

New Opportunities to Improve Pressure Ulcer Prevention and Treatment:

Implications of the CMS Inpatient Hospital Care Present on Admission (POA) Indicators/ Hospital-Acquired Conditions (HAC) Policy

A consensus paper from the International Expert Wound Care Advisory Panel

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Introduction

As part of the Deficit Reduction Act of 2005, the Centers for Medicare & Medicaid Services (CMS) initially identified eight preventable adverse events on August 1, 2007, with nine more conditions proposed on April 14, 2008.^{1,2} They have introduced a plan to help contain costs by rejecting payment of the higher diagnostic category when such events occur as a secondary diagnosis in acute care facilities. This policy, which began a phased rollout in the acute-care setting in October 2007 (culminating in October 2008), has created some logistical and implementation concerns in the clinical community. The financial implications for pressure ulcers will be determined by the Present on Admission Indicator (POA). The POA Indicator identifies if a patient has a pressure ulcer at the time the order for admission occurs.

Now there is a renewed urgency and heightened focus on prevention because beginning in October of 2008, the hospital will not receive additional reimbursement to care for a patient who has acquired the pressure ulcer while under the hospital's care. Like any groundbreaking policy, this provides impetus for change. We view this payment provision as challenging, but one that provides all clinicians and particularly wound care specialists with an opportunity to assume leadership in important preventive healthcare strategies.

*CMS defines "provider" as "a physician or any qualified health care practitioner who is legally accountable for establishing the patient's diagnosis." Additional information is available at: www.cms.hhs.gov/HospitalAcqCond/Downloads/poa_fact_sheet.pdf.

Pressure ulcers represent the possibility to implement best practices to improve outcomes. In FY 2007, CMS reported 257,412 cases of preventable pressure ulcers as secondary diagnoses.^{2,3} The average cost per case in which pressure ulcers were listed as a secondary diagnosis is estimated to be \$43,180 per hospital stay.^{2,3} The incidence of new pressure ulcers in acute-care patients is around 7 percent, with wide variability among institutions.⁴

The Medicare program's hospital inpatient prospective payment system (PPS), as currently set forth, will no longer assign a higher DRG for facility-acquired pressure ulcers effective October 1, 2008.⁵ Physician/provider* determination and documentation during the hospitalization that the pressure ulcer was present at the time of admission is critical. Since this represents a change in approach from current skin assessment protocols, as well as a paradigm shift with financial implications, it requires some new approaches in terms of how healthcare professionals in the acute-care setting manage patients at risk for pressure ulcers or patients admitted with existing pressure ulcers. While physician/provider* documentation is required, the expertise of wound assessment in hospitals is predominantly within nursing. Competence of the provider in assessment is critical to do an accurate skin assessment.

History

Wound care has been discussed even in the most ancient of medical literature, dating back to the earliest

known medical document, the Edwin Smith Papyrus (17th century B.C.).⁶ Wound care, and specifically prevention and treatment of pressure ulcers, has always been an important component of clinical care. In the 19th and 20th centuries, pharmacological and technological innovation captivated the focus of medicine, and today's evidence-based medicine continues the emphasis on drug- and device-based interventions. The result is that the prevention and treatment of pressure ulcers have been the subject of fewer retrospective studies and randomized clinical trials compared to many other areas of medical interest. While there exists what might rightly be called evidence-informed practice of pressure ulcer prevention and treatment based on best practices, consensus documents, clinical practice guidelines and established standards of care, there is not quite the wealth of evidence with regard to pressure ulcers that exists for other fields of medicine.

Some preventive ideas

It is beyond the scope of this paper and exceeds the authority of the International Expert Wound Care Advisory Panel to provide specific solutions, but we are offering some ideas in areas we consider key to addressing the Medicare policy related to pressure ulcers. The "ticking clock" of October 2008 regarding payment provisions compels us to act quickly, and we trust that our colleagues understand our agenda is one of providing thoughts on how to rapidly meet this new challenge.

To meet Medicare policy and, more importantly, to improve care for patients in the acute-care setting, we have identified several points on which the entire wound care community must reach consensus.

The areas on which we must agree are:

Preventive strategies

- Patient education
- Clinician training

- Strategies in developing communication and terminology materials
- Implementation of toolkits and protocols Behavioral challenges
- Healthcare provider adherence
- Patient adherence

Preventive strategies

The payment provision gives clinicians throughout the healthcare system the opportunity to raise preventive care (especially for pressure ulcers) to its rightful role in the continuum of care. Preventive strategies include educating patients and their families about skin care, training and empowering clinicians in preventing pressure ulcers, developing strategies for communication (in particular, terminology) and working out toolkits and specific protocols that can be easily rolled out to facilities across the country.

