

Wound Care ADVISOR

PRACTICAL ISSUES IN WOUND, SKIN, AND OSTOMY MANAGEMENT

Official journal of National Alliance of Wound Care
and Ostomy



Peristomal skin issues

Understanding radiation
dermatitis

Maggot therapy

Hyperbaric oxygen therapy

Antibiotic stewardship

May/June 2016 • Volume 5 • Number 3
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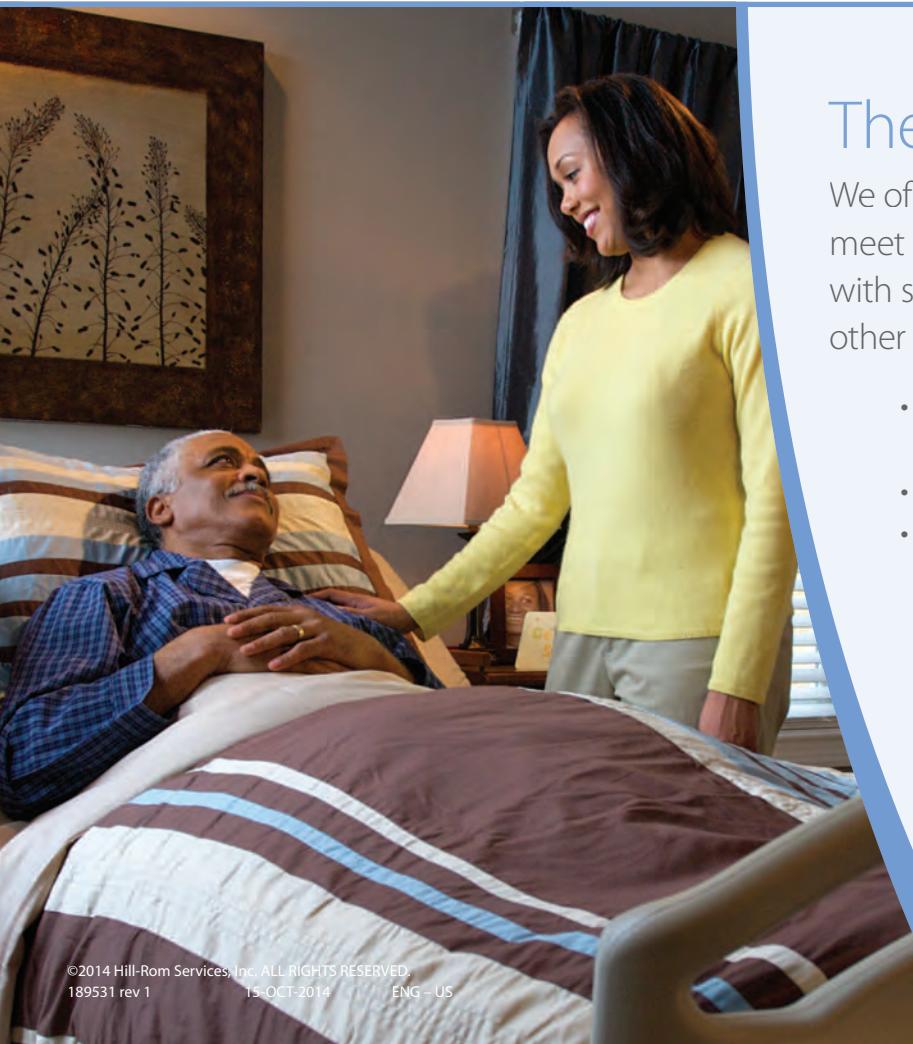


1. Ochs RF, Horn SD, et al. Comparison of Air-Fluidized Therapy with Other Support Surfaces Used to Treat Pressure Ulcers in Nursing Home Residents. *Ostomy Wound Management*, 2005, 51(2):38-68.

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HealthCom Media

259 Veterans Lane, Doylestown, PA 18901
Tel: 215/489-7000 • Fax: 215/230-6931

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Finance Director/Operations

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A pressure ulcer by any other name

Just when we think we've figured out pressure ulcer staging, it changes again. In April 2016, the National Pressure Ulcer Advisory Panel (NPUAP) held a consensus conference on staging definitions and terminology. The purpose: to analyze and discuss the rationale for the panel's changes. One of the key changes is replacing the term "pressure *ulcer*" with "pressure *injury*." So instead of calling it a pressure *ulcer* staging system, NPUAP will refer to it as a pressure *injury* staging system. The panel explained that the new terminology "more accurately describes pressure injuries to both intact and ulcerated skin."

Other changes include:

- use of Arabic rather than Roman numerals in the stage names
- modified descriptions of each individual stage (although the underlying definition of each stage remains the same.)

The revised staging guidelines, along with new schematic artwork for each stage, are available for [free download](#).

More than 400 people attended the conference. (I assume most were experienced in wound care.) I wasn't able to attend, so I reached out to several clinicians who did and found that their reactions were mixed. Here are some of their responses:

- "I was surprised the updated pressure injury guidelines were released so soon."
- "This was presented by industry experts. I preface what I am about to say with this comment because of the concern I had with the updated staging system by end of the meeting."

- "During a picture review of wounds, incorrect responses were greater than 40%. What became frightfully obvious to me was that if the experts were having trouble identifying the wounds correctly, [it would be even more difficult for nonexperts]."
- "I thought the process would serve to simplify and clarify. I'm not so sure it accomplished either."
- "Was any thought given to how the changes will affect the conflicts between clinician documentation and the various mandatory reimbursement tools used in different healthcare settings?"

Obviously, comments were all over the board, but I did note a common theme: *confusing*. Based on attendees' feedback, I urge wound care clinicians to read the new guidelines carefully and take care in implementing them. And keep in mind what Shakespeare said: "A rose by any other name would smell as sweet." So pressure ulcers, now called pressure injuries, will still require the skilled care of expert clinicians.

A handwritten signature in black ink that reads "Donna Sardina".

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

Online Resource

[A. npuap.org/national-pressure-ulcer-advisory-panel-npuap-announces-a-change-in-terminology-from-pressure-ulcer-to-pressure-injury-and-updates-the-stages-of-pressure-injury/](http://npuap.org/national-pressure-ulcer-advisory-panel-npuap-announces-a-change-in-terminology-from-pressure-ulcer-to-pressure-injury-and-updates-the-stages-of-pressure-injury/)



Moldable skin barrier effective for elderly patients with ostomy

A study in *Gastroenterology Nursing* reports that compared to a conventional skin barrier, a moldable skin barrier significantly improves self-care satisfaction scores in elderly patients who have a stoma. The moldable skin barrier also caused less irritant dermatitis and the costs for leakage-proof cream were lower.

"The application of a moldable skin barrier in the self-care of elderly ostomy patients^A"

included 104 patients ages 65 to 79 who had a colostomy because of colorectal cancer.

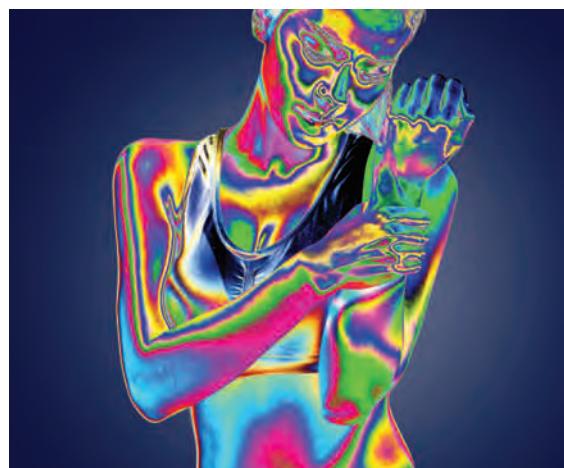


Risk factors for severe hypoglycemia in older adults with diabetes identified

"Risk factors associated with severe hypoglycemia in older adults with Type 1

diabetes^B" include glucose variability and greater lack of awareness of hypoglycemia.

Participants in the case-control, multi-center study, published in *Diabetes Care*, were age 60 or older and had a history of diabetes dating back 20 years or more.



Thermal imaging via smartphone helps detect inflammation

Early detection of inflammation in wounds promotes early treatment, and clinicians may have an additional assessment tool available to them. A recent study published in the *Journal of Wound Care* concludes the FLIR ONE, a thermography device that connects to a smartphone, can be successfully used to assess subclinical inflammation in patients with pressure ulcers and diabetic foot in clinical settings.

"Use of smartphone attached mobile thermography assessing subclinical inflammation: A pilot study^C" included 16 thermal images from eight patients and found good criterion-related validity and inter-rater reliability when the FLIR ONE results were compared to those from a hand-held device. The findings may open the door to more thermal imaging assessment at the bedside.



Role of skin substitutes in treatment of diabetic foot ulcers analyzed

“**Systematic review and meta-analysis of skin substitutes in the treatment of diabetic foot ulcers^D**,” published in *Wound Repair and Regeneration*, concludes that skin substitutes “can, in addition to standard care, increase the likelihood of achieving complete ulcer closure compared with standard care alone in the treatment of diabetic foot ulcer.”

The authors caution, however, that long-term effectiveness, including limb salvage and recurrence, is not known, and cost-effectiveness is not clear. The review included 17 randomized clinical trials, with a total of 1,655 patients.



Tap water safe alternative for wound cleaning

“Tap water is a safe alternative to sterile normal saline for wound cleansing in a

community setting,” concludes a study in the *Journal of Wound, Ostomy and Continence Nursing*.

“**Tap water versus sterile normal saline in wound swabbing: A double-blind randomized controlled trial^E**” studied 22 people with 30 wounds. Half were in the tap water group and half in the sterile normal saline group. Researchers found no differences in the proportion of wound infection and healing between the two groups.

Review of skin grafting in patients with chronic leg ulcers

Autologous split-thickness skin grafting remains the gold standard in terms of safety and efficacy for chronic leg ulcers, according to a review article in *International Wound Journal*.

“**Skin grafting for the treatment of chronic leg ulcers—a systematic review in evidence-based medicine^F**” also found that skin grafts are more successful in patients who have chronic venous leg ulcers, compared to other types. The researchers noted that skin tissue engineering is “rapidly expanding” and holds promise for better outcomes when treating patients with long-lasting chronic wounds.

