334.56</td>
</tr>
<tr>
<td><strong>Amount of progress after 4 weeks</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Wound size reduction in 4 weeks</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>Costs for 4 weeks of care</td>
<td>$5762.96</td>
<td>$1338.24</td>
</tr>
<tr>
<td><strong>Cost per 1% reduction</strong></td>
<td><strong>$115.26</strong></td>
<td><strong>$13.38</strong></td>
</tr>
<tr>
<td>Supply cost per 1% healing with patient doing self care*</td>
<td>$3.26</td>
<td>$1.38</td>
</tr>
</tbody>
</table>

*4 week costs/% of healing L. Ovington, Home Healthcare Nurse, 2001
MOISTURE BALANCE
Adding moisture to the wound externally is not the same as retaining moisture over time. Saline moistened gauze may provide moisture to a wound if changed or remoistened frequently. However, it cannot keep the wound continually moist on its own and is not considered moisture-retentive. Semi occlusive dressings, such as films, foams and hydro-colloids, are able to keep the wound continuously moist even when no additional moisture is supplied, by catching and retaining moisture vapor that would otherwise be lost due to evaporation.

If drainage occurs and is not managed, tissues may subsequently become over wet and periwound skin macerated. Healthy tissues in the wound are moist, but not wet or dry. To manage high drainage levels, a dressing must have an ability to absorb moisture and to transmit vapor. An overly wet wound bed can result in hypergranulation which is the over-growth of wound healing tissue. Absorbent dressings such as calcium alginate, hydrofiber, foam and hydrocolloids, can help achieve balanced moisture in the wound. The process of absorption physically moves drainage away from the wounds surface and edges into the dressing material. At the other end of the hydration spectrum, wound tissue that is already dry may need to be actively rehydrated using dressing materials that donate (and maintain) water to the tissue.

Crusting
Crusting is a treatment technique that offers similar but even greater protection than skin sealant alone. In this technique, first a barrier powder is placed around wound and then a skin sealant is applied over the powder. The sealant is allowed to dry before a dressing is placed over the wound, making a second skin that absorbs exudate and protects the periwound from trauma. If the periwound is eroded, ulcerated or weeping, skin crusting must be done with no-sting sealants to prevent pain. No-sting sealants can be up to three times more expensive than regular alcohol-based products; therefore, once the periwound is healed, switching back to an alcohol-based skin sealant can significantly reduce cost.

pH BALANCE
pH balance is also important for wound healing. The pH of the wound should be similar to that of the bloodstream, which is essentially neutral at 7.4. The presence of urine, stool or fistula drainage in a wound will affect the pH and consequently slow/prevent healing. Similarly, many antiseptics such as acetic acid, with a pH of 2.4 is an effective antiseptic in controlling bacteria, but it is also toxic to important cells required for healing. Historically antiseptics were used for decontaminating infected wounds today, their use is generally discouraged, because their cellular toxicity exceed their bactericidal (bacteria killing) activity (AHCPR, 1994; WOCN Society 2001).

BACTERIAL BALANCE
Bacterial balance is critical to the healing of a pressure ulcer. The use of semi occlusive dressings reduces wound infection by more than 50% as
compared with traditional gauze dressings. In many cases semi occlusive dressings serve as a barrier to entry of exogenous (outside of body) bacteria (Martz and Ovington, 1993). One study found that bacteria can penetrate up to 64 layers of gauze (Lawrence, 1994; Bryant and Nix, 2007).

**TEMPERATURE**
Maintaining normal temperature of the wound tissues is important because all cellular functions are affected by temperature. Local hypothermia can impair both the healing process and the immune response. Local cooling can occur with wound management practices such frequent dressing changes and wound cleaning techniques (such as irrigation with refrigerated solutions). Topical wound dressings that reduce moisture loss from wounded tissue and do not require frequent changes will reduce cooling.

**USING TREATMENT PRODUCTS EFFECTIVELY**
Various products are available for use in maintaining an ideal moisture balance in the pressure ulcer wound beds. The information in this toolkit is not intended to endorse the use of any specific products; therefore examples of categories are used for illustration purposes only in the decision trees that mechanical

(Hutchinson, 1989, 1993; Bryant 2007). In many follow. These decision trees will help clinicians determine appropriate treatment approaches depending on the pressure ulcer stage.

These treatment trees are based on principles of moist wound healing. Sample treatment options are provided; however specific treatment orders should be obtained from the physician directly or through a wound care professional.

**Terms to know:**

**Primary dressing** - dressing closest to the wound bed; for example, alginate for increased absorption of drainage.

**Secondary dressing** - dressing covering the primary dressing for example the hydrocolloid or foam dressing. If there is only one dressing such as a transparent film, adhesive foam composite or hydrocolloid dressing then it is both the primary and secondary dressing.

**Packing** - a product placed into the wound to absorb drainage and eliminate dead space such as in the case of tunneling or undermining.
STAGE I  Intact skin with non-blanchable redness of a localized area usually over a bony prominence. 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.

Avoid positioning individual on the reddened area then

Choose

<table>
<thead>
<tr>
<th>Protective Ointment</th>
<th>OR</th>
<th>Transparent film dressing change every 3-7 days or sooner as needed</th>
<th>OR</th>
<th>Thin hydrocolloid change every 7 days or sooner as needed</th>
<th>OR</th>
<th>Open to air</th>
</tr>
</thead>
</table>
**STAGE II** Partial thickness skin 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.

**Wounds with no drainage or minimal drainage:**
Avoid positioning individual on the affected area then -
Choose

<table>
<thead>
<tr>
<th>Protective Ointment</th>
<th>Transparent film dressing change every 3-7 days and as needed</th>
<th>Adhesive Hydrogel sheet Change every 7 days or as needed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*Transparent film dressings are not recommended on infected pressure ulcers</td>
<td></td>
</tr>
<tr>
<td>O/R</td>
<td>O/R</td>
<td>O/R</td>
</tr>
</tbody>
</table>

Note: Hydrofiber is more absorbent than calcium alginate and is the best choice for very heavy drainage.

**STAGE II** Partial thickness skin 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.

**Wounds with heavy/moderate drainage:**
Avoid positioning individual on the affected area then -
Choose

<table>
<thead>
<tr>
<th>Adhesive Foam dressing Change as needed according to manufacturer’s instructions</th>
<th>Hydrofiber dressing Change as needed according to manufacturer’s instructions</th>
<th>Absorbent dressing (such as Calcium Alginate) covered by a hydrocolloid dressing Change as needed according to manufacturer’s instructions</th>
<th>Composite dressing Change as needed according to manufacturer’s instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>O/R</td>
<td>O/R</td>
<td>O/R</td>
<td>O/R</td>
</tr>
</tbody>
</table>


**STAGE III** Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon or muscle are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunneling.

**STAGE IV** Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present on some parts of the wound bed. Often includes undermining and tunneling.

**Wound with minimal or no drainage:**
**Avoid positioning individual on the affected area then -**

Choose

- Place Hydrogel on the wound cover with Hydrocolloid (if the hydrogel is in gel form)
- Change every 7 days and as needed or every 3 days if using antimicrobial gel

- OR

- Cover with Hydrogel sheets
- Change every 7 days and as needed or every 3 days if using antimicrobial gel

- OR

- Cover with Adhesive foam or Hydrocolloid dressing
- Change every 7 days and as needed or every 3 days if using antimicrobial gel

**STAGE III** Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon or muscle are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunneling.

**STAGE IV** Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present on some parts of the wound bed. Often includes undermining and tunneling.

**Wounds with moderate/heavy drainage:**
**Avoid positioning individual on the affected area then -**

Choose

- Use calcium alginate or hydrofiber as primary dressing for absorption

- AND

- Cover with absorbent secondary dressing such as Hydrocolloid or adhesive foam
- Change as needed according to manufacturer’s instructions
### NECROTIC WOUNDS

#### Wounds with minimal or no drainage:

Avoid positioning individual on the affected area then -  
Choose

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesive wound gel sheet</td>
<td>Change every 7 days and as needed or every 3 days and as needed if using antimicrobial gel</td>
</tr>
<tr>
<td>Transparent film dressing</td>
<td>Change every 3-7 and as needed</td>
</tr>
<tr>
<td>Hydrocolloid (if using amorphous wound gel)</td>
<td>Change every 7 days and as needed</td>
</tr>
<tr>
<td>Surgical or conservative sharps debridement per physician/sharps certified wound care professional</td>
<td></td>
</tr>
</tbody>
</table>

Note: Enzymatic debriding agents are not active in dry wound beds. Also heavy metals such as Zinc and silver, inactivate these enzymes so any product containing these should be thoroughly rinsed with normal saline before applying the enzymatic debriding agent.

#### Wounds with moderate to heavy drainage:

Avoid positioning individual on the affected area then -  
Choose

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absorbent composite dressing (if moderate drainage, can use hydrocolloid)</td>
<td>Change as needed according to manufacturer’s instructions</td>
</tr>
<tr>
<td>Apply primary alginate dressing, cover with an absorbent secondary dressing such as composite or hydrocolloid</td>
<td>Change as needed according to manufacturer’s instructions</td>
</tr>
<tr>
<td>Apply enzymatic debriding agent if eschar/slough present. Since enzymes are applied at least daily gauze may be best choice</td>
<td>Change as needed according to manufacturer’s instructions</td>
</tr>
<tr>
<td>Surgical or conservative sharps debridement per physician/sharps certified wound care professional</td>
<td></td>
</tr>
</tbody>
</table>

NECROTIC HEEL WOUNDS Heels covered with dry necrotic eschar (non-draining) should be off loaded and observed for induration/edema and drainage. Report the symptoms to the physician should they occur.

DO NOT DEBRIDE DRY NECROTIC HEELS

Assure blood flow is adequate to debriding the lower extremities.

STAGE III Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon or muscle are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunneling.

STAGE IV Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present on some parts of the wound bed. Often includes undermining and tunneling.

Wound with dead space: (undermining or tunneling)
Avoid positioning individual on the affected area then - Choose

- If minimal or no drainage:
  Fill space with Hydrogel impregnated gauze cover with Hydrocolloid or adhesive foam

- If moderate to heavy drainage:
  Fill space with alginate and cover with Hydrocolloid or adhesive foam

- If deep, narrow tunneling/tracking:
  Use continuous materials such as moisture-impregnated gauze with adequate length and loosely packed
Pressure ulcers require consistency in treatment to promote healing. Use this list that includes the major types of products to ensure your nursing center carries an appropriate range of materials. Nursing staff then can choose the most effective dressing type based on wound stage, characteristics and potential concerns.