Patient education

While clinician training will vary from hospital to hospital, the development of easily available, generic patient education materials in multiple forms, including a downloadable online format in English as well as other languages, would be welcomed. Existing materials should be identified and evaluated, using criteria in the literature, including readability.^{7,8} These materials should then be modified, if appropriate, and widely disseminated online for widespread use by patients, families and caregivers. This creates an excellent opportunity for associations and industry to help support an initiative in this area.

Patient materials should be available in translated forms to accommodate the increasing number of people in the United States who speak or prefer to use languages other than English. Prior to the electronic age, a major obstacle to producing multilingual materials was the cost of printing many different versions of a booklet or pamphlet. Today's downloadable formats make dissemination of translations affordable and practical.

Patient education materials should be at a reading level appropriate for patients (self-care) as well as for family members who might be primary caregivers.

Clinician training

The treatment and prevention of chronic wounds is complex and does not belong to any one specialty. On the front lines are those who do skin inspections and implement the numerous, sometimes small, preventive steps, but they are not the only ones with an interest in preventing pressure ulcers. Every member of the skin and wound care team is important and plays a valuable role in preventing and treating pressure ulcers. Nurses, certified nursing assistants (CNAs), residents, physical therapists, nutritionists, other clinicians and even hospital reimbursement staff and administrators join the attending physician and other specialists as stakeholders in keeping a hospitalized patient free of pressure ulcers. For that reason, training efforts must reflect the various perspectives of all stakeholders. Educational materials should be prepared and tailored to deliver the appropriate messages to the various members of the interprofessional pressure ulcer prevention team. Of special concern is that training efforts be timely, targeted and tactical.

Clinician training and education is an ideal opportunity for the wound care community to partner with associations or industry to develop appropriate programs and materials that can be implemented quickly.

The role of education cannot be overstated. In one study of pressure ulcer prevalence, a new pressure distribution system (pressure-reducing mattress) was introduced. All clinicians had access to this new product, but only one group received training. Pressure ulcer prevalence decreased in patients cared for by both groups, but the decrease was significantly greater in the group that had both

training and product (from 26.7 percent to 21.6 percent in the product-only group and from 21.9 percent to 5.7 percent in the product-plus-training group, $p=0.0001$).⁹

Educational efforts in hospitals should be phased so that there is an initial training to introduce this new policy (Inpatient Prospective Payment System [IPPS]) and its ramifications, followed by ongoing training. The cycle must be repeated regularly to accommodate newcomers to the facility. Since many facilities have contract employees who may also be part of the team involved in preventing pressure ulcers, hospital administrators and trainers are urged to find ways to mandate training to all individuals who provide care at the facility.

Communication and terminology

Documentation is crucial to meeting the new payment provisions. Pressure ulcer documentation by physicians should begin on admission and continue throughout the entire hospitalization. Without proper documentation, a tremendous and possibly insurmountable legal and financial burden shifts to the provider. To facilitate documentation and ensure patient safety throughout the continuum of care (which may involve multiple providers, multiple settings and teams of clinicians), universal wound care terminology must be developed and consistently used.

The National Pressure Ulcer Advisory Panel (NPUAP) has issued staging definitions for pressure ulcers, last updated in February 2007 to include two additional stages: unstageable and suspected deep tissue injury (DTI).¹⁰ Staging implications are under review by the CDC.^{11,12} Since not all staff may be fully familiar with advanced dermatological terms and concepts, training materials should also teach the “vocabulary” of pressure ulcer prevention. An official glossary of terms may be useful, particularly if it could be offered online and updated regularly.

Beyond speaking the same “language,” healthcare professionals tasked with pressure ulcer prevention must develop better skills at sharing information. Part of this involves documentation using standardized forms and consistent terminology. But it also involves a re-thinking of how clinicians share information. Effective interprofessional models of care should be evaluated to glean information as to how a team of diverse providers can interact efficiently across departments and even across facilities.¹³ Rather than reinventing the wheel, studying the mistakes and successes of such models can help shorten the implementation curve in wound care.

Finally, communication also means learning from what others have done. Excellent examples of this would include efforts by the New Jersey Hospital Association and Ascension Health.^{14,15} Due to the revision in 2004 of the CMS surveyor guidance to Tag F-314 on pressure ulcers, long-term care facilities have more familiarity with the care of patients with pressure ulcers than acute facilities. The field of geriatrics has already identified pressure ulcers as a geriatric syndrome. An outstanding resource in this regard is the John A. Hartford Institute for Geriatric Nursing, which offers many online materials (www.hartfordign.org). Tapping into these sources may allow some transfer of knowledge into the acute-care setting.

