# Wound Care ADVISOR

PRACTICAL ISSUES IN WOUND, SKIN, AND OSTOMY MANAGEMENT

Official journal of National Alliance of Wound Care and Ostomy™

## Compression therapy

## Understanding stoma complications

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Wound Care ADVISOR
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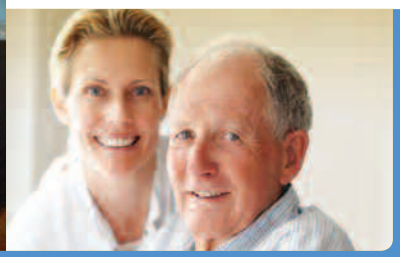

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# From the EDITOR

## Wound care superhero

What an honor it is to be the wound care "superhero"—the guru, the healer, the go-to person. Unfortunately, this honor may be accompanied by wound care overload—too much to do in too little time.

Once someone is crowned the superhero specialist, others may try to transfer every aspect of wound and skin care to that person—all treatment plans, assessments, documentation, prevention, education, and *accountability*. Superheroes don't cry, so they don't complain about the workload. Yet, the overload must be controlled.

So what can the superhero do? Start by using checklists. My favorite definition of a checklist comes from Wikipedia: an informational job aid used to reduce failure by compensating for the potential limits of human memory and attention. Must-have checklists include daily schedule, assessment, documentation, and treatment checklists. And let's not forget the master to-do list.

Checklists can be created in the form of protocols, algorithms, or procedures. The ultimate goal of creating a checklist is to produce a comprehensive form that promotes consistency and can be used quickly and easily in stressful situations.

Next, determine how much time you'll need to complete each checklist task. According to current research, it commonly takes about 10 minutes to change a basic wound dressing. But because wound treatments may vary with the product, protocol, and environment, you may find it more useful to determine your own durations. To do this, complete a detailed time and motion study. Alternatively, use a time management activity worksheet or keep a log of how much time you spend on each task. (**See Job task analysis**.)

Once you've determined your tasks and their durations, you might be in for a surprise: It's possible even a superhero wouldn't be able to complete all the tasks listed. Using detailed protocols and checklists, you can reassign specific tasks to other healthcare team members, or even demonstrate the need for additional wound care clinicians to your employer. Superheroes often suffer for the greater good of others, commonly by overworking. But when they do that, they may fall short of the ultimate superhero goal—protecting the public. It's hard to perform at your best when overloaded with work. Instead, organize, prioritize, and share the load.

**Access free to-do list templates.**

Donna Sardina, RN, MHA, WCC, CWCMS, DWC, OMS
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## Critical limb ischemia may not increase mortality risk in patients with diabetes

Diabetic patients with critical limb ischemia (CLI) who are assessed quickly and treated aggressively do not have an increased risk of long-term cardiac mortality, according to a study in *Diabetes Care*.

"**Impact of critical limb ischemia on long-term cardiac mortality in diabetic patients undergoing percutaneous coronary revascularization**" studied 764 patients, of whom 14% developed CLI and underwent revascularization, with 96% procedural success. The risk of cardiac mortality after 4 years did not increase.

Previously it had been reported that CLI is an independent risk factor for cardiac mortality in patients with diabetes.

## Radiation therapy, dissection, and lymphedema in positive-node breast cancer

A study presented at the 2013 American Society of Clinical Oncology Annual Meeting found that in women with a positive sentinel node biopsy for breast cancer, axillary radiation therapy and axillary lymph node dissection provide similar outcomes, but radiation therapy reduces the risk of both short- and long-term lymphedema compared to dissection.

"**Radiotherapy or surgery of the axilla after a positive sentinel node in breast cancer patients: Final analysis of the EORTC AMAROS trial**" reports that with a median follow-up of about 6 years, there were no significant differences in overall survival between the two groups.

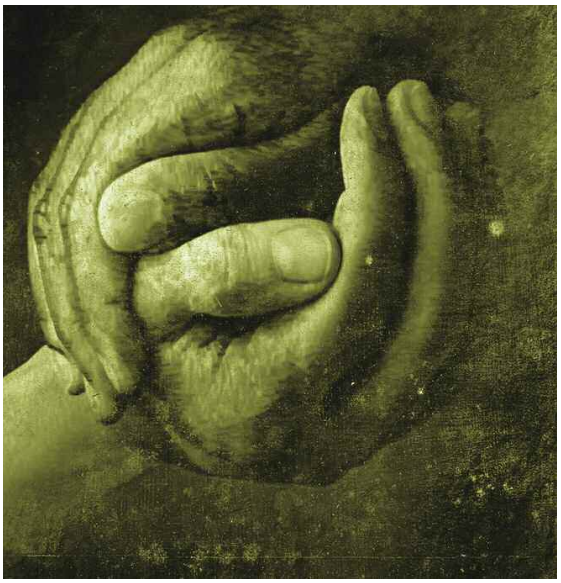
However, dissection nearly doubled the risk of lymphedema compared to radiation: 40% compared to 22% at year 1, and 28% compared to 14% at year 5. The women in AMAROS will continue to be followed for 10 to 15 years.

