# Wound Care ADVISOR

PRACTICAL ISSUES IN WOUND, SKIN, AND OSTOMY MANAGEMENT

Official journal of National Alliance of Wound Care and Ostomy®

## No more skin tears

## Buzz Report: Latest trends

## How to apply silver nitrate

## Nutritional considerations in patients with pressure ulcers

## Comprehensive turning programs can avoid a pain in the back

March/April 2016 • Volume 5 • Number 2
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1. Ochs RF, Horn SD, et al. Comparison of Air-Fluidized Therapy with Other Support Surfaces Used to Treat Pressure Ulcers in Nursing Home Residents. Ostomy Wound Management, 2005, 51(2):38-68.


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*Wound Care Advisor* is written by skin and wound care experts and presented in a reader-friendly electronic format. Clinical content is peer reviewed.

The publication attempts to select authors who are knowledgeable in their fields; however, it does not warrant the expertise of any author, nor is it responsible for any statements made by any author. Certain statements about the use, dosage, efficacy, and characteristic of some drugs mentioned here reflect the opinions or investigational experience of the author. Any procedures, medications, or other courses of diagnosis or treatment discussed or suggested by authors should not be used by clinicians without evaluations of their patients' conditions and possible contraindications or danger in use, review of any applicable manufacturer's prescribing information, and comparison with the recommendations of other authorities.


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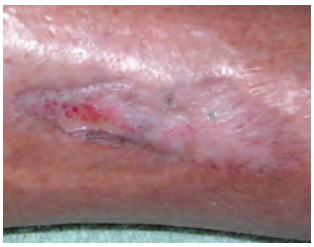

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## DEPARTMENTS




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# Dr. Smith's® Zinc Oxide Adult Barrier Spray

# improved quality of care in nursing home usage trial.


For External Use Only

**Nursing Home Usage Study*:** After a 30-day nursing home usage study, caregivers indicated that Dr. Smith's® Adult Barrier Spray improved the quality of care in their facility, and the vast majority preferred Dr. Smith's method of application over their previous barrier cream or ointment.

## Study Finding Highlights:

- 80% prefer a new method of application to standard protocol of ointment/creams
- 82% said Dr. Smith's Adult Barrier Spray has improved the quality of care in their facility
- 88% would recommend Dr. Smith's Adult Barrier Spray
- There were no instances of UTI or other infection during the course of the study
- Comments received included that it was "easy to use," "more convenient," "saved time," and "provided a no-mess alternative."

## Incorporating Dr. Smith's Adult Barrier Spray into your protocol can:

- ✓ Provide a more efficient way to treat and prevent Incontinence Associated Dermatitis (IAD)
- ✓ Offer nursing staff a touch-free alternative that saves them time and is easy to clean up with brief changes
- ✓ Help eliminate risk of cross contamination
- ✓ Help eliminate product waste and save money

***Conduct your own usage trial with Dr. Smith's Adult Barrier Spray to improve quality of care in your facility.***

To request samples, order product, or obtain a copy of the complete trial study, contact us at:

**AdultBarrierSpray.com**

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* This study and its data were provided by a third party. Data on file.

# From the EDITOR

## Caution: Checklists may lead to inaccurate documentation

Using a checklist form to document wound care can make the task easier and faster—and help ensure that you've captured all pertinent data needed for assessment, reimbursement, and legal support. But the form itself may not be comprehensive; some important fields may be missing.

Recently, we at *Wound Care Advisor* received a question from a clinician who was having trouble deciding how to code a patient's wound in her hospital's electronic health record (EHR). Her patient's specific wound and tissue types weren't available options in the dropdown menu on the software system. Luckily, on investigating, we discovered her system provided the option to override the checklist and add comments in a notes section.

Perhaps you've been in a similar position. If so, did you ask for help? Did you find out about an override option? Or did you just choose from the only options offered?

Whether it's done with pen and paper, a computer mouse, a checklist, or a narrative form, documentation in the medical record is considered a legal document. Choosing an option that isn't clinically accurate because it's the only option you think is available doesn't protect you from legal issues or even healthcare fraud.

Think of the problems that could arise from this. Suppose, for instance, you classify a dermal lesion as a pressure ulcer; the computer software recognizes the pressure ulcer code and bills Medicare for pressure ulcer reimbursement. Hospitals are reimbursed at a higher rate for pressure ulcers than for dermal lesions, so your documentation could constitute Medicare fraud.

Here's another scenario: You code a wound as a skin tear in the EHR, but the skin tear actually is a pressure ulcer. Subsequently, the patient develops a wound infection and dies. Your facility is sued for wrongful death and you lose your professional license due to inaccurate documentation.

### Checklist tips

To make your wound care checklist and EHR documentation the best it can be, follow these tips:

- ☑ Notify management about complications or challenges with current documentation forms.
- ☑ Ask the wound care committee to review the forms and generate a wish list to present to the information technology

*(continued on page 7)*

# *Clears the way for healthy tissue*

Collagenase SANTYL® Ointment 250 units/g is the only FDA-approved enzymatic debrider that selectively removes necrotic tissue without harming granulation tissue


Collagenase SANTYL® Ointment is indicated for debriding chronic dermal ulcers and severely burned areas.

Occasional slight transient erythema has been noted in surrounding tissue when applied outside the wound. One case of systemic hypersensitivity has been reported after 1 year of treatment with collagenase and cortisone. Use of Collagenase SANTYL® Ointment should be terminated when debridement is complete and granulation tissue is well established.

**Please see complete prescribing information on adjacent page.**

For more information, please visit **www.santyl.com.**

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# Collagenase Santyl®

Ointment 250 units/g

**Rx only**

**DESCRIPTION:** Collagenase SANTYL® Ointment is a sterile enzymatic debriding ointment which contains 250 collagenase units per gram of white petrolatum USP. The enzyme collagenase is derived from the fermentation by *Clostridium histolyticum*. It possesses the unique ability to digest collagen in necrotic tissue.

**CLINICAL PHARMACOLOGY:** Since collagen accounts for 75% of the dry weight of skin tissue, the ability of collagenase to digest collagen in the physiological pH and temperature range makes it particularly effective in the removal of detritus.[1] Collagenase thus contributes towards the formation of granulation tissue and subsequent epithelization of dermal ulcers and severely burned areas. [2, 3, 4, 5, 6] Collagen in healthy tissue or in newly formed granulation tissue is not attacked. [2, 3, 4, 5, 6, 7, 8] There is no information available on collagenase absorption through skin or its concentration in body fluids associated with therapeutic and/or toxic effects, degree of binding to plasma proteins, degree of uptake by a particular organ or in the fetus, and passage across the blood brain barrier.

**INDICATIONS AND USAGE:** Collagenase SANTYL® Ointment is indicated for debriding chronic dermal ulcers [2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18] and severely burned areas. [3, 4, 5, 7, 16, 19, 20, 21]

**CONTRAINDICATIONS:** Collagenase SANTYL® Ointment is contraindicated in patients who have shown local or systemic hypersensitivity to collagenase.

**PRECAUTIONS:** The optimal pH range of collagenase is 6 to 8. Higher or lower pH conditions will decrease the enzyme's activity and appropriate precautions should be taken. The enzymatic activity is also adversely affected by certain detergents, and heavy metal ions such as mercury and silver which are used in some antiseptics. When it is suspected such materials have been used, the site should be carefully cleansed by repeated washings with normal saline before Collagenase SANTYL® Ointment is applied. Soaks containing metal ions or acidic solutions should be avoided because of the metal ion and low pH. Cleansing materials such as Dakin's solution and normal saline are compatible with Collagenase SANTYL® Ointment.

Debilitated patients should be closely monitored for systemic bacterial infections because of the theoretical possibility that debriding enzymes may increase the risk of bacteremia.

A slight transient erythema has been noted occasionally in the surrounding tissue, particularly when Collagenase SANTYL® Ointment was not confined to the wound. Therefore, the ointment should be applied carefully within the area of the wound. Safety and effectiveness in pediatric patients have not been established.

**ADVERSE REACTIONS:** No allergic sensitivity or toxic reactions have been noted in clinical use when used as directed. However, one case of systemic manifestations of hypersensitivity to collagenase in a patient treated for more than one year with a combination of collagenase and cortisone has been reported.

**OVERDOSAGE:** No systemic or local reaction attributed to overdose has been observed in clinical investigations and clinical use. If deemed necessary the enzyme may be inactivated by washing the area with povidone iodine.

**DOSAGE AND ADMINISTRATION:** Collagenase SANTYL® Ointment should be applied once daily (or more frequently if the dressing becomes soiled, as from incontinence). When clinically indicated, crosshatching thick eschar with a #10 blade allows Collagenase SANTYL® Ointment more surface contact with necrotic debris. It is also desirable to remove, with forceps and scissors, as much loosened detritus as can be done readily. Use Collagenase SANTYL® Ointment in the following manner:

1 – Prior to application the wound should be cleansed of debris and digested material by gently rubbing with a gauze pad saturated with normal saline solution, or with the desired cleansing agent compatible with Collagenase SANTYL® Ointment (See **PRECAUTIONS**), followed by a normal saline solution rinse.

2 – Whenever infection is present, it is desirable to use an appropriate topical antibiotic powder. The antibiotic should be applied to the wound prior to the application of Collagenase SANTYL® Ointment. Should the infection not respond, therapy with Collagenase SANTYL® Ointment should be discontinued until remission of the infection.

3 – Collagenase SANTYL® Ointment may be applied directly to the wound or to a sterile gauze pad which is then applied to the wound and properly secured.

4 – Use of Collagenase SANTYL® Ointment should be terminated when debridement of necrotic tissue is complete and granulation tissue is well established.

**HOW SUPPLIED:** Collagenase SANTYL® Ointment contains 250 units of collagenase enzyme per gram of white petrolatum USP.

Do not store above 25°C (77°F). Sterility guaranteed until tube is opened.

Collagenase SANTYL® Ointment is available in 15 gram, 30 gram, and 90 gram tubes.

