THE NATIONAL QUALITY FORUM

NATIONAL VOLUNTARY CONSENSUS STANDARDS FOR DEVELOPING A FRAMEWORK FOR MEASURING QUALITY FOR PREVENTION AND MANAGEMENT OF PRESSURE ULCERS

TO: NQF Members and Public

FR: NQF Staff

RE: Pre-voting review for *National Voluntary Consensus Standards for Developing a Framework for Measuring Quality for Prevention and Management of Pressure Ulcers*

DA: April 8, 2009

The draft document, National Voluntary Consensus Standards for Developing a Framework for Measuring Quality for Prevention and Management of Pressure Ulcers is posted on the NQF web site, www.qualityforum.org along with additional information including:

- A summary of the Steering Committee deliberations and recommendations including a presentation demonstrating three methods to measure the area encompassing a pressure ulcer
- Environmental scan

In addition to seeking general comments on the report and the three domains, NQF is seeking comment regarding the 3 methods to measure the area encompassing a pressure ulcer and a maximum 8 hour timeframe for a comprehensive skin and pressure ulcer risk assessment upon arrival to a facility.

Pursuant to section II.A of the Consensus Development Process, v. 1.8, this draft document, along with the accompanying material, is being provided to you at this time for purposes of review and comment only—not voting. You may post your comments and view the comments of others on the NQF website.

NQF Member comments must be submitted no later than 6:00 pm ET, May 7, 2009; public comments are due by 6:00 pm ET, April 30, 2009.

NQF strongly prefers to receive comments through the online comment form. Supporting documents may be submitted by email to pressureulcer@qualityforum.org with *pressure ulcer comments* in the subject line and your contact information in the body of the email.

Thank you for your interest in the NQF's work. We look forward to your review and comments.

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Purpose of this project

The purpose of this project was to develop a framework for measuring quality for prevention and management of pressure ulcers at both the facility and practitioner levels across the continuum.

Purpose of the Framework

A nationally endorsed framework around the prevention and management of pressure ulcers across the continuum can serve as a road map that identifies preferred practices and performance measures, as well as areas requiring additional research or development. The evidence-based framework provides a conceptual model that identifies interrelated domains and sub domains that are applicable to multiple settings of care and providers of care. The framework, therefore, can be used to identify and organize NQF-endorsed® preferred practices and performance measures. Guided by the framework, a set of preferred practices and measures should provide comprehensive evaluation and reporting tools to address the following:

- Prevention of pressure ulcers;
- Healing of pressure ulcers;
- Measuring incidence and prevalence of pressure ulcers and the pros and cons of both;
- Multiple levels of analysis, including providers, systems, communities and geographical areas;
- Accountability as the patient moves across settings of care, such as present on admission;
- Measuring and staging of pressure ulcers, including temporarily "unstageable" and scoring systems;
- Multiple lesions and deep tissue injury in evolution; and
- Harmonization of measure specifications across settings of care.

NATIONAL VOLUNTARY CONSENSUS STANDARDS FOR DEVELOPING A FRAMEWORK FOR MEASURING QUALITY FOR PREVENTION AND MANAGEMENT OF PRESSURE ULCERS STEERING COMMITTEE

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Background:

Pressure ulcers are a complex clinical problem in which pressure, shear force and friction damage soft tissue. Underlying tissue health, excess moisture, nutritional state and other factors contribute to vulnerability. Pressure ulcers are one of the five most common harms experienced by patients in healthcare facilities* and they are considered key clinical indicators of the standard and effectiveness of care. Despite recent major technical advances in healthcare, pressure ulcers still occur at unacceptable rates within healthcare facilities, even though the majority of ulcers are preventable.†

Pressure ulcers are both high cost and high volume adverse events. In 2006, there were 322,946 reported cases of Medicare patients who had a pressure ulcer as a secondary diagnosis during hospitalization – these cases had an average charge of $40,381 for an annual total cost of $13 billion.‡ In addition, beginning October 1, 2008, Medicare will no longer pay the extra cost of treating stages III and IV pressure ulcer that occur while the patient is in the hospital.