C difficile may be risk factor for pouch failure after reconstruction

Patients with a history of preoperative *Clostridium difficile* colitis may be at higher risk for pouch failure after ileal pouch-anal anastomosis reconstruction following total proctocolectomy for ulcerative colitis, according to a study in *Inflammatory Bowel Disease*.

The authors of “**Clostridium difficile infection in ulcerative colitis: Can alteration of**



the gut-associated microbiome contribute to pouch failure?“ defined pouch failure as permanent ostomy diversion or pouch excision. Of 417 patients in the study, 28 (6.7%) developed pouch failure.



Color charts help improve pressure ulcer risk assessment



Lymphedema education lacking

Researchers of a study in the *Journal of Cancer Education* report that only 19.9% of 180 women with lymphedema after breast cancer surgery reported they had received education or information about the condition postoperatively.

“**The importance of awareness and education in patients with breast cancer-related lymphedema**” also reports that, “The degree and duration of lymphedema were lower in patients who had been informed or educated about lymphedema as compared to the patients who had not been informed or educated, but the difference was not statistically significant.”

“**Use of Munsell color charts to measure skin tone objectively in nursing home residents at risk for pressure ulcer development**,” published in the *Journal of Advanced Nursing*, concludes that the color charts provide a “more objective measurement of skin tone than demographic categories.”

The researchers state that use of the charts can improve pressure ulcer risk assessment when current clinical guidelines are less effective.

Online Resources

- A. journals.lww.com/gastroenterologynursing/Abstract/publish-ahead/The_Application_of_a_Moldable_Skin_BARRIER_in_the.99974.aspx
- B. care.diabetesjournals.org/content/39/4/603.abstract
- C. magonlinelibrary.com/doi/abs/10.12968/jowc.2016.25.4.177
- D. onlinelibrary.wiley.com/doi/10.1111/wrr.12434/abstract
- E. journals.lww.com/jwocnonline/Abstract/2016/03000/Tap_Water_Versus_Sterile_Normal_Saline_in_Wound.6.aspx
- F. onlinelibrary.wiley.com/doi/10.1111/iwj.12575/abstract
- G. journals.lww.com/ibdjournal/Abstract/2016/04000/Clostridium_Difficile_Infection_in_Ulcerative.15.aspx
- H. link.springer.com/article/10.1007/s13187-016-1026-1
- I. onlinelibrary.wiley.com/doi/10.1111/jan.12974/abstract?userlsAuthenticated=false&deniedAccessCustomisedMessage=

How to manage peristomal skin problems

Proper peristomal skin care and interventions for skin problems can improve patient outcomes.

By Armi S. Earlam, DNP, MPA, BSN, RN, CWOCN

For an ostomy pouching system to adhere properly, the skin around the stoma must be dry and intact. Otherwise, peristomal skin problems and skin breakdown around the stoma may occur. In fact, these problems are the most common complications of surgical stomas. They can worsen the patient's pain and discomfort, diminish quality of life, delay rehabilitation, increase use of ostomy supplies, and raise healthcare costs.

Peristomal skin problems also perpetuate a vicious cycle in ostomy patients: They impair adhesion of the pouching system, which in turn exacerbates the skin problem. That's why maintaining peristomal skin integrity and addressing skin problems promptly are so crucial.

This article focuses on three peristomal skin problems common in both inpatients and home healthcare patients—allergic contact dermatitis, irritant dermatitis, and fungal infection. It describes how to perform routine peristomal skin care; identifies the causes, clinical features, and prevention of these problems; and discusses appropriate interventions.

Types of skin barriers

Skin barriers (the wafers that adhere to the skin where the ostomy pouch attaches) come in two common types—two-piece and once-piece systems.

The barrier shown at top right is a two-piece system; the ostomy pouch attaches to the barrier. To attach the pouch, snap it on just as you'd snap on the lid of a food storage container.



Two-piece skin barrier

In the one-piece barrier pouching system shown below, the ostomy pouch and barrier are integrated as a single unit.



One-piece skin barrier with adhesive barrier on side and front

Removing the skin barrier and locating leakages

The proper way to remove the skin barrier is to gently peel it while pressing down on or supporting the skin. To locate a leak, examine the removed skin barrier by as-

sessing the part that adhered to the skin.

Cleaning around the ostomy

To clean around the ostomy, use warm water. Avoid routine use of soap or baby wipes; both may leave residue that can cause dermatitis or impede barrier adhesion. If you must use soap, avoid soap that contains oils and be sure to rinse the skin thoroughly. If the patient insists on using products other than water for cleaning, advise him or her to use skin wipes specially made for peristomal skin care.

If skin around the ostomy is hairy, shaving helps prevent folliculitis and painful skin-barrier removal. An electric shaver is preferable to a safety razor. But if your patient wants to use a safety razor, teach him or her to shave away from the stoma and use either a wet lubricant (mild soap) or a dry lubricant (for example, shaving cream or an ostomy barrier powder, which must be rinsed well after shaving). Advise the patient to rinse and dry the skin after shaving. Some patients prefer laser hair removal, although this can be expensive.

Normal peristomal skin

Ideally, skin around the ostomy should look like that in the image below, with no breakdown, redness, or lesions.



Viable budded stoma*

Allergic contact dermatitis

Allergic contact dermatitis is an immunologic response to an irritant or allergen. This condition may be hard to prevent unless the patient has a known history of allergy to the offending item. Unfortunately,

many patients don't find out about the allergy until they use the product.

On assessment, you may note papules and vesicles, along with redness, discoloration on darker skin, crusting, oozing, or dryness. (See the image below.) The patient may complain of burning or itching. The rash may match or mirror the area of contact with the allergen.



Allergic dermatitis*

To manage allergic dermatitis, follow these guidelines:

- Remove the irritant or allergen. In some cases, the patient may have to switch to a different brand of ostomy products. Skin-barrier adhesives may vary by brand. However, the patient might want to try another type of skin barrier from the same brand because it may have a different adhesive.
- Eliminate unnecessary ostomy products. Some manufacturers recommend against using skin barrier films or skin sealants, so be sure to check manufacturers' recommendations for products you could eliminate.
- If the patient's skin is denuded, consider using the crusting method, in which ostomy powder and skin prep are combined to form a crust on the affected peristomal skin. Ideally, use a no-sting skin prep instead of a regular one, which can cause pain from the chemical content. For details on the crusting method, [click here^A](#). To watch a video [click here^B](#). Caution: Use the crusting method only if the patient has a peristomal skin problem—not if the skin is intact.

Where to get help

For more help in addressing peristomal skin problems, visit the websites below. The National Alliance of Wound Care and Ostomy and the Wound, Ostomy and Continence Nurses Society can provide a list of certified clinicians in your community. The United Ostomy Associations of America offers information about local ostomy support groups and provides brochures about common ostomy surgeries. Representatives of the manufacturers listed here can answer questions you or your patients might have about their products.

Support and assistance resources

American Cancer Society

 www.cancer.org

Crohn's and Colitis Foundation of American

 www.ccfa.org

National Alliance of Wound Care and Ostomy

 www.nawccb.org

Osto Group

 www.ostogroup.org

United Ostomy Associations of America

 www.ostomy.org

Wound, Ostomy and Continence Nurses Society

 www.wocn.org

Ostomy product manufacturers

Coloplast

 www.coloplast.us

ConvaTec

 www.convatec.com

Cymed

 www.cymedostomy.com

Hollister

 www.hollister.com

Marlen

 www.marlenmfg.com

Nu-Hope Laboratories

 www.nu-hope.com

- Consider a topical or systemic steroid. But be aware that steroid creams or ointments can impede adhesion of the skin barrier.
- For help in addressing a patient's peristomal skin problem, consult a nurse who is certified in ostomy care in your community or in the agency or facility where you work.
- For severe or recalcitrant allergic con-

tact dermatitis, arrange for a dermatology consult.

- Inform the patient and caregiver that allergic dermatitis usually presents as skin irritation that mirrors the size and shape of the skin barrier or parts of it (such as the tape). If such irritation occurs, advise them to contact the ostomy nurse or product manufacturer, who may suggest they try a different brand or type of skin barrier. (For resources that can help you manage this and other problems discussed in this article, see *Where to get help*.)

Irritant dermatitis

Irritant dermatitis (sometimes called contact irritant dermatitis) refers to skin damage caused by exposure to fecal or urinary drainage or chemical preparations. In ostomy patients, it usually results from enzymatic drainage. Other common causes include exposure to soaps, solvents, and adhesives. Also, a skin barrier that's cut too large can expose a relatively large area of skin to stool or urine. To improve barrier sealing, you may need to modify the pouching system or add accessories.

As with allergic dermatitis, irritant dermatitis may cause pruritus and present as papules and vesicles, redness, dark discoloration, or crusting, oozing, or dryness, along with well-defined erythema, edema, or epidermal loss. (See the image at right.)

To manage irritant dermatitis:

- Use the correct size opening for the pouching system.



*Denuded peristomal skin**

- Modify the pouching system by using an ostomy belt or a convex skin barri-

er instead of a flat one. (See the images below.)



Ostomy belt



Convex skin barrier

- Try using a convex or flat barrier ring.
- Use the crusting method to create a dry surface for pouch adhesion.
- Use a cyanoacrylate-based product as a protective layer over the skin.
- Educate the patient and caregiver about the interventions described above.
- For persistent cases of irritant dermatitis, arrange for a dermatology consult.

Candidiasis infection

Candidiasis (a fungal infection sometimes called moniliasis or yeast rash) stems from

body perspiration, denuded skin, or a leaking pouch system. Predisposing factors include diabetes mellitus, immunosuppression, and use of oral contraceptives, steroids, or antibiotics.

Candidiasis may present as discoloration—specifically, redness or darker pigmentation. Papules, pustules, and pruritus may occur. Satellite lesions may show maceration. (See the image below.)



Candidiasis skin infection with satellite lesions*

The following actions can help prevent fungal skin infection:

- Eliminate moisture by using a properly fitting pouching system.
- Use a pouch cover or a pouch with a cloth backing.
- Dry the pouching system well after swimming, bathing, showering, or contact with water or steam.
- If the patient has an established pattern of fungal infections—for example, if he or she has a history of developing a fungal rash during antibiotic therapy—prophylactic treatment (as with oral diflucan) may be warranted.