**REFERENCES: 1.** Mandl, I., Adv Enzymol. 23:163, 1961. **2.** Boxer, A.M., Gottesman, N., Bernstein, H., & Mandl, I., Geriatrics. 24:75, 1969. **3.** Mazurek, I., Med. Welt. 22:150, 1971. **4.** Zimmermann, WE., in "Collagenase," Mandl, I., ed., Gordon & Breach, Science Publishers, New York, 1971, p. 131, p. 185. **5.** Vetra, H., & Whittaker, D., Geriatrics. 30:53, 1975. **6.** Rao, D.B., Sane, P.G., & Georgiev, E.L., J. Am. Geriatrics Soc. 23:22, 1975. **7.** Vrabec, R., Moserova, J., Konickova, Z., Behounkova, E., & Blaha, J., J. Hyg. Epidemiol. Microbiol. Immunol. 18:496, 1974. **8.** Lippmann, H.I., Arch. Phys. Med. Rehabil. 54:588, 1973. **9.** German, F. M., in "Collagenase," Mandl, I., ed., Gordon & Breach, Science Publishers, New York, 1971, p. 165. **10.** Haimovici, H. & Strauch, B., in "Collagenase," Mandl, I., ed., Gordon & Breach, Science Publishers, New York, 1971, p. 177. **11.** Lee, L.K., & Ambrus, J. L., Geriatrics. 30:91, 1975. **12.** Locke, R.K., & Heifitz, N.M., J. Am. Pod. Assoc. 65:242, 1975. **13.** Varma, A.O., Bugatch, E., & German, F.M., Surg. Gynecol. Obstet. 136:281, 1973. **14.** Barrett, D., Jr., & Klibanski, A., Am. J. Nurs. 73:849, 1973. **15.** Bardfeld, L.A., J. Pod. Ed. 1:41, 1970. **16.** Blum, G., Schweiz, Rundschau Med Praxis. 62:820, 1973. Abstr. in Dermatology Digest, Feb. 1974, p. 36. **17.** Zaruba, F., Lettl, A., Brozkova, L., Skrdlantova, H., & Krs, V., J. Hyg. Epidemiol. Microbiol. Immunol. 18:499, 1974. **18.** Altman, M.I., Goldstein, L., & Horwitz, S., J. Am. Pod. Assoc. 68:11, 1978. **19.** Rehn, V.J., Med. Klin. 58:799, 1963. **20.** Krauss, H., Koslowski, L., & Zimmermann, W.E., Langenbecks Arch. Klin. Chir. 303:23, 1963. **21.** Gruenagel, H.H., Med. Klin. 58:442, 1963.

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*(continued from page 4)*

department.

- ☑ Investigate possible use of a **commercial specialty wound documentation module**[A].
- ☑ Advocate for staff training on the proper use of forms and electronic records, as well as the legal implications of wound care documentation.
- ☑ If your computer system can't be changed, work with management to find an alternative method for proper wound documentation.

In addition to commercial wound documentation modules, consider free resources. For example, you can download a **pressure ulcer documentation form**[B] from the Agency for Healthcare Research and Quality.

Having the best possible checklist or documentation form helps protect you from legal action, ensures that your facility obtains proper reimbursement and, most importantly, promotes optimal patient care.

Donna Sardina, RN, MHA, WCC, CWCMS, DWC, OMS
Editor-in-Chief
*Wound Care Advisor*
Cofounder, Wound Care Education Institute
Plainfield, Illinois

### Online Resources

A. woundsource.com/product-category/practice-management-software/emr-systems-health-care-reporting

B. ahrq.gov/sites/default/files/wysiwyg/professionals/systems/long-term-care/resources/pressure-ulcers/pressureulcerhealing/waform2.pdf

## Self-management ostomy program improves HRQOL

A five-session ostomy self-care program with a curriculum based on the Chronic Care Model can improve health-related quality of life (HRQOL), according to a study in *Psycho-Oncology*.

"**A chronic care ostomy self-management program for cancer survivors**[A]" describes results from a longitudinal pilot study of 38 people. Participants reported sustained improvements in patient activation, self-efficacy, total HRQOL, and physical and social well-being. Most patients had a history of rectal cancer (60.5%) or bladder cancer (28.9%).

## Assessment scale may help predict pressure ulcer development in patients with fecal incontinence

A study in the *International Wound Journal* has found that higher scores on the Incontinence-Associated Dermatitis and its Severity (IADS) tool are associated with an increased likelihood of developing a pressure ulcer in patients with fecal incontinence.

The authors of "**Prospective study on Incontinence-Associated Dermatitis and its Severity instrument for verifying its ability to predict the development of pressure ulcers in patients with fecal incontinence**[B]" suggest that patients with IADS scores higher than 8 points should be classified as being at risk of developing a pressure ulcer and receive "intensive care as a proactive measure" to prevent pressure ulcer development.

## Keratin-based products effective for burn treatment

Researchers report in *Burns* that compared to standard products, novel keratin-based products facilitate healing with minimal scarring in patients with superficial and partial thickness burns.

"**Keratin-based products for effective wound care management in superficial and partial thickness burns injuries**[C]" notes that the keratin products are cost-effective, associated with minimal pain and itch, and easy to use in community-based care.

## Sirolimus-eluting stents help wound healing in patients with ischemic PAD

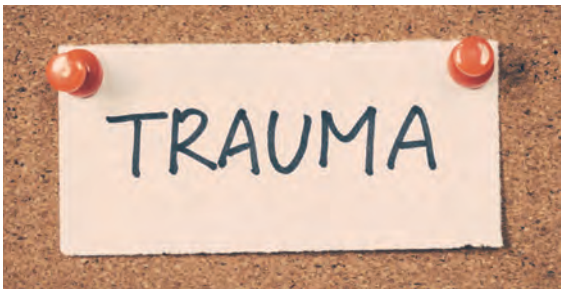
Infrapopliteal sirolimus-eluting stents (SES) accelerate wound healing in patients with ischemic peripheral arterial disease (PAD) compared with balloon angioplasty, according to a study of 200 patients in *JACC: Cardiovascular Interventions*.

"**Wound healing outcomes and health-related quality-of-life changes in the ACHILLES Trial: 1-year results from a prospective randomized controlled trial of infrapopliteal balloon angioplasty versus sirolimus-eluting stenting in patients with ischemic peripheral arterial disease**[D]" also reported a trend of more quality-of-life gains for patients receiving an SES.

## Incontinence of older persons affects QOL of their caregivers

"**Impact of incontinence on the quality of life of caregivers of older persons with incontinence: A qualitative study in four European countries**[E]" concludes that incontinence has a strong effect on the quality of life (QOL) of caregivers.

The study in *Archives of Gerontology and Geriatrics* included 50 interviews with caregivers in Italy, the Netherlands, the Slovak Republic, and Sweden. The researchers discovered that families need to learn new competencies in caring for the older person with incontinence and that incontinence remains "a taboo and a high stigmatizing condition" for caregivers. The concept that incontinence is unavoidable in older patients, along with shame and embarrassment, prevents caregivers from seeking help at an early stage.




## Trauma patients vulnerable to device-related pressure ulcers

"**Pressure ulcers in trauma patients with suspected spine injury: a prospective cohort study with emphasis on device-related pressure ulcers**[F]" reports the incidence of pressure ulcers in 254 patients with suspected spine injury as 28.3%, with 60.7% of those related to devices.

The study, published in the *International Wound Journal*, found pressure ulcers in 16 different locations on the body. The researchers conclude that the proportion of device-related pressure ulcers is "very high in trauma patients."

## Intensive therapy for patients with diabetes reduces CV complications

"**Intensive diabetes treatment and cardiovascular outcomes in Type 1 Diabetes: The DCCT/EDIC Study 30-year follow-up**[G]" reports that intensive treatment reduced the incidence of cardiovascular (CV) disease by 30% and the incidence of major CV events (nonfatal myocardial infarction, stroke, or cardiovascular death) by 32%.

Authors of the study, published in *Diabetes Care*, note that lower HbA1c levels accounted for the observed treatment effect on CV disease risk, and that increased albuminuria was also associated with CV disease risk.

### Online Resources

A. onlinelibrary.wiley.com/doi/10.1002/pon.4078/full

B. onlinelibrary.wiley.com/doi/10.1111/iwj.12549/full

C. burnsjournal.com/article/S0305-4179%2815%2900334-4/abstract

D. interventions.onlinejacc.org/article.aspx?articleID=2480656

E. aggjournal.com/article/S0167-4943%2815%2930077-7/abstract

F. onlinelibrary.wiley.com/doi/10.1111/iwj.12568/abstract?userIsAuthenticated=false&deniedAccessCustomisedMessage=

G. care.diabetesjournals.org/content/early/2016/01/29/dc15-1990.abstract

# Buzz Report: Latest trends, Part 2

By Donna Sardina, RN, MHA, WCC, CWCMS, DWC, OMS

A wound care clinician's best friend

Keeping clinicians up-to-date on clinical knowledge is one of the main goals of the Wild on Wounds (WOW) conference held each September in Las Vegas. Every year, I present the opening session, called "The Buzz Report," which focuses on the latest-breaking wound care news—what's new, what's now, and what's coming up. I discuss new products, practice guidelines, resources, and tools from the last 12 months in skin, wound, and ostomy management.

In the January issue, I discussed some of the updates from my 2015 Buzz Report. Now I'd like to share a few more, along with some of my favorite resources.

## Product buzz

Wound dressings with silicone are designed to reduce pain and trauma during dressing changes and to protect the wound. Coloplast's new **Biatain® Silicone Lite**[A] does just that, combining an absorbent polyurethane foam dressing with a semipermeable, water- and bacteria-proof top film and a soft silicone wound-contact layer. The thin foam provides a closer fit at skin level, resulting in increased mobility and product comfort.

**Anasept® Antimicrobial Wound Irrigation Solution**[C] provides a new dimension in antimicrobial wound care and negative-pressure wound therapy (NPWT). This FDA-cleared solution is a clear isotonic liquid that delivers 0.057% broad-spectrum antimicrobial sodium hypochlorite via a NPWT device. **Kill studies**[D] for Anasept® are fascinating: a 30-second kill time for infections with *Clostridium difficile*, methicillin-resistant *Staphylococcus aureus*, vancomycin-resistant enterococci, *Pseudomonas*, and many more. Anasept comes with an easy-to-use spikable container with an integrated hanger that can be quickly attached to an I.V. pole or NPWT device. It can be used with most NPWT systems that have instillation or infusion capability.

**Cutimed® Sorbact® Hydroactive B**[F] from BSN Medical provides infection control and fluid management for up to 4 days in a single wound dressing. It helps fight and prevent infection without chemical agents or antibiotics. The bacteria-binding, ab-

**View: Biatain® Silicone Lite**[B]

**View: Cutimed® Sorbact® Hydroactive B**[E]

sorbent gel dressing with an adhesive border absorbs and locks wound exudate and bacteria in a hydropolymer gel core; with each dressing change, bound bacteria are removed. The hydrogel matrix helps maintain a moist wound environment.

No scissors? No problem! Hy-Tape International, maker of the Original Pink Tape®, has come to the rescue with **Hy-Tape® Pre-cut Strips and Patches**[G]. These latex free, waterproof, zinc–oxide-based adhesive tape products are perfect for extended wear, soothing to delicate skin, and adherent to wet, oily, or hairy skin. The single-use strips measure 1.25" x 6" and come in packs of four. They can quickly be used to secure devices or to "picture-frame" wounds or ostomy barriers. The patches are designed to cover a large area. Available in 4" and 5" squares, they're perfect for making hydrocolloid dressings completely occlusive.