<table>
<thead>
<tr>
<th>Treatment Products</th>
<th>Description</th>
<th>Appropriate Wound Stage</th>
<th>Characteristics</th>
<th>Concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Polyurethane Film</strong></td>
<td>Adhesive and transparent.</td>
<td>Stages 1-2</td>
<td>Occlusive and waterproof Retains water Impermeable to bacteria &amp; contamination Promotes moist wound healing Nonabsorbent May be changed every 3 to 7 days May be used as a secondary dressing over a more absorbent product</td>
<td>Should not be used with moderate to heavy exudate wounds May macerate surrounding skin</td>
</tr>
<tr>
<td>Tegaderm™</td>
<td>Op-site◊</td>
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<td></td>
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<tr>
<td>EpiVIEW™</td>
<td>others</td>
<td></td>
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<tr>
<td><strong>Hydrocolloid</strong></td>
<td>Adhesive wafers composed of gelatin, pectin, and carboxymethyl-cellulose</td>
<td>Stages 1-4</td>
<td>Occlusive and waterproof Retains moisture Impermeable Promote moist wound healing Moderately absorbent Easy to apply</td>
<td>Should not be used with heavy exudate wounds Should not be used if infection is present May have odor upon removal May be difficult to remove</td>
</tr>
<tr>
<td>DuoDERM®</td>
<td>Replicare®</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Comfeel®</td>
<td>Others</td>
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<tr>
<td><strong>Hydrogels</strong></td>
<td>Glycerin or water based gels, wafers, sheets, and impregnated gauze with or without adhesive borders</td>
<td>Stages 2-4</td>
<td>Non-adherent Fills dead space Semi-occlusive Promotes moist wound healing Easy to apply &amp; remove Minimally absorbent Retains moisture and rehydrates wound</td>
<td>May macerate surrounding tissues Secondary dressing required Daily application required unless applied with adhesive borders Dries out easily Risk of candidiasis</td>
</tr>
<tr>
<td>Hypergel®</td>
<td>Carrasyn®</td>
<td></td>
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</tr>
<tr>
<td>DuoDERM®</td>
<td>Elasto-Gel Sheet™ SoloSite◊ Others</td>
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<tr>
<td><strong>Foams</strong></td>
<td>Hydrophilic polyurethane foam, available in wafers, sheets, and pillow with foam covering</td>
<td>Stages 2-4</td>
<td>Non-adherent Easy to apply and remove Highly absorbent</td>
<td>Can be used on various levels of exudate Additional fixation is required unless has an adhesive border</td>
</tr>
<tr>
<td>PolyMem®</td>
<td>Allevyn◊</td>
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<tr>
<td>Lyofoam®</td>
<td>Others</td>
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<tr>
<td><strong>Alginates</strong></td>
<td>Non woven fibers containing calcium sodium salts of alginic acid, available in pads or ropes</td>
<td>Stage 2 wounds with a lot of exudate Stages 3-4</td>
<td>Non-adherent Promotes moist wound healing Can be used on infected wounds</td>
<td>Should not be used on dry or low exudate wounds, the wound may get dehydrated Secondary dressing required Typically requires daily application</td>
</tr>
<tr>
<td>Treatment Products</td>
<td>Description</td>
<td>Appropriate Wound Stage</td>
<td>Characteristics</td>
<td>Concerns</td>
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<tr>
<td><strong>Antimicrobial</strong></td>
<td>Ionic silver and cadexomer iodine that provides sustained antimicrobial barrier to multiple bacteria including strains of MRSA and VRE. Can be found in different types of products including alginates, gels and polyurethane film</td>
<td>Stage 2 wounds when antimicrobial treatment is needed Stages 3-4</td>
<td>Manages bacterial burden Non-cytotoxic</td>
<td>Do not use with a person with a known sensitivity to silver. Iodine products should be avoided if known sensitivity, or thyroid disorder Do not use in conjunction with topical antibiotics</td>
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<tr>
<td>ACTICOAT◊</td>
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<tr>
<td>SilvaSorb®</td>
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<tr>
<td>IODOSORB®</td>
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<tr>
<td>ALLEVYN Ag◊</td>
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<tr>
<td>Optifoam AG®</td>
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<tr>
<td>Others</td>
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<tr>
<td><strong>Collagen</strong></td>
<td>Collagen provides the matrix for the body’s tissue structure. Stimulates wound healing Can be found in different delivery systems: dried collagen matrix, hydrogel with collagen, hydrogel base.</td>
<td>Wounds that have stalled in healing Chronic wounds</td>
<td>Promotes new tissue growth Wound debridement Pulls wound edges together</td>
<td>Check product for silver content and do not use on a person with a known sensitivity to silver. Do not use on dry wounds Do not use with patients sensitive to bovine products</td>
</tr>
<tr>
<td>Biostep◊</td>
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<tr>
<td>Prisma®</td>
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<td>Promogran®</td>
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<tr>
<td>Puracol®</td>
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<tr>
<td>Others</td>
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<tr>
<td><strong>Gauze, Dry or Wet</strong></td>
<td>Woven natural cotton fibers; non woven rayon and plastic blends; available in pads and rolls, sterile and non sterile</td>
<td>Stages 2-4, especially if wound is deep or has tissue that needs debridement</td>
<td>May be dampened with saline or water Inexpensive Facilitates moist to dry debridement Non-adherent when used as a wet to moist dressing Minimal to moderate absorbency</td>
<td>Moist to dry debridement can be painful, damaging healthy tissue Woven gauze is abrasive Requires frequent changes Packing may harden, causing further pressure injury</td>
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<tr>
<td>Woven gauze</td>
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</tbody>
</table>

**RELATED WOUND TREATMENTS**

<table>
<thead>
<tr>
<th>Treatment Products</th>
<th>Description</th>
<th>Indications</th>
<th>Contraindications</th>
<th>Concerns/Precuations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacuum Controlled Assisted Closure (V.A.C.) KCI VAC® Engenex™ EZCARE◊ VISTA◊</td>
<td>System that uses controlled negative pressure to help promote wound healing. VAC system pulls infectious materials and excess interstitial fluid from the wound</td>
<td>Pressure ulcers Traumatic wounds Post op-dehisced &amp; surgical wounds</td>
<td>Malignancy Untreated osteomyelitis Unexplored fistulas into the body cavity or to an organ Necrotic tissue with eschar in the wound abed Exposed arteries or veins Uncontrolled pain</td>
<td>Active bleeding Difficult hemostasis Anticoagulant therapy</td>
</tr>
</tbody>
</table>

** Brands are listed for reference purposes only. We do not recommend use of one brand over another. **
SECTION 4  CARE PLANNING FOR PRESSURE ULCER PREVENTION & TREATMENT

This section provides guidance for creating a well-developed, personalized care plan appropriate for each unique health care setting.

Create an individualized care plan for the person with a pressure ulcer and/or at risk of developing a pressure ulcer. Use an interdisciplinary team to address all potential areas of concern and to generate buy in and support from the care team.

It is best to include the individual and/or family members in the care planning process whenever possible.

Once the care plan is developed, the process additionally involves:

- Ensuring oversight for implementation
- Implementing the plan of care
- Communicating the plan of care to direct care staff
- Monitoring the response to the plan of care
- Reassessing and modifying care plan as necessary

TOOLS IN THIS SECTION

Action Plan: Creating an Individualized Pressure Ulcer Care Plan

GOALS FOR THIS SECTION:

1. Analyze, develop or revise your organization’s process for creating a pressure ulcer prevention and/or treatment care plan.

2. Include all parties whose input is necessary to form a comprehensive care plan.

3. Designate a clinical staff person responsible for implementing the care plan interventions.
1. Meet with an interdisciplinary team to review identified areas of risk from pressure ulcer risk assessment. (Include PT, OT, Resident/family, Dietary, Social Services, Nursing, etc.)

2. For impaired mobility consider including:
   - Assist with turning, rising, repositioning
   - Encourage ambulation
   - Remind individual to shift position every 15 minutes while sitting

3. For nutritional deficit consider including:
   - Supplements
   - Feeding assistance
   - Offer fluids
   - Dietary consult
   - Monitor intake/output
   - Obtain lab values
     - Pre-albumin
     - Albumin
     - Hemoglobin
     - Hematocrit

4. For exposure to moisture consider the following:
   - Identify and treat causes
   - Toileting plan
   - Wet/soiled checks
   - Hygiene assistance
   - Moisture barrier product
<table>
<thead>
<tr>
<th>Key Interventions/Tasks</th>
<th>Action Items</th>
<th>Who is responsible?</th>
<th>Target Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. For pressure redistribution consider adding:</td>
<td></td>
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<tr>
<td>• Support surface for bed</td>
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<td>• Support surface for chair</td>
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<tr>
<td>• Pressure reducing devices</td>
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<tr>
<td>• Check for “bottoming out”</td>
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<tr>
<td>6. Other items to address in care plan:</td>
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<tr>
<td>• Skin inspection frequency</td>
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<tr>
<td>• History of previous pressure ulcer</td>
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<tr>
<td>• Site</td>
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<tr>
<td>• Stage</td>
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<tr>
<td>• Sensory impairment</td>
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<tr>
<td>• Impaired cognition</td>
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<tr>
<td>• Fever</td>
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<tr>
<td>• Pain</td>
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</tr>
<tr>
<td>• Infection</td>
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<tr>
<td>7. For the person with a pressure ulcer include the following areas:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Wound cleaning</td>
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<tr>
<td>• Treatment</td>
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<td></td>
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<tr>
<td>• Dressing</td>
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<tr>
<td>• Debridement</td>
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<tr>
<td>• Adjunctive therapy</td>
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<tr>
<td>8. Develop a process for communicating care plan details to</td>
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<tr>
<td>• Direct care staff</td>
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<tr>
<td>• Patients/residents</td>
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<tr>
<td>• Family members</td>
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<tr>
<td>9. Assign responsibility for care plan implementation and monitoring for patient’s/resident’s progress.</td>
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</tbody>
</table>

**Note:** Key Interventions/Tasks and their corresponding Action Items, Who is responsible, and Target Dates are not specified in the provided text. Please provide the details if available.
Prevention and treatment of pressure ulcers will require a commitment to ongoing education for your staff as well as patients/residents and their families and caregivers. This section provides guidance for you to develop a structured, comprehensive educational program appropriate for each of these audiences.

The pressure ulcer committee or workgroup identified in the Organizational Commitment Action Plan (Section 1) are key staff that will help develop and implement your educational efforts and be responsible to ensure these efforts are effective and ongoing.

Some key areas to include in your pressure ulcer educational program are:
- Risk assessment
- Prevention and early treatment options
- Assessment and reassessment, staging
- Monitoring
- Wound treatment
- Accurate documentation
- Care planning

**GOALS FOR THIS SECTION:**

1. Analyze, develop or revise your organization’s educational program on pressure ulcer prevention and treatment.
2. Designate a clinical staff person proficient to answer questions from all staff about pressure ulcer prevention and management.
3. Assess and develop competency of staff.
4. Provide initial and ongoing education.
5. Provide access to educational materials on pressure ulcer prevention and treatment.
### Action plan: Assessing Staff Education Program

<table>
<thead>
<tr>
<th>Key Interventions/Tasks</th>
<th>Action Items</th>
<th>Who is responsible?</th>
<th>Target Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Establish educational program goals and objectives.</td>
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<tr>
<td>(e.g. To assess and develop staff competency in performing risk assessments,</td>
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<tr>
<td>wound identification, to provide initial and ongoing pressure ulcer education etc.)</td>
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<tr>
<td>2. Assess the frequency and content of your organization’s educational program.</td>
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<tr>
<td>a. Education is offered at hire</td>
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<tr>
<td>b. Ongoing education is offered at least annually</td>
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<tr>
<td>c. Education is provided at an appropriate level for the learner.</td>
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<tr>
<td>3. Ensure your education includes the following components:</td>
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</tr>
<tr>
<td>a. Risk assessment</td>
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<tr>
<td>b. Prevention</td>
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<td></td>
<td></td>
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<tr>
<td>c. Accurate identification / assessment/staging</td>
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<tr>
<td>d. Treatment</td>
<td></td>
<td></td>
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<tr>
<td>e. Monitoring</td>
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<tr>
<td>4. Designate a clinical expert to answer staff questions about pressure ulcer risk,</td>
<td></td>
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<tr>
<td>prevention, identification and treatment</td>
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<tr>
<td>5. Evaluate the effectiveness of your educational program.</td>
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<tr>
<td>a. Develop/use knowledge assessment tool (sample included)</td>
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<tr>
<td>b. Return skills demonstration</td>
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<tr>
<td>c. Use a skills checklist</td>
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<tr>
<td>6. Provide access to materials on pressure ulcer prevention and treatment.</td>
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<tr>
<td>a. Policies/procedures</td>
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<tr>
<td>b. Screening tools</td>
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<td></td>
<td></td>
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<tr>
<td>c. Prevention</td>
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<td></td>
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</tr>
<tr>
<td>d. Treatment</td>
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</tbody>
</table>
### Key Interventions/Tasks

<table>
<thead>
<tr>
<th></th>
<th>Action Items</th>
<th>Who is responsible?</th>
<th>Target Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Establish educational goals. &lt;br&gt;  <em>(e.g. To establish patient/resident and family awareness of pressure ulcer risk)</em></td>
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<tr>
<td>2. Develop/use educational materials that includes the following components: &lt;br&gt;   a. Pressure ulcer definition &lt;br&gt;   b. Pressure ulcer risk &lt;br&gt;   c. Ways to reduce risk</td>
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<td></td>
<td><em>(Samples are provided in this toolkit.)</em></td>
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<tr>
<td>3. Develop a process to ensure staff has regular interaction with patient/resident/family/caregiver about pressure ulcers. &lt;br&gt;   a. Talk to patient/resident/family about pressure ulcers on admission and at regular intervals &lt;br&gt;   b. Give patient/resident/family an opportunity to ask questions &lt;br&gt;   c. Provide patient/resident/family a wound care point of contact in your organization for questions and consultation &lt;br&gt;   d. Provide educational materials to patient/resident/family</td>
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</tbody>
</table>
NATIONAL PRESSURE ULCER ADVISORY PANEL

TITLE: Pressure Ulcer Prevention: A Competency-based Curriculum

PURPOSE: To prepare registered nurses with the minimum competencies for pressure ulcer prevention.

COMPETENCIES:
1. Identify etiologic factors contributing to pressure ulcer occurrence.
2. Identify risk factors for pressure ulcer development
3. Recognize the presence of factors affecting tissue tolerance.
5. Conduct a thorough skin assessment taking into account the individual’s uniqueness.
6. Develop and implement an individualized program of skin care
7. Demonstrate proper positioning to decrease pressure ulcer occurrence
8. Select and use support surfaces as indicated by risk status.
9. Use nutritional interventions as appropriate to prevent incident pressure ulcers.
10. Accurately document results of risk assessment, skin assessment, and prevention strategies
11. Apply critical thinking skills to clinical decision making regarding the impact of changes in the individual’s condition on pressure ulcer risk.
12. Make referrals to other health care professionals based on client assessment.

CONTENT OUTLINE
Identify etiologic factors contributing to pressure ulcer occurrence.
1. Etiologic factors contributing to pressure ulcer occurrence
   a. Pressure
   b. Shear
   c. Friction

Identify risk factors for pressure ulcer development
2. Risk factors for pressure ulcer development
   d. Inability to perceive pressure
   e. Incontinence/moisture
   f. Decreased activity level
   g. Inability to reposition
   h. Poor nutritional intake
   i. Friction and shear

Recognize the presence of factors affecting tissue tolerance.
3. Tissue tolerance factors affecting pressure ulcer development
   a. Age
   b. Vascular competency
   c. Glycemic control in diabetes mellitus
   d. Body weight/malnutrition
Conduct risk assessment using a valid and reliable tool.