## Multi-layered soft silicone foam dressings prevent pressure ulcers in ICU patients

"**A randomised controlled trial of the effectiveness of soft silicone multi-layered foam dressings in the prevention of sacral and heel pressure ulcers in trauma and critically ill patients: the border trial**," published by the *International Wound Journal*, concludes that when applied in the emergency department (ED) before transfer to the intensive care unit (ICU), the dressings prevent pressure ulcers.

Of the 440 patients in the study, an intervention group of 219 patients had Mepilex Border Sacrum and Mepilex Heel dressings applied in the ED and kept on throughout their stay in the ICU. Significantly fewer of those in the intervention group had pressure ulcers, compared to the control group.

## Older adults with diabetes benefit from behavioral interventions



A study in *Diabetes Care* reports that adults aged 60 to 75 who have diabetes benefit just as much as younger adults from participating in self-management activities.

"**Do older adults aged 60–75 years benefit from diabetes behavioral interventions**?" compared 71 adults in the community with an average age of 67 with 151 younger adults with an average age of 47. The two groups were randomized to attend a structured behavior group, an attention control group, or individual education. The researchers measured glycated hemoglobin, self-care indicators (such as blood glucose checks), and psychosocial factors (such as quality of life) at baseline and at 3, 6, and 12 months after the intervention.

Older adults participating in self-management activities received glycemic benefit equal to those of younger adults, and older adults had the greatest glycemic improvement in the two group conditions.

## Fruit flies reveal clues to wound healing in humans

A person's skin and a fruit fly's exoskeleton, called a "cuticle," both protect against injury. This similarity in function led researchers to use the model of what they call the "biological armor" of the fly to analyze skin repair at a cellular and molecular level.

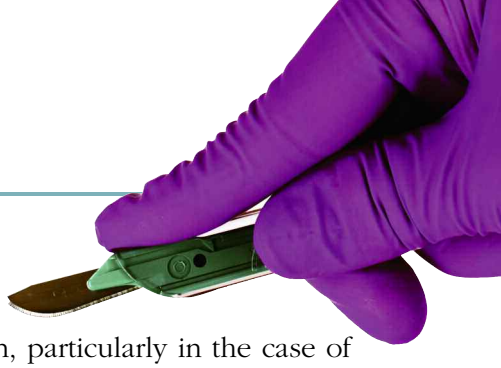
A **presentation given at the 2013 Genetics Society of America's 54th Annual Drosophila Research Conference** outlined the technique the researchers used to study how different molecular signals bind to receptors on the cells that line a wound, influencing the cell division, growth, and migration that result in healing.

An important part of the technique is to inject trypsin, which helps to pinpoint how genes turn "on" and "off" after a wound injury occurs. The researchers discovered that the immune response begins as soon as the cuticle has been breached. They also identified eight new genes that are activated in cells near puncture wounds in the flies, so they now can explore if genes in humans play a similar role.

Ultimately, the work may help develop compounds that promote healing and help identify treatments for chronic skin diseases, such as psoriasis and eczema.

## Study evaluates wound assessment tools

A study that evaluated the usefulness of



wound assessment tools for nurses recommends two—the Applied Wound Management tool and the National Wound Assessment Form.

The authors of "**Wound assessment tools and nurses' needs: an evaluation study**," published by the *International Wound Journal*, conducted a literature search to determine the criteria for an optimal wound assessment tool. Next, they evaluated freely available wound assessment tools to determine how well they met the criteria.

Although no tool met all criteria, the two recommended tools came closest. Criteria for inclusion in the optimal wound assessment tool were:

- details and characteristics of the wound
- patient details
- wound measurement
- tissue type
- exudate
- surrounding skin
- pain
- signs of infection
- documentation
- communication and continuity of care
- ease of use
- setting of goals for healing and planning care
- monitoring of the healing process
- guiding practice.

The authors evaluated 14 assessment tools that, among other criteria, were developed in the last 15 years, used for adults, and written in English.

## Wound infection, obesity increase risk of surgical dehiscence

An analysis of articles retrieved through three electronic databases found that the most common risk factors for surgical wound dehiscence (SWD) are obesity and wound infection, particularly in the case of abdominal surgery.

The authors of "**Determining risk factors for surgical wound dehiscence: a literature review**," published by the *International Wound Journal*, found that a clear definition of SWD and risk assessment tools are lacking.

## Human scabs inspire wound-healing material

A membrane inspired by human scabs is showing promise as a means for speeding wound healing, according to "**Scab-inspired cytophilic membrane of anisotropic nanofibers for rapid wound healing**," published in *Applied Materials and Interfaces*.

The researchers, who describe scabs as a perfect natural dressing material for wounds, set out to develop wound dressings that reduce the risk of infections while speeding wound healing. The resulting "cytophilic" wound dressing material attracts new cells needed for healing. The material mimics the underside of scabs, where tiny fibers are arranged in the same direction.

The researchers **conclude** the membrane made of polyurethane "is of great potential in fabricating dressing materials for rapid wound healing, as well as other biomaterials, such as membrane for capturing circulating tumor cells, bone growth and constructing neural networks." ■

# Wounds on the Web: Accessing the best online resources

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

Knowledge is exploding online, making it essential that you're comfortable using the Internet. You can also go online to save time and find a job, among other tasks. (See *Online value.*)

However, you also need to keep in mind that anyone can put information on the Internet. As the caption of a cartoon by Peter Steiner, published in *The New Yorker* says, "On the Internet, nobody knows you're a dog."