The American Diabetes Association's report "**Comprehensive Foot Examination and Risk Assessment**[H]" states that all individuals with diabetes should get an annual foot exam to assess peripheral neuropathy and protective sensation, including a test for vibration perception. Typically, the clinician uses a tuning fork to test for vibration sensation, but this can be difficult for those unfamiliar with the feel; also, the results are totally subjective. The new portable, handheld noninvasive **Dynamic Neuroscreening Device**[I] (DND) from Prosenex provides objective and consistent quantitative testing for vibration sensation. It offers five grades of vibration and temperature discrimination to screen for large- and small-fiber neuropathy. FDA approved and made in the United States, DND was named the 2014 New Hampshire High Tech Product of the Year.

**View: Prosenex**[J]

**Zinc oxide ointment**[K] is a "go-to" product for incontinence-associated dermatitis. But its consistency makes it difficult and messy to spread evenly over the skin. Mission Pharmacal Co. has created a new solution for this—**Dr. Smith's Adult Barrier Spray**[L]. This 10% zinc oxide solution comes as an easy, touch-free, spray application, offering accurate, uniform coverage with no rubbing necessary.

Incidence data reveal that the heel is the most common site of facility-acquired pressure ulcers. Once a heel pressure ulcer develops, complete elimination of heel pressure using a pressure-relief device is critical. The new **TruVue™ Heel Protector** from EHOB positions a pillow under the Achilles tendon to elevate the heel. Constructed with an anti-shear pad that serves as a barrier to shearing forces, the device has a deep, V-cut heel well that fully offloads the heel without product interaction and relieves product-to-heel engagement with foot flexion.

**View: TruVue™ Heel Protector**[M]

## Resource buzz

Accessing the Internet for information using smartphones and tablets has quickly become a huge part of health care. Two major wound care companies have released mobile applications to help healthcare professionals and consumers use and order their products. Several new wound-care books were published in 2015 as well. (See *What's the buzz on books?*)

The **iOn Healing™**[N] mobile app from Acelity offers a suite of tools to improve customer support. In addition to product guides, features include the ability to connect and consult directly with an Acelity representative, track outcomes to support

documentation of medical necessity, and order V.A.C.® Therapy and instantly transmit the signed prescription to Acelity. The HIPAA-compliant app offers high-security data protection. Designed for use by licensed clinicians in the United States, it's free to download and available for iOS and Android.

The **Johnson & Johnson Wound Care Resource™**[O] app helps identify new wounds, provides recommendations on wound care treatment, and keeps track of the daily checklists that come with continued treatment. It's available free for iOS at iTunes and for Android at GooglePlay.

A dream come true for wound care clinicians—an app that measures wounds! With the **Mobile Wound Care app from Tissue Analytics**[P], you can take a wound photo with a smartphone camera and stream it directly to your desktop, where you can measure, track, and manage your patients' wounds on a secure web portal. It's available for iOS at iTunes and for Android at Google Play.

The **Agency for Healthcare Research & Quality** (AHRQ) produces evidence that can be used to make health care safer, better, more accessible, more equitable, and more affordable. AHRQ websites offer a wealth of useful information for clinicians. A few of my favorites are the **Patient Safety Channel**[Q] on YouTube, Innovations Exchange, **Safety Program for Nursing Homes: On-Time Pressure Ulcer Prevention**[R], and **Service Delivery Innovation Profile**[S], such as this one, which details various healthcare projects around the country. ■

## What's the buzz on books?

Check out these new releases in wound and ostomy reference books and textbooks:

- *Text and Atlas of Wound Diagnosis and Treatment*, by Rose Hamm PT, DPT, CWS, FACCWS. (published in 2015 by McGraw-Hill Medical)
- *Wound Care at a Glance*, by Ian Peate and Wyn Glencross (published in 2015 by Wiley-Blackwell)
- *Wound, Ostomy and Continence Nurses Society® Core Curriculum: Ostomy Management* (published in 2015 by Lippincott Williams & Wilkins)

### Online Resources

A. coloplast.us/biatain-silicone-lite-new-en-us.aspx

B. vimeo.com/89699735

C. anacapa-tech.net

D. anacapa-tech.net/live/wp-content/uploads/2014/09/Anasept-Negative-pressure-brochure3.pdf

E. youtube.com/watch?v=kmzKhIiWunE

F. bsnmedical.com/products/wound-care-vascular/category-product-search/advanced-wound-care/wound-bed-preparation/cutimedr-sorbactr-hydroactive-b.html

G. hytape.com

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I. www.prosenex.com

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S. innovations.ahrq.gov/profiles/collaborative-health-education-and-access-events-offer-no-cost-screenings-and-navigation

Donna Sardina is editor-in-chief of *Wound Care Advisor* and cofounder of the Wound Care Education Institute in Plainfield, Illinois.

# No more skin tears

## Learn how to prevent, assess, and treat these common injuries.

By Gail R. Hebert, MS, RN CWCN, DWC, WCC, OMS

Imagine watching your skin tear, bleed, and turn purple. Imagine, too, the pain and disfigurement you'd feel.

What if you had to live through this experience repeatedly? That's what many elderly people go through, suffering with skin tears through no fault of their own. Some go on to develop complications.

A skin tear is a traumatic wound caused by shear, friction, or blunt-force trauma that results in a partial- or full-thickness injury. Skin tears are painful because the precipitating injury commonly involves the dermis, which is rich with nerve endings.

Skin tears that lead to complications can exact a toll not just on patients but also on healthcare facilities, whose reputations may suffer if the public believes staff are delivering a poor quality of care. A reported 1.5 million skin tears occur in institutionalized adults each year. And that doesn't include tears that occur at home. The problem isn't going away any time soon.

So what makes skin tears such a frequent occurrence? Who's at greatest risk? How can we better prevent and treat them?

### Pathophysiology

With age, our skin undergoes specific, well-documented changes. The epidermis and dermis are joined together by a wave-like basement membrane that prevents sliding. In aging skin, this junction flattens, allowing the skin to slip back and forth. This decreases the surface area between the layers, in turn reducing nutrient transfer and resistance to shearing forces.

Aging also slows epidermal turnover, wound repair, and collagen deposition; impairs vascularity; and causes thinning of the dermal and subcutaneous layers. These changes work in tandem to make the skin much more susceptible to the shearing and friction forces that result in skin tears.

### Causes

Common causes of skin tears include:

- applying or removing stockings, particularly over tibial areas and ankles
- removing tape or dressings too often, which can strip the epidermis
- improper patient handling
- handling by caregivers who are wearing jewelry or have long fingernails
- blunt-force trauma, as from a patient fall or wheelchair injury.

In some cases, the cause of a skin tear can't be identified—for example, in patients with cognitive impairment who can't communicate what happened to cause the injury.

## Risk factors

Patients who depend on caregiver assistance for activities of daily living are at risk for skin tears. Assistance with bathing, dressing, positioning, and transferring involves significant caregiver handling. Research from across many settings shows that roughly 70% to 80% of skin tears occur on the hands and arms, and most happen during peak activity hours (from 6 to 11 AM and from 3 to 9 PM).

Very young patients with immature skin also are at risk. The dermis doesn't develop fully until after birth; even at full-term, it has reached only 60% of its adult thickness. In neonates, skin tears commonly are linked to device trauma or adhesive use. In many cases, they occur on the head, face, and extremities.

Additional at-risk groups include critically ill patients with multiple risk factors and older adults who ambulate independently, especially those with an unsteady gait. Among these older adults, skin tears are common on the lower extremities. (See *Additional risk factors for skin tears*.)

### Additional risk factors for skin tears

Patients with the following conditions may be at higher risk for skin tears:

- compromised nutritional status
- sensory and cognitive deficits
- visible changes to the skin
- agitated behavior
- incontinence
- cardiac, pulmonary, and vascular disorders
- use of four or more prescribed medications.

### Risk assessment tool

You can use a risk assessment tool to help identify patients at risk and guide implementation of a prevention protocol. Called the Skin Integrity Risk Assessment Tool by White, Karam, and Colwell, it's the only tool designed specifically to assess skin integrity risk. Although the instrument is somewhat dated and not used widely in clinical settings, clinicians who've adopted it report it helps reduce skin-tear incidence through early identification and immediate targeted prevention. (**Click here**[A] for more information.)

## Assessment

The Payne-Martin Classification system provides a common language for assessing and classifying skin tears, promoting better communication among clinicians and helping to guide treatment. Developed in 1990 and updated in 1993, it has three primary classifications based on degree of severity. Besides helping clinicians differentiate full-thickness from partial-thickness tears, it addresses the skin flap (if present). For images of skin tears classified by the Payne-Martin system, **click here**[B].

In addition to identifying the skin-tear classification, also check for and document the following:

- anatomic location and duration of the tear
- dimensions of the tear (length, width, and depth)
- wound bed characteristics and percentage of viable vs. nonviable tissue
- exudate type and amount
- presence of bleeding or hematoma
- periwound skin color and condition; note edema, maceration, and induration
- wound-edge approximation and condition (open vs. closed)
- degree of flap necrosis
- integrity of surrounding skin
- signs and symptoms of infection
- associated pain.

## Prevention

Preventing skin tears requires a multifaceted approach, described below. Although not all skin tears are preventable, take all necessary steps to minimize risk. Remember—skin tears are a negative patient outcome. If your healthcare facility has a high

skin-tear incidence, some people may suspect the facility is not doing everything it can to decrease tears or that its caregivers are too rough when providing direct patient care.

**Provide an optimal environment**

To minimize skin tears, start by providing a safe environment. Remove scatter rugs and unclutter walkways. Pad bedrails, wheelchairs, and sharp furniture corners. Provide support for the patient's dependent limbs and ensure adequate lighting.

Dress at-risk patients in long sleeves, long pants, and knee-high socks to protect the skin below these garments.

Keep room temperature on the cool side, as heat tends to dry the skin. Elderly patients commonly are sensitive to cold, so this isn't always realistic—but you can add moisture to the air by using a humidifier.

**Follow bathing guidelines**

Too-frequent bathing dries the skin, making it more vulnerable to tearing. The following recommendations help minimize tears.

- Decrease bathing frequency.
- Advise patients to take shorter showers with warm to tepid (not hot) water to help the skin resist tearing.
- Use pH-balanced cleaning products that contain emollients and don't require rinsing. Know that although a bar of soap is inexpensive and removes soil, it also alters the skin's physical and chemical make-up and makes it more vulnerable to tears.
- Pat the patient's skin dry instead of rubbing it.
- Moisturize the patient's skin after bathing while it's still damp. This traps moisture and keeps skin hydrated. The skin's top layer, the stratum corneum, requires at least 10% moisture to maintain its integrity.
- Encourage proper fluid intake to help patients stay hydrated.