4. Risk assessment for pressure ulcers
   a. Select a risk assessment method or tool appropriate to the population (e.g. Braden Scale & Norton Scale)
   b. Calculate an individual’s risk assessment score using the Braden Scale
   c. Interpret the significance of the score
   d. Reassess as significant changes occur in a patient

Conduct a thorough skin assessment taking into account the individual’s uniqueness.

5. Skin Assessment
   a. Assess on admission and routinely
   b. Document findings and incorporate into plan of care
   c. Assess bony prominences and other areas of exposure to etiologic factors
   d. Observable indications of tissue ischemia (defined by stages)
      1. Stage I
      2. Stage II
      3. Stage III
      4. Stage IV
   e. Stages define level of tissue injury and NOT progression of ulcer development or healing

Develop and implement an individualized program of skin care

6. Implementation of an individualized program of skin care specific to the individual patient
   a. Individualized schedule of skin cleansing
   b. Measures to prevent skin dryness
   c. Incontinence skin cleansing
      1. Frequency and methods of cleaning
      2. Skin protection (barriers, products)
      3. Evaluation of need to refer for incontinence management

Demonstrate proper positioning to decrease pressure ulcer occurrence

7. Proper positioning
   a. Proper positioning to off set load (e.g. sitting, lying, height of bed)
   b. Transferring from one position to another (e.g. bed to chair, supine to lateral)
   c. Frequency of repositioning
   d. Avoid using donuts
   e. Avoid vigorous massage
   f. Small shifts in position while sitting

Select and use support surfaces as indicated by risk status.

8. Selection and use of support surfaces
   a. Evidence underlying use of support surfaces for pressure ulcer prevention
   b. Indications for use of various types of support surfaces
   c. Classifying support surfaces (static, dynamic, low air loss, air fluidized)
   d. Safe application and maintenance of support surfaces
Use nutritional interventions as appropriate to prevent incident pressure ulcers.

9. Nutritional Interventions
   a. Identification of clinical signs of malnutrition (e.g., unintentional weight loss & lab data, physical
      signs)
   b. Factors to consider when developing a nutritional plan (e.g., goals of therapy)
   c. Supplementation (vitamins, minerals, calories, protein, fluids) and feeding strategies
   d. Assess for appropriate referral

Accurately document results of risk assessment, skin assessment, and prevention strategies

10. Documents risk assessment skin assessment, prevention strategies
   a. Etiology, risk, and tissue tolerance factors to be documented
   b. Risk assessment results
   c. Interventions implemented and patient’s response
   d. Frequency of documentation including initial and periodic reevaluation

Apply critical thinking skills to clinical decision making regarding the impact of changes in the person’s
condition on pressure ulcer risk.

11. Demonstrates clinical critical thinking by accurately interpreting changes in patient status and the
    influence on plan of care to prevent pressure ulcers
   a. Case studies to demonstrate mastery of content
   b. Identification of patient triggers that require changes in plan of care

CASE STUDY:
Mrs. Katie Wilson is a 78-year-old white widow who has been admitted to your acute care hospital unit with a
diagnosis of right lower lobe pneumonia. Prior to admission, she was living alone in a two bedroom apartment.
She has had osteoarthritis for the past 20 years, which has limited her mobility to ambulating only in her
apartment. She is dependent on her neighbor for her grocery shopping. She does her own personal activities of
daily living (bathing, dressing, etc.). She has been taking nonsteroidal antiinflammatory agents for pain
associated with her osteoarthritis. She has a son who lives on the opposite coast and is not available for daily
care needs.

ADMISSION DATA
Temp = 39.2 C, R = 30 & shallow, P=112 apical and regular, BP= 96/56. Wt = 95 lbs., Ht = 5’ 4”

PHYSICAL ASSESSMENT AND PERTINENT ADMISSION HISTORY:
Neuro/muscoskeletal
Responds to verbal questioning, but is lethargic and does not communicate her needs. Over the past 4 days has
been increasingly fatigued spending most of her time in bed. Is very weak and unable to change her position
independently.

Abdominal
Intake has been limited to half bowl of cereal twice a day and piece of toast and tea for lunch for the past 4
days. Last bowel movement was 3 days ago; + bowel sounds
Education

Cardiovascular
NSR, No S3; S4 at apex, +1 pedal edema, faintly palpable pedal pulses, capillary refill 3 seconds

Respiratory
Crackles over right lower lobe, coughing periodically, productive of yellow mucous

Renal
Episodes of urinary incontinence for the past 4 days prior to admission (PTA) Now is voiding concentrated urine, wets herself occasionally Integumentary Skin is warm, dry, translucent, tenting noted

Lab Data
Hg 10, HCT 28, RBC = 3.2, WBC 21,000 shift to the left Albumin 3.0 gm/dl, K= 3.1, BUN= 32mg/100ml

Medical Orders
D5/1/2 NS with 10 meq KCL at 100cc/hr Bronchodilator inhaler 2 puffs q4hrs prn Cephalosporin 1 gm IV q 8 hrs 2 L oxygen via nasal cannula continuously Colace 100 mg po TID pulse oximetry monitoring continuously Metamucil 1 package OD Bedrest Multivitamin 1 tablet OD Respiratory toileting q shift Tylenol 650 mg po for temp > 38 C Daily weights Regular diet as tolerated

QUESTIONS:
1. On admission, what risk factors for pressure ulcers does Mrs. Wilson have?

2. Using the Braden Scale, what is Mrs. Wilson’s score? How would you use this score to plan her care?

3. Based on your nutritional assessment, what, if any, nutritional interventions would be appropriate for Mrs. Wilson at this time?

4. How should Mrs. Wilson be positioned? Given her level of mobility what preventive interventions are indicated to protect her from the effects on unrelieved pressure?

5. What protective measures are indicated given Mrs. Wilson’s incontinence?

6. What clinical manifestations would alert you that more vigorous interventions are indicated?


ANSWERS:
1. Fever, moist skin from perspiration and urinary incontinence contribute to increased moisture on her skin, a risk factor for pressure ulcer development. Reduced nutritional intake for the past 4 days, marginal
albumin level and decreased hemoglobin and hematocrit levels suggest possible nutritional deficit, another risk factor for pressure ulcer development. Dehydration, elevated BUN, weakness, and osteoarthritis contribute to her decreased mobility and activity level, which is a third risk factor for pressure ulcer development.

2. Sensory perceptions = slightly limited (3) Moisture = moist (2)
   Activity = bedfast (1)
   Mobility = completely immobile (1)
   Nutrition = very poor (1)
   Friction and Shear = problem (1)
   Total score = 9
   At risk for pressure ulcer development, needs to have prevention strategies implemented

3. Albumin is low and quality and quantity of intake is poor. Request nutritional assessment by Registered Dietitian to determine need for supplementation.

4. Position in 30 degree lateral position. Head of bed not greater than 30 degrees, not having respiratory distress at this time. Begin using a q2hour turning schedule. Dynamic support surface over her bed needed at this time. Put pillows or padding between her knees and ankles. Consider a protective dressing on her elbows to prevent injury. Keep her heels elevated off the bed surface.

5. Clean perineal area after each soiling with gentle soap/cleanser. Apply a protective barrier cream.

6. Observe for a stage I pressure ulcer by looking for nonblanchable erythema over her bony prominences. Assess these areas also for changes in skin temperature such as warmth, hardness or softness, swelling. The appearance of blisters would indicate a stage II pressure ulcer.

7. Remains weak and lethargic, turned and positioned q 2 hrs, remains on dynamic support surface. Skin is warm, dry and tents. Urinary incontinence X 2; perineal area washed, dried and barrier cream applied. Skin remains intact with no signs of irritation or denuding of the epidermis. Skin over bony prominences pale pink in color, with no evidence of a Stage I pressure ulcer. Ingesting all oral nutritional supplements with assistance.

REFERENCES:


TITLE: Pressure Ulcer Treatment: A Competency based Curriculum

PURPOSE: To prepare registered nurses with the minimum competencies for pressure ulcer treatment.

COMPETENCIES:
1. Perform a comprehensive assessment of a pressure ulcer which minimally includes:
   - Staging
   - Measurement of size
   - Exudate (drainage)
   - Wound bed characteristics
   - Pain
   - Surrounding skin
   - Tunnel/sinus tract/undermining

2. Distinguish pressure ulcers from other wounds or skin disorders

3. Develop a plan of care with the multidisciplinary team based on the individual’s goals of therapies.

4. Demonstrate knowledge and skill in performing local wound care including:
   - Debridement
   - Cleansing
   - Dressings
   - Pressure relief
   - Pain control

5. Identify systemic factors that may influence pressure ulcer healing including:
   - Infection
   - Nutrition
   - Tissue tolerance factors

6. Monitor pressure ulcer healing using a valid measuring method


8. Demonstrate clinical critical thinking by accurately interpreting changes in the pressure ulcer wound that may require a change in treatment.

CONTENT OUTLINE:
Performs a comprehensive assessment of a pressure ulcer which minimally includes: staging, measurement of size, exudate, wound bed characteristics, pain, surrounding skin and tunnel/sinus tract formation
1. Comprehensive assessment of a pressure ulcer includes:
   A. Staging the ulcer
      1. Classify the stage of a pressure ulcer using standard NPUAP definitions
      2. Identify pressure ulcers that cannot be staged (e.g., eschar covered, purple pressure ulcers)
      3. Staging of recurring pressure ulcers (e.g., a pressure ulcer closed with a flap or graft, reopening of a healed pressure ulcer)
   B. Measurement of size
      1. Techniques for determining length, width, depth
      2. Distinguishing between healed and unhealed portion of the wound
   C. Exudate (drainage)
      1. Identify the characteristics of exudate (e.g., purulent, serosanguinous)
      2. Determine the quantity of exudate
      3. Identify the significance of drainage to wound status and treatment plan
   D. Wound bed characteristics
      1. Identify the types of wound tissue (e.g., slough, necrotic, granulation, epithelial)
      2. List the common pitfalls in distinguishing wound tissue (e.g., tendons, scabs)
   E. Pain
      1. Assess pain using a population - appropriate scale
      2. Appropriate pain management prior to wound care treatments and/or interventions
   F. Surrounding skin
      1. Assess for signs of maceration, infection, pressure injury, tape injury
   G. Tunnel/sinus tract/undermining
      1. Differentiate characteristics of tunneling from sinus tract and undermining
      2. Determine the presence and extent of tunneling, sinus tract, and undermining in a pressure ulcer
      3. Describe modifications in local treatment if tunnels/sinus tracts are present
      4. State the significance of undermining.

Distinguish pressure ulcers from other wounds or skin disorders
2. Distinguish pressure ulcers from other wounds or skin disorders
   A. Definition of a pressure ulcer
   B. Characteristics of a pressure ulcer
   C. Clinical signs and symptoms that distinguish pressure ulcers from other chronic wounds such as vascular ulcers

Develop a plan of care in conjunction with the multidisciplinary team based on the individual’s goals of therapies.
3. Development of a plan of care
   A. Involve multidisciplinary team in developing plan of treatment
   B. Determine what aspects of patient care will be delegated to each member of the multidisciplinary team.
   C. Consider overall goals for patient when developing interventions
   D. Communicate and evaluate plan of care
Demonstrate knowledge and skill in performing local wound care including: debridement, cleansing, dressings, pressure relief, and pain control.

4. Local wound care technique
   
   A. Debridement
      1. List the indications for debridement (type of tissue in wound)
      2. Describe the method(s) of debridement (conservative, sharp, enzymatic, autolytic, mechanical)
      3. Match wound bed and patient goals to debridement (e.g., dry eschar on heels should not be debrided)

   B. Cleansing
      1. State the purpose – remove nonadherent debris
      2. State the frequency – with each dressing change
      3. Describe the type of solution – noncytotoxic
      4. Describe the method of cleansing – delivery system
         a. Irrigation – within range of 5 – 15 psi
         b. Cleansing with moistened gauze

   C. Dressings
      1. List the purpose of dressings (protection, absorption of exudate, insulation, etc.)
      2. Identify selection criteria based on wound characteristics or match wound needs to dressing purpose
         a. Wound location
         b. Tissue type
         c. Phase of wound healing
         d. Amount of exudate
      3. Differentiate types of dressings by categories (transparent film, hydrocolloid, alginates, gauze, hydrogels, foam, specialty/composite) using the following criteria
         a. Functions
         b. Application technique
         c. Frequency of dressing change
         d. Advantages & disadvantages

   D. Manage tissue load
      1. Select and use of support surfaces
         a. Proper positioning to off set load (e.g., sitting, lying, height of bed)
         b. Transferring from one position to another (e.g., bed to chair, supine to lateral)
         c. Avoid positioning on the ulcer
         d. Frequency of repositioning
         e. Avoid using donuts
         f. Indications for use of various types of support surfaces (static, dynamic, low air loss, air fluidized, specialty beds, gel cushions etc.)
         g. Safe application and maintenance of various types of support surfaces

   E. Pain management
      1. Use appropriate measures to control procedural versus background pain.
Identify systemic factors that may influence pressure ulcer healing including infection, nutrition, and tissue tolerance factors.