Be sure to evaluate the information, including such criteria as validity, authorship, integrity, and timeliness (be wary of undated information). Here are specifics to check.

## Audience

Who is the intended audience for the website? Children, teenagers, adults? General audience, professionals, students, researchers? Members of a certain group or proponents of a certain viewpoint? Content varies according to audience.

## Purpose

Why was the website created? To sell, advertise, inform, persuade? The purpose of a website may not be stated clearly, so review content to discern its purpose.

## Authority

Here are some questions to ask about the website:

- Has the website been created by a layperson or a well-known organization?
- Who sponsors the website? What is the sponsor's reputation?
- Is contact information provided?

You can often find this information under headings such as "About us" or "Our Philosophy."

## Authorship

Consider these questions for authors of online content:

- What credentials does the author have? If you don't know what a credential means, search for it online.
- What are the author's experience and expertise? Consider looking up the

author's name in a search engine, using three forms:

- without quotes: Firstname Lastname
- enclosed in quotes as a phrase: "Firstname Lastname"
- enclosed in quotes with * between the first and last name: "Firstname * Lastname" (The * can stand for any middle initial or name in Google only.)

- What is the end of the main URL address (called the domain extension)? This tells you the type of organization associated with the URL.

| Domain extension | Organization type |
|---|---|
| .com | Commercial company, usually for-profit |
| .edu | Educational institutions, usually colleges and universities |
| .gov | Government agency |
| .mil | Limited to use by the U.S. military |
| .net | Network, sometimes an internet service provider |
| .org | Organizations, usually nonprofit |

## Objectivity

The following questions help you determine objectivity:

- Is any bias evident? Does the author present the information objectively from various points of view, or from one particular point of view?
- Does the author or sponsor have a known affiliation that would indicate a specific agenda or bias?
- To what extent does the information attempt to persuade or sway the audience?

## Online value

Here are six of the many benefits of using the Internet, both professionally and personally.

**Save money.** You can reduce travel expenses for vacation and professional conferences and access online-only coupons and discounts. Pay your bills online to save postage costs.

**Save time.** Many tasks are quicker and easier online, including obtaining continuing education credit, registering for conferences (register for WOW Wild on Wounds 2013), and taking a college course. The Internet is open 24/7, so you can do things on your time frame, not others'. It's also easy to get your questions answered through help tools and frequently asked questions (FAQs) sections.

**Stay in touch.** Use free tools to keep in touch with friends, relatives, and wound care professionals. For example, consider "liking" *Wound Care Advisor* on Facebook so you can stay current on developments in wound care.

**Find a job.** Many jobs are now advertised only online and you need to apply online. Knowing online skills also helps you more easily find a job.

**Stay up to date.** The Internet is an instant source of news and information. Keep up with new products, recalls, and guidelines. Set up an account on an aggregator site such as feedly, then create "feeds" from other sources so you can quickly scan headlines and read only the articles of interest to you.

**Make your job easier.** Access patient education information, clinical forms, procedures, how-to videos, solutions to problems from others, and other tools. Be sure to obtain copyright permission for forms unless it's specially noted that permission isn't required. Check out the *Wound Care Advisor* toolkit.

- Does the information include vague statements, generalizations, stereotypes, or emotional appeals?

## Quality

Ask the following:

- Where did the author get the information? As in printed journals and books, you should expect support for the information, such as references or links.
- If there are links to other pages as sources, are they to reliable sources? Do the links work? Do links to references work and are the references from reputable sources? Keep in mind that it's possible to create fake references.
- Is permission to reproduce copyright information provided? If so, this typically means the website values its content.
- If the site has health information, does it display the Health on the Net Foundation Code of Conduct (**HONcode**) symbol? This means HON has evaluated the website and has deemed it meets **HON's ethical principles**. Absence of the symbol doesn't mean there is a problem with the site, but its presence is another point in the site's favor.

By asking questions like these, you can ensure you access accurate information for you and your patients. ■

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

# Forging a communication bond with prescribers

By T. Michael Britton, RN, NHA, WCC, DWC

As wound care professionals, we've all experienced a time when we felt that our patient didn't have the appropriate wound treatment orders. However, the physician, nurse practitioner, or other prescriber wouldn't follow your recommendation. This situation is not only frustrating but can delay the healing process. This article explores why a prescriber might not follow your recommendation and offers solutions. It focuses on physicians, because I've had the most experience with them.

## Know the physician's "type"

For 5 years, I was vice president of a company that managed physicians. I started asking them, "What makes you follow or not follow the wound clinician specialist's orders?" Responses varied, but one response gave me an important insight. The physician told me there are three types of physicians: those who know, those who think they know, and those who don't know.

With this in mind, the first thing you need to do is identify which of the three physician types you're dealing with. Ask mutual coworkers who've worked with the physician, as well as the physician's peers, for input so you get a feel for his or her personality. Then tailor your interaction based on your findings. For example, if a physician is the "think they know" type, prepare ahead of time what your response will be in case the physician disagrees with your recommendation. If a physician falls into the "don't know" category, you'll need to provide more detailed information about the nature of your recommendation.