Toolkits and protocols

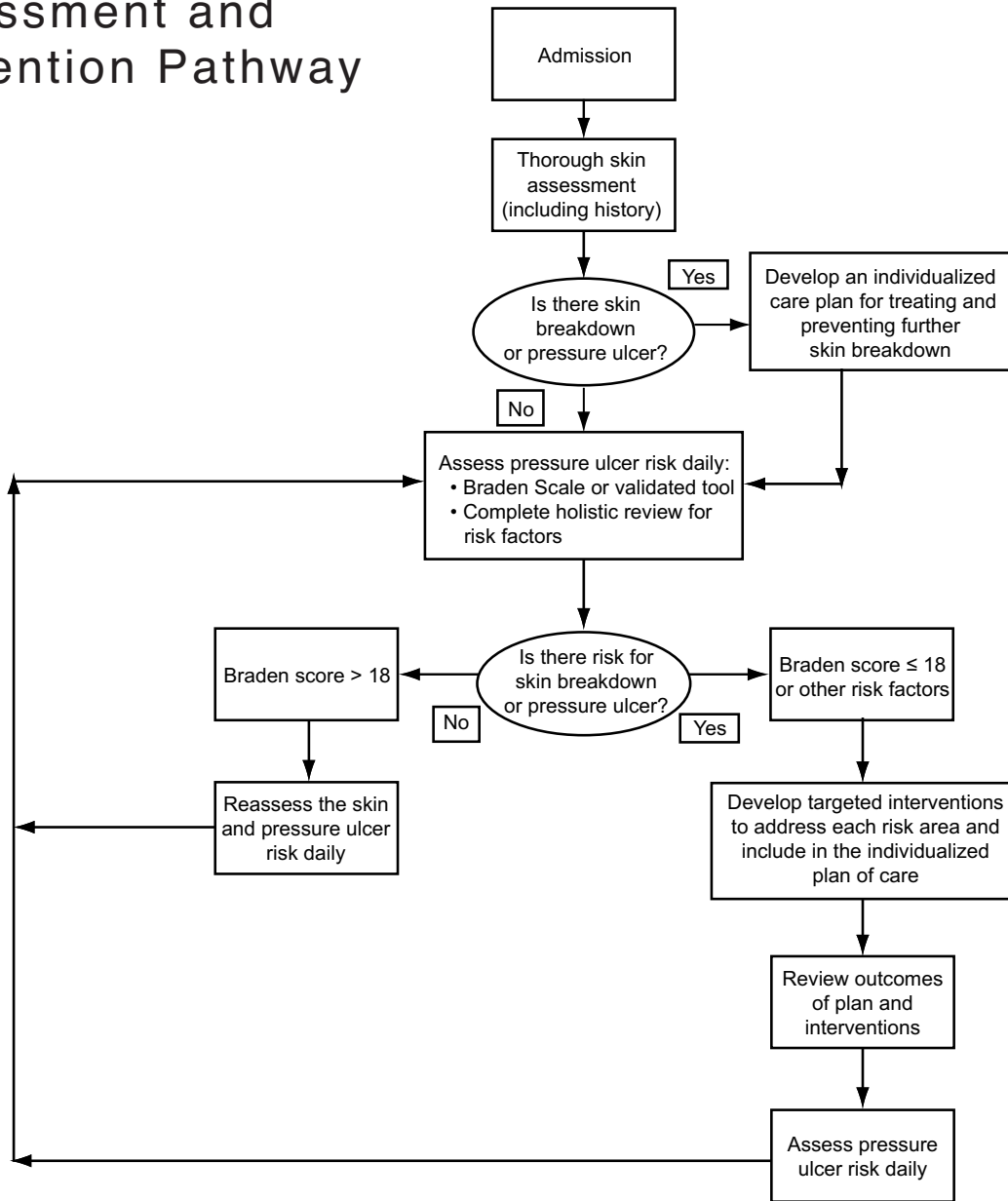
With the new payment provision, physician/provider* documentation regarding pressure ulcers is crucial. For a hospital to be paid the higher DRG for a patient who has a Stage III or IV pressure ulcer, the physician/provider* must document at some point during the hospitalization either that the Stage III or IV pressure ulcer was present on admission or that its status on admission was clinically undetermined by the end of the hospitalization.¹⁶ If the Stage III or IV pressure

ulcer was not documented by the physician/provider* as present on admission or its status on admission was unknown by the end of the hospitalization, then the hospital will not be paid the higher DRG. Note that “clinically undetermined” reflects the presence of diagnostic documentation, while “unknown” reflects lack of documentation.¹⁶ This is imperative because proposed changes in coding reference stages versus location for pressure ulcers.^{11,12} Administrators and clinicians are urged to refer to the ICD 9 coding guidelines for specifics.^{12,17} Since nurses traditionally have been indicating pressure ulcer staging, the shift to physician/provider* documentation of pressure ulcer staging for purposes of this Medicare policy will require documentation practice changes as well as the need for physician education on pressure ulcer staging.