**Handle patients gently**

Learn about the proper way to touch patients to decrease skin trauma risk. Using a practiced, deliberate, gentle touch makes all the difference.

Also, use low-friction repositioning sheets and equipment to decrease skin trauma caused by repositioning. Avoid wearing jewelry, because it can cause skin trauma, and keep your fingernails short.

**Dress patients properly**

Patient clothing plays a role in preventing skin tears. Dress at-risk patients in long sleeves, long pants, and knee-high socks to protect the skin below these garments. You can use athletic shin guards as protective devices on patients who are willing to wear them. Specialized products, such as the DermaSaver™ Arm Tube, Dermatuff® Protection Socks and Leg Protectors, and Posey® SkinSleeves™ Protectors, also help safeguard the skin. If the budget is tight, you can use tube socks to protect the patient's arms; just cut off the toe section and slip the socks on over your patient's hands.

## Management

Despite all of our efforts, skin tears do occur. How we treat them can make a big difference in our patient's pain level, how quickly tears resolve, and whether complications arise. Although we lack gold-standard or clinical practice guidelines to identify the ideal treatment regimen, many approaches can work well. Choose the one that best fits your individual patient.

Management goals include:

- stopping the bleeding
- reapproximating the edges of the skin flap to maintain integrity without stretching
- providing moisture and protection for the wound
- protecting periwound skin
- minimizing pain and discomfort
- preventing infection.

Also, if possible, try to determine the cause of the skin tear and remove it to help prevent recurrence.

Methods of treating skin tears include skin glue, skin-closure strips, and dressings. (See *Applying skin-closure strips*.)

### Skin glue

A specially formulated liquid topical bandage, skin glue creates a clear film that dries in 15 to 30 seconds. It doesn't require secondary dressings and allows for routine inspection. Examples of skin glues include Dermabond®, Surgiseal®, and Octylseal™.

### Dressings

The best standard dressing for a skin tear depends on the type of tear, amount of exudate, skin fragility, and other patient factors. In general, hydrocolloids or traditional transparent film dressings aren't recommended, as they may cause skin stripping and injure the healing tear if not removed properly.

To manage a skin-tear dressing, mark the outer dressing with an arrow to indicate the preferred direction of removal; document this to help prevent disturbing the healing wound. Ideally, this step should be included in your facility's policy and procedures to help ensure it's done every time.

When using a dressing over your patient's skin tear, remember these important points:

- Calcium alginates may help control bleeding and exudate.
- Soft silicone or silicone-impregnated dressings promote flap security and aid nontraumatic removal.
- Foam or hydrofiber dressings aid exudate management.
- Hydrogel dressings promote pain relief and a moist wound bed.
- Petroleum-based protective ointments and gauze also may be used.
- Antimicrobial dressings aid infection control.
- If the wound is infected or contaminated, observe it daily.
- Avoid tape whenever possible, because

## Applying skin-closure strips

You can use skin-closure strips to keep the wound edges approximated, which promotes healing by primary intention. Remember—the skin flap needs to stay intact with no signs of infection. (Because of fragile surrounding tissues, staples usually aren't recommended.)

To apply skin-closure strips, follow these steps:

- Clean the wound gently and remove excess blood under the skin flap.
- Gently roll the flap back into place using a moistened applicator, making sure not to stretch it.
- To apply a strip, start in the middle of the wound. Apply half of the first strip to the wound margin; press firmly in place without tension. Using your fingers or forceps, approximate the skin edges as closely as possible.
- Press the other half of the strip firmly on the other side of the wound.
- Close the rest of the wound with additional strips spaced approximately ⅛" (3 mm) apart, until the edges are completely approximated.
- If needed, apply additional strips parallel to the wound, approximately ½" in from the ends. This may reduce stress under the ends, decreasing the risk of skin-tension blisters and premature lifting of the strips.
- To allow the skin flap to "take," don't disturb it for approximately 5 days.
- Know that skin sealants (such as benzoin) aren't required or recommended.
- For added protection, you can cover skin-closure strips with a secondary dressing, such as a foam or silicone nonadherent dressing.

it may tear the skin on removal. To prevent this, use an adhesive remover.

- Alternative ways to secure the dressing include gauze netting, stockinette, cohesive bandages, TubiFast™ bandages, and other specialty products, such as TAPEless™ dressings. Be sure to follow the manufacturer's instructions for proper application to protect patients from harm stemming from circulatory compromise.

## Education is key

We need more research on skin tears to improve management. Education is the key to preventing skin tears. All caregivers should be well versed in prevention and management strategies and should teach patients about them. ■

Gail R. Hebert is a clinical instructor with the Wound Care Education Institute in Plainfield, Illinois.

Access an audio education program on skin tears.

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### Online Resources

A. goo.gl/AhnLFc

B. goo.gl/SHXG0w

C. skintears.org/Education/

Apple BITES

Dose from WCEI

WOUND CARE EDUCATION INSTITUTE®

# How to apply silver nitrate

By Nancy Morgan, RN, BSN, MBA, WOC, WCC, DWC, OMS

Each issue, *Apple Bites* brings you a tool you can apply in your daily practice. Here is how to safely apply silver nitrate.

Topical application of silver nitrate is often used in wound care to help remove and debride hypergranulation tissue or calloused rolled edges in wounds or ulcerations. It's also an effective agent to cauterize bleeding in wounds. Silver nitrate is a highly caustic material, so it must be used with caution to prevent damage to healthy tissues.

## Application method

Silver nitrate applicators are firm wooden sticks with 75% silver nitrate and 25% potassium nitrate embedded on the tip. Moistening the tip sparks a chemical reaction that burns organic matter (skin), coagulates tissue, and destroys bacteria.

## Precautions

- Silver nitrate is **very caustic** to skin and clothing. Wear protective equipment as needed.
- Excess silver nitrate can be neutralized with 0.9% or stronger saline and then washed away with water.
- Because silver nitrate is a corrosive substance, apply it only to tissue to be treated. Take care to confine the silver nitrate to the desired area by using a suitable barrier, such as petroleum jelly. Prevent any excess from oozing by covering the application area as necessary.
- Silver nitrate directly reduces fibroblast proliferation, so it is **not** recommended for prolonged or excessive use.
- Some patients report pain or burning during treatment with silver nitrate. Consider the need for medication before the procedure, including use of topical anesthetic, to reduce discomfort.

## Procedure

1. Wash your hands and put on gloves.
2. Remove the wound dressing, following dressing-removal procedure.
3. Wash your hands and put on new gloves.
4. Clean the wound with sterile normal saline solution according to wound-cleansing procedure.

Because silver nitrate is a corrosive substance, apply it only to tissue to be treated.

5. Remove your gloves, wash your hands, and put on new gloves.
6. Confine the area to be treated by encircling it with petroleum jelly or equivalent.
7. Cover the wound base tissue with moistened normal saline gauze to protect it from any spillage. It is important not to allow drips of silver nitrate to settle on any surface, as they will stain and burn.
8. Slightly moisten the caustic tip of the silver nitrate applicator stick by dipping (tip only) in distilled or deionized water.
9. To apply to tissue, rub and rotate the tip of the applicator along the tissue to be debrided. Two minutes of contact time is typically sufficient, keeping in mind that the degree of caustic action depends on the quantity of silver nitrate applied, which in turn is governed by the length of time the moistened tip is left in contact with the tissue. Do not touch any other part of the body, clothing, or furnishings with the tip. Depending on the size of the area to be debrided, more than one applicator may be needed.
10. Monitor the patient closely for response to the procedure, including pain and discomfort. STOP the procedure if the patient complains of pain.
11. Use damp saline gauze to gently clean the treated area after application. Pat dry to avoid trauma to surrounding tissue. Do not rub or apply friction to treated area.
12. Remove gloves and put on new ones.
13. Apply any other prescribed treatment to the wound base as ordered.

## Length of treatment

Frequency of application varies based on wound needs. If silver nitrate is being used for hypergranulation, apply it once daily for up to 5 days or until resolution of hypergranulation. In the case of rolled edges/epibole, treatment varies from daily to 3 times a week until the problem is resolved.

## Use with care

Silver nitrate can be an effective tool in treating wounds, but, as with many treatments, it must be used with care to obtain the best results for patients. ■

**Nancy Morgan, cofounder of the Wound Care Education Institute, combines her expertise as a Certified Wound Care Nurse with an extensive background in wound care education and program development as a nurse entrepreneur.**



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# FAQs about support surfaces

By Tony Forsberg, RN, BSBA, AMS, WCC, and Rosalyn S. Jordan, RN, BSN, MSc, CWOCN, WCC

Support surfaces are consistently recommended for the prevention and treatment of pressure ulcers. So patients can derive optimal benefits from support surfaces, clinicians must understand how to use them effectively. This article answers several questions about these useful tools.

## What is a support surface?

The National Pressure Ulcer Advisory Panel (NPUAP) defines support surfaces as "specialized devices for pressure redistribution designed for the management of tissue loads, microclimate, and/or other therapeutic functions (i.e., any mattress, integrated bed system, mattress replacement, overlay, seat cushion, or seat cushion overlay)".

Support surfaces are designed to redistribute pressure on skin, tissue, and bony prominences. The redistribution of pressure ("load") is achieved by the design of the support surface.

Examples of support surface devices for a sleeping surface include mattress replacement systems, overlays that fit on top of a standard mattress, and specialized mattresses. Examples of support surface devices for a seated surface include specialized seat or wheelchair cushions and overlays. Support surfaces may be constructed of different materials or combination of materials, such as foam products, air, gel, or liquid.


## What are some features of support surfaces?

Support surfaces fall into one of two categories:

- *Reactive support surfaces* provide redistribution by immersion and envelopment. In other words, they conform to a person's body shape, which decreases the pressure over bony prominences.
- *Active support surfaces* shift the contact over the skin and tissue against the support surface periodically or at set intervals.

Individual support surfaces may have additional features. For example, a reactive support surface with a low-air-loss feature provides not only immersion and envelopment but also changes the microclimate (the temperature and humidity of the patient) by increasing evaporation and heat transfer from the patient's skin.

A feature of some *active support surfaces* is alternating pressure, which changes load periodically: The powered active support surface changes the pressure on a specific area of the body by alternating higher and lower pressures.

## How are support surfaces best used?

The 2014 Prevention and Treatment of Pressure Ulcers: Clinical Practice Guide-

line, from NPUAP, European Pressure Ulcer Advisory Panel, and Pan Pacific Pressure Injury Alliance contains several recommendations related to the use of support surfaces. These guidelines form the basis for how to manage support surfaces.