Quality measurement organizations have worked to reduce the prevalence of pressure ulcers in nursing homes, home health, rehabilitation facilities and hospitals. To date, NQF has endorsed six measures addressing pressure ulcers. The measures use a variety of definitions, specifications, staging, and timeframes such that the results are not comparable among settings of care or for a single patient that moves across different care settings. To understand the impact of pressure ulcers across settings, quality measures addressing prevention, incidence, and prevalence of pressure ulcers must be harmonized and aligned. This will require collaboration among measure developers and other interested stakeholders.

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- Harmonization of measure specifications across settings of care.

The following provides an overview of the framework.

Framework Domains and Sub domains

Standardized staging and measuring techniques, public reporting, and prevention and healing treatments require identification of a comprehensive framework that delineates the domains of high-quality care. From this framework, preferred practices can be identified and/or mapped to, and from those practices measures can be developed. Gaps in practices, performance measures and areas requiring additional research and development should be readily identifiable based on this approach.

The three primary domains of measuring quality for the prevention and management of pressure ulcers are as follows:

1. Staging and Measuring of Pressure Ulcers

2. Analytics

3. Prevention and Healing of Pressure Ulcers

Each domain has sub-domains that further delineate the components of each domain.

DOMAIN ONE – STAGING AND MEASURING OF PRESSURE ULCERS

This domain focuses on appropriate measuring and staging of pressure ulcers including appropriate tools and/or scales including temporarily "unstageable" wounds, scoring systems, multiple lesions and deep tissue injury in evolution; definitions for terms, guidance for performing measuring and staging activities, and clarification for any misconceptions or known errors in performance

Domain 1.1

Staging of Pressure Ulcers. A 'Grading System' is more appropriate and is currently used in Europe.§ The current 'Staging' system implies a progression; however, the concept of progression across stages does not have strong pathophysiologic support. Other 'staging' systems in medicine often imply severity and anticipate decline such as in metastatic cancer – the stage of the cancer determines the treatment, which in turn,

determines the patient's outcome; the stage of a pressure ulcer is not linked to a treatment or outcome.

The currently available evidence does not support the concept of progression in pressure ulcers, i.e. Stage IV pressure ulcers have not necessarily progressed from Stage I ulcers. This is because Stage IV pressure ulcers can occur from the inside out, whereas more shallow stage II ulcerations can occur from the outside in.

Staging of pressure ulcers is often performed inaccurately. Stage I pressure ulcers are often missed in patients with darker skin pigmentation.** In addition, it is often difficult for providers to distinguish a Stage III from a Stage IV pressure ulcer in some areas such as nose or ear due to the presence of cartilage rather than bone.

Recommended changes to the current staging system of pressure ulcers:

- Stage I and II pressure ulcers to be graded as partial thickness injury pressure ulcer
- Stage III, IV pressure ulcers, deep tissue injury (DTI), and 'unstageable' pressure ulcers to be graded as full thickness injury pressure ulcers

Definitions:

Partial Thickness Injury: includes intact skin with color change and superficial open areas and clear fluid filled blisters. Describe whether area is open or closed. A pressure ulcer would be considered closed once re-epithelialized or color change has resolved (Stage I, II).

Full Thickness Injury: includes wounds with involvement of underlying structures. This would include DTI, purple pressure ulcers and blood filled blisters and unstageable (Stage III, IV, UN, DTI).

- Once a full-thickness ulcer has re-epithelialized it should be considered 'closed' rather than 'healed'.
- Describe whether pressure ulcer is open or closed.
- Deep structure involvement in a full thickness injury refers to bone exposure and bone involvement.
- Bone exposure refers to an exposed bone or structure within the wound whereas bone involvement refers to complications such as a diagnosis of osteomyelitis.
- DTI refers to purple or maroon localized area of discolored intact skin or blood filled blister due to damage of underlying soft tissue from pressure ulcer and/or shear. The area may be associated with tissue that is painful, firm, mushy, boggy, warmer or cooler to touch as compared to adjacent tissue.