5. Systemic factors that may influence pressure ulcer healing
   A. Infection
      1. Describe signs and symptoms of localized wound infection
      2. Discuss modifications in local wound strategies in response to signs and symptoms
      3. Discuss the pros and cons of routine culturing with surface swabs
      4. Identify complications of wound infection
   B. Nutritional Interventions
      1. Identification of clinical signs of malnutrition (e.g., physical, unintentional weight loss & lab data)
      2. List factors to consider when developing a nutritional plan (e.g., goals of therapy)
      3. Describe supplementation (vitamins, minerals, calories, protein, fluids) and feeding strategies
   C. Tissue tolerance factors
      1. Monitor glucose level
      2. Evaluate vascular status
      3. Monitor edema and sensation

Monitor pressure ulcer healing using a valid measuring method

6. Monitor pressure ulcer healing
   A. Identify tools commonly used clinically for monitoring pressure ulcer healing
      1. PSST
      2. PUSH
   B. Describe characteristics of each tool (components & usage)
   C. Discuss strengths and limitations of each tool in relation to various settings and populations

Document assessment and intervention strategies.

   A. Document wound characteristics
   B. Document patient wound responses to treatment plan
   C. Feedback to patient and significant others about wound care plan and wound progress
   D. Frequency of wound care documentation

Demonstrate clinical critical thinking by accurately interpreting changes in the pressure ulcer wound that may impact on treatment.

8. Demonstrate clinical critical thinking by accurately interpreting changes in the pressure ulcer and the patient as a whole that may impact on treatment.
   A. Case studies to demonstrate mastery of content
   B. Identification of patient triggers that require changes in plan of care
**CASE STUDY**

M.O. is an 82 year old female Caucasian with left sided hemiplegia secondary to a right sided Cerebral Vascular Accident. She is responsive to her name but does not initiate conversation. Responses to questions are frequently inappropriate or incoherent. Since her CVA she has been confined to bed and has been unable to reposition herself. During the acute phase of her CVA she was positioned supine for extended periods of time.

Discharge summary notes at the time of transfer to the long term care facility indicate that M.O. had an open wound over the coccyx that extended through the dermis and subcutaneous tissue exposing the deep fascia. A small area of adherent necrotic tissue covered the floor of the wound and the sides were diffusely covered with granulation tissue. Wound edges were distinct and attached to the wound base. The periwound tissue was pale pink and without evidence of edema, induration or erythema and blanched with digital pressure. Two small, irregular areas of ecchymosis were visible superior and lateral to the wound edges. A moderate amount of thin purulent exudate was draining from the wound. Ruler measurements revealed dimensions of 2.4 cm by 3.0 cm and 1 cm deep. M.O. shows no signs of pain at the ulcer site.

M.O has some difficulty swallowing. At the time of discharge to the LTC facility she was consuming no more than 50% of a mechanical soft diet at any meal with maximum assistance during feeding. Fluids are taken with difficulty and only when offered to her. Her most recent labs are: albumin 3.2 gm/dl., hematocrit 30 and hemoglobin 10.

**QUESTIONS**

1. What data support that this wound is a pressure ulcer?

2. What stage of pressure ulcer is this wound?

3. What local treatments to the wound are indicated to promote healing of this pressure ulcer at this time?

4. Beyond local wound care, how might other members of the multidisciplinary team contribute to creating an optimum environment for healing?

The wound is sharp debrided (conservative) to remove all necrotic tissue one week after admission to the long term care facility. Moist wound healing is promoted with application of hydrogel to the wound surface and covering with a semi-occlusive dressing. M.O. continues to have difficulty swallowing and her intake ranges from 25 to 50 percent of each meal. Oral nutritional supplements recommended by the Registered Dietitian are being taken in small amounts. Speech therapy evaluation concludes that the limitations in swallowing will continue to limit M.O.’s intake even with maximum assistance and use of special feeding techniques. A team meeting was held with the patient’s family and the decision was made to have a PEG tube placed for feeding. This procedure was done as an outpatient on the eighteenth day after admission to the LTC facility. The Registered Dietitian conducts a nutritional assessment and recommends a tube feeding to meet M.O.’s needs for increased calories, protein and fluids. The tube feeding is initiated using a high nutrient tube feeding formula.
Following are the results of wound assessments over the course of the wound.

### M.O.’S WOUND ASSESSMENTS

<table>
<thead>
<tr>
<th>Week #</th>
<th>Leng</th>
<th>Width</th>
<th>Depth</th>
<th>Necrotic</th>
<th>Granu</th>
<th>Ex Amt</th>
<th>Ex Type</th>
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<tbody>
<tr>
<td>Admit</td>
<td>2.4</td>
<td>3.0</td>
<td>1.0</td>
<td>50%</td>
<td>25%</td>
<td>Mod</td>
<td>Purulent</td>
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<tr>
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<td>3.0</td>
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<td>25%</td>
<td>Mod</td>
<td>Purulent</td>
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<tr>
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<td>3.0</td>
<td>1.3</td>
<td>0%</td>
<td>6%</td>
<td>Mod</td>
<td>Purulent</td>
</tr>
<tr>
<td>3</td>
<td>2.2</td>
<td>2.9</td>
<td>1.1</td>
<td>0%</td>
<td>100%</td>
<td>Mod</td>
<td>Purulent</td>
</tr>
<tr>
<td>4</td>
<td>2.1</td>
<td>2.8</td>
<td>0.8</td>
<td>0%</td>
<td>100%</td>
<td>Small</td>
<td>Purulent</td>
</tr>
<tr>
<td>5</td>
<td>1.9</td>
<td>2.7</td>
<td>0.5</td>
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<td>100%</td>
<td>Small</td>
<td>Purulent</td>
</tr>
<tr>
<td>6</td>
<td>1.5</td>
<td>2.4</td>
<td>0.2</td>
<td>0%</td>
<td>100%</td>
<td>Small</td>
<td>Purulent</td>
</tr>
<tr>
<td>7</td>
<td>1.1</td>
<td>1.2</td>
<td>---</td>
<td>0%</td>
<td>100%</td>
<td>Small</td>
<td>Serous</td>
</tr>
<tr>
<td>8</td>
<td>0.6</td>
<td>0.7</td>
<td>---</td>
<td>0%</td>
<td>100%</td>
<td>Scant</td>
<td>Serous</td>
</tr>
<tr>
<td>9</td>
<td>0.3</td>
<td>0.4</td>
<td>---</td>
<td>0%</td>
<td>100%</td>
<td>Scant</td>
<td>Serous</td>
</tr>
<tr>
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</tr>
</tbody>
</table>

### QUESTIONS:

5. Why did the wound depth increase between admission and the Week #1 assessment?

6. Based on the above assessments, what adjustments in treatment are indicated over the course of therapy?

7. In addition to the wound assessments provided, what other assessments would need to be done on an ongoing basis?

8. Using the wound assessments provided, apply the PUSH Tool (you can download the tool from the NPUAP website) to monitor healing of this wound.

### ANSWERS:

1. The hospital report of being confined to bed, unable to reposition and spending extended periods of time supine supported the presence of the etiologic factor of unrelieved pressure and hemiplegia with some decrease in sensation.

2. The clinical evidence of full thickness tissue loss extending to the deep fascia suggests that this is at least a Stage III pressure ulcer. However, this ulcer cannot be staged accurately until the necrotic tissue in the floor of the wound is removed, since the level of injury may be deeper beneath the necrotic eschar.
3. The first priority of treatment is removal of the necrotic tissue.
   a. Debridement of the necrotic tissue could be accomplished by several methods. If speed is of the essence (e.g., if the patient has signs and symptoms of infection) sharp debridement is the preferred methods. This must be performed by skilled personnel and should be followed with a continuously moist dressing such as a hydrogel and gauze or an alginate. In the absence of these considerations, alternative methods may be used, including autolytic debridement and enzymatic debridement could be used to facilitate removal of the necrotic tissue. The autolytic method could be accomplished with a type of dressing that retains wound fluid on the wound bed. The enzymatic method requires that a chemical enzyme be applied to the wound surface and covered with a moist dressing. Following debridement of the necrotic tissue from the wound bed, the ulcer can be staged accurately.
   b. The patient needs to have a support surface on her bed. She needs to be positioned from side to side at least every two hours with bony prominences supported. The supine position should NOT be used in order to avoid pressure on the coccyx. The patient should NOT be up in the chair, since sitting will increase pressure on the wound.

4. The patient’s nutritional status must be addressed. A referral to Speech Therapy for evaluation of her difficulty with swallowing is indicated. A Registered Dietitian should be consulted for recommendations on a diet that would provide the increased protein and calories needed for wound healing within the limits of the patient’s ability to swallow. The wishes of the family need to be assessed in relation to long term goals and the use of alternative feeding methods (e.g., a PEG tube). The patient should be started on a multivitamin.

5. The increase in depth is the result of the necrotic tissue having been removed by sharp debridement. The true depth of the injury is now able to be assessed.

6. As the wound decreases in depth and the exudate decreases in amount (approximately Week #6), the dressing could be switched to a hydrocolloid. This would require less frequent dressing changes.

7. The patient’s nutrition and hydration status needs to be monitored continuously. The skin around the wound needs to be evaluated for signs of inflammation, maceration or injury from adhesive on dressings and tape. The skin (especially the bony prominences) needs to be inspected daily for signs of pressure injury.

8. PUSH Tool Assessments (total score):
   - Admit = 14
   - Week #1 = 12
   - Week #2 = 12
   - Week #3 = 11
   - Week #4 = 10
   - Week #5 = 10
   - Week #6 = 9
   - Week #7 = 7
   - Week #8 = 4
   - Week #9 = 3
   - Week #10 = 0
REFERENCES:


National Pressure Ulcer Advisory Panel. PUSH Tool Information and Registration Form. From the NPUAP website:http://www.npuap.org.


**PRESSURE ULCER KNOWLEDGE AND ATTITUDE SURVEY**

Name: __________________________ Position/Title: __________________________
Department: ______________________ Shift: (Check One) Days _ Evenings ____ Nights ______

We are interested in your individual answer; please circle true (T) or false (F) to each of the following statements.

1. Pressure ulcer identification and documentation is part of my job duties. T  F
2. Pressure ulcer prevention is part of my job duties. T  F
3. Pressure ulcers should be documented by the RN or LPN staff only. T  F
4. Immobility is a cause of pressure ulcers. T  F
5. Incontinence is a cause of pressure ulcers. T  F
6. Poor dietary intake is a cause of pressure ulcers. T  F
7. Chronic illness is a cause of pressure ulcers. T  F
8. Poor circulation is a cause of pressure ulcers. T  F
9. Pressure ulcers are part of the aging process. T  F
10. Proper positioning can prevent pressure ulcers. T  F
11. Pressure ulcers begin with a reddened area of the skin that does not disappear after pressure is relieved. T  F
12. Individuals that have had a pressure ulcer in the past are more likely to develop one in the future. T  F
13. A bed ridden person cannot fully recover from a pressure ulcer without surgery T  F
14. Pressure ulcers are often viewed as a sign of poor care being provided by the nursing staff T  F
15. Pressure ulcers lower a person’s self esteem T  F
16. Pressure ulcers can occur on any area on the body T  F
17. Family members are an important part of the pressure ulcer healing process T  F
PRESSURE ULCER KNOWLEDGE AND ATTITUDE SURVEY: KEY

Questions 1 & 2
All clinical staff within your facility should have identification, assessment, prevention, care and documentation of pressure ulcers identified as a part of their job duties. This would be noted as a True answer. If your facility’s surveyed staff felt this statement was False, it may indicate an area your facility could focus on for additional training.

Non-clinical staff’s answers may vary between True and False; however, if you have a high percentage of non-clinical staff who believe prevention is not part of their job duties, additional training would be indicated. It is important for all staff to recognize ways they can identify potential problems and inform the correct clinical staff. Your facility may want to provide educational interventions to staff, volunteers and families regarding:

- Your facility’s overall pressure ulcer plan.
- The role each team member plays in pressure ulcer prevention, assessment and treatment.
- The role the family has in pressure ulcer prevention, assessment and treatment.
- Ongoing frequent education noting your facility’s commitment to pressure ulcer prevention and treatment.

Question 3
This question addresses documentation issues associated with pressure ulcers. All staff has the responsibility to note information that is identified as part of the general pressure ulcer plan of care. Your facility must identify how and where that information will be documented on the resident’s record. Non-clinical staff may answer False, but your facility will need to incorporate a method for those non-clinicians to report their observations as well ensuring this information is documented. Your facility may want to provide educational interventions to staff to include:

- Facility’s documentation guidelines regarding pressure ulcers for all disciplines.
- Training on sharing work responsibilities between disciplines regarding pressure ulcers, i.e., activities staff must reposition resident while attending activities and document this for staff sharing, dietary staff must know the resident with a pressure ulcer cannot sit up to eat.
- Identifying pressure ulcer tools to increase documentation consistency throughout the facility and within clinical staff, i.e. ulcer measurement guide, bedside turning schedule, staging guidelines, exudate documentation

Questions 4, 5, 6, 7, 8 and 12
This set of questions reference identified risk factors associated with pressure ulcers. These risk factors greatly increase the potential for any resident to develop a pressure ulcer. Immobility and poor nutritional and circulatory conditions are direct contributing factor to pressure ulcer formation.