To manage candidiasis, use the crusting method with antifungal powder and skin prep. The powder treats candidiasis and the skin prep helps seal in the powder. If more than one body part is involved, the patient may need systemic treatment. In diabetic patients, blood glucose control can help prevent this infection.

Improving patient outcomes

Besides causing pain and discomfort, peristomal skin problems also may impede pouch adherence, which can affect the patient's adjustment to living with an ostomy.

There are three common peristomal skin problems: allergic contact dermatitis, irritant dermatitis, and fungal infection.

my. In addition, constant leakage from a nonadherent skin barrier may lead to isolation and other psychological problems. Teaching ostomy patients about proper peristomal skin care and how to address peristomal skin problems can greatly improve their outcomes.

*Images of viable budded stoma, allergic dermatitis, denuded peristomal skin, and candidiasis skin infection with satellite lesions courtesy of Wound, Ostomy and Continence Nurses Society. (N.D.) WOCN Image Library. [Image database]. www.wocn.org/page/ImageLibrary

Online Resource

- A. <http://earlamperistomalskin-care.blogspot.com/2014/11/crusting-method.html>
- B. <https://www.youtube.com/watch?v=v83hWZDMpgE>

Armi S. Earlam is the lead certified wound, ostomy, and continence nurse at Lutheran Medical Center in Wheat Ridge, Colorado. She recently graduated from the Doctor of Nursing Practice program at Regis University in Denver, Colorado. Ms. Earlam wishes to acknowledge the assistance of Bonnie Sue

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Selected references

- Beitz JM, Colwell JC. Stomal and peristomal complications: prioritizing management approaches in adults. *J Wound, Ostomy Continence Nurs.* 2014;41(5):445-54.
- Beitz JM, Gerlach M, Ginsburg P, et al. Content validation of a standardized algorithm for ostomy care. *Ostomy Wound Manage.* 2010;56(10):22-38.
- Emory University. *Ostomy and Continent Diversion Module.* Atlanta, GA: Emory University; 2012.
- Meisner S, Lehur PA, Moran B, et al. Peristomal skin complications are common, expensive, and difficult to manage: a population-based cost modeling study. *PLoS One.* 2012;7(5):1-8.
- Prinz A, Colwell JC, Cross HH, et al. Discharge planning for a patient with a new ostomy: best practice for clinicians. *J Wound, Ostomy Continence Nurs.* 2015;42(1):79-82.
- Salvadarena G. Peristomal skin conditions. In: Carmel JE, Colwell JC, Goldberg MT, eds. *Wound, Ostomy and Continence Nurses Society® Core Curriculum: Ostomy Management.* Philadelphia, PA: Wolter Kluwer; 2016; 176-99.
- Wound, Ostomy and Continence Nurses. *Peristomal skin complications: Best practice for clinicians.* Mt. Laurel, New Jersey: Author; 2014.

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Case study: Maggots help heal a difficult wound

Wound improvement in one patient was strikingly dramatic.

By Sally Anne Jewell, RN, WCC, OMS

Using maggots to treat wounds dates back to 1931 in this country. Until the advent of antibiotics in the 1940s, maggots were used routinely. In the 1980s, interest in them revived due to the increasing emergence of antibiotic-resistant bacteria.

At Select Specialty Hospital Houston in Texas, we recently decided to try maggot therapy for a patient with a particularly difficult wound. In this case study, we share our experience.

About the patient

Mr. Green, age 52, had a history of diabetes, which led to bilateral below-the-knee amputations. His medical history also included coronary artery disease, peripheral arterial disease, and anemia.

Alert and oriented, he was able to give a detailed account of his recent wound. On August 12, 2015, Mr. Green cut the distal tip of his right third finger while preparing food. Having already lost his legs, he was concerned about the possible need for another amputation, so he made an appointment to see his primary care physician. The physician instructed him to keep his finger clean and dry and to observe it. Nonethe-

less, it became infected and his finger had to be amputated at the base on September 11. A week later, he was admitted to an acute-care hospital for pain, swelling, and erythema. He received I.V. antibiotics along with pulsed lavage, treatment with Arobella Medical's Qoustic Wound Therapy System™, ultrasound, and finally, negative-pressure wound therapy (NPWT).

When Mr. Green was admitted to our long-term acute care hospital, the wound bed was pale pink with the hazy, gelatinous look associated with high bioburden tissue, although no bacteriologic testing was done. (See *About biofilm*.) The wound measured 5 cm x 3.2 cm x 0.9 cm, and lacked the cobblestone appearance usually seen with recently discontinued NPWT. (See the image below.)



Wound on day 0

Maggot therapy

Based on the difficulty of healing this wound, we decided Mr. Green was a good candidate for maggot therapy, which we'd been wanting to introduce into our facility. Mr. Green and his family were concerned about his lack of healing and eager to try maggot therapy. We selected maggots contained within mesh bags because nurses were reluctant to handle free-range ones. (See *Maggot application options*.)

Applying the maggots

With Mr. Green's consent, 10 clinical staff

About biofilm

As wound care nurses, we frequently deal with the frustration of high bioburdens hampering wound-bed preparation, delaying treatments, and slowing healing. Wound biofilm sometimes can be identified by a hazy, gelatinous coating on the wound, caused by microbe presence. When wound healing has stalled and fails to respond to multiple types of dressings and interventions, biofilm is the most likely culprit. Unfortunately, the biofilm barrier blocks most antibiotics and antiseptics from reaching bacteria, particularly toward the center of the wound matrix. Although it can be removed with vigorous cleanings or multiple sharp debridement, it tends to return, causing frustration for clinician and patient alike.

Although wound biofilms resist antibiotics, antibiotics, disinfectants, and phagocytic inflammatory cells, strong clinical evidence suggests maggot therapy (less costly than enzymatic or surgical debridement) may be useful in eradicating them. In 2004, the Food and Drug Administration approved the use of maggot therapy, and in vitro studies have shown the effectiveness of maggot excretions on biofilm.

members attended the first day of maggot therapy, when the maggot-therapy containment dressing was applied to the wound. Most were surprised to learn that larvae don't have teeth in their mouths and don't bite. Instead, they score the wound surface with their mandibles and secrete an enzyme that liquefies the microbes, which they then ingest. The excess fluid is absorbed by the upper dressing.

Applying the containment dressing took 5 minutes. Then zinc oxide cream was rubbed into the periwound skin to protect it from moisture damage and the bag containing the maggots was placed where it contacted the wound bed. Wound location

made this a bit difficult, but we managed it by placing multiple pieces of fluffed saline moist gauze on top of the bag and wrapping it firmly with a sterile gauze bandage.

Changes in the wound bed

After 24 hours, the wound bed was predominately a beefy red color and the dressing was saturated. What we'd assumed was slough in the bed actually was a tendon; striae were clearly visible and the surface had a shiny cream color.



Wound 1 day after maggot therapy, with tendon visible

After 3 days of maggot therapy, the wound bed consisted entirely of moist red granulation tissue. Mr. Green experienced some pain, as would be expected with a wound proximal to nerves in the hand. We also suspected the biofilm had been coating and protecting the nerves until this time, so we chose to remove the maggots with the understanding that the biofilm should have been eradicated.



Wound 3 days after maggot therapy

Maggot application options

- Maggots can be applied by two methods.
- With *confinement*, maggots are placed directly on the wound. Clinicians can either make a dressing to wall or cage them in or can purchase a dressing made specifically for this purpose.
 - With *containment*, maggots are delivered already packaged in a net dressing. Clinicians just need to make sure the bag touches the wound bed.

One study comparing free-range with bagged maggots found better results with free-range maggots—but bagged maggots are easier for squeamish people to handle.

Additional therapy

Mr. Green then underwent NPWT for 1 week, after which antibiotic ointment, petrolatum gauze, and sterile gauze were applied daily until discharge. He was discharged November 25, 2015 with an appointment to see a plastic surgeon to evaluate him for a planned skin graft; at discharge, the wound measured 1.6 cm x 2.5 cm x < 0.1 cm. The plastic surgeon told Mr. Green he'd need no further treatment.



Wound at discharge

Broadening the treatment options

Engaging other staff members and encouraging them to attend dressing changes contributed to the success of this first use of maggot therapy in our facility. After the

first dressing change, Mr. Green's wound improvement was so dramatic that it made a vivid impact on staff. This motivated them to discuss the results with their coworkers. Soon, staff from other disciplines began to approach me with questions and ask if they could attend the next scheduled dressing change.

Mr. Green's wound improvement was so dramatic that it made a vivid impact on staff.

Thanks to the success of our experience, we introduced maggot therapy throughout the Select Specialty Hospitals' network of facilities in January 2016. Since then, we've treated at least a dozen patients.

Sally Anne Jewell is manager of wound care at Select Specialty Hospital Houston in Texas. (Mr. Green's name in the case study was fictitious.)

Selected references

Cazander G, van Veen KE, Bouwman LH, et al. The influence of maggot excretions on PA01 biofilm formation on different biomaterials. *Clin Orthop Relat Res.* 2009;467(2):536-45.

Cowan LJ, Stechmiller JK, Phillips P, et al. Chronic wounds, biofilms and use of medicinal larvae. *Ulcers.* 2013. www.hindawi.com/journals/ulcers/2013/487024/

Geary MJ, Smith A, Russell RC. Maggots down under. *Wound Pract Res.* 2009;17(1):38. awma.com.au/journal/1701_04.pdf

Steenvoorde P, Jacobi CE, Oskam J. Maggot debridement therapy: free-range or contained? An in-vivo study. *Adv Skin Wound Care.* 2005;18(8):430-5.

Hyperbaric oxygen therapy as adjunct therapy for wound care

By Debra Clair, PhD, APRN, WOCN, WCC, DWC

Why would a patient with a wound spend almost 2 hours a day, 5 days a week, in a locked chamber receiving 100% oxygen? The answer is that medical grade hyperbaric oxygen therapy (HBOT) can be a valuable adjunct therapy for selected types of wounds.

In this article, I'll focus on hospitals and clinics that follow guidelines from the Undersea & Hyperbaric Medical Society as I give you a brief overview of how HBOT works and its use in wound care.