Domain 1.2

Measuring Pressure Ulcers. The goal in wound measurement is to establish an objective basis for creating the plan of pressure ulcer care, for monitoring progress

toward goals and to guide changes to the plan of care, as needed, to sustain progress. Clear, consistent wound assessment also supports effective coordination of care across settings. An industry 'minimal' standard is needed. Those facilities, who have established more advanced measuring technology such as tracing systems, should continue to utilize them.

Tools and scales are currently available which demonstrate improvement of pressure ulcers but have not been validated to demonstrate outcomes when used by clinicians over time. Some of these tools/scales include the PUSH Tool©††, Bates- Jensen tool©,‡‡ and Sonata.

Measurement depends on the way length is determined. The majority of wound care professionals prefer a head-to-toe direction, encompassing the wound; the width is the longest perpendicular and the depth is the deepest site to the plane of the wound surface at the level of the skin.

The problem with the "longest length" is that it depends on how the skin is manipulated and the patient is positioned (side-ward movement of the skin is easier than vertical movements in the areas that are generally affected). The reason some clinicians prefer "longest length" is because photographs often fail to have anatomic markers that distinguish the body's orientation. This is "easily" compensated for, by requiring that all photographs have a scale that is oriented head-to-toe, an important practice if one is to track these wounds over time and setting of care.

The following three methods were presented by Dr. George Taler, a member of the Steering Committee, and discussed by the Steering Committee:

- "Box" technique (Length A): Longest dimension, regardless of orientation
- "Best Area" (Length B): Longest vertical measurement within the wound boundaries
- "Vertical Box" (Length C): Longest measure that encompasses the wound

NQF is specifically seeking public and member comment regarding the three methods of measurement. **Access the power point presentation here**.

To measure a pressure ulcer use:

1. Length: longest length, head-to-toe
2. Width: perpendicular to length
3. Depth: deepest vertical depth - 'dipstick' in multiple areas to obtain deepest depth
4. Area: encompassing the pressure ulcer

Longest length is recommended when anatomical structures are not available for head-to-toe measurement.

It is important to recognize that, for full thickness pressure ulcers, complete resurfacing with epithelium most likely does not occur during a short acute care stay. In addition,

for pressure ulcers requiring debridement, there may be an increase between measurements in the size of a pressure ulcer due to debridement.

The PUSH Tool© measures length, width, exudate amount, and tissue type but does not include larger wounds and wound depth. Currently there is no evidence-based literature available to demonstrate that pressure ulcer characteristics such as exudate is a sign of improvement. This may be related to the fact that volume present is influenced by dressing type and frequency of dressing change.

An ideal measuring tool would include the elements of:

1. Length x width
2. Depth
3. Tissue Type % (i.e. necrotic, eschar, slough etc.)
4. Undermining/tunneling

Domain 1.3

Tracking Outcomes and Severity of Pressure Ulcers. Partial thickness tissue injury pressure ulcer dimensions are difficult to obtain and often subjective§§ due to difficulty in determining wound edge due to erythema, blisters, etc., therefore closed vs. healed characteristics are to be identified for internal quality improvement purposes only.

At this time, other wounds such as diabetic foot ulcers, venous stasis ulcers, shearing, skin tears, perineal (incontinence associated) dermatitis, surgical wounds, (does not include surgical debridement of chronic pressure ulcers) etc. are not included because these types of wounds require different treatment. Grouping various types of ulcers/wounds requires further research and would not provide a true indicator of quality due to the varying etiology of these wounds.

The following is the basic information required to track outcome and severity of pressure ulcers for quality improvement purposes. A full assessment is still required to determine treatments and interventions.