### Choose a support surface that meets the person's needs

Factors to consider include the individual's activity, mobility, size, weight, risk for (and existing) pressure ulcers, and the need for microclimate control and sheer reduction. For example, a mattress must properly fit the bed frame. If the mattress is too narrow, the patient could become entrapped.

Match the support surface to the care setting. For example, space, ventilation, door width, and ability to use a continuous power source should be considered.

### Conduct assessments on a regular basis

Support surfaces require ongoing assessment and monitoring:

- Assess the function of the support surface when it's initiated and each time you interact with a patient, just as you would check an infusion pump. For instance, the electrical plug for a powered support surface may have been knocked out of the socket or the setting could have been changed for transfers from the bed to the chair and not changed back.
- Remember that support surfaces have a finite functional life span, meaning they do not continue providing the expected pressure redistribution for an unlimited period of time. Follow the manufacturer's guidelines regarding testing function.

#### Resources

- Download a table of **support surface terms and definitions**[A] from the National Pressure Ulcer Advisory Panel Support Surface Standards Initiative.
- Download a **quick reference guide**[B] for the 2014 Prevention and Treatment of Pressure Ulcers: Clinical Practice Guideline.

### Choose materials compatible with the support surface

Choose clothing, linens, and incontinence pads that are compatible with the support surface. For instance, specially made disposable incontinence pads will allow air movement, which maximizes the benefit of a low-air-loss mattress.

In addition, limit the number of linens and incontinence pads on support surfaces. Studies show that excess linens and incontinence pads interfere with support surface therapy. For example, Williamson and others found that multiple layers of linens and pads increased the interface pressure between the skin and the top of the mattress. In another study, Williams and others found that each additional layer of linens and/or pads on a low-air-loss support surface reduced the surface's ability to manage moisture-vapor transmission, which leads to decreased effectiveness.

### Continue to reposition the patient

The patient must be turned and repositioned, unless this is contraindicated by a medical condition. Individualized treatment plan and turning schedules should be developed based upon the patient's general condition related to skin and comfort measures. The care plan should reflect

the turning and repositioning schedule and a rationale if the schedule deviates from standard policy.

**Consider unique needs based on the support surface**

Some support surfaces present circumstances that require special patient care. For example, dehydration may occur with some bed systems that are warmer and have a more intense airflow. When using this equipment, the patient's fluid intake may need to be increased.

## How can I promote optimal use of support surfaces?

Staff education is an integral element for providing appropriate support surface therapy. Education should include all staff members who care for the individual or the equipment. Assess the staff's knowledge before developing an educational plan, so it can be tailored to their specific needs. After education, reassess to verify staff's understanding. (See *Suggested topics for a support-surfaces education program*.)

Through better understanding of support surface therapy and its appropriate use, you can help provide patients with quality, cost-effective care. ■

Tony Forsberg is senior account executive and Rosalyn S. Jordan is clinical director of postacute clinical programs and services for Joerns Health Care in Charlotte, North Carolina.

### Suggested topics for a support-surfaces education program

Here are some topics you might want to include in your education program on support surfaces:

- importance of support surface use in the prevention and treatment of pressure ulcers
- review of the organization's algorithm or decision tree for support surfaces. If no such tool exists, one should be developed.
- demonstration of each support surface
- correct assessment and reporting of support surface function
- appropriate use of linens and incontinence pads
- turning and repositioning
- daily maintenance of support surface
- documentation in the patient's health record.

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### Online Resources

A. npuap.org/wp-content/uploads/2012/03/NPUAP_S3I_TD.pdf

B. npuap.org/wp-content/uploads/2014/08/Quick-Reference-Guide-DIGITAL-NPUAP-EPUAP-PPPIA-Jan2016.pdf

# Nutritional considerations in patients with pressure ulcers

## Addressing four essential elements can help you meet these patients' nutritional needs.

By Jill Cox, PhD, RN, APN-C, CWOCN, and Sophia Zigouras, MS, RD, CNSC

Optimizing nutritional status is a key strategy both in preventing and managing pressure ulcers. In patients across all care settings, compromised nutrition—as from poor intake, undesired weight loss, and malnutrition—increases the risk of pressure ulcers. It contributes to altered immune function, impaired collagen synthesis, and decreased tensile strength. In many cases, malnutrition also contributes to wound chronicity and increases the risk for delayed and impaired wound healing. In patients with chronic wounds, such as pressure ulcers, a chronic inflammatory state can induce catabolic metabolism, malnutrition, and dehydration.

Adequate nutrition, on the other hand, promotes wound healing in patients with pressure ulcers. Wound healing occurs in three distinct but overlapping phases—inflammatory, proliferative, and remodeling. Each phase is time limited and marked by distinct physiologic events, with specific key nutrients playing a crucial role during that phase. (See *Understanding wound-healing phases.*)

Pressure-ulcer management must include a comprehensive nutritional care plan based on the latest practice guidelines. This article describes the four essential elements that help you address the nutritional needs of patients with pressure ulcers:

- performing a nutrition screening for potential nutrition deficits
- identifying malnutrition
- addressing the patient's macronutrient and fluid needs
- determining appropriate micronutrient supplementation. (See *Nutritional therapy recommendations for pressure-ulcer management.*)

### Element 1: Nutrition screening

The goal of nutrition screening is to identify patients who need a more in-depth nutritional assessment and a comprehensive nutritional plan based on identified nutritional risk factors. On admission to a healthcare facility, the patient should undergo a complete nutrition screening, including assessment of pressure ulcer risk using a tool such as the Braden Scale (**www.bradenscale.com**). In the hospital setting, the nurse generally completes this initial screening.

Several validated screening tools can be

## Understanding wound-healing phases

The three phases of wound healing—inflammatory, proliferative, and remodeling—overlap. During each phase, key physiologic events occur and specific nutrients play a vital role in healing.

| Phase, onset, and duration | Key events | Essential nutrients |
|---|---|---|
| **Inflammatory phase**<br>Starts at time of injury and lasts 4 to 6 days | • Hemostasis<br>• Release of pro-inflammatory cytokines<br>• Vasodilation<br>• Phagocytosis of bacteria by neutrophils<br>• Removal of debris and growth-factor secretion by macrophages | • Vitamins A, C, and K<br>• Iron<br>• Zinc<br>• Protein<br>• Fat<br>• Carbohydrates |
| **Proliferative phase**<br>Starts 3 or 4 days after injury and lasts 2 to 3 weeks | • Fibroblast proliferation<br>• Angiogenesis<br>• Collagen synthesis<br>• Collagen deposition and cross-linking<br>• Development of granulation tissue and extracellular matrix<br>• Epithelialization<br>• Onset of wound closure by myofibroblasts | • Vitamins A and C<br>• Iron<br>• Copper<br>• Zinc<br>• Manganese<br>• Protein<br>• Carbohydrates |
| **Maturation/remodeling phase**<br>Starts about 21 days after injury and lasts up to 2 years | • Collagen maturation and stabilization<br>• Increased tensile strength<br>• Scar-tissue formation | • Vitamins A and C<br>• Zinc<br>• Protein |

used in various settings, including the Nutrition Risk Classification, Malnutrition Universal Screening Tool, and Nutrition Risk Screening 2002. Screening parameters include malnutrition risk factors, such as:

- unintentional weight loss
- changes in appetite or food and fluid intake
- poor dental health
- chewing and swallowing difficulties
- poor self-feeding ability
- GI signs and symptoms.

If the screening determines the patient is at nutritional risk, a registered dietitian (RD) conducts a timely and complete nutrition assessment. The RD determines the patient's nutritional status and develops a comprehensive nutritional care plan in consultation with interdisciplinary team members, including the physician or a midlevel practitioner, a registered nurse, and when appropriate, a speech pathologist, occupational therapist, or dentist. The RD also provides the expertise to ensure that the plan of care is based on standard nutritional guidelines from the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) and the Academy of Nutrition and Dietetics. This plan must be individualized to reflect the patient's comorbidities and malnutrition level. Then the RD implements the plan to address nutritional deficits and monitors macro- and micronu-

## Nutritional therapy recommendations for pressure-ulcer management

This table shows therapeutic nutrition recommendations for each pressure-ulcer stage.

| Recommended nutritional therapy and goal | Stage1: Nonblanchable erythema of intact skin | Stage 2: Partial-thickness loss of dermis | Stage 3: Full-thickness tissue loss; subcutaneous fat may be visible | Stage 4: Full-thickness tissue loss with exposed muscle, bone, or tendon |
|---|---|---|---|---|
| **Total calories**<br>To optimize anabolism, collagen formation, nitrogen retention, and angiogenesis | ≥ 25 cal/kg | 28-30 cal/kg | 30 cal/kg | 33-35 cal/kg. Maximum: 40 cal/kg |
| **Protein**<br>To promote cell growth and structure, fibroblast proliferation, collagen production, and angiogenesis | 1-1.2 g/kg | 1.25-1.4 g/kg | 1.5 g/kg | 1.5-2.0 g/kg. Maximum: 2.2 g/kg |
| **Fluid**<br>To maintain skin turgor, tissue perfusion and oxygenation, and nutrient transport | ≥ 30 mL/kg with ≥ 1 mL/cal consumed. Adjust to fluid losses. | | 30-40 mL/kg with 1-1.5 mL/cal consumed. Adjust to fluid losses. | |
| **Multivitamins with minerals**<br>To provide many nutrients involved in collagen production, tissue regeneration, and prothrombin synthesis | Multivitamin/mineral supplement once daily for patients with inadequate oral or enteral intake | | Add multivitamin/mineral supplement once daily. Maximum dose: twice daily. | |
| **Vitamin C**<br>To aid collagen formation, angiogenesis, and fibroblast formation and promote neutrophil activity | 100-200 mg/day | | 1,000-2,000 mg/day in divided doses for patients who are stressed or at risk for deficiency; reassess in 10-14 days. Maximum dose: 2,000 mg/day. | |
| **Zinc**<br>To promote cell replication and growth and serve as a cofactor for synthesis of collagen and other wound proteins | 15 mg elemental zinc/day; give up to 220 mg zinc sulfate daily for 10-14 days for suspected deficiency. | | 25-40 mg elemental zinc per day; give up to 220 mg zinc sulfate up to twice daily for 10-14 days for suspected deficiency. | |
| **Vitamin A**<br>To stimulate inflammatory phase of wound healing, maintain integrity of mucosal and epithelial surfaces, increase collagen formation, and inhibit detrimental effects of diabetes and glucocorticoids | • If patient is taking concomitant glucocorticoids, supplement with 10,000-15,000 units vitamin A daily for 7 days.<br>• For patients with suspected deficiency, replete with 10,000-50,000 units daily for 10-14 days, based on degree of injury and malnutrition.<br>• Maximum dose: 25,000-50,000 units daily for 10-14 days | | | |

cal/kg = calories per kilograms of body weight; mL/cal = milliliters of fluid per calorie consumed
*Note:* Requirements can be adjusted based on clinician's judgment and patient's overall clinical condition, comorbidities, and medical history.

trient interventions until the patient's nutritional status has been optimized.