How HBOT helps in wound healing

The air that we breathe is 21% oxygen. With HBOT, patients are placed in a sealed chamber, where they breathe



100% oxygen under pressure. The pure oxygen saturates blood cells and blood plasma, which in turn increases oxygen supply to the tissues—including the wound being treated. HBOT can reduce the time it takes for a wound to heal by:

- promoting collagen deposition, enhancing epithelial cell migration, and decreasing local tissue edema

Patient education resources for hyperbaric oxygen therapy

Patient education before hyperbaric oxygen therapy (HBOT) is key. Patients need to know not only how HBOT works, but what to expect when they are in the chamber. For example, the 100% oxygen environment means it's important to avoid any source of combustibility, which is why patients need to wear a 100% cotton gown for the treatment. Here are

a few helpful resources.

- **22 reasons why hyperbaric oxygen therapy (HBOT) will help you^b**, from Advanced Hyperbaric Recovery™
- **Hyperbaric oxygen therapy for wound healing^c**, from Johns Hopkins Medicine
- **Hyperbaric oxygen therapy fact sheet^d**, from Kent Hospital

- **What are the side effects of hyperbaric oxygen therapy?^e** from Hyperbaric Centers of Texas
- **Hyperbaric oxygen enhances wound therapy^f**, a video from OSU Wexner Medical Center
- **What is hyperbaric oxygen therapy (HBOT)?^g**, a video from Martin Health System

- killing anaerobic bacteria in tissue and bones
- preventing additional bioburden by increasing leukocyte production and activity
- enhancing angiogenesis (development of new blood vessels), which brings more blood and healing factors to the wound. Keep in mind that although angiogenesis can be beneficial for wounds with insufficient perfusion, HBOT is not an alternative to revascularization.

Not all wounds benefit from HBOT. (See *Types of wounds treated with hyperbaric oxygen therapy*.)

Length of treatment

The average treatment time is 110 minutes in the HBOT chamber: about 10 minutes for a patient to reach the appropriate pressure, 90 minutes at the pressure, and 10 minutes to return the patient to normal pressure. Times can be expedited in the case of an emergency; for example, a patient can be out of the chamber in 7 minutes if he or she experiences a serious reaction. The average length of treatment is 30 visits, normally 5 days a week for 6 weeks.

A safety director monitors the HBOT chambers and treatment area, and a supervising provider is present at all times to monitor each treatment and prevent or manage emergencies.

Possible negative effects

Overall, HBOT is a safe treatment for serious wounds, but there can be negative effects. The most common of these is barotrauma—discomfort in the ear when the pressure on the outside of the ear is

Types of wounds treated with hyperbaric oxygen therapy

The Undersea & Hyperbaric Medical Society provides an evidence-based list of indications and contraindications for hyperbaric oxygen therapy (HBOT). Medicare and most insurance companies use this list when approving or denying HBOT reimbursement. Some private insurers may approve indications not accepted by Medicare, but it's important to verify which ones.

Indications

- Gas gangrene
- Crush injury, compartment syndrome, and other acute traumatic ischemic wounds
- Acute arterial insufficiency
- Refractory osteomyelitis
- Osteoradionecrosis and soft tissue radionecrosis
- Compromised grafts and preparation and preservation of skin flaps
- Acute thermal burn injury
- Progressive necrotizing infections
- Nonhealing, infected deep ulcerations (reaching tendons or bone) of the lower extremity in adults with diabetes; ulcerations must be unresponsive to at least 1 month of meticulous wound care

Absolute contraindications

- Untreated tension pneumothorax
- Certain medications, including bleomycin, disulfiram, cisplatin, sulfamylon, doxorubicin, and amiodarone

Relative contraindications

- Upper respiratory tract infections
- Emphysema with carbon dioxide retention
- Asymptomatic pulmonary lesions seen on chest radiograph
- History of thoracic or ear surgery
- Uncontrolled hyperthermia
- Pregnancy
- Claustrophobia
- Seizure disorder

different than the pressure on the inside of the ear. This is similar to when you are flying in a plane or diving under water and your ears feel like they are plugged up.

Although quite rare, patients can develop a tension pneumothorax. Other important potential side effects include hypoglycemia and hypoglycemic seizures,

HBOT may help the patient avoid an amputation, which has been shown to reduce life expectancy for patients with diabetes.

oxygen toxicity with seizures, and vision changes that can persist for up to 6 weeks after treatment.

Some patients are claustrophobic and require sedation medicine before entering the chamber.

Timely intervention

HBOT should not be considered a last-resort wound treatment, although typically insurers require an adequate trial of other high-quality wound care interventions before granting authorization. It's important to refer potential patients early so they can get treatment as soon as possible. Early referral can make a significant difference. For example, HBOT may help the patient avoid an amputation, which

has been shown to reduce life expectancy for patients with diabetes.

A healing effect

HBOT can make a difference in wound healing and, in turn, a patient's quality of life. Keep this option in mind and refer patients with wounds who may benefit from it for further evaluation. For more information about HBOT, visit the website for the **Undersea and Hyperbaric Medical Society^A**.

Debra Clair is a wound care and hyperbaric therapy provider at University Hospitals Wound Care and Hyperbaric Center in Streetsboro, Ohio.

Selected references

- Cakmak T, Battal B, Kara K, et al. A case of tension pneumothorax during hyperbaric oxygen therapy in an earthquake survivor with crush injury complicated by ARDS (adult respiratory distress syndrome). *Undersea Hyperb Med.* 2015;42(1):9-13.
- Kaur S, Pawar M, Banerjee N, Garg R. Evaluation of the efficacy of hyperbaric oxygen therapy in the management of chronic nonhealing ulcer and role of periwound transcutaneous oximetry as a predictor of wound healing response: randomized prospective controlled trial. *J Anaesthesiol Clin Pharmacol.* 2012;28(1):70-5.
- Medicare.gov. Hyperbaric oxygen (HBO) therapy. n.d. www.medicare.gov/coverage/hyperbaric-oxygen-therapy.html
- Weaver LK, ed. *Hyperbaric Oxygen Therapy Indications*, 13th ed. Undersea and Hyperbaric Medical Society. 2014.

Online Resources

- A. [https://www.uhms.org/](http://www.uhms.org/)
- B. <http://hyperbaricoxygentherapy.com/patient-info>
- C. http://www.hopkinsmedicine.org/healthlibrary/test_procedures/neurological/hyperbaric_oxygen_therapy_for_wound_healing_135,44/
- D. <http://www.kentri.org/woundcare/hyperbaric-oxygen-therapy-facts.cfm>
- E. <http://www.hyperbariccentersoftexas.com/what-are-the-side-effects-of-hyperbaric-oxygen-therapy#KiA1CbKWYd050jk.99>
- F. <https://www.youtube.com/watch?v=HeW1m3TiNHI>
- G. <https://www.youtube.com/watch?v=mh5UveY4r-U>



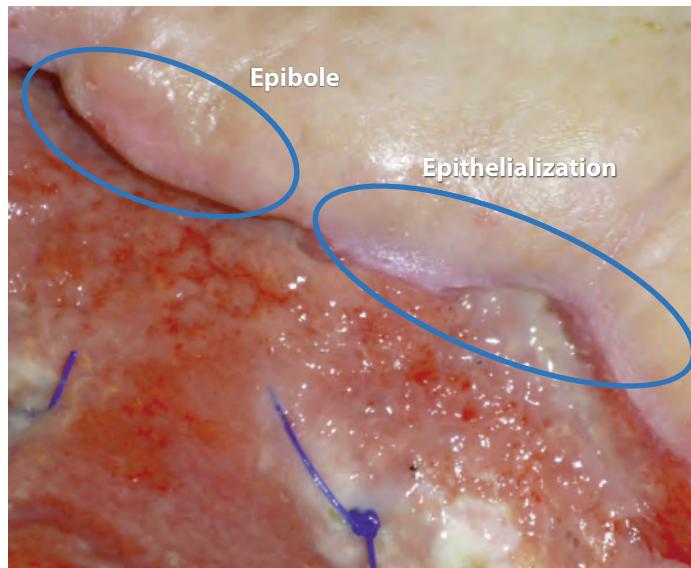
Causes, prevention, and treatment of epibole

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 prevent and treat epibole.

As full-thickness wounds heal, they begin to fill in from the bottom upward with granulation tissue. At the same time, wound edges contract and pull together, with movement of epithelial tissue toward the center of the wound (contraction). These epithelial cells, arising from either the wound margins or residual dermal epithelial appendages within the wound bed, begin to migrate in leapfrog or train fashion across the wound bed. Horizontal movement stops when cells meet (contact inhibition). The ideal wound edge is attached to and flush with the wound bed, moist and open with the epithelial rim thin, and pale pink to translucent.

In many chronic wounds, a problem with slow or absent epithelial edge advancement is caused by a clinical condition known as epibole. Epibole refers to rolled or curled-under closed wound



In an epibole, the wound edges close prematurely, which halts epithelialization, delays healing, and necessitates additional intervention.

edges that may be dry, callused, or hyperkeratotic. Epibole tends to be lighter in color than surrounding tissue, have a raised and rounded appearance, and may feel hard, rigid, and indurated.

Causes

Epibole results when the upper epidermal cells roll down over the lower epidermal cells and migrate down the sides of the wound instead of across. Edges that roll over ultimately cease migration secondary to contact inhibition once epithelial cells of the leading edge come in contact with other epithelial cells. In other words, the body thinks the wound is healed and epithelial migration across the top of the wound ceases. There are many possible

reasons why the epidermal margin fails to migrate, including hypoxia, infection, desiccation, dressing trauma, overpacking the wound bed, unhealthy wound bed, inability to produce the basement membrane that the epithelial cells adhere to, or cellular senescence.

Epibole results when the upper epidermal cells roll down over the lower epidermal cells and migrate down the sides of the wound instead of across.

Prevention

Follow these tips to help prevent epibole:

- Pack dead or empty space in the wound bed. Packing promotes healing from the bottom up and avoids abscess formation at the wound depth. Fill the depth of the wound to the surface. Do not pack tightly, as this will cause pressure and impair circulation. Wound fillers, hydrogel impregnated gauze, alginates, or fluffed plain-woven moistened gauze can be placed loosely into the space.
 - Protect periwound skin with a skin sealant, moisture barrier ointment, or barrier wafer.
- Prevent epidermal stripping by using silicone border dressings or silicone tape; consider tape-free securement strategies.
 - Protect the wound from pressure.