- Factors that could track severity and outcome:
  - Size (Length x Width x Depth) LxWxD
  - Necrosis
  - Undermining/tunneling/sinus tracks/exposed structures

- Documentation of Multiple Pressure Ulcers:
  - Number of partial thickness injury pressure ulcers
  - Number of full thickness injury pressure ulcers

- Tracking Pressure Ulcers for internal Quality Improvement:
  - Partial thickness injury: closed vs. open
  - Dimensions (LxWxD) of the largest full thickness injury

Domain 1.4

Public Reporting of Pressure Ulcers. The level of information required for measurement and improvement of pressure ulcers depends on the intended use. To drive quality improvement, a more detailed, robust set of parameters are required. For public reporting purposes, the following information that is usable by end users should specifically include:

1. The number of partial thickness and full thickness injury pressure ulcers.
2. The most severe pressure ulcer such as the largest full thickness injury pressure ulcer; if the patient does not have any full thickness injury pressure ulcers, then the most severe partial thickness injury pressure ulcer should be reported.

The other factors noted above are useful to monitor quality improvement and would specifically track the size and depth of each pressure ulcer.

DOMAIN TWO – ANALYTICS

This domain focuses on measuring the incidence and prevalence of pressure ulcers and the pros and cons of both activities; performing analysis at multiple levels, including providers, systems, communities, and geographical areas; determining accountability as the patient moves across settings of care and identifying potential pit falls; and drafting standard specifications with numerator and denominators including exclusions for various pressure ulcer measures (process, outcome, populations).

Domain 2.1

Incidence and Prevalence. Incidence data are difficult to obtain, therefore a substitute or proxy measure called facility- or agency-acquired can be used instead. For example, we commonly think of the acquisition of pressure ulcers in the long-term care setting as a two-point difference or a two-point prevalence difference, those who did not have it on admission to the long-term care facility versus those who had it on the next MDS. OASIS measures of agency-acquired pressure ulcers can be estimated as those who did not have the pressure ulcer when they were admitted versus those who had it on the next OASIS assessment or before discharge or any subsequent OASIS assessment that was completed in between. This has been used that as a proxy measure. When used in acute care settings, it has been called hospital-acquired.

Established definitions of incidence and prevalence:

- Incidence:
    - Numerator: # of people who acquire the event in question
    - Denominator: # of people within the population under question

- Prevalence:
    - Numerator: # of people who have the event under question
    - Denominator: population under question

The intended use of the measure determines if incidence or prevalence is more informative. Current measurement systems such as the National Database of Nursing Quality Indicators (NDNQI) use prevalence measures. Prevalence measures, on the whole, are easier to measure than incidence measures.

Incidence Pro:

- Incidence is most accurate using a database
- Excludes present on admission

Incidence Con:

- Problems in defining present on admission (POA) data for incidence
- End point measures differ in different settings
- Time intensive; requires extensive resources to track true incidence, because some incident cases may be missed if patient was not included in end-point assessment or pressure ulcer closed before endpoint assessment.

Domain 2.2

Measuring Incidence and Prevalence:
In order to have comparable data, standard methods of data collection must be defined. Currently, these methods are setting-specific. It is critical that we move to harmonize the methods across settings as we move toward consideration of care coordination and patient-focused episodes of care. Some basic tenets of measurement of pressure ulcers are:

1. Setting-acquired ulcers are an acceptable method of measuring incidence
    a. setting-acquired definition:
        i. start: assessment on admission
        ii. possible end points: discharge assessment, quarterly assessment, or other assessment conducted after admission to facility to capture setting acquired pressure ulcers
2. Start and endpoint assessment:
    a. endpoint should capture pressure ulcers acquired since start of care and would determine if the pressure ulcer is hospital/facility acquired
3. Move toward real-time reporting vs. reporting data obtained from retrospective chart review

At this time, studies have shown extracting pressure ulcer data from electronic records is not accurate. Studies have found too much discrepancy between the accuracy of physical inspection to chart review in determining hospital acquired pressure ulcers with physical inspection finding higher rates.[***]

Domain 2.3

Inclusion and Exclusion Principles:

- Be as inclusive as possible; but where preventive measures are contraindicated for specific individuals, those individuals may be excluded. Examples include an immobile patient who declines replacing the bed with a pressure redistribution support surface, or a malnourished patient who eats little, despite maximal provider support and whose goals of care or clinical presentation indicate that a feeding tube is not appropriate.
- Exceptionally low risk populations may be excluded such as normal obstetrics
- Keep track of patients who are not included due to refusals, off the unit, unstable, etc.
- Hospital stay: short stay patients may be excluded, i.e. 48 hour cardiovascular hospital stay – risk adjust to avoid skewing the data

Exclusion criteria should be indentified first and for public reporting, criteria must be clear and monitored for continued appropriateness.