If your facility’s surveyed staff felt these statements are False, it may indicate that the pressure ulcer risk factors are not well known or their importance is not well understood. Your facility may want to identify if one
group of employees or employees in general need information regarding risk factors and the role they play in pressure ulcer formation.

The facility may want to provide educational interventions to staff, volunteers and families regarding:

- What are the identified pressure ulcer risk factors?
- How do risk factors contribute to the formation of pressure ulcers?
- When are individuals assessed for risk factors in your facility?
- What affect do risk factors have on the patient’s/resident’s plan of care?
- Who is responsible for identification and care planning for individuals with identified risk factors?
- Why is this important?

**Question 9**
This question identifies a frequently noted misconception. Pressure ulcers are not part of the normal aging process. Although loss of skin elasticity and thinning of the skin are normal with aging, pressure ulcer formation is not.

If this misconception is noted to be generally accepted in your survey results, as noted with a true answer, your facility would want to provide an intervention to educate staff, families and the community on what is considered part of the normal aging process. This information would include:

- Facts regarding the normal aging process.
- How the factors of the normal aging process contribute to the risk for pressure ulcer formation.
- What your facility is doing to address the care associated with the elderly, i.e. nutritional and activity programs, support groups, association with community support group.
- Your facility’s efforts to communicate with other health care facilities that you have direct interaction with, i.e., referring hospitals, senior citizen groups, physician’s offices, home health agencies.

**Question 10**
This question addresses the role that proper positioning has in the prevention of pressure ulcers. If the lower extremity were positioned with proper support to keep pressure off the heel, an ulcer due to pressure on the heel would be prevented.

If your facility’s staff felt positioning did not contribute to pressure ulcer prevention, as noted with a false answer, your interventions may want to include the following information:

- Instruction and demonstration of basic positioning techniques.
- Your facility’s plan of care addressing proper positioning and repositioning, i.e., turning schedule, pressure reduction techniques, devices available at your facility to reduce pressure load.
- Review of the etiology of pressure ulcer formation, i.e., prolonged pressure reducing the blood flow to the capillaries causing tissue damage.

**Question 11**
The development of a pressure ulcer is addressed in this question. Pressure ulcers do begin with a reddened
area of the skin that does not disappear after the pressure is relieved. This is identified as a stage I pressure ulcer.

A response of False to this question may indicate that the staff members at your facility do not have a good understanding of pressure ulcers. Educational intervention may include the following information:

- Provide all staff a common consistent definition of pressure ulcer, i.e., NPUAP is a widely accepted overall definition and staging guidelines.
- The facility’s standard for description, measurement and evaluation of pressure ulcers.
- Consistent tools need to be provided and used consistently throughout the facility, i.e. measurement guide, staging guidelines, assessment scale.
- Review of the pressure ulcer plan of care.
- Outline of the potential causes of a pressure ulcer.

**Question 13**
This question identifies the misconception that a bed-ridden resident’s pressure ulcer will require surgery to heal. The use of the newly developed and improved wound care products and pressure reduction devices have greatly increased the healing of pressure ulcers without surgical interventions.

If members of your staff noted this statement to be True, it may indicate that the educational interventions need to focus on:

- Discussion and demonstration of the new pressure reduction products available to assist with wound healing.
- Review of the new products available for wound care and the appropriate clinical indications.
- Demonstrate how your facility has incorporated these products into your pressure ulcer plan of care.

**Question 14**
For your clinical staff that answered True to this question, further education and information regarding the reasons why pressure ulcers may occur would be indicated. If a high number of staff members indicate they believe this to be true, additional training that emphasizes other factors involved may include:

- Non-compliance with pressure ulcer plan of care.
- Disease progression.
- Poor nutritional intake.
- Information regarding the pressure ulcer risk factors.

For non-clinical staff, additional information may include:

- General training regarding the etiology of pressure ulcers formation.
- The role of non-clinical staff in the prevention and assessment or pressure ulcers.
- A general review of the pressure ulcer risk factors and how they contribute to pressure ulcer formation.
- Information on their role in the care process as it relates to pressure ulcers. It is EVERYONE’S job to intervene in prevention. Activity directors, dietary and social workers have frequent opportunity to observe and interact with residents who are at risk for pressure ulcers or who have a pressure ulcer.
**Question 15**
If staff answered True to this statement, it is a good indicator that they understand the emotional impact a physical condition (such as pressure ulcers) can have on the resident’s self-esteem. Pressure ulcers may limit the independence of the resident. They may also contribute to a resident feeling ‘sick’ and dependent on others for care. Additionally, many pressure ulcers occur in areas of the body that are emotionally uncomfortable for people to deal with, such as the buttocks. Dignity may be compromised if the resident feels embarrassed or ashamed over having a pressure ulcer. Family members may be angry at the facility or the resident and may verbalize their concerns. This could add to feelings of inadequacy the resident may already be experiencing.

If many of your facility’s staff answered False, it would be important to educate both clinical and non-clinical staff as well as the families on the importance of understanding how pressure ulcers can affect the resident’s psychosocial well-being as well as their physical discomfort.

**Question 16**
Pressure ulcers may occur on any part of the body that is exposed to unrelieved pressure that decreased the flow of blood a sufficient length of time to cause underlying tissue damage. A False answer to this question may indicate that your staff does not understand the etiology of a pressure ulcer. Although pressure ulcers generally are noted over boney prominences of the body, they can occur at any location where unrelieved pressure is noted. Educational intervention may include the following information:

- Provide all staff a common consistent definition of pressure ulcer, i.e., NPUAP is a widely accepted overall definition and staging guidelines.
- The importance of proper positioning and repositioning.
- The proper use of pressure reduction devices.
- Ongoing frequent education that pressure ulcer prevention and treatment is everyone’s responsibility.

**Question 17**
If your facility’s staff answers False, this may reflect the need to identify the important role the family has as part of the healing process. When the resident has a good relationship with their family and wants them involved, the healing process is positively affected. Families should be an integral part of the plan of care, particularly with cognitively impaired residents or for those residents who do not choose to comply. Interventions would focus on helping family members understand:

- How and why pressure ulcers occur.
- How pressure ulcers are treated
- The important role that families play in the pressure ulcer plan of care and how that will help their loved one

If staff answers true, this would indicate they have a good understanding of the importance of the role that family members have in the healing process of not only pressure ulcers, but other issues as well.
STOP!
IS IT REALLY A PRESSURE ULCER?

BEFORE YOU DOCUMENT ANY SUSPICIOUS SKIN AREA(S) skin AS A PRESSURE ULCER, ASK YOURSELF THESE QUESTIONS:

Is it located over a bony prominence?
Is it caused by pressure?

Skin tears, diabetic ulcers, arterial ulcers, venous ulcers and redness from incontinence are often confused with pressure ulcers.
REDUCE PRESSURE
• Change your position every 1 to 2 hours in bed, more often in a chair
• Try to find comfortable positions that avoid putting pressure on red or sore spots
• Use pillows to protect bony parts
• Avoid donut shaped pillows
• Float your heels off your bed or chair surface with a pillow placed under your calves
• Rest with the head of your bed as low as possible to prevent sliding down in bed

CLEAN AND PROTECT YOUR SKIN
• Keep your skin clean and dry
• Ask for help to get you from the bed to your chair or toilet
• Tell your caregivers if you are wet or have had an accident so they can help you get clean and dry
• Wear briefs and use protective cream to protect your skin from urine or stool
• Moisturize your dry skin

MAINTAIN GOOD NUTRITION
• Be sure to eat a balanced diet
• Drink enough fluids

PREVENT PRESSURE ULCERS BY:
• Inspecting your skin every day for redness or signs that sores may be forming
• Keeping your skin clean and dry
• Moisturizing your dry skin
• Reminding you to move and increase your activity
• Changing your position in bed or chair every 1 to 2 hours if you are not able to move yourself without help
• Protecting your bony areas with pillows
• Keeping your heels off the bed surface with pillows placed under your calves
• Keeping the head of your bed as low as possible to prevent you from sliding down in bed
• Helping you to get from the bed to the chair or toilet
• Using briefs and protective cream to protect your skin from urine or stool
• Helping you get a well-balanced diet and adequate fluids
• Informing your doctor if signs of skin breakdown are noticed

YOU AND YOUR FAMILY CAN HELP PREVENT PRESSURE ULCERS

BE ACTIVE IN YOUR HEALTH CARE!
If you have any questions or problems, ask your doctor or healthcare provider.
WHAT IS A PRESSURE ULCER?
A pressure ulcer, often called a bed sore, is a wound that forms when muscles and soft tissue in your body are squeezed between one of your bones and an outside surface (like a chair or bed).

YOU ARE AT RISK IF YOU:
- don’t move
- stay in the bed or a chair most of the time
- lose bladder or bowel control
- do not eat a balanced diet or drink enough fluids
- are over or under weight
- have thin, dry or fragile skin
- need help getting from the bed to a chair or the toilet
- are confused or restless
- take steroids
- take medications that make you sleepy

WHERE DO PRESSURE ULCERS BEGIN?
- Tail bone
- Hip Bones
- Spine
- Ears
- Back of head
- Heels
- Ankles
- Elbows
- Anywhere!

WHAT ELSE DO YOU NEED TO KNOW?
- Your skin is your body’s largest organ.
- Urine or stool on your skin can cause your skin to break down quickly.
- When you lose control of your bladder or bowel, it is very important to:
  - Practice good hygiene
  - Keep skin clean and dry
  - Dragging yourself across the bed or chair can tear your skin.

HOW CAN YOU KEEP YOUR SKIN HEALTHY AND REDUCE YOUR RISK?
- Keep skin clean and dry
- Moisturize dry skin
- Eat a well-balanced diet
- Drink plenty of fluids
- Get plenty of rest
- Be as active as possible

WHAT CAN YOU DO TO PREVENT PRESSURE ULCERS?
Inspect your skin daily. Look for red areas where pressure ulcers often form (tailbone, hips, heels, ankles, elbows, etc.)

Increase Activity
- Change your position often.
- If possible, walk and exercise or get physical therapy to increase movement and activity.
WHAT ARE PRESSURE ULCERS
A pressure ulcer is an injury usually caused by unrelieved pressure that damages the skin and underlying tissue. Pressure ulcers are also called bed sores and range in severity from mild (minor skin reddening) to severe (deep craters down to muscle and bone).

Unrelieved pressure on the skin squeezes tiny blood vessels, which supply the skin with nutrients and oxygen. When skin is starved of nutrients and oxygen for too long, the tissue dies and a pressure ulcer forms. Skin reddening that disappears after pressure is removed is normal and not a pressure ulcer.

Other factors cause pressure ulcers too. If a person slides down in the bed or chair, blood vessels can stretch or bend and cause pressure ulcers. Even slight rubbing or friction on the skin may cause minor pressure ulcers.

PURPOSE OF THIS BOOKLET
Pressure ulcers are serious problems that can lead to pain, a longer stay in the hospital or nursing home, and slower recovery from health problems. Anyone who must stay in a bed, chair, or wheelchair because of illness or injury can get pressure ulcers. Fortunately, most pressure ulcers can be prevented, and when pressure ulcers do form, they do not have to get worse. This booklet describes where pressure ulcers form and how to tell if you are at risk of getting a pressure ulcer. It also lists steps to take to prevent them or keep them from getting worse, and suggests how to work effectively with your health care team.

WHERE PRESSURE ULCERS FORM
Pressure ulcers form where bone causes the greatest force on the skin and tissue and squeezes them against an outside surface. This may be where bony parts of the body press against other body parts, a mattress, or a chair. In persons who must stay in bed, most pressure ulcers form on the lower back below the waist (sacrum), the hip bone (trochanter), and on the heels. In people in chairs or wheelchairs, the exact spot where pressure ulcers form depends on the sitting position. Pressure ulcers can also form on the knees, ankles, shoulder blades, back of the head, and spine.
Nerves normally tell the body when to move to relieve pressure on the skin. Persons in bed who are unable to move may get pressure ulcers after as little as 1-2 hours. Persons who sit in chairs and who cannot move can get pressure ulcers in even less time because the force on the skin is greater.

YOUR RISK
Confinement to bed or a chair, being unable to move, loss of bowel or bladder control, poor nutrition, and lowered mental awareness are some common risk factors that increase your chance of getting pressure ulcers.

1. Bed or chair confinement. If you must stay in bed, a chair, or a wheelchair, the risk of getting a pressure ulcer can be high.

2. Inability to move. If you cannot change positions without help, you are at great risk. Persons who are in a coma or who are paralyzed or who have a hip fracture are at special risk. Risks of getting pressure ulcers are lower when persons can move by themselves.