Skin assessment must be incorporated into the systematic intake procedure at inpatient hospital facilities in such a way that patients receive a thorough but immediate or near-immediate skin assessment that is documented by the physician/provider*. In looking for guidance for what should be on a skin assessment, there is some analogy to the CMS revised surveyor guidance regarding Tag F-314. This includes *comprehensive* skin assessment that addresses five areas at a minimum: risk factors, pressure points, nutrition, hydration, and moisture as well as *minimal* skin assessment of the following five factors: skin temperature, color, turgor, moisture status and integrity.¹⁸ Policy requires that the attending physician/provider* sign this documentation. This represents a variation in current intake procedures at most facilities regarding documentation. This procedure should be basic and easy to modify in order to meet the specific requirements of individual institutions.

*CMS defines “provider” as “a physician or any qualified health care practitioner who is legally accountable for establishing the patient’s diagnosis.” Additional information is available at: www.cms.hhs.gov/HospitalAcqCond/Downloads/poa_fact_sheet.pdf.

Figure 1: Acute Care Assessment and Prevention Pathway



Braden Scale Key*

Braden Scores:	
At Risk:	15-18
Moderate Risk:	13-14
High Risk:	10-12
Very High Risk:	≤9

* Braden Scale for Predicting Pressure Sore Risk. Available at: <http://www.bradenscale.com/newlevels.htm>. Accessed May 13, 2008.

Data from long-term care facilities provide excellent insight into pressure ulcers. In one skilled nursing facility study, 80 percent of pressure ulcers developed within a two-week window post-admission and 96 percent developed within three weeks.^{19,20} Since pressure ulcers can occur quickly, we concur with the Institute for Healthcare Improvement's suggestion that in acute care subsequent skin inspections should be conducted at least every 24 hours for patients at risk of developing a pressure ulcer.²¹

Every acute-care facility should develop a flowchart showing the intake procedure and pressure ulcer prevention plan. This plan should be flexible and robust enough to include patients at high risk and low risk of pressure ulcers and be adjustable to meet specific needs of individual patients. A proposal for such a flowchart is attached (see Figure 1).

As the next step, this flowchart should be tied to more detailed information including:

- ✓Forms (such as history and physical and documentation of a risk assessment, including a validated pressure ulcer risk assessment scale and documentation of skin assessment)
- ✓Protocols for care
- ✓Training materials for the clinicians carrying out the protocols
- ✓Patient educational materials
- ✓Documentation checklists
- ✓Appropriate products

Since CMS revision to surveyor guidance on F Tag 314 emphasizes individualized protocols, we propose a "toolkit" approach that can translate the basic pressure ulcer prevention flowchart into modifiable but comprehensive pressure ulcer prevention plans, tailored to individual patients.

There are several pressure ulcer risk assessment tools available and in use around the world, including the Braden Scale, the Gosnell Scale, the Knoll Scale, the Waterlow Scale and the Norton Scale (the latter two are European). The Braden Scale, developed by Barbara Braden, PhD, and Nancy Bergstrom, PhD, is most commonly used in the United States. It assesses risk of pressure ulcers based on a numerical scoring system of six risk factors (sensory perception, moisture, activity, mobility, nutrition and friction/shear). The high acceptance level of the Braden scale likely owes to the fact that it is easy to use, has been clinically validated,^{22,23,24} requires minimal training and addresses the many issues that can affect the risk of pressure ulcers. A free video that teaches hospital staff how to use the Braden Scale is available at <http://links.lww.com/A106>. Because of the rapid uptake, the impact of this instrument on pressure ulcer care has been very valuable. However, as our knowledge of chronic wounds increases, we realize that the Braden Scale might not capture all of the risk factors that can contribute to the development of pressure ulcers. A thorough patient history is important to ascertain such contributing factors as age, medications and co-morbidities (diabetes, low blood flow, history of previous pressure ulcers) among other things.¹⁷

Dr. James Spahn has proposed a useful chart for assessing risk factors in the development of pressure ulcers,²⁵ which remains to be validated. This chart recognizes seven risk factor considerations for patients: cognitive status, mobilization and ambulation, nutrition and hydration, incontinence and/or moisture, general medical conditions and medications, existing pressure ulcer(s) and previous pressure ulcer(s).