## Element 2: Malnutrition identification

Adult malnutrition (undernutrition) results from inadequate calories, protein, or other nutrients needed for tissue maintenance and repair. At least two of the following conditions indicate the patient has malnutrition:

- insufficient energy intake
- weight loss
- muscle mass loss
- subcutaneous fat loss
- localized or generalized fluid accumulation that may mask weight loss
- diminished functional status, as measured by handgrip strength.

The extent of these conditions determines if malnutrition is severe. Based on symptom duration and inflammation presence, malnutrition is classified further as acute, chronic, or social/environmental. Severe malnutrition of acute or chronic illness is associated with pressure ulcer development with increased severity, delayed healing, and chronicity. (See *Clinical features of severe malnutrition*.)

Be aware that using serum inflammatory biomarkers (such as albumin and prealbumin) to diagnose malnutrition isn't recommended. These values can be affected by inflammation, renal function, hydration status, and other factors (such as comorbidities and illness severity) and may not accurately reflect the patient's nutritional status.

## Element 3: Macronutrient requirements and hydration

Calories, protein, fat, and fluids each play a specific role in supporting wound healing.

**Macronutrients**

Patients with pressure ulcers require sufficient calorie and protein intake to support anabolism, nitrogen retention, collagen formation, and angiogenesis—all of which are fundamental for wound healing. The 2014 National Pressure Ulcer Advisory Panel/European Pressure Ulcer Advisory Panel/Pan Pacific Pressure Injury Alliance (NPUAP/EPUAP/PPPIA) Nutrition Guidelines recommend providing 30 to 35 calories/kg/day to adults who have, or are at risk for, pressure ulcers and malnutrition. The guidelines suggest adjusting energy intake based on weight change, underweight, and obesity.

Pressure-ulcer healing requires adequate protein; increased protein intake is associated with improved wound healing rates.

Dietary carbohydrates and fat are the preferred energy sources because they spare protein for collagen production and cell structure. According to dietary reference intakes, adults should get 45% to 65% of calories from carbohydrates and 20% to 35% from fat. No recommendations exist for carbohydrate intake based on pressure ulcer stage; however, hyperglycemia is linked to impaired leukocyte production, which impedes wound heal-

## Clinical features of severe malnutrition

This chart distinguishes the clinical features of severe malnutrition of acute illness from those of severe malnutrition of chronic illness.

| Clinical feature | Severe malnutrition of acute illness | Severe malnutrition of chronic illness |
|---|---|---|
| **Energy intake** | • ≤ 50% of estimated needs for ≥ 5 days | • ≤ 75% of estimated needs for ≥ 1 month |
| **Weight loss** | • 2% in 1 week<br>• 5% in 1 month<br>• > 7.5% in 3 months | • 5% in 1 month<br>• 7.5% in 3 months<br>• 10% in 6 months<br>• > 20% in 1 year |
| **Body fat wasting (orbital, triceps, over ribs)** | Moderate | Severe |
| **Muscle wasting (temples, clavicle, scapula, thigh, calf)** | Moderate | Severe |
| **Edema (generalized, ascites, or extremities)** | Moderate | Severe |
| **Grip strength** | Measurably reduced | Measurably reduced |

ing and increases susceptibility to infection. In patients with diabetes mellitus or glucocorticoid-induced hyperglycemia, the interdisciplinary team should maximize blood glucose control through medication adjustment and carbohydrate restriction as needed.

Similarly, no recommendation exists for fat intake specific to patients with pressure ulcers. A dense energy source, fat provides essential fatty acids and carries fat-soluble vitamins. Nonetheless, its role in wound healing hasn't been established.

Protein is needed for cell growth and structure, collagen production, fibroblast proliferation, and synthesis of enzymes involved in wound healing. Pressure-ulcer healing requires adequate protein; increased protein intake is associated with improved wound healing rates. NPUAP/EPUAP/PPPIA guidelines recommend providing 1.25 to 1.5 g/kg/day of protein for adults who have, or are at risk, for pressure ulcers and malnutrition. Patients with stage III/IV pressure ulcers or multiple wounds may need 1.5 to 2 g/kg/day. Those with a protein intake as high as 2 g/kg/day must be monitored for changes in renal function and hydration status.

Current guidelines for patients with pressure ulcers recommend supplements of specific amino acids, such as arginine, along with high protein supplementation in patients with stage III/IV pressure ulcers or multiple pressure ulcers whose nutritional needs can't be met with traditional high-calorie and protein supplements. According to A.S.P.E.N, recommendations for arginine and glutamine supplementation are lacking.

### Hydration

To prevent or treat pressure ulcers, patients require adequate hydration. Sufficient fluid intake maintains skin turgor and delivery of oxygen and nutrients to

both healthy and healing tissues. Current fluid intake recommendations are 30 mL/kg/day or 1 to 1.5 mL per calories consumed. The interdisciplinary team must monitor the patient's hydration status carefully because high protein intake, fluid losses from draining wounds, elevated temperature, diaphoresis, vomiting, and diarrhea may increase fluid requirements.

## Element 4: Micronutrient requirements

Micronutrients are vitamins, minerals, and trace elements that the body requires for cell metabolism in small but critical amounts. Standard multivitamin supplements with minerals are recommended for patients with pressure ulcers and inadequate oral or enteral intake. In particular, vitamins C and A and zinc play important roles in wound healing.

- Vitamin C is crucial for collagen formation, angiogenesis, and fibroblast formation; it also acts on neutrophil activity. Patients with stage I or II pressure ulcers should receive 100 to 200 mg/day in vitamin C supplementation; those with stage III or IV ulcers should receive 1,000 to 2,000 mg/day.
- Vitamin A stimulates the inflammatory phase of wound healing, maintains integrity of mucosal and epithelial surfaces, increases collagen formation, and inhibits detrimental effects of glucocorticoid therapy, diabetes, radiation, and chemotherapy. Patients with vitamin A deficiencies and pressure ulcers of any stage should receive 10,000 to 50,000 units/day for 10 days. Patients receiving glucocorticoids should receive 10,000 to 15,000 units/day for 1 week prophylactically to counter immunosuppression.
- Zinc promotes cell replication and growth and aids protein and collagen synthesis. Supplements are recommended only for patients with zinc deficiency, which commonly accompanies malnutrition, malabsorption, diarrhea, and hypermetabolic states. For patients with zinc deficiency, supplementation at the recommended dose of 220 mg zinc sulfate twice daily for 10 to 14 days can enhance wound healing.

Standard multivitamin supplements with minerals are recommended for patients with pressure ulcers and inadequate oral or enteral intake.

## Strategies to improve nutritional intake

For patients with pressure ulcers who can't achieve an adequate dietary intake, NPUAP/EPUAP/PPPIA guidelines recommend these additional strategies to improve overall nutritional status:

- Liberalize dietary restrictions if those restrictions lead to inadequate nutritional intake.
- Offer high-calorie, high-protein oral supplements between meals.
- Consider providing enteral or parenteral nutrition support to patients who can't

achieve a satisfactory oral nutritional intake.

When considering whether to implement these strategies, keep in mind the patient's comorbidities and overall care goals.

A comprehensive nutritional plan based on the latest clinical practice guidelines can improve outcomes for patients who have pressure ulcers or are at risk for developing them. All healthcare team members are responsible for optimizing nutrition for these patients. The RD is central to developing and refining a successful nutritional plan. As frontline caregivers, nurses are in a unique position to identify nutritional deficiencies, evaluate pressure-ulcer healing, and communicate assessment findings to the medical team and RD. ■

The authors work at Englewood Hospital and Medical Center, in Englewood, New Jersey. Jill Cox is an advanced practice nurse and WOC nurse; Sophia Zigouras is a clinical dietitian. Dr. Cox is also an assistant professor of nursing at Rutgers University in Newark.

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# Comprehensive turning programs can avoid a pain in the back

By Jeri Lundgren, BSN, RN, PHN, CWS, CWCN

Turning programs are essential to prevent and promote healing of pressure ulcers and to prevent the many negative effects of immobility, ranging from constipation to respiratory infections. However, turning a patient often puts a caregiver's body in an awkward position, which can lead to musculoskeletal damage, especially back injuries.

According to the U.S. Bureau of Labor Statistics, healthcare workers suffer the highest rate of musculoskeletal disorders for all occupational groups and more than seven times the average rate for all occupations. Direct caregivers are the group most likely to experience musculoskeletal injuries. During turning tasks, excessive forces are imposed on the caregiver's musculoskeletal structure due to the external load of the patient and the caregiver's form and position during the task. Fragala and Fragala found that turning patients in bed is one of the highest-risk activities that lead to low back pain.

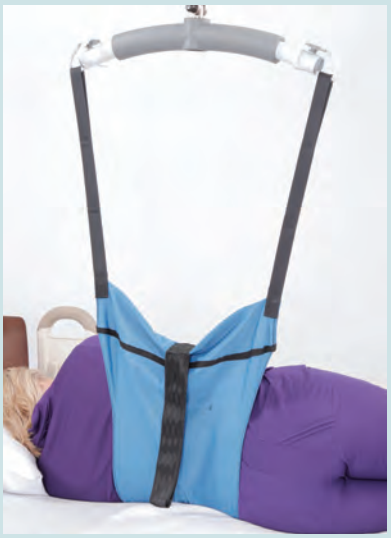
## Reducing the risk

Using safe patient handling equipment reduces the force exerted on musculoskeletal structures and lowers the risk of injury to the caregiver. Leaders should consider investing in the following safe patient handling equipment as part of the organization's comprehensive turning program:

- grab bars and/or a trapeze on the bed so the patient can participate or be-

## Lifting aids

The following tools are a useful additions to safe turning programs.



*Small repositioning sling*

*Limb lift sling*

Photos from JoernsRecoverCare. Used with permission.

come independent in turning
- friction-reducing aids to reduce the force required to turn patients
- mechanical lifts with
  - full-body turning/repositioning slings to remove the workload of the caregiver
  - a small repositioning sling and a limb lift sling to position and hold a patient in place during care or a dressing change to a wound. (See *Lifting aids*.)

Investment in this equipment can help reduce costs associated with musculoskeletal disorders in caregivers.

Caregivers should choose the right equipment for the task at hand and use the equipment appropriately. They should remove slings or friction-reducing aids when the task is complete, so they don't hinder the pressure redistribution properties of the support surface.