Treatment

Treatment for epibole involves reinjuring the edges and opening up the closed tissue, which renews the healing process. Options include conservative or surgical sharp debridement, **treatment with silver nitrate^A**, and mechanical debridement by scrubbing the wound edges with monofilament fiber dressings or gauze. ■

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.

Information in *Apple Bites* is courtesy of the **Wound Care Education Institute (WCEI)**, © 2016.

Selected references

- Black J, Baharestani M, Black S, et al. An overview of tissue types in pressure ulcers: a consensus panel recommendation. *Ostomy Wound Manage.* 2010; 56(4):28-44.
- Ermer-Seltun J, Rolstad BS. General principles of topical therapy. In Doughty D, McNichol L, eds. *WOCN® Core Curriculum: Wound Management*. Philadelphia, PA: Wolters Kluwer; 2016; 107-30.
- European Wound Management Association (EWMA). Position Document: Wound Bed Preparation in Practice. 2004; London: MEP Ltd.
- Hamm RL. Evaluation of the patient with a wound. In Hamm RL, ed. *Text and Atlas of Wound Diagnosis and Treatment*. New York, NY: McGraw Hill; 2015;3:67-95.

Online Resource

A. <http://woundcareadvisor.com/how-to-apply-silver-nitrate/>

Understanding radiation dermatitis

Most patients who get radiation experience dermatitis—yet we know little about how to prevent or treat it.

By Carole Bauer, MSN, RN, ANP-BC, OCN, CWOCN

According to the National Cancer Institute, an estimated 1.6 million new cases of cancer will have been diagnosed in the United States in 2015. During the course of their disease, most cancer patients receive radiation therapy.

Delivering high energy in the form of waves or particles, radiation therapy alters the DNA of cancer cells, causing their death. Radiation can be administered either externally or internally (through materials placed into the body). It's given in fraction doses, with the total recommended dose divided into daily amounts. Treatment, including the total dose, is determined on an individual basis.

Although improvements have been made in delivery of radiation therapy, approximately 95% of patients who receive it experience a skin reaction. What's more, radiation therapy commonly is given concurrently with chemotherapy or targeted therapy to improve survival, which increases the toxicity risk.

Physiologic effects

Radiation can injure rapidly dividing cells both directly and indirectly by damaging structures and chemicals within the cell. External beam radiation (the most common form of radiation therapy) commonly affects rapidly dividing cells of the epidermis, sebaceous glands, and hair follicles. The initial radiation dose begins



to destroy the skin's basal layer, causing the remaining cells to shed more quickly. Basal cells in the resting phase of mitosis are stimulated into proliferating more quickly and the balance of normal cell production is disrupted. An inflammatory response arises, with histamine production, capillary dilation, edema, and increased vascularity.

Patients may experience both early and late effects of radiation therapy, as well as skin pigmentation changes from melanin migration to the superficial skin layers. Hair growth within the radiation field is interrupted as hair follicles enter a resting phase, with complete hair loss occurring at doses above 55 Gy.

Doses of 30 Gy permanently damage the sweat and sebaceous glands, causing such symptoms as dry skin and pruritus. (See *Risk factors*.)

Risk factors

Various patient- and treatment-related factors influence whether a patient will develop radiation dermatitis and how severe it might be.

Patient-related factors include older age, poor nutritional status, smoking, overlapping skinfolds, poor skin integrity before radiation therapy, obesity, concurrent chemotherapy (such as with cetuximab), chronic sun exposure, genetic factors, and certain underlying comorbidities (including diabetes and renal failure).

Treatment-related factors include treatment field location; larger treatment volume, field, or total dose; larger fraction size; type of energy used (for instance, X-ray, gamma rays, electrons, protons, or neutrons); and therapy duration. Radiation to the head, neck, breast, chest wall, perineum, or vulva are more likely to cause radiation dermatitis.

Assessment

Signs and symptoms of radiation dermatitis include pain, discomfort, pruritus, burning, and general irritation. In some patients, these problems may restrict movement of an affected limb, impeding activities of daily living (ADLs) and lead to loss of independence and self-care ability. Some patients have difficulty wearing clothing on the affected area.

Clinicians can use various grading scales to define the skin reactions of radiation dermatitis. These scales include:

- National Cancer Institute (NCI) Common Toxicity Criteria for Adverse Events (CTCAE)
- Radiation Therapy Oncology Group/European Organization for Research and Treatment of Cancer toxicity criteria

- Radiation-induced Skin Reaction Assessment Scale
- Skindex-16 scale.

In the United States, the CTCAE scale is most commonly used in clinical trials. It defines acute skin reactions to radiation as those occurring within the first 90 days after therapy. The scale encompasses five grades of reactions.

- *Grade 1*: faint erythema or dry desquamation. Arising within the first 2 to 4 weeks of treatment, these reactions cause skin redness and warmth and a rashlike appearance. The patient may complain that the skin feels tight or sensitive.
- *Grade 2*: moderate to brisk erythema; patchy, moist desquamation usually confined to skinfolds or creases. Moderate edema, dryness, pruritus, and flaking of skin layers (dry desquamation) also may occur.
- *Grade 3*: moist desquamation in areas other than creases and skinfolds. Bleeding may arise from minor trauma, such as abrasion.
- *Grade 4*: life-threatening consequences, such as full-thickness skin ulcers, necrosis, and spontaneous bleeding
- *Grade 5*: death.

Prevention

Although many products have been tested, prevention of radiation dermatitis remains elusive. In 2010, Gosselin et al. tested Aquaphor®, Biafine®, RadiaCare®, and a placebo of sterile water mist. In the study ($n=208$), none of these skin care products made a statistically significant difference in minimizing the incidence of grade 2 to 4 skin reactions, compared to placebo. A recent pilot study by Fenton-Kerimian ($n=30$) also reported no statistically significant difference in the effects of calendula cream, RadiaPlex®, and mometasone plus Aquaphor®.

Wong et al. (2013) developed an inter-

Generally, topical corticosteroids can ease itching.

Recommended interventions for radiation dermatitis

The list below comes from the Oncology Nursing Society's "Putting Evidence into Practice (PEP)" resources. PEP teams include nurse scientists, advanced practice nurses, and staff nurses, who summarize and synthesize available evidence in an effort to determine which interventions are effective or ineffective in preventing or treating radiation dermatitis. The agents and approaches fall into four categories, shown below.

Recommended for practice

- Intensity-modulated radiation therapy
- Skin hygiene and care
- Use of non-aluminum containing deodorants

Likely to be effective

- Calendula
- Silver sulfadiazine

Effectiveness not established

- Allantoin emulsion

- Anionic Polar Phospholipid (APP) cream
- Aquaphor®
- ATP cream
- Bepanthen® topical cream
- Chamomile cream and almond ointment
- Corticosteroids (topical)
- Dermatitis control protocol
- Dietary supplements
- Epithelial growth factor
- Glutathione and anthocyanin (Ray Gel™)
- GM-CSF impregnated gauze
- Henna ointment
- Herbal medicine
- Honey-impregnated gauze
- Hyaluronic acid/sodium hyaluronate
- Hydrocolloid and hydrogel dressings
- Hydrophilic foam dressing
- LED light
- Lipiderm™
- MASO65D (Xclair®)
- No Sting Barrier (Cavilon™ No Sting Barrier Film)
- Oil in water emulsion
- Plant extract cream (Capilen®)
- Platelet gel
- Polymeric dressings
- Silver leaf dressings
- Sodium sucrose octasulfate (Na SOS)
- Sucralfate
- Theta cream
- Turmeric cream
- Urea and hyaluronic acid (topical)
- Urea-based topical treatment
- Vitamin C
- Wheatgrass
- WOBE-MUGOS®
- Zinc, zinc supplements

Not recommended for practice

- Aloe vera
- Trolamine (Biafine®)

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[ons.org/practice-resources/pep/
radiodermatitis](http://ons.org/practice-resources/pep/radiodermatitis)

national clinical practice guideline for prevention and treatment of acute and late radiation reactions. It recommends prophylactic topical steroids, such as mometasone, to reduce discomfort from radiation dermatitis. It gives all other agents, including sucralfate, hyaluronic acid, and silver sulfadiazine cream, only a weak or insufficient evidence recommendation. The panel strongly recommends against use of trolamine (Biafine®) and aloe vera. Similarly, Chan et al. (2014) found no strong evidence for any products in preventing or treating radiation dermatitis.

General skin care during radiation therapy also has been investigated as a

way to prevent radiation dermatitis. Some experts recommend washing the skin with a pH-balanced soap, wearing loose-fitting clothing, avoiding scratching or rubbing the skin, and avoiding sun exposure on the treatment area.

Treatment

Like prevention, treatment of radiation dermatitis poses a challenge. For many therapeutic agents, effectiveness hasn't been established. (See *Recommended interventions for radiation dermatitis*.)

Generally, though, principles of moist wound therapy apply. For grade 1 skin reactions, apply bland emollients to keep the skin moisturized and follow standard

hygiene principles.

Both Chan et al. and Wong et al. found insufficient evidence to support recommending for or against any specific treatment. Generally, topical corticosteroids can ease itching. If the patient develops signs or symptoms of infection, cultures should be obtained from the affected area and antibiotics prescribed based on culture results.

No specific dressing is better than any other; each case should be evaluated individually. Dressing choices include hydrocolloid, hydrogel, hydrofiber, alginates, and polyurethane and silicone foam dressings.

Late skin effects of radiation therapy include chronic ulceration, telangiectasia, and fibrosis. Chronic ulcers should be evaluated for biofilm and subclinical infection and treated according to moist wound principles. These wounds may require debridement or hyperbaric oxygen therapy. Telangiectasia may improve with vascular laser therapy. Chronic fibrosis is hard to treat; refer the patient to a dermatologist with experience treating this complex problem.

Take a cautious approach

Caring for patients undergoing radiation therapy calls for special attention to topical skin care. Yet high-quality studies haven't shown that specific agents prevent radiation dermatitis, and the literature on treating the condition fails to identify which skin care treatments are most effective. As more and more products reach the marketplace, clinicians needs to be cautious about blanket recommendations until these agents have undergone further testing to determine their effectiveness.