## Start off on the right foot

Your first interaction with the physician is crucial because it sets the stage for your ongoing relationship. When you introduce yourself, include all your credentials and

don't be embarrassed to talk about your training and experience. If possible, you already should have assessed the patient and reviewed the chart. It may be helpful to have someone familiar to the physician and who knows your expertise provide the introduction.

## Make your case

Physicians say that clinicians who make a recommendation commonly aren't prepared to provide the information the physician needs to make an informed decision. Having your information organized and readily available increases the chance that the physician will accept your recommendation. Many tools can help you get organized. One of the most user-friendly is SBAR—Situation, Background, Assessment, Recommendation. (See *SBAR communication tool*.)

Before you call or see the physician, be sure you can answer "yes" to the following questions:

- Have I seen and assessed the patient myself (instead of relying on someone else's report)?
- Am I calling the right physician to address this situation? For example, can the patient's primary care physician address the problem or do I need to call one of the consulting specialists?
- Do I know the admitting diagnosis and admission date?
- Have I read the most recent progress and nurses' notes?
- Do I have the patient's chart available so I can easily access information, such as age, current medication, wound treatments, allergies, laboratory results, and most recent vital signs?
- Do I know the patient's resuscitation status?

## Know what to do in the case of inappropriate treatment

If you believe the physician's prior treatment orders were inappropriate, calmly express your concerns, and give rationales for your opinion. Be ready to cite a reputable source, such as protocols or research studies, to validate your position. Use correct medical terminology but don't overcomplicate your language. Share your ideas for alternatives and try to get permission for a trial period.

Also tap into other resources, such as pharmacists, other physicians, and even product representatives, for information or support to make your case. For instance, a pharmacist may be able to bolster your argument for making a switch from one antibiotic to another.

If all else fails, report the problem to the appropriate supervisor.

## Know when to suggest and when to recommend

It's important to understand the difference between a suggestion and a recommendation. A *suggestion* implies a possibility or proposal. A *recommendation* is something presented as worthy of acceptance or trial. The difference is in the direction of the flow. A recommendation flows from upper level to lower level and between equals; a suggestion flows from lower level to upper level. Making a recommendation when the situation calls for a suggestion can lead to someone in a higher position than you being offended or feeling that you have overstepped your boundaries. On the other hand, using a suggestion when a recommendation is needed can result in the other party taking it as an option, something they don't *have* to do; therefore, they don't follow through.

An example of a suggestion from lower level to upper level is when a unit nurse says to the physician, "Dr. Jones, we are currently changing Ms. Johnson's dressing three times a day. Studies have shown that dressings should be removed as infrequently as possible to prevent excess wound cooling."

Here's an example of a recommendation between equals is this interaction between a unit nurse and a wound care nurse: "We should change Ms. Johnson's dressing change from three times a day to every day. Her drainage has decreased and we can reduce the wound's exposure time." Note that the unit nurse provided a rationale for her recommendation.

Here's another example of a recommendation: As the wound care expert, you're consulted to evaluate a patient in a long-term care facility who continues to have skin breakdown. After reviewing the medical record, you realize the patient is being turned only once every 3 to 4 hours. When you meet with staff on the floor, you state,

"Ms. Johnson has had two pressure ulcers in the past 6 months, and has a history of diabetes, which can affect healing. She's at high risk for skin breakdown, so she needs to be turned every hour." Again, note that support is provided for the recommendation.

## Pick your battles

It's not important to win every battle. Instead, remember that you want to win the war. There will always be some physicians and other prescribers who aren't willing to follow your suggestions. As professionals, we have to accept that. Of course, if a physician's unwillingness to follow your suggestion puts the patient at risk for harm, you'll need to take your case to the next level. ■

T. Michael Britton is president and CEO of Consult Us, LLC, in Montgomery, Alabama.

## SBAR communication tool

This simple tool promotes communication between clinicians and prescribers and improves efficiency by encouraging concise, standard communication.

**S**ituation: State the situation or reason for your call or face-to-face conversation. Remember to identify yourself and, in the case of a call, your facility.

**B**ackground: Provide pertinent background information.

**A**ssessment: Summarize the facts and what you've observed. State what you believe the problem to be. In the case of a wound, your report should include:

- location (use anatomic terms, such as anterior, posterior, medial, and lateral)
- measurements (in centimeters, proximal to distal, medial to lateral)
- condition of surrounding tissue
- condition of the wound base
- any indications of infection
- current treatment and a review of past treatment, if appropriate.

Compare these observations to wound condition on admission or in the past to establish if the wound is better, worse, or about the same.

**R**ecommendation: State what you recommend for next steps—for example, an order change, new order, or referral. Provide evidence-based support for your recommendation.

**Download SBAR tool**

# What's causing your patient's lower-extremity redness?

## How to differentiate hemosiderin staining, lipodermatosclerosis, venous dermatitis, and similar conditions

By Robyn Bjork, MPT, CWS, WCC, CLT-LANA

In left image, note pronounced varicose veins and hemosiderin staining in gaiter area (ankle to knee) of light-skinned patient. In right image, note hemosiderin staining in dark-skinned patient and medial ankle flare of dilated small veins associated with chronic venous hypertension.

Note inverted champagne-bottle appearance of leg and ankle, indicating chronic lipodermatosclerosis. Also note lumpy, bumpy skin (papillomatosis) and thickened, fibrotic skin with positive Stemmer's sign, which indicate secondary phlebolymphedema. Redness results from chronic inflammation and resolves with compression therapy and manual lymphatic drainage.