Domain 2.4

Risk-adjustment:

- Development of risk-adjustment models for hospitals must consider the structural/quality/outcome link for any risk-adjustment, including why a variable (e.g. hospital size, unit type) might influence outcomes when constructing risk-adjustment.

DOMAIN THREE - PREVENTION AND HEALING

This domain focuses on proper prevention techniques and equipment for specific population or clinical situations; proper healing strategies for various populations or clinical situations; and identifying outdated prevention or healing strategies that should no longer be used.

Domain 3.1

Assessment:

- Screen all patients with a head-to-toe skin assessment on admission to identify problem areas early
- Screen all patients with a head-to-toe pressure ulcer risk assessment on admission†††,[1]
- The head-to-toe skin assessment and the pressure ulcer risk assessment should be done within 8 hours of arrival to facility (including arrival at the emergency department). NQF is specifically seeking public and member comment on this 8-hour assessment window.
- Integrate repetitive and sequential comprehensive assessments,[2] including both head-to-toe skin and risk assessments into an interdisciplinary plan of care and communicate across care settings

[1] Most commonly used tools include the Braden scale© and PUSH tool©

Doman 3.2

Training and Education:

- Educate students as part of core curriculums in primary professional training
- Educate staff by professional training and support ongoing competency at all levels
- Educate patients and caregivers in prevention and treatment strategies

Domain 3.3

Prevention Strategies:

- Consider goals of care
- Pressure redistribution surfaces[3] for bed and chair
- Nutrition and hydration – assess parameters such as weight status, adequacy of food and fluid intake, hydration status, pertinent laboratory data and provide appropriate nutrition support.‡‡‡
- Turn for bed and chair – each facility will set specific time frame based on individual patient circumstances or use current guidelines§§§
- Management of bowel and bladder incontinence
- Maintain proper hygiene
- Daily or repetitive skin inspection for at-risk patients

Domain 3.4

Supporting Effective Care Transition:[4]

Current plan of care should follow the patient across care settings. If patient does not have a pressure ulcer, the preventive measures that are in use and have been effective for the patient should be included in the plan of care that is communicated across settings.

1. Factors that could track severity and outcome:

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[2] Comprehensive assessment: includes both skin assessment and pressure ulcer risk screening to manage and prevent pressure ulcers

[3] Pressure redistribution: Support surfaces for pressure ulcer prevention and treatment that act by either moulding around the patient to distribute the patient's weight over a larger area or by mechanically varying the pressure also described as pressure-redistributing devices.[13] Examples of devices for redistribution include non-powered air, water, or gel-filled devices; powered low-air-loss, alternating-pressure and air-fluidized devices.

[4] Care transition: a set of actions designed to ensure the coordination and continuity of healthcare as patients transfer between different locations or different levels of care within the same location. Representative locations include but are not limited to hospitals, sub-acute and post-acute nursing facilities, the patient's home, primary and specialty care offices, and long-term facilities.

582 a. Size (LxWxD)
583 b. Necrosis
584 c. Undermining/tunneling/sinus tracks/exposed structures
585 2. Documentation of Multiple Pressure Ulcers:
586 a. Number of partial thickness injury ulcers
587 b. Number of full thickness injury ulcers
588 3. Tracking Ulcers:
589 a. Full thickness tissue injury pressure ulcer: closed vs. open[5]
590 b. Dimensions (LxWxD) of the largest full thickness injury
591 4. Treatment plan:
592 a. Date of onset and supplies used, application technique and frequency of
593 dressing change
594 b. Equipment used to redistribute pressure while in bed, during transfer
595 and while sitting and/or use of any other adaptive equipment
596 c. Patient/patient designee/caregiver education
597 5. Patients At-Risk for Pressure Ulcers:
598 d. Risk assessment instrument used and last score
599 e. Prevention measures implemented as part of the previous plan of care
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601 **Domain 3.5**
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603 **Development of Plan of Care:**
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605 Wound care strategies should be aligned with the patient's overall condition, goal of
606 care and preferences.
607 • Tailor plan of care to the individual when establishing a goal of wound healing
608 vs. palliation.[6,7]
609 • Develop a realistic care plan in collaboration with the patient and/or patient
610 designee and caregivers.
611
612 **Domain 3.6**
613