Gravely ill patients facing multiple organ failure, reduced tissue perfusion and no mobility face special risks that may make pressure ulcers unavoidable.^{26,27} The skin, like any other organ in the body, can fail.²⁸

While such patients are often treated in long-term facilities or hospice care, we feel that the toolkit should acknowledge the special situation of palliative patients. While there are many ways to develop this tool kit, the key factors remain simplicity, universal applicability (it will work for most patients in most institutions) and completeness (it addresses *all known risk factors*). For the purposes of prevention, subheadings that ask for diagnosis, prognosis and proposed medical care seem useful to formulate an individualized care plan. There should also be an easy and systematic way to document when pressure ulcer prevention is discussed with the patient and family that can also capture their response; a checklist might work well for this.

One state already regulates the documentation of family and patient notification of Stage 3 and 4 pressure ulcers.²⁹ Of prime importance is that risk factors be captured in such a way that they lead to an individualized pressure ulcer prevention protocol. Prevention bundles (tool kits) are standardized plans that can be modified for individual patients; when properly deployed, they streamline and facilitate the process of creating effective individualized skin care plans.

When prevention bundles (toolkits) are employed, pressure ulcers are reduced.^{14,15,30,31} The Pressure Ulcer Prevention Protocol Interventions (PUPPI) found that a protocol assessing risk and nutritional status, providing skin care and offering referrals if appropriate reduced the prevalence of pressure ulcers by more than 50 percent.³⁰ A NO ULCERS[®] bundle developed by the New Jersey Hospital Association (**N**utrition and fluid status, **O**bservation of skin, **U**p and walking or turn and position, **L**ift [don't drag] skin, **C**lean skin and continence care, **E**levate heels, **R**isk assessment and **S**upport surfaces for pressure redistribution) reduced pressure ulcer incidence by 70 percent and pressure ulcer prevalence by 30 percent in 20 months across care settings.^{14,31} The SKIN[®] bun-

dle (**S**urface selection, **K**eeP turning, **I**ncontinence management and **N**utrition) was rolled out at Ascension Health, the nation's largest not-for-profit health-care system, in 2004 and reduced pressure ulcer incidence to about 1.4 per 1,000 patient days.^{15,31} No new Stage III or IV pressure ulcers were acquired at many Ascension hospitals from August 2004 to February 2006.^{15,31} Evidence supports the implementation of such a bundle, ideally one that is easy to remember, comprehensive and flexible enough to meet the needs of the wide spectrum of patients seen routinely in the acute-care setting today.

A bundled or systematic approach is beneficial on many levels, but when properly practiced, the use of a well-developed system provides a pathway where no step is ever inadvertently omitted or overlooked. These results and our own clinical experiences strongly suggest that the precise system may be less important than the fact that an acceptable system is developed, deployed and rigorously used. Pre-existing wounds identified at the POA skin assessment represent a special challenge to this process. The diagnosis of a chronic wound is a complex process, often requiring consultation with specialists, and the underlying etiology of a given wound cannot always be determined immediately upon admission. For example, a deep tissue injury that occurred prior to admission might not be visible until a few days after admission. This underscores both the need for continuous surveillance of the skin throughout the hospital stay as well as the necessity of finding objective methods for documenting such wounds.

New imaging techniques exist that might well allow objective identification and "description" of pre-existing or developing wounds. For example, there is relatively inexpensive software on the market that can convert four flash digital photos into a serviceable three-dimensional image, suitable for documentation purposes.

Figure 2: Skin Barriers and Moisturizers

Ideal products	<ul style="list-style-type: none"> • Low allergenicity, irritancy • Fewer ingredients
Skin barriers (prevent damage)	<ul style="list-style-type: none"> • Zinc oxide, petroleum • Film-forming liquid acrylates • Windowed dressings
Skin barriers (increase stratum corneum moisture)	<ul style="list-style-type: none"> • Hydrogels • Urea • Lactic acid
Lubricants (oil layer above the skin)	<ul style="list-style-type: none"> • External barriers: Low, medium and high oil content

Additionally, tools like thermographic cameras, which act as a sensitive and quantifiable surrogate for inflammation, have become inexpensive and simple to use. Such cameras may ultimately be useful as both a rapid admission and follow-up tool.^{32,33} Innovative technology should be incorporated into the tool kit if the technology is of genuine value. While thermography and ultrasonographic changes are surrogates of inflammation, these very promising technologies require further validation for best utility and application in regard to predicting levels of risk and tracking wound healing.