The ability to understand or "read" lower-extremity redness in your patient is essential to determining its cause and providing effective treatment. Redness can occur in multiple conditions—hemosiderin staining, lipodermatosclerosis, venous dermatitis, chronic inflammation, cellulitis, and dependent rubor. This article provides clues to help you differentiate these conditions and identify the specific cause of your patient's lower-extremity redness.

### Hemosiderin staining and lipodermatosclerosis

Hemosiderin staining is dark purple or rusty discoloration of the lower legs caused by chronic venous disease. A 2010 study found hemosiderin staining in all subjects with lipodermatosclerosis and venous ulcers. When vein valves fail, regurgitated blood forces red blood cells (RBCs) out of capillaries. Dead RBCs release iron, which is stored in tissues as hemosiderin, staining the skin.

Hemosiderin staining and active lipodermatosclerosis may be misdiagnosed as cellulitis. Active lipodermatosclerosis causes painful, sharply demarcated red patches on medial aspects of the lower leg. Unlike in cellulitis, redness in lipodermatosclerosis is localized to areas of hemosiderin staining and induration. Also, the skin isn't hot and the patient is afebrile and unresponsive to antibiotics. Lipodermatosclerosis progresses to fibrosis and constriction, causing an inverted

champagne-bottle appearance of the legs.

Treat active lipodermatosclerosis with compression therapy and topical corticosteroids, if needed. Control chronic venous hypertension with compression, and hemosiderin staining will fade. Refer the patient for potential corrective venous surgical procedures.

## Venous dermatitis

Defined as inflammation of the epidermis and dermis, venous (stasis) dermatitis is common in patients with lower-extremity venous disease. Signs and symptoms include scaling, crusting, weeping, erythema, erosions, and intense itching. This disorder increases the risk of contact sensitivity. Advise the patient to avoid such products as lanolin, balsam of Peru, rubber, adhesives, fragrances, dyes, preservatives, skin sealants, silver sulfadiazine, neomycin, and bacitracin—all known to exacerbate venous dermatitis.

Top image shows redness, weeping, and crusting from acute venous dermatitis, coupled with secondary phlebolymphedema. Bottom image shows scaling from venous dermatitis on right leg and hemosiderin staining on left leg. Notice skin pallor on left leg (top of image), which becomes more prominent with leg elevation, indicating concurrent peripheral arterial disease. Redness from stasis dermatitis obscures arterial disease on right leg. Skin tears on right ankle result from patient tearing off itchy, flaky scales.

Venous dermatitis commonly is confused with cellulitis. A 2011 study found that 28% of 145 patients hospitalized for cellulitis had been misdiagnosed. The most common mistaken diagnosis was venous dermatitis. Unlike cellulitis, venous dermatitis causes itching and crusting; also, the skin isn't acutely painful or hot and the patient is afebrile.

Treat acute venous dermatitis with compression therapy and mild-potency topical corticosteroids. Apply corticosteroids sparingly to affected areas once or twice daily for 2 weeks; be aware that premature discontinuation can lead to recurrence, while prolonged use can cause skin thinning and reduced efficacy. Domeboro soaks also decrease weeping, irritation, and itching. Paste bandages impregnated with calamine or zinc oxide are soothing and drying. However, some patients may react to the preservatives in paste bandages, so a patch test is prudent.

## Chronic inflammation

Lymphedema causes chronic inflammation. About 50% of plasma proteins leak into the interstitial space daily and are recycled through the lymphatics. Lymphatic failure traps proteins in the tissues; the proteins act like sponges, attracting and binding fluid. The proteins then denature, trigger-

Top image demonstrates phlebolipolymphedema, a combination of venous disease (phlebo), lipedema (lipo), and early secondary lymphedema. Note the chronic inflammation just above the ankle, where there is significant lymphatic congestion. Also note the dilated veins near the medial heel, which indicate venous hypertension. The foot appears spared of swelling compared to the rest of the leg, indicating lipedema. The redness resolves with compression therapy. In the bottom image, note the scale and crust of chronic venous dermatitis on the lateral aspect of the left ankle.

ing a chronic inflammatory response. This response sometimes is misdiagnosed and treated as chronic cellulitis.

Compared to cellulitis, high-protein chronic inflammation is diffuse and nontender, with light redness and mildly increased warmth. Local skin changes may include thickening or papillomatosis (a lumpy, bumpy appearance). A positive Stemmer's sign confirms lymphedema. Complete decongestive physiotherapy promotes protein reabsorption and resolves chronic inflammation.

## Cellulitis

Cellulitis is a rapidly spreading infection of the dermis and subcutaneous tissue. In adults, it most commonly stems from *Staphylococcus aureus* infection of the legs. Erysipelas, a superficial form of cellulitis, involves the lymphatic system and is differentiated by "streaking" toward a regional lymph node.

Cellulitic skin is hot, acutely painful, edematous, and indurated. Redness spreads and the borders usually are irregular, sharply defined, and slightly elevated. Blisters, hemorrhagic bullae, abscesses, erosions, and necrosis may develop. About 30% to 80% of patients with lower limb cellulitis are afebrile. The white blood cell count, erythrocyte sedimentation rate, and C-reactive protein levels commonly are elevated, but normal values don't rule out cellulitis.