Carole Bauer is a wound and ostomy nurse practitioner at Beaumont Health System in Troy, Michigan.

Selected references

Bauer C, Laszewski P, Magnan M. Promoting adher-

ence to skin care practices among patients receiving radiation therapy. *Clin J Oncol Nurs.* 2015;19(2):196-203.

Chan RJ, Webster J, Chung B, et al. Prevention and treatment of acute radiation-induced skin reactions: a systematic review and meta-analysis of randomized controlled trials. *BMC Cancer.* 2014;14:53.

Chen AP, Setser A, Anadkat MJ, et al. Grading dermatologic adverse events of cancer treatments: the Common Terminology Criteria for Adverse Events Version 4.0. *J Am Acad Dermatol.* 2012;67(5):1025-39.

Dendaas N. Toward evidence and theory-based skin care in radiation oncology. *Clin J Oncol Nurs.* 2012;16(5):520-5.

Feight D, Baney T, Bruce S, McQuestion M. Putting evidence into practice. *Clin J Oncol Nurs.* 2011;15(5):481-92.

Fenton-Kerimian M, Cartwright F, Peat E, et al. Optimal topical agent for radiation dermatitis during breast radiotherapy: a pilot study. *Clin J Oncol Nurs.* 2015;19(4):451-5.

Fogh S, Yom SS. Symptom management during the radiation oncology treatment course: a practical guide for the oncology clinician. *Semin Oncol.* 2014;41(6):764-75.

Gosselin TK, Schneider SM, Plambeck MA, Rowe K. A prospective randomized, placebo-controlled skin care study in women diagnosed with breast cancer undergoing radiation therapy. *Oncol Nurs Forum.* 2010;37(5):619-26.

Hymes SR, Strom EA, Fife C. Radiation dermatitis: clinical presentation, pathophysiology, and treatment 2006. *J Am Acad Dermatol.* 2006;54(1):28-46.

McQuestion M. Evidence-based skin care management in radiation therapy: clinical update. *Semin Oncol Nurs.* 2011;27(2):e1-e17.

Morgan K. Radiotherapy-induced skin reactions: prevention and cure. *Br J Nurs.* 2014;23(4):S24, S26-S32.

National Cancer Institute. Cancer Statistics. 2015. <http://www.cancer.gov/about-cancer/what-is-cancer/statistics>

Oncology Nursing Society. Radiodermatitis. Updated July 29, 2015. ons.org/practice-resources/pep/radiodermatitis

Russi EG, Moretto F, Rampino M, et al. Acute skin toxicity management in head and neck cancer patients treated with radiotherapy and chemotherapy or EGFR inhibitors: literature review and consensus. *Crit Rev Oncol Hematol.* 2015;96(1):167-82.

Wong RK, Bensadoun RJ, Boers-Doets CB, et al. Clinical practice guidelines for the prevention and treatment of acute and late radiation reactions from the MASCC Skin Toxicity Study Group. *Support Care Cancer.* 2013;21(10):2933-48.



Wise use of antibiotics in patients with wound infections

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

Antibiotic resistance is a pressing public health threat not only in the United States, but worldwide. According to the World Health Organization (WHO), it is one of the major threats to human health.

Despite these concerns, antibiotics continue to be widely used—and overused. In long-term care, for instance, antibiotics are the most frequently prescribed medications, with as many as 70% of residents receiving one or more courses per year. And antibiotics are consistently ordered for suspected pressure ulcer infections.

Here is what clinicians who care for patients with wounds can do to help reduce antibiotic resistance.

Understand the potential harm

Organisms that are resistant to antibiotics because of overprescribing can cause serious harm in patients with wounds. For example, a patient could develop a serious diarrheal infection from *Clostridium difficile*, which can further infect the wound and impede healing. It's also important to keep in mind that any drug, including an antibiotic, can cause adverse events or interfere with the action of other drugs.

Culture first

If you suspect a pressure ulcer or wound is infected, don't immediately think "antibiotic." Instead, first confirm the infection. If

ANTIBIOTIC RESISTANCE

there is no infection, you can avoid an unnecessary medication and if there is an infection, a targeted antibiotic—instead of a broad-spectrum drug—can be chosen as needed.

The gold standard is to obtain a tissue biopsy. A tissue biopsy will identify organisms invading the wound, not those contaminating the wound surface. Unfortunately, surface swabs will only reveal the colonizing organism and may not reflect deeper tissue infection. If the wound is in need of debridement, this is an ideal time to obtain the tissue biopsy.

If a tissue biopsy is not feasible, then obtain a swab using the Levine method. (See *Levine quantitative swab technique for culturing a wound*.)

Advocate for the patient

If you have prescribing authority, use it wisely. If you don't have prescribing authority, you can still be an advocate for the patient by questioning antibiotic orders without proper biopsy or cultures. Remember, the goal is to prevent overuse of antibiotics and the risks associated with inappropriate use.

Levine quantitative swab technique for culturing a wound

The National Pressure Ulcer Advisory Panel lists the following steps for the Levine culture method:

- Cleanse wound with normal saline (do not use wound cleansers).
- Blot dry with sterile gauze.
- Culture the healthiest looking tissue in the wound bed.
- Do not culture exudate, pus, eschar, or heavily fibrous tissue.
- Rotate the end of a sterile alginate-tipped applicator over a 1 cm by 1 cm area for 5 seconds.
- Apply sufficient pressure to the swab to cause tissue fluid to be expressed.
- Use sterile technique to break tip of the swab into a collection device designed for quantitative cultures.

Note: You must be able to swab viable tissue, so if the wound is covered with slough and/or eschar, the best approach would be to first have the wound debrided and biopsied.

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

Selected references

CDC. The Core Elements of Antibiotic Stewardship for Nursing Homes. Atlanta, GA; US Department of Health and Human Services, Centers for Disease Control and Prevention. 2015. Updated March 16, 2016. www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html.

CDC. Making Health Care Safer - Antibiotic Rx in Hospitals: Proceed with Caution. March 2014. www.cdc.gov/vitalsigns/pdf/2014-03-vitalsigns.pdf.

National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Ulcer Injury Alliance. Prevention and Treatment of Pressure Ulcers: Clinical Practice Guideline. Haesler E, ed. Cambridge Media: Osborne Park, Western Australia; 2014.

Smith P, Watkins K, Miller H, et al. Antibiotic stewardship programs in long-term care facilities. *Ann Longterm Care*. 2011;19(4). www.annalsoflongtermcare.com/article/antibiotic-stewardship-programs-long-term-care-facilities

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Ten tips for a successful professional conference

By Kristy S. Chunta, PhD, RN, ACNS, BC, CMC

Attending a professional conference can yield many benefits if you follow these 10 tips.

- 1 Obtain new knowledge.** Conferences provide opportunities for clinicians to gain new knowledge about procedures, technology, and research. Take notes and keep handouts for reference. After you return, share what you have learned with colleagues so multiple people benefit from the conference. Remember to complete the necessary information to obtain professional continuing education (CE) credit.
- 2 Become certified.** Conferences typically provide opportunities for attendees to take certification exams or attend sessions to prepare for exams. If you're planning to take a certification test, obtain test blue prints at the conference or attend a pre- or post-conference session that focuses on the certification exam. If you're ready to test, sign up before the conference so you can become certified while you're away.
- 3 Visit the exhibitors.** Exhibitors display their products and services at conferences. Scheduled exhibit sessions allow attendees to explore new equipment, computer programs, textbooks, and many other products. Use this time to meet the exhibitors and learn more about their products and services; pick up some fun materials, such as free



pens, highlighters, and sticky notes; and register to win free drawings. Many exhibitors now also offer CE sessions.

- 4 Network.** Professional conferences draw international and national colleagues to one location. This collective venue allows for networking with experts in the fields of education, administration, and clinical practice. For example, meeting a speaker who is presenting a conference session on a topic that is similar to your work interest can provide information about ways to implement a new teaching strategy or an administrative policy or to conduct research. These opportunities also may lead to collaborative work projects in the future. Networking can occur during conference sessions such as poster and oral presentations, during meal times, or even during non-conference time. Remember to pack business cards to share with others and take advantage of having the chance to interact with experts throughout the trip.
- 5 Serve on committees.** Attending conferences not only allows for networking but provides opportunities for clinicians to serve on committees within a professional organization. Committee positions

are typically elected by members of the professional organization. Once elected, clinicians usually meet to complete or review committee work during conference time. Committee service allows you to collaborate with other colleagues and can help you grow professionally.

6 **Take advantage of “think time.”** Conferences provide time for you to generate new ideas for research, teaching, administration, or clinical practice by taking you away from daily work demands and giving you time to consider new ideas. These ideas may occur during a conference session or during travel or down time. Take advantage of this “think time” by creating a new “to do” list of work projects to complete in the future. Make the list at the conference while the ideas are fresh and before daily work interferes. When you return from the conference, remember to review the list and assign due dates so that the ideas remain clear and the work projects are completed.

7 **Catch up on work.** Conferences provide some uninterrupted time to catch up on work. Down time that occurs between conference sessions, during travel, or throughout the day can give clinicians time to complete work. You can use this time to grade papers, complete reports, or check email. Using down time productively helps you avoid feeling “behind” after the conference.

8 **Rejuvenate, rest, and relax.** It’s easy for clinicians to become overwhelmed with daily demands and pressure from colleagues, students, or patients. Even preparing for the conference and traveling can be stressful. Once at the conference, however, you’re away from stress, so be sure to save some time to rest

and relax. Take a nap, sleep slightly later in the morning, or relax with a good book. This can help to rejuvenate your spirit and restore your enthusiasm for your professional role.

9 **Exercise.** Most hotels provide a fitness room where guests can exercise. Take advantage of this service to help overcome jet lag and to keep up on your normal routine. Exercise is also helpful to avoid gaining weight from the added calories of dining out during the trip. Walking outside or on a treadmill may feel good after sitting through sessions during the day.

10 **Play tourist.** Conferences are typically held in prominent cities to foster attendance and tourism. Use this opportunity for exploring the city, shopping, or dining. Tourism information is usually included in the conference brochure. There also may be group trips to participate in even if you are traveling alone. Enjoy your location during nonconference sessions by having some tourism fun and visiting places of interest.