[5] Partial thickness pressure ulcers generally heal by regeneration so after closure, they no longer exist. Full thickness pressure ulcers, however, heal by repair and the resulting tissue is permanently altered so we call them "closed" rather than "healed".

[6] Palliative Care: refers to patient- and family-centered care that optimizes quality of life by anticipating, preventing, and treating suffering. Palliative care throughout the continuum of illness involves addressing physical, intellectual, emotional, social, and spiritual needs and facilitating patient autonomy, access to information, and choice.[14]

[7] Hospice care: a service delivery system that provides palliative care for patients who have a limited life expectancy and require comprehensive biomedical, psychosocial, and spiritual support as they enter the terminal stage of an illness or condition. It also supports family members coping with the complex consequences of illness, disability, and aging as death nears. Hospice care further addresses the bereavement needs of the family following the death of the patient. Of particular importance, palliative care services are indicated across the entire trajectory of a patient's illness and its provision should not be restricted to the end-of-life phase.[14]

Wound Management:

Wound management should be guided by regular, comprehensive patient assessment (deficits in perfusion, oxygenation, metabolism, weight status, hydration status) and wound assessments (including size, wound bed appearance, quality and quantity of exudate, periwound skin):

1. Identify and manage wound infection
2. Debride devitalized tissue[8] as appropriate
3. Maintain moist wound bed and manage wound exudate
4. Maintain effective pressure redistribution (positioning in bed and chair and transferring techniques)
5. Manage bowel and bladder incontinence
6. Provide nutrition and hydration support
7. Maintain overall management of co-morbidities including psychiatric conditions
8. Protect peri-wound skin and monitoring for secondary iatrogenic trauma (e.g. skin tear)
9. Manage local and systemic pain
10. Perform regularly scheduled wound evaluation to determine wound progress or deterioration
11. Careful consideration of medications or therapies that may inhibit wound healing (e.g. antineoplastics, anti-inflammatories)
12. Incorporate interdisciplinary approach and resources through inter-professional communication
13. Increase strength, endurance and mobility
14. Strict attention to pressure relief and failure to promote wound healing needs to be monitored
15. Balance patient functional independence with the wound management strategy

In wounds failing to show effective progress in an evidence-based timeframe, reassess the patient's wound status, the patient's overall medical status and prognosis to guide interventions.

- Reconsider acute and chronic disease states, iatrogenic states and medications, nutrition and hydration status
- Reassess or confirm causation of injury and impediments to wound healing
- Re-evaluate for previously unidentified underlying pathological conditions
- Seek additional consultation as appropriate

Domain 3.7

Prevention and healing strategies that should be avoided:

[8] Devitalized tissue: dead tissue from a wound bed; devitalized tissue can appear yellow, tan, or black in color, and can be dry or wet[14]

The following preventions and healing strategies have been identified by the Steering Committee as strategies that should be avoided based on the available literature and expert opinion.