Treat cellulitis with oral antibiotics effective against staphylococcus and streptococcus. Adding a brief course of oral corticosteroids significantly shortens cellulitis duration. Severe cases may necessitate hospitalization and I.V. antibiotics, plus abscess incision and drainage. Control edema with bed rest and leg elevation.

Recurrent cellulitis is common in patients with lymphedema. With compromised skin immunity, bacteria invade and spread with little resistance. If lymphedema is present, refer the patient for treatment after acute cellulitis resolves. If the patient already is being treated for lymphedema, suspend manual lymphatic drainage and compression until acute cellulitis resolves.

The most common disorders mistaken for lower-limb cellulitis are venous dermatitis, lipodermatosclerosis, irritant dermatitis, and lymphedema. It also may be mistaken for deep vein thrombosis (DVT) or dependent rubor. Rule out DVT using venous duplex ultrasound. Dependent rubor disappears with leg elevation, whereas cellulitic redness doesn't.

**Click here to view image of cellulitis.**

## Dependent rubor

Dependent rubor is a fiery to dusky-red coloration visible when the leg is in a dependent position but not when it's elevated above the heart. The underlying cause is peripheral arterial disease (PAD), so the extremity is cool to the touch. To test for dependent rubor, position the patient supine and elevate the legs 60 degrees for 1 minute; then examine sole color. PAD causes the soles to change from pink to pale in fair-skinned people and to gray or ashen in dark-skinned people. The faster the pallor appears, the worse the PAD. Pallor within 25 seconds of leg elevation indicates severe occlusive disease, which warrants further evaluation for potential revascularization.

Next, observe skin color changes with the patient in a sitting position. Normally, the foot and leg should remain pink with elevation and dependency. In PAD, the color changes from pale to pink and then progresses to purple-red or bright red. The longer dependent rubor takes to reappear, the worse the PAD. Rubor that appears in 25 to 40 seconds indicates severe ischemia. If rubor disappears quickly with elevation and returns in less than 25 seconds, consider the possibility that the patient has venous reflux, not PAD. In this case, pooled blood causing the rubor drains rapidly from the veins when the leg is elevated and regurgitates back into the tissues when the leg is dependent.

If you detect dependent rubor, obtain the ankle-brachial index (ABI) to confirm PAD. For moderate PAD (ABI of 0.5 to 0.79), refer the patient for a routine vascular specialist consultation. For severe PAD (ABI below 0.5), maintain dry, stable wound eschar and urgently refer the patient to a vascular specialist for potential revascularization.

**Click here to view images and read a case study on dependent rubor.**

## Knowledge summary

"Reading" the common causes of leg redness helps you determine what's causing your patient's redness so you can provide effective treatment. Remember—chronic venous disease causes hemosiderin staining, lipodermatosclerosis, and venous dermatitis. Dermatitis is itchy and crusty; lipodermatosclerosis causes sclerosis and an inverted champagne-bottle appearance of the legs. Relieve inflammation and itching with topical corticosteroids and treat venous disease with compression and corrective surgery. Lymphedema causes chronic inflammation; treat with complete decongestive physiotherapy. Cellulitis is a spreading skin infection that's acutely painful and hot; treat with antibiotics. PAD causes dependent rubor, which disappears with leg elevation. ■

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*continued on page 28*

# Understanding stoma complications

## Learn how to identify and manage stoma hernias, trauma, mucocutaneous separation, necrosis, prolapse, retraction, and stenosis.

By Rosalyn S. Jordan, RN, BSN, MSc, CWOCN, WCC, OMS; and Judith LaDonna Burns, LPN, WCC, DFC

About 1 million people in the United States have either temporary or permanent stomas. A stoma is created surgically to divert fecal material or urine in patients with GI or urinary tract diseases or disorders.

A stoma has no sensory nerve endings and is insensitive to pain. Yet several complications can affect it, making accurate assessment crucial. These complications may occur during the immediate postoperative period, within 30 days after surgery, or later. Lifelong assessment by a healthcare provider with knowledge of ostomy surgeries and complications is important.

Immediately after surgery, a healthy GI

stoma appears red, moist, and shiny. Edema of the stoma is expected for the first 6 to 8 weeks. A healthy urinary stoma is pale or pink, edematous, moist, and shiny. Usually, it shrinks to about one-third the initial size after the first 6 to 8 weeks as edema subsides. The stoma warrants close observation as pouching types and sizes may need to be changed during this time. Teach the patient and family caregivers to report changes or signs and symptoms of stoma complications to a healthcare provider. If complications are recognized early, the problem may be resolved without surgical intervention.

Stoma complications range from a simple, unsightly protrusion to conditions that require emergency treatment and possible surgery. Clinicians must be able to recognize complications and provide necessary treatment and therapy early. Complications include parastomal hernias, stoma trauma, mucocutaneous separation, necrosis, prolapse, retraction, and stenosis. Although one complication can lead to and even promote others, all require attention and treatment.