Making safe patient handling equipment available encourages caregivers to comply with turning protocols and leads to better outcomes for both patients and caregivers. ■

Jeri Lundgren is the president of Senior Providers Resource in Cape Coral, Florida. She can be contacted at jeri@seniorprovidersresource.com.

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**Access more information[A] about selecting equipment from the Association of Rehabilitation Nurses.**

**Online Resource**

A. rehabnurse.org/uploads/files/pdf/sphchap4.pdf

# Exercise your right to be fit!

## The medicine of movement

By Tracey Long, PhD, RN, MS, MSN, CDE, CNE, CHUC, CCRN

Nearly all clinicians know exercise is good for our physical and mental health. But incorporating it into our busy lives can be a challenge. The only types of exercise some clinicians have time for are working long shifts, juggling life's demands, balancing the books, jumping on the bandwagon, climbing the ladder of success, and skipping meals.

Clinicians are in a unique position to help patients change their behavior to improve their health. Ironically, the first behavior clinicians need to change is to work toward improving our own exercise habits.

### Jumping through hurdles

Clinicians have no problem describing the many benefits of exercise to patients, but most of us don't have a regular exercise program for ourselves. Even with strong evidence supporting the benefits of exercise, only about 25% of adults follow the recommendation to get at least 30 minutes of moderate-intensity physical activity daily; 37% admit they get no exercise at all. Our high-tech society makes it convenient to be sedentary; figuring out how to get Americans out of their seats and away from their TVs and computers poses a real challenge.

### Moving in new definitions

One barrier that can be overcome may be as simple as semantics. For many, the word *exercise* carries the stigma of sweat, pain and, when neglected, guilt. So simply replacing *exercise* with *movement* may be liberating. Movement is any bodily action produced by skeletal muscle contraction that increases energy use above the baseline level and requires tissue oxygenation. Movements with the most health-promoting and disease-preventing benefits include those that build cardiorespiratory endurance and muscle strength, toning, and flexibility.

### Get moving

According to the Department of Health and Human Services, the more physically active you are, the more health benefits you gain for life. **Physical activity guidelines**[A] established in 2008 can help physical educators, policymakers, healthcare providers, and the public understand the amounts, types, and intensity of physical activity needed to achieve health benefits across the lifespan. Combined with the **Dietary Guidelines for Americans**[B], these evidence-based documents support the physical activity objectives established for **Healthy People 2020**[C].

### Exercise guidelines and prescriptions

Exercise guidelines and prescriptions are

based on the FITT formula, which stands for:

- Frequency (how often you exercise)
- Intensity (how hard you exercise)
- Time (how long you exercise)
- Type (which exercises you do).

*Frequency* recommendations are based on multiple research studies that show cardiovascular benefits occur with 2½ hours of exercise weekly.

The *intensity* level must be customized to each individual's health, age, and limitations. The American Heart Association recommends reaching target heart rate (THR), calculated with this formula: 220 minus your age. Reaching THR helps you achieve maximum cardiovascular exercise, but you must sustain it for 20 to 30 minutes. Safety is a priority, though, and not everyone should attempt to reach 100% of THR. People taking beta blockers, for instance, may not be able to reach even 70%.

> The more physically active you are, the more health benefits you gain for life.

*Time* recommendations are 20 to 60 minutes of continuous aerobic exercise of moderate to vigorous intensity 3 to 5 days per week.

The *type* of exercise depends on individual preference and ability. Generally, aerobic exercise is best because it supplies oxygen for muscle movements. Anaerobic exercise, done while holding your breath, may create lactic acidosis and side aches. Even while doing static exercise or weight training, pay attention to breathing.

## Exercise caution

How much to exercise depends on your health status, initial fitness level, available time, activity preferences, personal goals, and available equipment and facilities. The minimum caloric expenditure for health is 150 kcal/day or 1,000 kcal/week. For the maximum health benefit, you'll need to perform 5 to 6 hours of physical activity per week and expend 2,000 kcal/week above your basal metabolic rate.

For an even higher fitness level or weight loss, you'll need to exercise in the upper end of the range by expending 300 to 400 kcal/day. But be aware that age, gender, and health status can influence the totals. Thirty minutes of moderate activity daily is equivalent to 600 to 1,200 cal/week of energy expenditure. Modify this expenditure if you have neuropathy, retinopathy, cardiac disease, or medication contraindications. People with asthma should carry emergency inhalers and bronchodilators. Sedatives and antihistamines may cause drowsiness, slow reaction time, and impair balance and coordination, creating a safety risk during exercise. Stimulants may increase the heart rate and cause unwanted side effects. Exercise is contraindicated in people with known aortic aneurysms, aortic stenosis, decompensated heart failure, pulmonary or systemic embolism, thrombophlebitis, uncontrolled metabolic disorders, and ventricular tachycardia or other dangerous arrhythmias.

## Training technologies

Although technology might be at the root of our sedentary lifestyles, we can use it to improve our movement and activity level. Nu-

merous smartphone apps can track walking, eating, sleeping, and exercise levels to promote self-awareness and progress toward goals. Finding these tools is as easy as exercising your fingers to an online search engine. (See *Exercise and fitness apps*.)

## Movement mantras

You can help drive a shift toward a more active lifestyle by spreading the word that public health officials have been preaching—but tone it down to the kinder and gentler philosophy of getting into shape simply by moving more. And by all means, set an example yourself. By becoming better examples of healthy living, clinicians can help eliminate the mantra "No pain, no gain" and replace it with this sage advice: If you don't have time for your health today, you won't have health for your time tomorrow. ■

Tracey Long is on the nursing faculty at the College of Southern Nevada in Las Vegas.

### Exercise and fitness apps

A multitude of exercise and fitness apps are available for smartphones, computers, and tablets. Here's just a small sampling.

- MyFitnessPal
- Fitness Buddy
- iFitness
- 1000 Exercises
- Daily Workout Apps
- FitnessBuilder
- GymGoal ABC
- iTreadmill
- RunKeeper Pro
- Women's Health Personal Trainer
- Women's Health Workouts LITE
- Workout Trainer

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2008 Physical Activity Guidelines for Americans. U.S. Department of Health and Human Services. October 2008. www.health.gov/paguidelines/pdf/paguide.pdf.

### Online Resources

A. health.gov/PAGuidelines/

B. health.gov/dietaryguidelines/2015/default.asp

C. healthypeople.gov/2020/topics-objectives/topic/physical-activity?topicid=33

# Clinician RESOURCES

Check out the following resources, all designed to help you in your clinical practice.


## Human trafficking resources

Victims of human trafficking often suffer tremendous physical and psychological damage. Clinicians play an important role in identifying potential victims so they can obtain help.

Here are some resources to learn more about human trafficking.

- "**Addressing human trafficking in the health care setting**[A]" is an online course that includes a downloadable quick-reference guide that can be saved and easily accessed from a mobile device to assist providers with essential information in the healthcare setting.
- The **National Human Trafficking Resource Center**[B] provides an online course for healthcare professionals on how to identify human trafficking victims. You also can access tools such as a short summary of what to look for on examination.

Experts recommend posting the phone number for the National Human Trafficking Resource Center in a prominent location: (888) 373-7888. The hotline is staffed 24 hours a day, 7 days a week, and help is available in more than 200 languages.

## Resources from NPUAP

The National Pressure Ulcer Advisory Panel (NPUAP) website includes links to resources, including:

- "**Do lift slings significantly change the efficacy of therapeutic support surfaces?**[C]"
- "**The Role of Nutrition for Pressure Ulcer Management**[D]" (from the NPUAP, European Pressure Ulcer Advisory Panel, and Pan Pacific Pressure Injury Alliance).

## Patient/caregiver education brochure


The European Pressure Ulcer Advisory Panel's website includes a **brochure**[E] for patients and caregivers that describes the "RISE" strategy for preventing pressure ulcers—Reposition, Inspect, Skin care, and Eat well.

The brochure defines pressure ulcer, describes who is at risk, and reviews the elements of the RISE strategy, providing caregiver tips for each one.

## Online course on ostomy care

"**Nursing care of the person with an ostomy**[F]," an online education course from Hollister, includes types of ostomies, pouching systems, pouching basics, ostomy accessories, problem solving, and patient education and resources.

## New guidelines for use of antiretroviral agents in HIV

The recently updated "**Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents**[G]," developed by a panel convened by the U.S. Department of Health and Human Services, are based on two large randomized clinical trials.

A **summary of key changes**[H] is available online and includes information on when to start antiviral therapy (ART):

- ART is recommended for all HIV-infected individuals, regardless of CD4 cell count, to reduce the morbidity and mortality associated with HIV infection.
- ART is also recommended for HIV-infected individuals to prevent HIV transmission.

### Online Resources

A. catholichealthinitiatives.org/human-trafficking-and-the-role-of-the-health-provider

B. traffickingresourcecenter.org/audience/service-providers

C. npuap.org/wp-content/uploads/2012/01/NPUAP-Lift-Sling-White-Paper-March-2015.pdf

D. journals.lww.com/aswcjournal/Fulltext/2015/04000/The_Role_of_Nutrition_for_Pressure_Ulcer.7.aspx

E. epuap.org/wp-content/uploads/2014/11/RISE-LEaflet-07.05.14-FInal-Version.pdf

F. hollister.com/us/ostomy/hcp/nursing/online_ce.asp

G. aidsinfo.nih.gov/contentfiles/lvguidelines/adultandadolescentgl.pdf

H. aidsinfo.nih.gov/guidelines/html/1/adult-and-adolescent-treatment-guidelines/0

## Note from Executive Director

By Cindy Broadus, RN, BSHA, LNHA, CLNC, CLNI, CHCRM, WCC, DWC, OMS

National Alliance of Wound Care and Ostomy®

It's hard to believe that it has been over 2 years since I was named executive director of NAWCO. What an experience! During these 2 years, I've had the opportunity to meet many great individuals who volunteer their time to make this organization a success. Last year, I introduced you to the Board of Directors over several issues. I wanted our readers and members to get to know the impressive group of people who collaborate with me in leading NAWCO. Board members volunteer their time and are instrumental in making decisions that positively affect what we do for our members as an organization and, ultimately, for the individuals those members care for.

Equally as impressive are the volunteer members of the NAWCO Wound Care Certified (WCC) Certification Committee. I could not tell you about the board and not mention this dedicated and intelligent group of clinicians who work to ensure that the WCC examination remains credible, current, and congruent with the requirements of accrediting boards.

In this and upcoming issues of *Wound Care Advisor*, I'll focus on the Certification Committee, including its purpose, who the members are, the importance of obtaining certification, and reasons for maintaining your certification once you have earned it.

Let me begin the series by discussing the process the Certification Committee uses to develop and maintain the WCC examination. Many of our readers are certified, or have taken examinations in the past, so you probably can imagine how much work goes into putting one together. Here's an overview of how the exam is developed.