Innovation can also occur beyond technology, even in terms of how we identify high-risk patients to the rest of the staff. The use of brightly colored wristbands for patients at high risk of developing pressure ulcers sounds simplistic, but this and other visual cues might be beneficial. In short, we recommend that creative and innovative means be used, when appropriate, in developing a systematic approach to pressure ulcer prevention.

The pressure ulcer prevention toolkit must address a formulary of products, but this should be handled generically rather than by identifying specific brands. Overall observations on skincare products useful in pressure ulcer prevention are summarized here (see

Figure 3: Factors that Increase Pressure Ulcer Risk

Factors	Possible interventions/solutions
Decreased cognition	Stimulation Music therapy Protect from falls Assess for pain
Decreased ambulation	Avoid bed rest as soon as possible
Decreased nutrition	Supplements designed to improve wound healing
Increased moisture	New wicking materials (transfer foams with and without silver/polyhexamethylene biguanide [PHMB])
Incontinence	Fecal collectors Better external catheters
Decreased general health	Holistic assessment and Rx

Figure 2). Ideas for innovative new products (wicking materials, wound-specific supplements and so on) should be shared with our partners in industry (see Figure 3).

Behavioral challenges

Change is never easy; nonetheless, CMS has delivered to American healthcare providers a rather substantial challenging mandate to transform acute care pressure ulcer prevention within a short period of time. The stakes are high in that they affect the top two concerns facing most hospitals today: patient outcomes and reimbursement.

Healthcare provider adherence

In many cases, best practices, clinical guidelines, consensus documents and standards of care are the only yardsticks we have. The lack of evidence makes it difficult to affirm even what we think about wound care, much less grapple with unanswered questions. We need to take the best evidence available to us at

the time and use it when making decisions. Evidence-informed practice includes all of the following^{34,35}:

1. Research: We should take into account all types of research.
2. Expert knowing: This is a combination of knowledge, individual clinical experience and clinical intuition.
3. Patient and family preferences

Scientifically sound data are the strongest weapons in helping healthcare professionals solve the problem of hospital-acquired pressure ulcers. For that reason, we strongly urge the wound care community to mobilize to fill in data gaps as quickly as possible. Existing data should be identified and evaluated in an effort to determine what data are most needed.

Evidence from these studies will help formalize evidence-based guidelines for pressure ulcers.

That goal is perhaps less immediate than the other initiatives we propose, but it is equally as important. Behavioral changes should be encouraged through a recognition and rewards program.

While most institutions must treat training in terms of providing specific units or credits, in wound prevention, continuous professional development is a more useful model since it is situational, can be made to relate to specific daily activities at a given facility and is more likely to produce change. Continuous professional development trains people on an ongoing basis in their work setting and results in confirming current practice, changing current practice or causing the learner to seek more information.

Patient compliance and adherence

It far exceeds the scope of this roundtable to address the extremely challenging and complex issue of fostering patient adherence and compliance. The term adherence connotes a willingness on the part of the patient to participate actively in his or her care, while

the traditional term compliance refers to a more passive obedience to the instructions of healthcare providers. We recommend that patient education be included in pressure ulcer prevention tool kits and that clinicians be encouraged to regard patient education in skin care as an ongoing intervention rather than a one-time occurrence. For example, nurses carrying out steps in the pressure ulcer prevention plan should talk to appropriate patients and explain what they are doing and why. We believe that patient adherence in skin care is best facilitated by steady, consistent, learner-oriented education of the patient and his or her family or caregivers, conducted by all members of the interprofessional healthcare team.

This, in turn, means that patient adherence will improve as the entire healthcare staff becomes increasingly familiar (and communicative) about pressure ulcer prevention strategies.

Conclusion

Our roundtable discussion underscores the utility of bringing together the various voices in health care to discuss this important and complex issue. The new CMS payment provisions have provided a compelling reason to review pressure ulcer prevention care practices.³⁶

To achieve consistency in our message and approaches, we invite our colleagues to join us in drilling down into these recommendations to develop these materials, educational modules, clinical protocols and to design and conduct clinical studies. There is far too much to be done right now for wound care and skin experts to waste time doing anything less than joining forces.

Time is of the essence for hospitals to review documentation practices since the payment provisions take effect on October 1, 2008. The payment provisions mean that we must develop a pressure ulcer prevention strategy and interventions sooner rather than later. Adjustments

can be made as we gain momentum, collegial support and clinical data. The many learned colleagues who participate in the continuum of care in American health-care have the resources, the wherewithal and the determination to transform this moment of uncertainty into an opportunity for the hospital system and its patients. To that end, we must not forget that interprofessional collaboration right now is not just a professional nicety – at this point, it is a matter of economic survival.