3. Loss of bowel or bladder control. If you cannot keep your skin free of urine, stool, or perspiration, you have a higher risk. These sources of moisture may irritate the skin.

4. Poor nutrition. If you cannot eat a balanced diet, your skin may not be properly nourished. Pressure ulcers are more likely to form when skin is not healthy.

5. Lowered mental awareness. When mental awareness is lowered, a person cannot act to prevent pressure ulcers. Mental awareness can be affected by health problems, medications, or anesthesia.

Fortunately, you can lower your risk. Following the steps in this booklet can help you and your health care provider to reduce your risk of pressure ulcers.

KEY STEPS TO PREVENT PRESSURE ULCERS
The following steps for prevention are based on research, professional judgment, and practice.

These steps can also keep pressure ulcers from getting worse. Talk to a nurse or doctor about which steps are right for you.

TAKE CARE OF YOUR SKIN
Inspect Skin Daily
Your skin should be inspected at least once a day. Pay special attention to any reddened areas that remain after you have changed positions and the pressure has been relieved. This inspection can be done by yourself or your caregiver. A mirror can help when looking at hard-to-see areas. Pay special attention to pressure points shown on page 1. The goal is to find and correct problems before pressure ulcers form.

Keep it Clean
Your skin should be cleaned as soon as it is soiled. A soft cloth or sponge should be used to reduce injury to skin.

Take a bath when needed for comfort or cleanliness. If a daily bath or shower is preferred or necessary, additional measures should be taken to minimize irritation and prevent dry skin. When bathing or showering, warm (not hot) water and a mild soap should be used.

Prevent Dry Skin
- Use creams or oils on your skin.
- Avoid cold or dry air.
Minimize/Control Moisture

- Minimize moisture from urine or stool, perspiration, or wound drainage. Often urine leaks can be treated.

- Pads or briefs that absorb urine and have a quick drying surface that keeps moisture away from the skin should be used.

- A cream or ointment to protect skin from urine, stool, or wound drainage may be helpful.

PROTECT YOUR SKIN FROM INJURY

Avoid massage of your skin over bony parts of the body. Massage may squeeze and damage the tissue under the skin and make you more likely to get pressure ulcers.

Limit pressure over bony parts by changing positions or having your caregiver change your position.

- If you are in bed, your position should be changed at least every 2 hours.
- If you are in a chair, your position should be changed at least every hour.

Reduce friction (rubbing) by making sure you are lifted, rather than dragged, during repositioning. Friction can rub off the top layer of skin and damage blood vessels under the skin. You may be able to help by holding on to a trapeze hanging from an overhead frame. If nurses or others are helping to lift you, bed sheets or lifters can be used. A thin film of cornstarch can be used on the skin to help reduce damage from friction.

Avoid use of donut-shape (ring) cushions. Donut-shape cushions can increase your risk of getting a pressure ulcer by reducing blood flow and causing tissue to swell.

If you are confined to bed:

- A special mattress that contains foam, air, gel, or water helps to prevent pressure ulcers. The cost and effectiveness of these products vary greatly. Talk to your health care provider about the best mattress for you.

- The head of the bed should be raised as little and for as short a time as possible consistent with medical conditions and other restrictions.

- When the head of the bed is raised more than 30 degrees, your skin may slide over the bed surface, damaging skin and tiny blood vessels.

- Pillows or wedges should be used to keep knees or ankles from touching each other.

- Avoid lying directly on your hip bone (trochanter) when lying on your side. Also, a position that spreads weight and pressure more evenly should be chosen -- pillows may also help.

- If you are completely immobile, pillows should be put under your legs from mid-calf to ankle to keep heels off the bed. Avoid placing pillows behind the knees.
If you are in a chair or wheelchair:
- Foam, gel, or air cushions should be used to relieve pressure. Ask your health care provider which is best for you. Avoid donut-shape cushions because they reduce blood flow and cause tissue to swell, which can increase your risk of getting a pressure ulcer.
- Avoid sitting without moving or being moved.
- Good posture and comfort are important.

EAT WELL
Eat a balanced diet. Protein and calories are very important. Healthy skin is less likely to be damaged.

If you are unable to eat a normal diet, talk to your health care provider about nutritional supplements that may be desirable.

BE ACTIVE IN YOUR CARE
The best program for preventing pressure ulcers will consider what you want and be based on your condition.

Be sure you:
- Ask questions of your health provider.
- Explain your needs, wants, and concerns.
- Understand what and why things are being done.
- Know what is best for you. Talk about what you can do to help prevent pressure ulcers - at home, in the hospital, or in the nursing home.

You can help to prevent most pressure ulcers. The extra effort can mean better health.

ADDITIONAL RESOURCES
National Pressure Ulcer Advisory Panel (NPUAP) 2300 N. Street NW, Suite 710, Washington, D.C. 20037 (202) 521-6789 – A non-profit professional organization dedicated to the prevention and management of pressure ulcers through public policy, education and research. www.npuap.org

Agency for Healthcare Research and Quality (AHRQ) 540 Gaither Road, Rockville, MD 20850 (301) 427-1364 – The federal agency that conducts research on health care quality issues, health care cost and patient safety. Their mission includes translating research into better patient care. www.ahrq.gov

Pressure ulcers can affect persons in every setting of health care. Increasingly, health care providers must consider ways to improve coordination across the continuum of care, focusing on patient-centered care rather than setting-specific care. Across all settings of care, we have opportunities to reduce risk or harm to patients and cost to payers.

To improve prevention and treatment of pressure ulcers, providers should consider process improvements to increase effectiveness of communication across care settings. Providers should attempt to develop open relationships with referring providers to address the problem of pressure ulcers as a community.

This section provides tools to help providers improve communication about pressure ulcers in transitioning patients from one setting of care to another.

**GOALS FOR THIS SECTION:**

1. Determine settings of care and identify providers with whom communications about pressure ulcers should be established or improved
2. Identify protocol for communications to impact care for pressure ulcers across settings.
3. Conduct skin assessments upon admission and discharge of patients/residents.

**TOOLS IN THIS SECTION:**

1. Establish appropriate preventive interventions for pressure ulcers based on an individual’s risk assessment
2. Identify phases of wound healing
3. Discuss the concept of moist wound healing
4. Differentiate various forms of debridement for pressure ulcers
5. Identify appropriate pressure ulcer treatment strategies
### Key Interventions/Tasks

<table>
<thead>
<tr>
<th></th>
<th>Action Items</th>
<th>Who is responsible?</th>
<th>Target Date</th>
</tr>
</thead>
</table>
| 1. | Identify providers in the community with whom you most commonly share patients  
• Identify specific roles at each provider, e.g., discharge planner, admissions nurse, etc. | | |
| 2. | Evaluate current pressure ulcer communication process between provider settings  
• Timeliness of report  
• Shared documentation | | |
| 3. | Develop a common transfer form for communication between settings  
• Samples included in this section | | |
| 4. | Include the following documentation at time of transfer  
• skin inspection  
• wound status  
• pressure ulcer risk assessment  
• treatment orders | | |
# Pressure Ulcer Communication Form

Name: ___________________________ Age: ______________ Sex: ____________ Date: ___________________

Diagnosis: ____________________________________________________________________________________

Current Medications: ___________________________________________________________________________

_____________________________________________________________________________________________

_____________________________________________________________________________________________

Allergies: _____________________________________________________________________________________


## Pressure Ulcer Description

<table>
<thead>
<tr>
<th>Location 1:</th>
<th>Location 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size in cm:</td>
<td>Size in cm:</td>
</tr>
<tr>
<td>Length</td>
<td>Length</td>
</tr>
<tr>
<td>Width</td>
<td>Width</td>
</tr>
<tr>
<td>Depth</td>
<td>Depth</td>
</tr>
</tbody>
</table>

Stage: [ ] Yes [ ] No

Exudate: [ ] Yes [ ] No
- Serous
- Serosanguineous
- Purulent
- Sinus Tract
- Tunnelling
- Undermining
- Necrotic Tissue
- Sough
- Eschar
- Granulation
- Epithelialization
- Pain: [ ] Yes [ ] No
  - pain score ______

Exudate: [ ] Yes [ ] No
- Serous
- Serosanguineous
- Purulent
- Sinus Tract
- Tunnelling
- Undermining
- Necrotic Tissue
- Sough
- Eschar
- Granulation
- Epithelialization
- Pain: [ ] Yes [ ] No
  - pain score ______

## Related Factors

### Mobility

<table>
<thead>
<tr>
<th>Bed mobility</th>
<th>Chair mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] No assist [ ] Some assist [ ] Extensive assist</td>
<td>[ ] No assist [ ] Some assist [ ] Extensive assist</td>
</tr>
</tbody>
</table>

Support surfaces used: [ ] Yes [ ] No
Type of support surfaces used:

[ ] OT Consult for positioning devices
### Bowel/Urinary Incontinence
Is pressure ulcer exposed to urine and/or fecal contaminants?
- Yes [ ] No [ ]

### Nutritional Status
Adequate oral intake? [ ] Yes [ ] No (if no fill in below)  
- □ Dietary consult
- Current height _________  Weight_________  
  - BMI               
  - Recent weight loss? [ ] Yes [ ] No

### Physician’s Dressing/Treatment Orders

<table>
<thead>
<tr>
<th>Location 1</th>
<th>Location 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleansing</td>
<td>Cleansing</td>
</tr>
<tr>
<td>□ Normal Saline</td>
<td>□ Normal Saline</td>
</tr>
<tr>
<td>□ Other*: _</td>
<td>□ Other*: _</td>
</tr>
<tr>
<td>□ Dressing:</td>
<td>□ Dressing:</td>
</tr>
<tr>
<td>□ Packing:</td>
<td>□ Packing:</td>
</tr>
<tr>
<td>□ Frequency:</td>
<td>□ Frequency:</td>
</tr>
<tr>
<td>□ Debridement: (conservative sharp, surgical sharp, mechanical, autolytic, enzymatic)</td>
<td>□ Debridement: (conservative sharp, surgical sharp, mechanical, autolytic, enzymatic)</td>
</tr>
<tr>
<td>□ Consults:</td>
<td>□ Consults:</td>
</tr>
</tbody>
</table>

*SHOULD NOT BE CLEANED WITH SKIN CLEANSERS OR ANTISEPTIC AGENTS (e.g. Povidone Iodine, Iodophor, Sodium Hypochlorite (Dakins Solution® Hydrogen Peroxide, or Acetic Acid) as they are toxic to human fibroblast, decrease white blood cell viability and phagocytic efficiency. (Clinical practice guideline number 15, pressure ulcer treatment, AHCPR Pub 95-0652, Pg 50, Dec 1994)

Nurse Signature: __________________________  Department: __________________________

MD Signature: __________________________  Date: __________________________

Print Name: __________________________
SITUATION, BACKGROUND, ASSESSMENT, RECOMMENDATION (SBAR)

WHAT IS SBAR?

The SBAR technique provides a standardized framework for members of the healthcare team to communicate about a patient’s condition. Standards of communication are essential for developing teamwork and fostering a culture of patient safety.

SBAR is an easy-to-remember, concrete mechanism that is useful for framing any conversation, especially a critical one requiring a clinician’s immediate attention and action. SBAR originated in the U.S. Navy submarine community to quickly provide critical information to the captain. It provides members of the team with an easy and focused way to set expectations for what will be communicated and how.

In phrasing a conversation with another team member, consider the following:

S  Situation – What is happening with the patient?
B  Background – What is the clinical background?
A  Assessment – What do I think the problem is?
R  Recommendation/Request – What would I recommend?