- Avoid donut seat cushions for pressure redistribution†††
- Avoid sheepskin for pressure redistribution†††
- Avoid cytotoxic solutions in clean wounds: Many antineoplastic agents are cytotoxic due to the nature of their action - to target rapidly growing cells. Some solutions, such as undiluted hydrogen peroxide, when used repeatedly, can retard wound healing through the suppression of fibroblast proliferation. ****
- Avoid heat lamps
- Avoid hair dryers
- Avoid wet-to-moist and wet-to-dry dressings as a long term treatment - may be appropriate as a short term option such as in the acute presentation, acute perioperative or as a peri-intervention treatment, where a wound has been extensively debrided, and gross purulence and necrosis is present.†††† In the short-term, frequent wet-to-moist, wet-to-dry dressing may be appropriate as transitioning from one therapy to another after an acute deterioration or change in the status of the wound.
- Avoid packing materials that tend to matt or are non-resilient (avoid using patient care and/or wound care products in a way that result in a matted or non-resilient mass that could produce a point of pressure in the wound [e.g. dense gauze, negative-pressure wound therapy[9]] in weight bearing areas [based on expert opinion]
- Avoid use of wound care products as a preventive measure over bony prominences that inhibit skin reassessment and could lead to maceration[expert opinion]

RESEARCH RECOMMENDATIONS

During the course of development of the framework, a number of high-priority areas for each of the three domains were identified. Generally, these areas represent those for which high priorities exist, but for which limited evidence-based literature is currently available. These priority areas are viewed as significant gaps in the management of pressure ulcers.

Measuring and Staging Pressure Ulcers

- Utilization of available technologies for pressure ulcer staging
- Pressure ulcer characteristics that can be used to measure severity and used as quality indicators
- Further research to predict healing of pressure ulcers such as if you do not achieve a 50% area reduction within 12 weeks you can highly predict it will not close

[9] Negative pressure wound therapy: consists of an open-cell foam dressing covered with an adhesive drape. The dressing is connected to a vacuum pump that creates and maintains a subatmospheric pressure.

- Further research needed to determine healing rates by wound location including heels, sacrum, ischial tuberocity – currently delineating locations is difficult due to the current coding system that does not separate ischial tuberocity from sacrum

Analytics

- Risk factors for partial-thickness tissue injury pressure ulcers (Stage I and Stage II pressure ulcers) vs. risk factors for full-thickness tissue injury pressure ulcers (Stage III or IV pressure ulcers)
- Relationship between partial-thickness tissue injury pressure ulcers (Stage I and Stage II pressure ulcers) and other issues such as quality of care or internal Quality Improvement
- Adequate sample size to have stability for full-thickness tissue injury pressure ulcer (Stage III and IV pressure ulcers) data
- Appropriate methods to handle small pressure ulcer occurrences such as full thickness tissue injury pressure ulcers (Stage III and IV)
- Ability to measure time of tissue damage to occurrence of pressure ulcer

Prevention and Healing

- Linking specific processes of care to improved prevention and healing
- Further evidence-based research is needed on the role of nutrition in the prevention of pressure ulcers and to determine the effects of different medical nutrition therapy interventions on pressure ulcer healing[10]

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[*] Elliot, R., McKinley, S., Fox, V. Quality Improvement Program to Reduce the Prevalence of Pressure Ulcers in an Intensive Care Unit. *American Journal of Critical Care.* July 2008, Volume 17, No. 4.

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[‡] Association of periOperative Registered Nurses, *Skin Integrity. Available at* http://www.skinintegrity.com/pdf/WhyItMatters.pdf.

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[††] National Pressure Ulcer Advisory Panel. *Pressure Ulcer Scale for Healing (PUSH).* PUSH Tool 3.0. *Available at* www.npuap.org. Last accessed 3 April 2009.

[‡‡] Bates-Jensen, Barbara. Bates-Jensen Wound Assessment Tool. 2001. *Available at* http://www.geronet.med.ucla.edu/centers/borun/modules/Pressure_ulcer_prevention/puBWAT.pdf. Last accessed 2 April 2009.

[§§] Fette, A.M. A clinimetric analysis of wound measurement tools. *World Wide Wounds.* 2006. *Available at* http://www.worldwidewounds.com/2006/january/Fette/Clinimetric-Analysis-Wound-Measurement-Tools.html. Last accessed 3 April 2009.

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[10] Medical Nutrition Therapy (MNT) is a specific application of the Nutrition Care Process in clinical settings that is focused on the management of diseases. MNT involves in-depth individualized nutrition assessment and a duration and frequency of care using the Nutrition Care Process to manage disease.

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