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References

- 1 Centers for Medicare & Medicaid Services. Medicare Program; Proposed Changes to the Hospital Inpatient Prospective Payment Systems and Fiscal Year 2009 Rates; Proposed Changes to Disclosure of Physician Ownership in Hospitals and Physician Self-Referral Rules; Proposed Collection of Information Regarding Financial Relationships Between Hospitals and Physicians; Proposed Rule. *Federal Register*. 2008;73(84):23552-59. Available at: <http://edocket.access.gpo.gov/2008/pdf/08-1135.pdf>.
- 2 Centers for Medicare & Medicaid Services. Proposed Fiscal Year 2009 Payment, Policy Changes for Inpatient Stays in General Acute Care Hospitals. Available at: <http://www.cms.hhs.gov/apps/media/press/factsheet.asp?Counter=3045&intNumPerPage=10&checkDate=&checkKey=&srchType=1&numDays=3500&srchOpt=0&srchData=&keywordType=All&chkNewsType=6&intPage=&showAll=&pYear=&year=&desc=&cboOrder=date>. Accessed May 13, 2008.
- 3 Centers for Medicare & Medicaid Services. Medicare Program; Proposed Changes to the Hospital Inpatient Prospective Payment Systems and Fiscal Year 2009 Rates; Proposed Changes to Disclosure of Physician Ownership in Hospitals and Physician Self-Referral Rules; Proposed Collection of Information Regarding Financial Relationships Between Hospitals and Physicians; Proposed Rule. *Federal Register*. 2008;73(84):23550. Available at: <http://edocket.access.gpo.gov/2008/pdf/08-1135.pdf>.
- 4 Whittington K, Briones R. National prevalence and incidence study: 6-year sequential acute care data. *Advances in Skin & Wound Care*. 2004;17:490-4.
- 5 Centers for Medicare & Medicaid Services. Medicare Program; Changes to the Hospital Inpatient Prospective Payment Systems and Fiscal Year 2008 Rates; Final Rule. *Federal Register*. 2007;72(162):47130-48175.
- 6 Levine JM. Wound care in the 21st century: lessons from ancient Egypt. *Journal of the American Medical Directors Association*. 2000;1:224-7.
- 7 Doak CC, Doak LG, Root JH. *Teaching Patients with Low Literacy Skills*. Philadelphia, Pa.: Lippincott Co.; 1996.
- 8 Ayello EA. Critique of AHCPR's consumer guide - "Treating Pressure Sores." *Advances in Wound Care*. 1995;8(5):18-32.
- 9 Sibbald RG. Medline CMS Advisory Board Meeting: Implications for Pressure Ulcers: Products, Prevention, PMB. Presentation given on February 2, 2008, Chicago.
- 10 National Pressure Ulcer Advisory Panel. Pressure ulcer stages revised by NPUAP. Available at: <http://www.npuap.org/pr2.htm>. Accessed April 7, 2008.
- 11 Centers for Medicare & Medicaid Services. Medicare Program; Proposed Changes to the Hospital Inpatient Prospective Payment Systems and Fiscal Year 2009 Rates; Proposed Changes to Disclosure of Physician Ownership in Hospitals and Physician Self-Referral Rules; Proposed Collection of Information Regarding Financial Relationships Between Hospitals and Physicians; Proposed Rule. *Federal Register*. 2008;73(84):23552. Available at: <http://edocket.access.gpo.gov/2008/pdf/08-1135.pdf>.
- 12 Centers for Disease Control and Prevention. ICD-9-CMS Coordination and Maintenance Committee Meeting, September 27-28, 2007. Diagnosis Agenda, pages 24-25. Available at: <http://www.cdc.gov/nchs/data/icd9/agendaSep07.pdf>. Accessed May 14, 2008.
- 13 Krasner DL, Rodeheaver GT, Sibbald RG. Interprofessional wound caring. In: Krasner DL, Rodeheaver GT, Sibbald RG. *Chronic Wound Care: A Clinical Source Book for Healthcare Professionals*. 4th ed. Wayne, Pa: HMP Communications; 2007. Available at: www.chronicwoundcarebook.com
- 14 Holmes A, Edelstein T. Envisioning a world without pressure ulcers. *Extended Care Product News*. 2007;122:24-9.
- 15 Gibbons W, Shanks HT, Kleinhelter P, Jones P. Eliminating facility-acquired pressure ulcers at Ascension Health. *Journal on Quality and Patient Safety*. 2006; 32: 488-96.