SBAR EXAMPLE:

<table>
<thead>
<tr>
<th></th>
<th>Situation</th>
<th>Background</th>
<th>Assessment</th>
<th>Recommendation/Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>What is going on with the patient?</td>
<td>Patient is a 62 year old female post-op day one from abdominal surgery. No prior history of cardiac or lung disease.</td>
<td>“Breath sounds are decreased on the right side with acknowledgement of pain. Would like to rule-out pneumothorax.”</td>
<td>“I feel strongly the patient should be assessed now. Are you available to come in?”</td>
</tr>
<tr>
<td>B</td>
<td>“I am calling about Mrs. Joseph in room 251. Chief complaint is shortness of breath.”</td>
<td>“Patient is a 62 year old female post-op day one from abdominal surgery. No prior history of cardiac or lung disease.”</td>
<td>“Breath sounds are decreased on the right side with acknowledgement of pain. Would like to rule-out pneumothorax.”</td>
<td>“I feel strongly the patient should be assessed now. Are you available to come in?”</td>
</tr>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### SBAR Report Tool for Reporting on:

<table>
<thead>
<tr>
<th><strong>S</strong> - Situation</th>
<th>Identify yourself and what site/unit you are calling from. Identify patient by name and the reason for report.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What is happening with the patient?</strong></td>
<td>I am concerned about:</td>
</tr>
<tr>
<td><strong>(Describe in ranked order.)</strong></td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
</tr>
<tr>
<td></td>
<td>4.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>B</strong> - Background</th>
<th>What is the clinical background?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient’s reason for admission is:</strong></td>
<td>Patient is:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>A</strong> - Assessment</th>
<th>What do I think the problem is?</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>R</strong> - Recommendation</th>
<th>What would I recommend or request?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What I need from you is:</strong></td>
<td>(Be specific about request and time frame.)</td>
</tr>
<tr>
<td></td>
<td>-Suggestions (such as:____________________)</td>
</tr>
<tr>
<td></td>
<td>-Clarify orders and expectations.</td>
</tr>
</tbody>
</table>
TRANSFER FORM GENERAL SKIN ASSESSMENT (SAMPLE A)

Transfer Date: __________ Transfer from: __________ Transfer to: __________

Patient Last Name: __________ First Name: __________ DOB: __________

1. Skin intact? Y / N
   If no, use the following legend to complete the form
   P = Pressure Ulcer   B = Bruise   E = Excoriation/Maceration from Fecal
   R = Rash   D = Diabetic Ulcer   A = Arterial Ulcer   V = Venous Stasis Ulcer
   O = Other ______

2. Were restraints used Y / N

Receiving Facility (complete the following)
Reviewed By
Name: ____________________________
Title: ____________________________
Date: ____________________________
# Transfer Form General Skin Assessment (Sample B)

**Date Transfer Out** ______  **Date Return** ______

**Current Mobility Status:** Independent

| Dependant | Number of Assists: | 1 | 2 | 3 | Hoyer | At Risk for Falls | ☐ |

**Transfer Facility Name:**  
*Please circle:* Hosp SNF ALF HHA  
**Transfer Contact Name and Number:**

**Receiving Facility Name:**  
*Please circle:* Hosp SNF ALF HHA  
**Receiving Contact Name and Number:**

**Skin intact? Y/N**  
If no, circle corresponding area(s) on diagram and give number, location, size, and type of wounds including pressure ulcer stage under “Skin issues”

| Skin Issues: | ☐ See attached form |

**Treatment:**  
☐ See attached form

---

**Form completed by:** ______  
**Report given to:** ______  
**Received by:** ______
UNIVERSAL TRANSFER FORM

AMDA has developed and recommends the use of the Universal Transfer Form (UTF) to facilitate the transfer of necessary patient information from one care setting to another. Patient transfers are fraught with the potential for errors stemming from the inaccurate or incomplete transfer of patient information. Use of the UTF can help to minimize the occurrence of such errors by ensuring that patient information is transmitted fully and in a timely fashion.

Patient’s name: __________________________ Patient Identifier #2: ________________
Setting Discharged from: __________________________
Setting Discharged to: ________________
Attending physician in setting discharged from: __________________________
Admission date: ___________ Discharge date: ___________

A. Admitting diagnosis: __________________________

B. Other diagnoses from this admission: 1. ___________
2. ___________
3. ___________
4. ___________
5. ___________
6. ___________

C. Current diagnoses prior to admission: 1. ___________
2. ___________
3. ___________
4. ___________
5. ___________
6. ___________

D. Surgical procedures and endoscopies during admission (include name of physician who performed the procedure) None
1. __________________________ Date/results __________________________ (may attach)
2. __________________________ Date/results __________________________ (may attach)
3. __________________________ Date/results __________________________ (may attach)

E. Laboratory values (please record most recent results, with date)

- WBC __________________________ BUN __________________________
- Hgb __________________________ Creatinine __________________________
- Na+ __________________________ TSH/T4/T3 __________________________
- K+ __________________________ Other __________________________
- Fasting glucose __________________________

F. Results and dates of pertinent studies (radiology, CT, MRI, nuclear scans, etc.) (may attach)

1. __________________________
2. __________________________
3. __________________________
- Chest X-ray: __________________________ Date performed: ___________
- Results: No active disease: ___________
- Or description if abnormal: __________________________

G. Allergies:
- Medication: __________________________ Reaction: __________________________
- Medication: __________________________ Reaction: __________________________
- Foods: __________________________ Reaction: __________________________
- Other: __________________________ Reaction: __________________________

H. Admission weight: ___________
- Discharge weight: ___________

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I. Advance directives:  

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPR</td>
<td></td>
</tr>
<tr>
<td>PEG tube feeding</td>
<td></td>
</tr>
<tr>
<td>Further hospitalization</td>
<td></td>
</tr>
<tr>
<td>Other: (Attach copies)</td>
<td></td>
</tr>
</tbody>
</table>

J. Has patient had a recent fall? Yes □ No □  Is patient at risk for wandering? Yes □ No □

K. Comments on inpatient course: (may attach summary)

L. Is the patient aware of his/her diagnosis(es)? Yes □ No □  If No, why not?

M. Patient’s cognitive status for decision-making:
   □ Independent  □ Modified independence (some difficulty in new situations)
   □ Moderately impaired (decisions poor) □ Severely impaired (never/rarely makes decisions)

N. Is the patient a candidate for rehabilitation therapy? Yes □ No □  If yes, state goals for rehabilitation:

O. Discharge medication orders:

1. Dose _______ Route _______ Frequency _______

   Rationale: ____________________________

2. Dose _______ Route _______ Frequency _______

   Rationale: ____________________________

3. Dose _______ Route _______ Frequency _______

   Rationale: ____________________________

4. Dose _______ Route _______ Frequency _______

   Rationale: ____________________________

5. Dose _______ Route _______ Frequency _______

   Rationale: ____________________________

6. Dose _______ Route _______ Frequency _______

   Rationale: ____________________________

7. Dose _______ Route _______ Frequency _______

   Rationale: ____________________________

8. Dose _______ Route _______ Frequency _______

   Rationale: ____________________________

9. Dose _______ Route _______ Frequency _______

   Rationale: ____________________________

10. Dose _______ Route _______ Frequency _______

    Rationale: ____________________________
Transitions of Care

P. Is patient on antibiotics? Yes □ No: □
   Reason for antibiotic: ____________________________
   Antibiotic stop date: ____________________________

Q. Diet: ____________________________

R. Immunizations: Influenza: ___ Date    PPD: ___ Results ___ Date ___    Pneumovax: ___ Date
   TD: ___ Date

S. Additional orders: ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

T. Follow-up on consults/tests/procedures recommended: __________________________
   ____________________________________________________________
   ____________________________________________________________

U. Is patient legally competent? Yes □ No: □
   If no, name of legally appointed decision-maker: ____________________________
   If yes, but has a decision-maker, name of decision-maker: ____________________

Name of physician/designee completing form: ____________________________
Contact phone number: ( ) ______-__________ Extension or beeper: ____________________
Date form completed: / /

Name of Primary Care Physician
Contact phone number: ( ) ______-__________ Extension or beeper: ____________________
APPENDIX A: GLOSSARY – PRESSURE ULCER TERMS

**Abscess:** A cavity containing pus and surrounded by inflamed tissue in any part of the body—a result of a localized infection.

**Aerobe:** A microorganism that lives in the presence of free oxygen.

**Altered tissue perfusion:** A condition in which cells have a decrease in nutrition and oxygenation caused by a deficient capillary blood supply.

**Anaerobe:** A microorganism that grows without any or with little free oxygen.

**Antibacterial:** An agent that kills or stops the growth of bacteria.

**Antimicrobial:** An agent that kills or stops the growth of microbes.

**Approximated incision:** Wound edges are brought together, often by surgical closure.

**Autolysis:** Disintegration or liquefaction of tissue or of cells by the body’s own mechanisms (leukocytes/ enzymes).

**Bacterial burden:** The number, diversity and virulence of bacteria in the wound.

**Bactericidal:** An agent that destroys bacteria.

**Bacteriostatic:** Inhibits the growth or multiplication of bacteria.

**Blanching Test:** A test to check circulation of fingers and toes. Pressure is applied over nail until all color is gone. When pressure is removed, the rate at which color returns determines circulation.

**Cell migration:** Movement of cells in the repair process. Cellulitis: Inflammation of tissue around a lesion. Characterized by heat, redness, swelling, and tenderness. Signifies a spreading infectious process.

**Collagen:** The main supportive protein which combines to form of the skin, tendon, bone, cartilage, and connective tissue.

**Colonized:** Presence of bacteria which cause no local or systematic signs or symptoms.

**Contamination:** To infect by contact or introduction of organisms into a wound.

**Contraction:** Tissue pulling together the wound edges in the healing process.

**Crater:** A circular depression with a raised area around the periphery.

**Cytokine:** Any of several regulatory proteins, such as the interleukins and lymphokines, that are released by cells of the immune system and act as intercellular mediators in the generation of an immune response.

**Debridement:** Removal of damaged tissue.

**Debris:** Remains of broken down or damaged cells or tissue.

**Decubitus ulcer:** Ulcer of the skin caused by prolonged pressure over the affected area.

**Degranulate:** Release of granules from cells, for example the rupture of platelet granules leading to the release of cytokines/growth factors.

**Denude:** Loss of epidermis.

**Dermal:** Related to skin or derma.

**Dermal wound:** Loss of skin integrity; may be surface level or deeper.

**Dermis:** The inner layer of skin in which hair follicles and sweat glands reside; involved in Stage II to IV pressure ulcers.

**Edema:** The presence of larger than normal amounts of fluid in the interstitial space.

**Enzymes:** Biochemical substances that can break down necrotic tissue.

**Enzymatic debridement:** Breakdown to liquid form of necrotic wound debris by chemical agents.

**Epidermis:** The outer most layer of skin.

**Epibole:** Rolled over wound edges so the epithelial cell migration stops and the wound is unable to resurface.

**Epithelial cell migration:** The progression or traveling of epithelial cells from the wound edges to resurface the wound.
Epithelization: Regrowth of the epidermis across wound surface.
Erythema: Redness of skin surface produced by vasodilatation.
Eschar: Thick, leathery necrotic tissue; damaged tissue.
Excoriation: Damage to the surface of the skin from trauma, e.g., scratching, abrasion.
Exuberant granulation: Formation of large amounts of granulation tissue that may protrude above the margins of a wound.
Exudate: Fluid that leaks from damaged tissue.
Fibroblast: Any cell of the body from which connective tissue is developed.
Fibroplasia: The formation of connective tissue.
Friction: Surface damage caused by skin rubbing against another surface.
Full-thickness: Wounds that extend through the epidermis, and entire dermis, and possibly muscle or bone.
Granulation: The formation of growth of small blood vessels and connective tissue in a full thickness wound.
Granulation tissue: Healing tissue composed of new capillaries and fibroblasts.
Hemostasis Phase: Stage of wound healing that occurs in acute full thickness wounds.
Horney layer: The thin top most layer of the epidermis.
Hydrophilic: Attracts moisture.
Hyperalimentation: Nutritional supplement given either enterally or parentally.
Hyperemia: Presence of excess blood in the vessels: engorgement.
Induration: Abnormal firmness of tissue with a defined edge.
Infection: Overgrowth of microorganisms capable of tissue destruction and invasion followed by local or systemic symptoms.
Inflammation: Reaction to tissue injury; involves increased blood flow and capillary permeability and requires physiologic cleanup of wound.

Accompanied by increased heat, redness, swelling, and pain in the affected areas.
Insulation: Keeping wound temperature close to body temperature.
Ischemia: A deficiency of blood because of functional constriction or obstruction of a blood vessel to a body part.
Keloid: A large, bulging scar caused by excessive amounts of collagen in connective tissue.
Lesion: A broad term referring to wounds or sores.
Leukocyte: White blood cell.
Leukocytosis: An increase in the number of leukocytes (above 10,000 per cu. Mm) in the blood.
Maceration: Softening of tissue by soaking in fluids.
Macrophage: Cells which have the ability to destroy bacteria and devitalized tissue.
Mechanical debridement: The loosening and removal of necrotic wound debris by means of water, brush, gauze, and etc.
Moist wound healing: Healing of a wound that is kept moist as opposed to allowing the wound to dry. Moist wound healing eliminates desiccation of viable tissue, allows faster reepithelialization and granulation tissue to form at wound surface. It minimizes scab and eschar formation. It also allows autolysis by inflammatory cells and enzymes in exudates. Moist wound healing helps comfort level of the patient.
Necrotic: Dead; avascular.
Neangiogenesis: The new growth of new capillaries from preexisting blood vessels.
Neovascularization: (See neoangiogenesis.)
Osteomyelitis: an infection of bone or bone marrow
Add
Norton scale: As assessment of physical condition, mental status, activity, mobility, and incontinence to determine the risk of pressure ulcer development.
Pallor: Lack of natural color; paleness.
Partial-thickness: Wounds that extend through the epidermis and part of the dermis.
Pathogen: Any disease producing agent or microorganism.
**Phagocytosis:** Autodebridement of bacteria and necrotic debris from the wound.

**Platelet:** Found in the blood plasma, functions to promote blood clotting.

**Pressure:** A force applied to skin compromising circulation.

**Pressure sore:** An area of localized tissue damage caused by ischemia because of pressure.

**Proud flesh:** (See exuberant granulation.)

**Pus:** Thick fluid indicative of infection that contains leukocytes, bacteria, and cellular dermis.

**Pyogenic:** Producing pus.

**Reactive hyperemia:** The body produces extra blood in vessels in response to a period of blocked blood flow.

**Remodeling:** Reorganization of collagen fibers in a healing wound.

**Sanguineous drainage:** Bloody drainage.

**Scab:** Dried fluid, cells, or other substances that have been discharged covering a superficial wound. Serum: A clear fluid from the body, having a watery consistency.