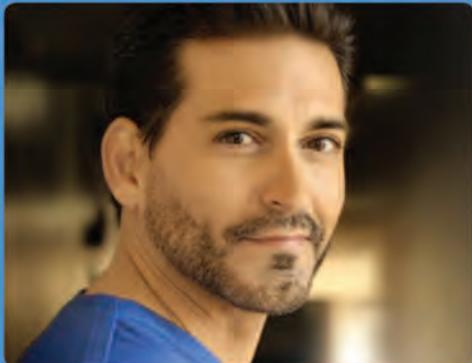
Consider these guidelines for a productive conference whether you have attended multiple conferences or are planning your first trip. These tips will help you to return from the conference feeling rested and filled with new knowledge, ideas, and enthusiasm.

Kristy S. Chunta is an associate professor for the department of nursing and allied health professions in the college of health and human services at Indiana University of Pennsylvania.

Selected reference

Rodgers K. The top 5 reasons to attend a nursing conference. Nov. 5, 2007. <http://ezinearticles.com/?The-Top-5-Reasons-to-Attend-a-Nursing-Conference&id=817730>.

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Clinician RESOURCES

This issue we focus on resources to help clinicians protect themselves from injuries and engage in a healthier lifestyle.

The screenshot shows the homepage of the OSHA Worker Safety in Hospitals website. At the top, a banner reads "Worker Safety in Hospitals" and "Caring for our Caregivers". Below the banner, there's a section titled "Understanding the Problem" with a yellow background. To the right, there's a group photo of healthcare workers. The main content area features four sections with icons: "Understanding the Problem" (yellow), "Safety & Health Management Systems" (blue), "Safe Patient Handling" (blue), and "Preventing Workplace Violence" (blue). Each section has a brief description and a "Learn More" button.

OSHA safety website

A hospital is one of the most hazardous places to work, according to the Occupational Safety and Health Administration (OSHA). The agency provides a wealth of information on how to protect hospital workers as part of its website **Worker Safety in Hospitals: Caring for Our Caregivers^A**.

PDF resources include:

- A fact sheet that helps **dispel myths^B**, barriers, and concerns related to safe patient handling
- Information on **making the case^C** for safe patient handling programs
- **An overview^D** of workplace violence
- **A road map^E** for preventing workplace violence
- **Core elements^F** of a safety and health management system

Download an overview^G of available tools and resources.

Shift work education program

The National Institute for Occupational



Safety and Health (NIOSH) offers the free online education program "**NIOSH training for nurses on shift work and long work hours^H**".

The program is designed to educate nurses and their managers about the health and safety risks associated with shift work, long work hours, and related workplace fatigue issues. The program also discusses strategies in the workplace and in the nurse's personal life to reduce these risks.



Guidelines for preventing workplace violence

Download "Guidelines for preventing workplace violence for healthcare and social workers^I" from OSHA. The document con-

tains information on identifying risk factors in the workplace and developing violence prevention programs, along with several checklists, such as:

- risk factors for workplace violence
- inspecting work areas
- security measures
- workplace violence prevention program assessment.



Creating a more civil workplace

“**Conversations to inspire and promote a more civil workplace**,” published in *American Nurse Today*, provides practical strategies for having difficult conversations in the workplace.

Although targeted towards nurses, all clinicians can benefit from these tips, such as how to apply the four steps of the DESC model:

- D:** Describe the specific situation.
- E:** Express your concerns.
- S:** State other alternatives.
- C:** Consequences stated.

Keep track of your healthy activities

Trying to live a healthier life? Get some



help from the United States Department of Agriculture’s **Supertracker**®.

On Supertracker you can:

- look up nutritional information for foods and even do a side-by-side comparison
- track the foods you eat and compare to your nutritional goals
- log your physical activity
- see how your weight is trending.

You can also get weight management guidance, establish personal goals, and sign up for tips from a virtual coach. ■

Online Resources

- A. osha.gov/dsg/hospitals/
- B. osha.gov/dsg/hospitals/documents/3.1_Mythbusters_508.pdf
- C. osha.gov/dsg/hospitals/documents/3.5_SPH_effectiveness_508.pdf
- D. osha.gov/dsg/hospitals/workplace_violence.html
- E. osha.gov/Publications/OSHA3827.pdf
- F. osha.gov/dsg/hospitals/documents/2.4_SHMS_roadmap_508.pdf
- G. osha.gov/dsg/hospitals/documents/2.4_SHMS_roadmap_508.pdf
- H. cdc.gov/niosh/docs/2015-115/default.html
- I. osha.gov/Publications/osa3148.pdf
- J. americannursetoday.com/cne-civility/
- K. supertracker.usda.gov/

Note from Executive Director



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



In the first article of this series, I shared how the NAWCO Certification Committee works. Although it was only a brief overview, I hope it gave you an idea of the work this talented group of individuals does. In this article, I will continue to introduce you to the 15 members of the committee.

Catherine C. Bradley, MSW, LCSW

Catherine received a BS from the University of Illinois in 1980, followed by an MSW in 1987. She is a licensed clinical social worker, and a member of the Academy of Certified Social Workers. Catherine has worked in the hospital and long-term care settings, and has been a long-term care consultant in the areas of social services, activities, and mental health. Since 1997, she has worked for Social Work Consultation Group, Inc., where she provides consultation services to facilities throughout central Illinois. Catherine served on The Joint Commission's laboratory professional and technical advisory committee (PTAC) for long-term care and assisted living, representing the National Association of Social Workers (NASW). She also has served as the chair for NASW's Peoria District and on both the executive and finance committees for Illinois NASW. Catherine has been the public member for the certification committee since 2010.

LaDonna Burns, LPN, WCC, DWC

LaDonna is the wound care coordinator for negative pressure wound therapy at Med-

South, Inc. She has 22 years of experience in nursing, including acute care, home health, and long-term care. LaDonna became interested in wound care while working in these areas and first earned her Wound Care Certification (WCC) in 2002. She helped start the South East Affiliation of NAWCO members. LaDonna joined the certification committee in November 2013.

Carmen Cooper Oguz, PT, DPT, MBA, CWS, FCCWS, WCC

Carmen has worked in health care for 25 years. During that time, her responsibilities have steadily increased across many different healthcare arenas—medical records, accounts payable, marketing, human resources, rehabilitation and rehabilitation management, consulting, and service line development. She is also licensed to practice physical therapy in Mississippi, Arkansas, and Tennessee. Carmen has earned two nationally recognized certifications in wound care and has experience as a medical expert witness.

Marcy Couitt, RN, WCC, DWC

Marcy is a nurse in Massachusetts and Rhode Island. She works for an independent center for wound healing and has more than 25 years of experience in home health, where she first participated in specialty wound care. Marcy obtained her WCC in 2007 and became certified in Diabetic Wound Care (DWC) in 2011. She joined the certification committee in 2013.

Jennifer Hulsey, RN, BSN, WCC, CPhT

Jennifer is the director of the Health Science Academy/CDC, and high school teacher in WCPSS. She has 28 years of experience in nursing and 7 years in CTE Health Science Education, teaching biomedical technology and pharmacy technician courses. Jennifer's clinical experience includes public health, long-term care, and obstetrics/gynecology. As the clinical manager for national healing, she helped establish the Duke Raleigh Wound Healing Center, North Carolina, in 2006. Her interest in wound care was established in her early years as a nurse, and she obtained her WCC in 2006. She uses her certification to advocate for commitment to quality healthcare compliance and best practice medicine. Jennifer is a new addition to the certification committee, joining in March 2016.

Kim Steele, RN, WCC, RAC-CT

Kim has 22 years of nursing experience, specializing in the geriatric population. As a

director of nursing for 18 years, Kim developed and implemented skin programs, and, along with her staff, maintained a 0% rate for avoidable pressure ulcers for more than 10 years. Currently employed as a regional consultant for Harmony Healthcare International, Kim has held her WCC since 2006 and joined the committee in 2012.

Monessa (Missy) Wadford RN, WCC, OMS

Missy has been a nurse for 22 years, a WCC since 2006, and an Ostomy Management Specialist (OMS) since 2013. She has 21 years of home-care experience, and she provides extensive training and education to her peers and her patients. In 2012, Missy received the Outstanding Wound Care Certified Clinician of the Year Award from the NAWCO. Missy joined the certification committee in 2015.

That's all for now; watch for our next issue for more introductions.

New certificants

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

Shelia Adams

Rozelle Aguilera

Soyouen Ahn

Anna Alberski

Romaine Alexander

Carrol Andersen

Carolyn Anderson-Beals

Laci Arnett

Aileen Asi

Emily Backer

Jessica Bailey

Joli Baird

Beth Baker

Lydia Beal

Michele Becker

Billie Bennett

Crystal Bilderback

Cynthia Blankenship

Larisa Bobrovnikova

Sue Bolyard

Jennifer Booker

Chantelle Borel

Svetlana Borochin

Rebecca Bowling

Kathy Brandi

Donna Brehm

April Bridges

Nancy Brooks

Gail Brooks-Dixon

Clarice Brown

Lesley Bunn

Linda Campbell

Sara Carmona

Nicole Carr

Helen Castro

Carla Caughel

Kristin Cempe

Caroline Charles

Deborah Chartrand

Brittany Chervino

Melanie Chipman

Hellen Chirchir

Allie Chotard

Lisa Chow

Kelly Christian

Helen Christians

Magali Chumbiauca

Elizabeth Chung

Amy Clowson

Kathryn Colburn

Thomas Combs, Jr.