The volunteer members of the Certification Committee, who are subject matter experts (SMEs), write the questions. The questions are designed to assess cognitive levels of knowledge, comprehension, application, and analysis related to skin and wound management. Questions are based on job task analyses conducted to ensure the content is current, job-related, and representative of the responsibilities of wound care practitioners.

The members of the Certification Committee strive to ensure that those who receive certification meet or exceed the knowledge of a minimally qualified candidate. During in-person meetings, the committee members analyze job tasks of wound care professionals, define criteria for the minimally qualified candidate who can take the exam, and accomplish other tasks. The Certification Committee also holds virtual meetings about every 4 to 6 weeks to develop and review test questions. Between meetings, committee members work on the questions they have been assigned to develop or refine. Experts from Alpine Testing Solutions, Inc., which provides NAWCO with support to ensure the exam is psychometrically sound, edit each question for grammar, potential bias, and technical adequacy.

After the questions are written, they are pilot tested. A total of 100 candidates take

the exam consisting of questions previously tested and approved, plus 10 of the new questions the committee has developed. Alpine Testing Solutions experts analyze responses to determine which of the pilot questions meet required standards. Those questions meeting the standards are maintained for future use in the final exam, and a new set of pilot questions, pulled from the ones the committee developed, is added for additional testing. Questions that don't meet the standards are returned to the Certification Committee for reevaluation and further action.

As you can see, the process is quite involved and requires many steps, each involving experts in wound care and/or test development. Now that you know a bit about the process, I'd like to begin introducing you to the members of the Certification Committee, starting with the chair.

### Jen Pettis, BS, RN, WCC, chair of the Certification Committee

Jen is a nurse researcher/associate in the U.S. Division of Abt Associates. Jen, who began her career as a nursing assistant, has more than 25 years' experience in health care, including experience as a clinical and regulatory consultant to the Division of Nursing Homes at the Centers for Medicare & Medicaid Services (CMS). She has extensive clinical, managerial, consulting, and training experience, has provided educational sessions around the country, and has written or contributed to multiple publications. Jen joined the certification committee in 2012.

When I asked Jen why she joined the Certification Committee, she said, "I wanted to get involved in the organization and saw involvement in the Certification Committee as an opportunity to continue to use my wound care expertise while learning new skills related to test development. I have really learned a great deal about developing psychometrically sound tests and the information has been very useful in my practice, including when developing educational tools for others."

Jen has played a key role in the certification process and we are pleased to have her as the Committee Chair.

I hope you'll join me for the next issue of *Wound Care Advisor* as I continue this series on certification and introduce other members of the committee.

## New certificants

Below are WCC, DWC, and OMS certificants who were certified from December 2015 to January 2016.

Victoria Ables
Theresa Acholonu
Alice Adams
Stephanie Allen
Ruth Altidor-Floreus
Leidy Alvarez-Lopez
April Antazo
Sally Arsenault
Marykutty Babu
Renee Balboa
Monette Barbian
Nadine Barkman
Veronica Barraza
Susan Bartocci
Shannon Bawden
Karen Bay
Lu Ann Beebe
Elise Belcher
Jennifer Bender
Jennifer Bishop
Belinda Blanton
Lisa Bodemer
Shelley Borbonus
Aisha Brackett
Judith Bright
Lashawn Brown
Hanna Brown
Carla Brown
Shawna Burks
Madalene Calvert
Tiffany Campbell
Lilian Cardenas
Kerri Carr
Autumn Carter
Darlene Celevante
Anitha Cherian
Courtney Claiborne
Julie Clinton
Bilinda Collins
Danielle Collord

Linda Corbitt
Alma Corona
Cathrina Cox
Cathryn Craig
Rhonda Dalton
Rebecca Davidson
Barbara Davignon
John Carlo De Chavez
Elizabeth DeFeo
Emily DeLoach
Jennifer DeTurk
Kelin Dimas
Dustin Dodge
Nana Donkor
Tammy Driscoll
Lydia Dunbar
Jennifer Dunn
Tamesha Eaton
Towanah Edwards
Annette Fearon
Evangeline Fernandez
September Foster
Caitlin Fosteson
Anita Francisco
Evamariely Garcia Solis
Melissa Gaynor
Rebekah Gerhards
Teresa Golden
Angela Gordon
Anne Graham
Jennifer Hackman
Heather Hailey
Jennifer Hamilton
Susan Hannigan
Mary Heatlie
Jennifer Hester
Jennifer Hobig
Tracy Hoffman
Sheri Honeycutt
Bobbie Honorable
Elizabeth Hope Ries
Ronald Horner
Patricia Hoyecki
Christie Hsu
Mary Hubbard
Mindy Hund
Yaritza Islas
Margaret Jablonski
Marla Jim
Paulette Johnson
Oksana Kakuriev
Amy Kelsheimer
Michelle Kennedy
Susan Kline
Cheri Klinghard
Melissa Koonce
Anna Koziol
Karen Krueger
Cynthia Krystozek
Judith Lais
Larkland Lawrence
Rebecca LeBlanc
Jessica Lesko
Krista Lickey
Christine Loggins
Brooke Lopez
Tamara Lutsyk
Ayshia Madden
Kisun Mamon
Barbara McFadden
Sherin McGovern
April Meyer
Rachelle Mitchell
Tisha Moore
Sondra Moseley
Courtney Mudrick
Elizabeth Murphy
Donna Myers
Rebecca Naughton
Liesl Neumann
Laura Nickel
Tracy Occhipinti
Treva Ockenfels
Kimberly O'leary
Aylmer Oporto
Beata Pearce
Christy Peterson
Tanya Pintado
Karen Powers
Colleen Price
Leslie Prime
Jamie Pritchard
Erica Provci
Nina Purtlebaugh
Edma Quiambao Valencia
Maybelle Ramos
Jackie Ramsey
Heather Rastello
Kenneth Restor
Heather Revaleon
Amy Rickens
Nora Rodgers
Brittan Roth
Michelle Ruffner
Jose Salvador
Suzanne Schatzer
Susan Schaub
Anne Schiavoni-Colucci
Sharon Schillings
Ketlin Schneider
Jin Schnitzler
Karin Schrunk
Wendi Scott
Mahanee Lei Sermon
Kristine Setterlund
Jodie Shimp
Frances Sibonga
Catherine Sierra
Tamela Silveira
Colleen Skoglund
Miriam Smart
Brent Smith
Carol Smith
Maria Soto
Eileen Stahlheber
Mallikarjuna Suryamoni
Suzan Tahir
Kathleen Terlecki
Beverly Terregrossa
William Terry
Mary Terry
Amber Thacker
Amber Thomas
Nikki Thornton
Linda Thuren
Rhellen Tigley
Ofonasaha Udofia
Kimberly Valente
Margaret Valente
Keiko VandeBerg
Monette Virtudazo
Amanda Wagg
Tricia Wagner
Katoria Westbrook
Rebecca Whitton
Veronica Wilhelm
Mitchelle Williams
Amanda Yale
Roldan Yumul
Shannon Zundel

## Recertified certificants

Below are WCC, DWC, and OMS certificants who were recertified from December 2015 to January 2016.

Louise Alberg
Diana Amick
Christine Amole
Karen Andrews

Vicki Andrews
Judith Anthony-Miller
Miguel Arguelles
Dawn Auger
Arlene Ayugat
Donna Bailer
Bobbi Bailey
Christina Balling
Ramon Banea
Tina Bark
Nancy Barker
Tommie Bass
Amy Beightel
Molly Berry
Wendy Bordenave
Linda Boyce
Kimberly Boyett
Charleen Brisindi
Kristian Bugaoan
Cheryl Burke
Regenia Butler
Patricia Cabala
Maureen Calnan
Sara-Scott Capps
Jessica Carter
Kathleen Casolino
Jill Cavaliere
Tracey Cearley
Ziping Cen
Leah Chandler
Mique Chappell
Cathleen Christy
Catherine Chung
MaryAnn Claypoole
Elizabeth Clupny
Winona Coaker
Amber Collins
Christopher Cormier
Teresa Cornwell
Mary Coyle
Jacqueline Cretser
Ruthann Crocetto
Robert Crocetto
Shannon Cyphers
Ashley Damiano
Shannon Dart
Kyle DeFrain
Sherry DeMoura
Nancy Dreher
Lakena Dupree
Patty Emberson
Sue Emmons
Shane England
Queen Enyogai
Maria Escuadro
Rosario Escueta
Elizabeth Espin
Marlo Franklin-Hamm
Tara Frazier
Eugene Gaertner, MD
Kathy Gallagher
Kristi Gallegos
Eleanor Ganibi
Roberta Gauthier
Kristina Gilbert
Olga Gililland
Stephanie Girard
Andrea Gorman
Marina Grigoriant
Julie Harrington
Stephanie Hazzard
Autumn Henson
Amy Herrmann
Tanya Hodge
Donna Hoffer Heisey
Beth Hoffmire Heideman
Mohamed Jalloh
Jan Johnson-Barger
Veronica Jones
D Lynn Jones
Kelly Jorgenson
Loretta Kakascik
Martina Kaucka
Antoinette Kettner
Judith Klingensmith
Debra LaBrecque
Susan Laning
Rebecca Leatham
Elizabeth Leffler
Lynn Lesperance
Jei-Ing Liu
Leonor Lopez
Stacy Lowery
Stephanie Mansfield
Annet Matovu
Candice Mayer
Melissa McGrail
Kathleen Medvedoff
Toby Mikki
Nexeli Mohrman
Jane Momoh
Sue Moore
Mark Neer
Lam-Quynh Nguyen
Jane Oliver Moody
Normita Oredina
Carolyn Parsons
Lene Pedersen
Lisa Persson
Michelle Prada
Jacqueline Proby
Cynthia Quinones
Shirin Ramsini
Amanda Ray
Michelle Reeves
Peggy Rennels
Cynthia Rice
Brenda Roberson
Carol Robinson
DeAnn Ronk
Rebecca Roorda
Vicky Ruby
Sherry Runestad
Michelle Rung
Karen Salas
Latosha Sanders
Christina Sawelsky
Laurie Schmitt
Katie Schroeder
Mary Schroth
Jeannine Sedlacik
Lori Sherlock
Colleen Shivetts
Kathleen Sholler
Rose Shufelt
Mariclaire Silverman
Farida Sitorus
Lorrie Snider
Liza Sombrito
Shellie Sonnentag
Carol Spencer
Jill Spengler
Leilani Stenberg
Cynthia Stone
Veronica Story
Beth Strecker
Cheryl Swann
Helen Tagliaferro
Patricia Tidd
Josette Tolbert
Marie Torell-Alverio
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