**Serous:** Producing a secretion or containing serum that moistens mucus membranes.

**Serous drainage:** Serum like drainage having a watery consistency.

**Serosanguineous drainage:** Exudate containing serum and blood.

**Secondary intention:** Healing of a wound by granulation resulting in significant scar tissue.

**Sharp debridement:** Surgical removal by scalpel or scissors of the eschar and/or any devitalized tissue within the pressure ulcer.

**Shear:** Trauma to the skin caused by tissue layers sliding against each other results in disruption or angulation of blood vessels.

**Sinus Tract:** A course or pathway that can extend in any direction from the wound surface; results in space with potential for abscess formation.

**Slough:** Loose, stringy necrotic tissue.

**Stratum corneum:** The thin top layer of the epidermis. Strip: Remove epidermis by mechanical means: denude. Subcutaneous layer: Masses of loose connective and fat tissues located beneath the dermis.

**Surgical debridement:** a type of sharp debridement using a scalpel, scissors, or other instrument to cut dead tissue from beyond the wound edges and is usually performed by the Physician.

**Tissue tensile strength:** The degree of strength scar tissue is able to endure before it tears. Add

**Tunneling:** A narrow channel/passageway extending into healthy tissue.

**Ulcer:** An open sore.

**Undermine:** Tissue destruction underlying intact skin along wound edges.

**Varicosities:** Dilated tortous superficial veins.

**Vasocclusion:** Constriction of the blood vessels.

**Vasodilatation:** Dilation of blood vessels—especially small arteries and arterioles.

**Wound base:** Top viable tissue layer of wound; may be covered with slough or eschar.

**Wound margin:** Edge or border of a wound.

**Wound repair:** The healing process. Partial-thickness involves epithelialization; full thickness involves contraction, granulation, and epithelialization.  

## APPENDIX B: PRESSURE ULCER GUIDELINES

<table>
<thead>
<tr>
<th>Guideline</th>
<th>Overview</th>
<th>Source</th>
<th>Order Information and other Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Ulcers</td>
<td>Evidence based guideline incorporates the revised federal guidance to surveyors on pressure ulcers (Tag F314) including:</td>
<td>American Medical Directors Association (AMDA)</td>
<td>To order the guideline:</td>
</tr>
<tr>
<td></td>
<td>• risk factors</td>
<td>11000 Broken Land Parkway Suite 400</td>
<td><a href="http://www.amda.com/tools/cpg/pressureulcer.cfm">http://www.amda.com/tools/cpg/pressureulcer.cfm</a> (This guideline is available for a fee. Check the order source for current pricing.)</td>
</tr>
<tr>
<td></td>
<td>• infection</td>
<td>Columbia, MD 21044</td>
<td>Additional articles tools and resources can be found here: <a href="http://www.amda.com/tools/clinical/pressureulcers.cfm">http://www.amda.com/tools/clinical/pressureulcers.cfm</a></td>
</tr>
<tr>
<td></td>
<td>• pain management</td>
<td>Phone: 410-740-9743</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• treatments based on the wound characteristics</td>
<td>Toll Free: 800-876-2632</td>
<td></td>
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<tr>
<td></td>
<td>• the resident’s rights to refuse one or more aspects of pressure ulcer care</td>
<td><a href="http://www.amda.com">www.amda.com</a></td>
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<tr>
<td></td>
<td>Also includes the updates for staging according to the 2007 National Pressure Ulcer Advisory Panel (NPUAP).</td>
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<td>Guideline</td>
<td>Overview</td>
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<tr>
<td>Pressure Ulcer Staging Guidelines</td>
<td>In February 2007, the National Pressure Ulcer Advisory Panel has redefined the definition of a pressure ulcer and the stages of pressure ulcers, including the original 4 stages and adding 2 stages on deep tissue injury and unstageable pressure ulcers. This work is the culmination of over 5 years of work beginning with the identification of deep tissue injury in 2001.</td>
<td>National Pressure Ulcer Advisory Panel (NPUAP) 2300 N Street NW, Suite 710 Washington, DC 20037 Phone: 202-521-6789 <a href="http://www.npuap.org">www.npuap.org</a></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX C: RESOURCES

American Association of Homes & Services for the Aging (AAHSA)
2519 Connecticut Avenue, NW Washington, DC 20008-1520 (202) 783-2242 - AAHSA is a non-profit organization composed of 5,700 nursing homes, continuing care retirement communities, assisted living residences, senior housing facilities, adult day cares, home health, and community service organizations. www.aahsa.org

American College of Health Care Administrators (ACHCA)
12100 Sunset Hills Road, Suite 130, Reston, VA. 20190 (202) 536-5120 - ACHCA is the professional society for nearly 4,500 administrators in long-term care, including assisted living and sub-acute care. It offers educational programming, career development opportunities, and certification in a variety of positions. ACHCA members enhance their professional development through education that is geared to the continuum of health care administration and that emphasizes long-term care – an approach that clearly improves the quality of care they provide. www.achca.org

American Health Care Association (AHCA)
1201 L Street, NW Washington, DS 20005 (202) 842-4444 - AHCA is a federation of state health organizations, together representing more than 10,000 non-profit and for profit assisted living, skilled nursing, long term care, and sub-acute care providers, who care for over 1.5 million elderly and disabled individuals nationally. www.ahca.org

American Nurses Association (ANA)
8515 Georgia Avenue, Ste. 400, Silver Spring, MD 20910-3492 (301) 628-5000, (800) 274-4262 – ANA is a full-service professional organization representing the nation’s 2.9 million registered nurses through its 51 constituent member nurses associations, 23 organizational affiliates, and its workforce advocacy affiliate, the Center for American Nurses. The ANA advances the nursing profession by fostering high standards of nursing practice, by promoting the economic and general welfare of nurses in the workplace, projecting a positive and realistic view of nursing, and lobbying Congress and regulatory agencies on health care issues affecting nurses and the public. www.ana.org

The Gerontological Society of America (GSA)
1220 L. Street NW, Suite 901, Washington, D.C. 20005 (202)842-1275 - GSA was established to promote the scientific study of aging, to encourage exchanges among researchers and practitioners from various disciplines related to gerontology, and to foster the use of gerontological research informing public policy. www.geron.org

Administration on Aging (AoA)
One Massachusetts Avenue, Ste. 4100 & 5100, Washington, DC 20201 (202) 619-0724 – AoA is the federal focal point and advocate agency for older persons, their concerns and their caregivers. They work with the Aging Services Network to promote the development of a comprehensive and coordinated system of home and community-based long-term care. www.aoa.gov

Agency for Healthcare Research and Quality (AHRQ)
540 Gaither Road, Rockville, MD 20850 (301) 427-1364 – AHRQ is the federal agency that conducts research on health care quality issues, health care cost and patient safety. Their mission includes translating research into better patient care. www.ahrq.gov

American Academy of Wound Management (AAWM)
1155 15th Street NW, Suite 500, Washington, DC 20005 (202) 457-8408 – AAWM is a non-profit organization dedicated to the multidisciplinary team approach in promoting the science of preventative care and treatment of acute and chronic wounds. www.aawm.org
American Association of Nurse Assessment Coordinators (AANAC)
400 S. Colorado Blvd., Suite 600, Denver, CO., 80246 (800) 768-1880 - AANAC is a non-profit professional association representing nurse assessment coordinators and others involved in resident assessment. Provides access to information on clinical assessment, regulatory requirements, reimbursement, etc. (RNs, Administrators) www.aanac.org

American Association of Spinal Cord Nurses (AASCIN)
801 18th Street, NW, Washington, D.C. 20006 (202) 416-7704 - AASCIN is a non-profit health organization dedicated to the promotion of quality care for individuals with spinal cord impairment (SCI) through education, research, advocacy, health care policy and collaboration with consumers and health care delivery systems. www.aascin.org

American Geriatrics Society (AGS)
The Empire State Building 350 Fifth Avenue, Suite 801 New York, NY 10118 (212) 308-1414 – AGS is a nationwide, not-for-profit association, with an active membership of over 6,000, providing leadership to health care professionals, policy makers, and the public by developing, implementing and advocating programs in patient care, research, professional and public education, and public policy. www.americangeriatrics.org

American Medical Directors Association (AMDA)
11000 Broken Land Parkway, Suite 400, Columbia, MD 21044 (410) 740-9743 (800) 876-2632 – AMDA is a national professional association for medical directors and other MD’s who practice in long term care, and are committed to continuous improvement of quality in patient care. www.amda.com

American Society on Aging (ASA)
833 Market Street, Suite 511, San Francisco, CA 94103 (415) 974-9600, (800) 537-9728 - ASA is a national association providing educational programs, publications, and training resources on age-related issues. www.asaging.org

Cochrane Library
The Cochrane Collaborative is an international non-profit and independent research publishing organization. Their focus is to help people make well-informed decisions about healthcare and provide information, education, research and funding. The Cochrane Wounds Group provides an updated collection of evidence-based medical databases. Abstracts are free, but other information is available only with a subscription fee. www.update-software.com/publications/cochrane; www.cochrane.org

Healthy People 2010
U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, 1101 Woot-ton Parkway, Suite LL100, Rockville, MD 20852 (240) 453-8280 - National health objectives designed to identify the most significant preventable threats to health and to establish goals to reduce these threats. www.healthypeople.gov

National Guideline Clearinghouse (NGC)
A web-based comprehensive database of evidence-based clinical practice guidelines and related abstract, summary and comparison materials widely available to healthcare professionals. NGC is operated by the U.S. Department of Health and Human Services (DHHS) and the Agency for Healthcare Research and Quality (AHRQ) in partnership with the American Medical Association (AMA) and the American Association of Health Plans (AAHP). www.guideline.gov

National Council on Aging (NCOA)
1901 L. Street NW, 4th Floor, Washington, DC 20036 (202) 479-1200 - NCOA works primarily with community organizations and professionals to help them enhance the lives of older persons. They provide on-line links to other useful web sites. www.ncoa.org
APPENDICES

National Association of Area Agencies on Aging (N4A)
1730 Rhode Island Avenue NW, Suite 1200, Washington, DC 20036 (202) 872-0888 – N4A is the umbrella organization for area agencies on aging and Title VI Native American Aging programs in the U.S. to ensure that needed resources and support services are available to older Americans and persons with disabilities. www.n4a.org

National Institute on Aging (NIA)
Building 31, Room 5C27 31 Center Drive, MSC 2292, Bethesda, MD 20892 (301) 496-1752 - NIA is one of twenty-seven institutes and centers of the National Institute of Health. They conduct research on age-related issues, disseminate information and communicate with the public and other interested groups on health and research advances. www.nia.nih.gov

American Physical Therapy Association (APTA)
1111 North Fairfax Street Alexandria, VA 22314 (703) 684-2782 (800) 999-2782 – The APTA is a national professional organization representing more than 72,000 physical therapists. They provide clinical resources, education materials, articles, publications, information on government regulations/reimbursement, and other general information to therapists, health care professionals, and the public to help advance physical therapy practice and rehabilitation. www.apta.org

National Pressure Ulcer Advisory Panel (NPUAP)
2300 N. Street NW, Suite 710, Washington, D.C. 20037 (202) 521-6789 – NPUAP is a non-profit professional organization dedicated to the prevention and management of pressure ulcers through public policy, education and research. www.npuap.org

National Gerontological Nursing Association (NGNA)
7794 Grow Drive Pensacola, FL 32514 (850) 473-1174 (800) 723-0560 – NGNA is a professional organization of nurses whose mission is to improve the care and well-being of older adults through professional and public education, dissemination of research findings and support of innovative approaches in gerontological health care. www.ngna.org

Wound, Ostomy and Continence Nurses Society (WOCN)
15000 Commerce Parkway, Suite C, Mt. Laurel, N.J. 08054 (888) 224-9626 – WOCN is a professional international nursing society of more than 4,200 healthcare professionals who are experts in the care of patients with wound, ostomy and continence problems. www.wocn.org

Web Sites
www.cochranewounds.org - Cochrane Wounds Group Using evidence from trials to conduct systematic reviews to establish the effectiveness of interventions for the prevention and treatment of wounds and wound complications.

www.snfinfo.com (links to: www.hcpro.com) - Super site for LTC issues, i.e. regulations, MDS, etc. Provides links to other resources. (RNs, Administrators, MDS Coordinators)

www.advancefornurses.com (links to: http://nursing.advanceweb.com) - Site for nurses. Has archived articles related to nursing, LTC, ADLs, etc.

www.advanceforot.com (links to: http://occupational-therapy.advanceweb.com) - Site for occupational therapists. Has archived articles related to OT, ADLs, etc.

www.advanceforpt.com (links to: http://physical-ther-apy.advanceweb.com) - Site for physical therapists. Has archived articles related to PT, mobility, etc.

www.journalofwoundcare.com - Site includes current issue of the Journal of Wound Care and archive materials dating back to 1999.