### Parastomal hernia

A parastomal hernia involves an ostomy in the area where the stoma exits the abdominal cavity. The intestine or bowel extends beyond the abdominal cavity or abdominal muscles; the area around the stoma appears as a swelling or protuberance. Parastomal hernias are incisional hernias in the area of the abdominal musculature that was incised to bring the intestine through the abdominal wall to form the stoma. They may completely surround the stoma (called circumferential hernias) or may invade only part of the stoma.

Parastomal hernias can occur any time

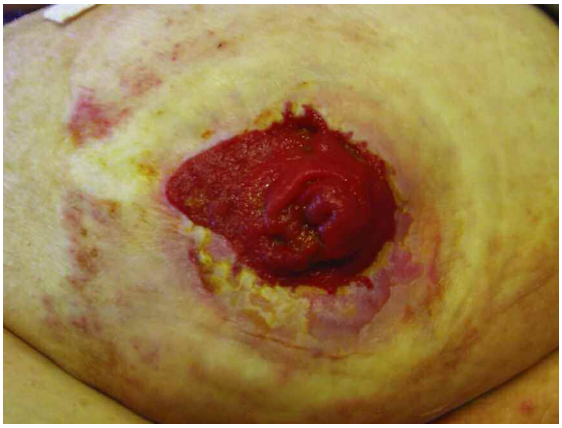
after the surgical procedure but usually happen within the first 2 years. Recurrences are common if the hernia needs to be repaired surgically. Risk factors may be patient related or technical. Patient-related risk factors include obesity, poor nutritional status at the time of surgery, presurgical steroid therapy, wound sepsis, and chronic cough. Risk factors related to technical issues include size of the surgical opening and whether surgery was done on an emergency or elective basis.

Parastomal hernias occur in four types. (See *Types of parastomal hernias*.) Initially, a parastomal hernia begins as an unsightly distention in the area surrounding the stoma; the hernia enlarges, causing pain, discomfort, and pouching problems resulting in peristomal skin complications that require frequent assessment. Conservative therapy is the usual initial treatment. Adjustments to the pouching system typically are required so changes in the shape of the pouching surface can be accommodated. Also, a hernia support binder or pouch support belt may be helpful. Avoid convex pouching systems; if this isn't possible, use these systems with extreme caution. If the patient irrigates the colostomy, an ostomy management specialist should advise the patient to discontinue irrigation until the parastomal hernia resolves.

## Stoma trauma

Stoma trauma occurs when the stoma is injured, typically from a laceration. Lacerations usually result from the pouch appliance or clothing. Belt-line stomas are easily traumatized and injury may occur from both clothing belts and pouch support belts. Stoma lacerations commonly result from a small opening in the flange or a misaligned pouch opening. Other causes include parastomal or stomal prolapse with possible stoma enlargement or edema.

Signs and symptoms of stoma trauma include bright red bleeding, a visible cut, and a yellowish-white linear discoloration. Lacerations may heal spontaneously. If the culprit is the pouching system, make sure nothing within the system comes in contact with the stoma. Usually direct pressure controls bleeding, but if bleeding continues, refer the patient to a physician for treatment.



The image shows stoma injury caused by a poor fitting appliance.

## Mucocutaneous separation

Mucocutaneous separation occurs when the stoma separates from the skin at the junction between the skin and the intestine used to form the stoma. Causes are related to poor wound-healing capacity, such as malnutrition, steroid therapy, diabetes, infection, or radiation of the abdominal area. Tension or tautness of the suture line also can cause mucocutaneous separation.

This complication usually arises early

### Types of parastomal hernias

The four types of parastomal hernias are based on hernia location within the abdominal tissue:

- *intestinal interstitial*, in which the hernia lies within the layers of the abdominal wall
- *subcutaneous*, in which the hernia is contained within subcutaneous tissue
- *intrastomal*, in which the herniated intestine penetrates the stoma (usually confined to an ileostomy)
- *peristomal*, in which the hernia is located within a stoma that has prolapsed.

This temporary ileostomy secondary to colon cancer has been treated for mucocutaneous separation.

Closure of the temporary ileostomy.

and can lead to other serious conditions, such as infection, peritonitis, and stomal stenosis. The area of the separation may completely surround the stoma (known as a circumferential separation), or the separation may affect only certain areas of the stoma/skin junction. The separation may be superficial or deep.

The first sign of mucocutaneous separation may be induration. Treat the separation as a wound, and apply wound-healing principles: Absorb drainage, reduce dead space, use the proper dressing, and promote wound healing. The proper dressing depends on wound depth and amount of wound drainage. Be sure to assess the wound, using the "clock method" to describe location; measure the wound area in centimeters; and describe the type of tissue in the wound bed. Be aware that slough may be present.

Treatment of the wound dictates how often the pouch is changed. A two-piece pouching system commonly is used to reduce the number of pouch changes. Cover the wound dressing with the pouching system unless the wound is infected. If infection is present, let the wound drain into the pouch and heal by secondary intention. Don't use a convex pouching system, because this may cause additional injury to the mucocutaneous junction.

## Stoma necrosis

Blood flow and tissue perfusion are essential to stoma health. Deficient blood flow causes stoma necrosis. A stoma may be affected by both arterial and venous blood compromise. The cause of necrosis usually relates to the surgical procedure, such as tension or too much trimming of the mesentery, or the vascular system that provides blood flow to the intestine. Other causes of vascular compromise include hypovolemia, embolus, and excessive edema.