Dianna Cook

Kyra Cooke

Ashley Couchis

Anna Cox

Christen Coyle	Cynthia Gatilao	Leslie Johnston	Nadine Martinez
Dawn Craft	Gail Georges	Jamie Jones	Elaine Martinez
Konnie Cross	Lindsay Gharst	Cassandra Juneau	Lisa Mays
Beverly Croyle	Elmer Gica	Mariatu Kamara	Brandon McAleer
Justin Cullimore	Kristina Gittens	Kimberly Katich	Jennifer McCormick
Brianna Cutting	Jose Gonzalez	Jennifer King	Donna McCown
Anne Charmaine	Angela Goode	Karen Kirschner	Sharon McCoy
Danila-Lim	Marilyn Gordian	Teresa Kitchens	Rena McDermott
Kathlyn Davis	Trenna Gosser	Rhonda Knisley	Melissa McDonald
Judith Day	Valerie Graham	Marcia Knittel	Michael McGlaughlin
Abbie De La Porte	Julie Graves	Jennifer Knoll	Leonore McIntyre-Meuchner
Jody Deardorff	Michelle Griffin	Konstantins	Amber McMahon
Janet Deocampo	Shanna Griffiths	Kociasvili	Robin McNamara
Kimberly Dewey	Zerina Hameed	Misty-Anne Koloski	Linda Meade
Ana Diaz	Lisa Harber	Jayarathne Kottage	Stephanie Medrano
Ma Laura Isabel	Julaine Harding	Devin Kramer	Queen Mendoza
Divinagracia	Laura Harrell	Patorosia Kuhn	Lori Mercedes
Marsha Dixon	Rosemarie Havenga	Amber Kulp	Deborah Meyers
Barbara Dobyns	Steffanie Hayes	Nicholas Kunio	Keisha Mihaly
Tina Dobyns	Florence Heitzman	Denee Kunzman	Jackie Miles
Donna Dominguez	Richard Hess	Kathryn Lamb	Tessa Miller
Moira Donoghue	Cylinda Hile	Olivia Lang	Robin Milonas-Lafollette
Elina Dubovsky	Denise Hill	Theresa Langkau	Wanda Mitoraj
Urszula Dziura	Jennifer Hoffman	Kellie Laschinsky	Raphaelle Molas
Kathryn Egger	Valerie Hoffmann	Kelly Latini	Kathryn Montague
Franchette Etienne	Rita Holden	Sarah Lauersdorf	Penny Moore
Lalanne	Sheris Holden	Stephanie Leach	Andrea Morgan
Victoria Evitts	Gretchen Holloway	Kerry Lear	Stephanie Morgan
Roberta Fairchild	Stephanie Holzman	John Lee, Jr.	Laura Morgan
Sokna Falk	Sabrita Hopkins	Amber Lemaire	Elane Morse-Follmann
Chelsea Faris	Amanda Hopkins	Brittany Levering	Anke Mtafu
Colleen Farrington	Jonathan Horton	Alice Lewinski	Gregory Mukalian
Sarah Felker	Amy Hudson	Rachel Lewis	Kyla Murray
Taryn Fellows	Diana Hudson	Angeline Lim	Alex Mutuku
Christina Fierke	Heather Huntley	Talea Logan	Andrew Nagel
Amy Fletcher	Roberta Hurd	Rozel Lontok	Bonita Nelson
Robert Foose	Genevieve Jackson	Amanda Lukasik	Mary Neubauer
Elizabeth Ford	Lindsey James	Katie Lutz	Amanda Neuman
Rebecca Fout	Sarah Jarvis	Stellica MacDonald	Jina Nocera
Christine Franke	Danielle Jaszczyzyn	Rose Ann	Cathryn Norman
Cinquella Fullerton	Mary Jens	MacDougall	
Nancy Gadarowski	Tamera Johnson	Sylvia Madland	
Ashley Garland	Cynthia Johnson	Deborah Malone	

Kathleen Novak
Anaka Nunnink
Ellen O'Brien
Katharine O'Brien
Stephen O'Dell
Carly Okamoto
Mary Ordiales Salak
Jeremy Osmond
Debra Ott
Sandra Pacheco
Julie Paquette
Mary Parsons
Arlene Pascall
Stephanie Paul
Christie Pelow
Robert Peterson
Beth Phillippe
Kelly Phillips
Rita Pickert
Roger Pomeroy
Audra Pounds
Nicole Preddy
Denise Proctor
Elizabeth Reddy
Jodi Reed
Keaohna Reynolds
Michelle Rogers
Rebecca Russo
Stephanie Ryan
Margaret Salzbrenner
Melissa Sanchez
Nora Sanchez-Soto
Jana Sanders
Marilou Santillano
Jatinder Saroya
Ekaterina Savelieva
Danielle Schaaf
Jessica Scherer
Samantha Schild
Michelle Scholl
Francine Schuster
Amy Scullion
Tara Seelig

Elizabeth Sellers
Teri Sessamen
Todd Setnik
Sunil Sharma
Carl Shelton, MD
Stephanie Shepherd
Christina Sheppard
Richard Siira
Camille Simon
Melissa Smith
Theresa Smith
Miteshkumar Soni
Beth Spannagel
Jacquelyn Spicer
Angela Stewart
Scott Surden
Keri Sutter
Dawn Swift
Angela Tanner
Cynthia Tarachko
Deborah Tenge
Elizabeth Theiss
Melody Thomas
Katherine Trapp
Tracy Tregillis
Francisco Usis
Rowena Valencia
Karen Vernon
Carol Vixie
Tricia Waggoner
Mark Walker
Nancy Walsh
Akilah Ward
Michelle Weeks
Dustin Westerman
Brianna White
Ratana-Pore
Whitfield
Amy Wilcox
Sandra Willis
Angela Wilson
Martha Wilson
Kristin Wing

Paula Wojtalewicz
Christina Wolfe
Barbara Wolfgang
Heather Woodruff
Kaitlyn Woods
Anyssa Wright
Tammy Wright
Nicole Wyman
Deidre Yarbrough
Cristen Young
Elizabeth Young
Lori Yurkavage
Ancy Zacharia
Elizabeth Zimmer

Aida Ruth Bearnod
Shannon Besaw
Renee Bielinski
Christina Bilal
Kennette Bilyeu
Patricia Blake Parker
Brenda Bledsoe
Antoinette
Bloomfield
Liliana Bociu
Paul Bosse
Ronda Bowles
Susan Branda
Juli Brandt
Timothy Britton
Lordan Bromberek
Melody Burch
Susan Burns
Michiana Cabato
Bocala
Alesia Calcote
Thelma Campbell
Dawanda Campbell
Karen Carson
Tricia Cervantes
Donna Chambers
Darin Chambers, MD
Ginger Chandler
Charrawndae Cherry
Fay Chin
Jamie Christensen
Pamela Cipriano
Ruth Claassen
Debra Clair
Jacqueline Cole
Beverly Coleman
Laura Copat
Ashley Cornett
Charles Cox
Janet Cross
Diane Crowell
Tracy Curry
Amy Czenis

Recertified certificants

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

Khatidja Aden
Candace Adkins
Margaret Agbeshie
Armah
Jasmin Aguilar
Cynthia Alexander
Deon Allen
Bella Fe
Ambubuyog
Mercy Ameyaw
Melinda Andreassen
Katherine
Andrzejewski
Augustina Annus
Michelle Auger
Shirley Backus
Christine Bauman

Lisa Czerwinski	Pamela Garner	Kara King Barron	Tamara Nogle
Cynthia Daugherty	Amanda Garrett	Pamela Kinsey	Patricia O'Shea
Alan Davis, MD	Christal Garrison	Speranza Kironji	Tisha Painter
Edgardo De Vera	Amanda Geyer	Judith Kitchen	Joyce Parris
Barry Depoorter	Suzanne Giliotti	Marianne Klemp	Mary Patrick
Mona Dietz-	Kea Ginn	Christie Kotas	Sherry Penley
Cordova	Suzanna Gordon	Janet Kovach	Jalene Percy
James Diola	Kelly Grabowski	Jason Kurek	Wanda Perez
MaryAnn DiRaddo	Mary Griffith	Lisa Kussmaul	Shana Pero
Theresa Dobbin	Deborah Grigg	Jessica Kuznia	Janice Perry
Sara Domerchie	Maria Gugulski	Jill Laboranti	Brian Pervis
Renee Donnarumma	Trisha Guillermo	Theresa LaPorta	Mary Petito
Petra Dority	Jeffrey Gutierrez	Teri Leja	Kathryn Phelps
Sherri Drake	Sandra	Grace Lim	Meridith Phillips
Carole Drake	Hackenmueller	Letitia Lippencott	Michele Pletcher
Lynn Drake	Kathleen Hahn	Tobi Lohn	Robin Poole
Mark Duff	Jessica Hammons	Vincent Ludwig	Katherine Powell
Heather Dulay	Terri Harris	Mary MacDonald	Christy Powell
Diana Easton	Alane Hartlage	Donna Mack	Amie Powell
Ma Emileen Ecito	Rebecca Haught	Kathleen Martin	Debra Pratt
Felicia Edwards	Gail Hebert	Elvia Martinez	Kristie Preston
Pamela Eichelberger	Ann Hebert	Christa Mason	Lynn Price
Janette Ellens	Jennifer Heiston	Barbara Mazgaj	Susan Pryor
Arlene Elliott	Gina Hilton	Nicole McAllister	Barbara Quinn
Deborah Ellison	Linda Holland	Jessie McLlland	Emma Ralston-Dell
Melinda Eshbach	Mary Holley	Kristin McMillan	Kari Roberts
Karen Ettienne	Pamela Honaker	Susan Menchell	Melanie Rodeheaver
Traci Faddis	Jessica Hueth	Ma. Lizza Mendiola	Michelle Rooney
Marilyn Farran	Margaret Huggins	Amy Michek	Karen Roth
Lisa Fears	Estorya Hughes	Dawn Minesal	Joan Rueter
Sandra Fedie	Rhonda Irvin	Nima Moghaddas, DPM	Janice Kay Sales
Shirley Ferina	Kelli Jackson	Paraluman	Gilda Sarnillo
Heather Fetterly	Sabrina James	Montenegro-Espina	Terri Schindler
Kelly Ficklin	Jamie Johnson	Sarah Montoya	Ashley Schulz
Arнета Finney- Beverly	Tammy Jolly	Cynthia Mooney	Herschell Servies, Jr., MD
Brenda Flasch	Cynthia Jones	David Morse	Elaine Sessa
Marilyn Fleming	Mary Jones	Holly Muench	Lori Sexton
Michael Fragala	Donna Jones	Lori Mullery	Melissa Shashok
Celeste Fusco	Gail Jones	Catherine Murphy	Rosemary Sheffel
Aron Galloway	Marin Karsmarski	Ashlie Nader	Laura Sherman
Hiltrud Garcia	Tiffanie Kavanagh	Myra Nenna	Joanne Shultz
Martha Garduno	Melanie Kerr	Danielle Newman	Ann Siebers
	Annette Kietur		

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