- 16 Centers for Medicare & Medicaid Services. Medicare Program; Proposed Changes to the Hospital Inpatient Prospective Payment Systems and Fiscal Year 2009 Rates; Proposed Changes to Disclosure of Physician Ownership in Hospitals and Physician Self-Referral Rules; Proposed Collection of Information Regarding Financial Relationships Between Hospitals and Physicians; Proposed Rule. *Federal Register*. 2008;73(84).
- 17 Centers for Disease Control and Prevention. Classifications of Diseases and Functioning & Disability. Available at: <http://www.cdc.gov/nchs/icd9.htm>. Accessed May 13, 2008.
- 18 CMS Manual System. Guidance to Surveyors for Long Term Care Facilities. Available at: www.cms.hhs.gov/transmittals/Downloads/R4SOM.pdf. Accessed May 13, 2008.
- 19 Bergstrom N, Braden B. A prospective study of pressure sore risk among institutionalized elderly. *J Am Geriatr Soc*. 1992;40:747-58.
- 20 Bergstrom N, Braden B, Kemp M et al. Predicting pressure ulcer risk: a multisite study of the predictive validity of the Braden Scale. *Nurs Res*. 1998;47:261-9.
- 21 5 Million Lives Campaign. *Getting Started Kit: Prevent Pressure Ulcers How-to Guide*. Cambridge, MA: Institute for Healthcare Improvement; 2008.
- 22 Bergstrom N, Braden B, Laguzza A, Holman A. The Braden Scale for predicting pressure sore risk. *Nursing Res*. 1987;36:205-10.
- 23 Bergstrom N, Demuth PJ, Braden B. A clinical trial of the Braden Scale for predicting pressure sore risk. *Nursing Clinics of North America*. 1987;22:417-18.
- 24 Bergstrom N, Braden BJ, Kemp M et al. Reliability and validity of the Braden Scale: a multi-site study. *Nursing Res*. 1998;47:261-9.
- 25 Spahn J. Pressure ulcers—ever-changing times: a physician's role. PowerPoint® presentation. 2008. Available at: <http://www.ehob.com>. Accessed March 8, 2008.
- 26 Ferris FD, Al Khateib AA, Fromantin I et al. Palliative wound care: Managing chronic wounds across life's continuum: a consensus statement from the International Palliative Wound Care Initiative. *Journal of Palliative Medicine*. 2007; 10(1):37-39.
- 27 Langemo DK. Palliative wound care. In: Baranoski S, Ayello EA. *Wound Care Essentials: Practice Principles*. 2nd edition. Springhouse, Pa: Lippincott Williams & Wilkins; 2008:448-461.
- 28 Langemo DK, Brown G. Skin fails too: acute, chronic, and end-stage skin failure. *Adv Skin Wound Care*. 2006 May;19(4):206-11.
- 29 New Jersey Hospital Association. Patient or Resident Safety Requirements and Other Reportable Events – Rule Adoption March 3, 2008. Available at: http://www.njha.com/LibrarySection/Pdf/Patient_Safety_Regulations.pdf. Accessed April 15, 2008.
- 30 Catania K. Wound wise. PUPPI: The Pressure Ulcer Prevention Protocol Interventions. *Am J Nursing*. 2007;107:44-53.
- 31 Ayello EA, Lyder CH. Protecting patients from harm: preventing pressure ulcers in hospital patients. *Nursing*. 2007;37:36-40.
- 32 Armstrong DG, Holtz-Neiderer K, Wendel C et al. Skin temperature monitoring reduces the risk for diabetic foot ulceration in high-risk patients. *The American Journal of Medicine*. 2007;120:1042-46.
- 33 Armstrong DG. Guest editorial: time and place-shifting the physical examination: technologies are converging to allow more detailed evaluations of the foot and wound. *International Wound Journal*. 2007;
- 34 Sackett DL, Straus SE, Richardson WS, Rosenberg W, Haynes RB. *Evidence-Based Medicine: How to Practice and Teach EBM*. New York: Churchill Livingstone; 1997.
- 35 Ayello EA, Sibbald RG. A new global perspective of evidence-based wound protocols. *Adv Skin Wound Care*. 2006 Oct;19(8):416-9.
- 36 Centers for Medicare & Medicaid Services. Present on Admission Indicator Reporting. Available at: www.cms.hhs.gov/HospitalAcqCond/Downloads/poa_fact_sheet.pdf. Accessed April 7, 2008.