Stoma necrosis usually occurs within the first 5 postoperative days. The stoma appears discolored rather than red, moist, and shiny. Discoloration may be cyanotic, black, dark red, dusky bluish purple, or brown. The stoma mucosa may be hard and dry or flaccid. Also, the stoma has a foul odor. Associated complications may

**Blood flow and tissue perfusion are essential to stoma health.**

include stoma retraction, mucocutaneous separation, stoma stenosis, and peritonitis.

Report signs and symptoms to the primary care provider immediately. Superficial necrosis may resolve with necrotic tissue simply sloughing away. But if tissue below the fascial level is involved, surgery is necessary. A transparent two-piece pouching system is recommended for frequent stoma assessment. The pouch may need to be resized often.

## Stoma prolapse

A stoma prolapse occurs when the stoma moves or becomes displaced from its proper position. The proximal segment of the bowel intussuscepts and slides through the orifice of the stoma, appearing to telescope. This occurs more often in loop transverse colostomies. A prolapsed stoma increases in both length and size. Prolapse may be associated with stoma retraction and parastomal hernias.

Causes of stoma prolapse include large abdominal-wall openings, inadequate bowel fixation to the abdominal wall during surgery, increased abdominal pressure, lack of fascial support, obesity, pregnancy, and poor muscle tone.

Unless the patient complains of pain, has a circulatory problem, or has signs or symptoms of bowel obstruction, conservative treatment is used for uncomplicated stoma prolapse. The prolapse usually can be reduced with the patient in a supine position. After reduction, applying a hernia support binder often helps. Also, a stoma shield can be used to protect the stoma. A prolapsed stoma may require a larger pouch to accommodate the larger stoma. Some clinicians use cold compresses and sprinkle table sugar on the stoma; the sugar provides osmotic therapy or causes a fluid shift across the stoma mucosa and reduces edema.

Unless the patient complains of pain, has a circulatory problem, or has signs or symptoms of bowel obstruction, conservative treatment is used for uncomplicated stoma prolapse.

## Stoma retraction

The best-formed stoma protrudes about 2.5 cm, with the lumen located at the top center or apex of the stoma to guide the effluent flow directly into the pouch. In stoma retraction, the stoma has receded about 0.5 cm below the skin surface. Retraction may be circumferential or may occur in only one section of the stoma.

The usual causes of stoma retraction are tension of the intestine or obesity. Stoma retraction during the immediate postoperative period relates to poor blood flow, obesity, poor nutritional status, stenosis, early removal of a supporting device with loop stomas, stoma placement in a deep skinfold, or thick abdominal walls. Late complications usually result from weight gain or adhesions. Stoma retraction is most common in patients with ileostomies.

A retracted stoma has a concave, bowl-shaped appearance. Retraction causes a

poor pouching surface, leading to frequent peristomal skin complications. Typical therapy is use of a convex pouching system and a stoma belt. If obtaining a pouch seal is a problem and the patient has recurrent peristomal skin problems from leakage, stoma revision should be considered.

Most stoma complications are preventable.

## Stoma stenosis

Stoma stenosis is narrowing or constriction of the stoma or its lumen. This condition may occur at the skin or fascial level of the stoma. Causes include hyperplasia, adhesions, sepsis, radiation of the intestine before stoma surgery, local inflammation, hyperkeratosis, and surgical technique.

Stoma stenosis frequently is associated with Crohn's disease. You may notice a reduction or other change in effluent output with both urinary and GI ostomies. With GI stoma stenosis, bowel obstruction frequently occurs; signs and symptoms are abdominal cramps, diarrhea, increased flatus, explosive stool, and narrow-caliber stool. The initial sign is increased flatus. With urinary stoma stenosis, signs and symptoms include decreased urinary output, flank pain, high residual urine in conduit, forceful urine output, and recurrent urinary tract infections.

Partial or complete bowel obstruction and stoma stenosis at the fascial level require surgical intervention. Conservative therapy includes a low-residue diet, increased fluid intake, and correct use of stool softeners or laxatives for colostomies.

Most stoma complications are preventable and result from poor stoma placement. Up to 20% of patients with stoma complications require surgical revision of the stoma. All patients with ostomies require ongoing, accurate assessment and, if needed, early intervention by trained clinicians. ■

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Apple BITES

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# What you need to know about xerosis in patients with diabetic feet

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

Each month, *Apple Bites* brings you a tool you can apply in your daily practice.

## Description

Xerosis, an abnormal dryness of the skin, is one of the most common skin conditions among patients with type 2 diabetes. While assessing for predictors of foot lesions in patients with diabetes, the authors of one study found that 82.1% of these patients had skin with dryness, cracks, or fissures. An unpublished survey of 105 consecutive patients with diabetes revealed that 75% had clinical manifestations of dry skin.

## Characteristics

- Excessively dry, rough, uneven, and cracked skin
- Possible raised or uplifted skin edges (scaling), desquamation (flaking), chapping, and pruritus
- Most common on the heels and feet
- Can lead to fissures (linear cracks in the skin) with hyperkeratotic tissue

## Progression

The progression of xerosis follows a defined pattern:

- Initially, the skin becomes dry and rough, with pronounced skin lines.
- As the condition progresses, superficial scaling with fissuring and erythema develops. In severe cases, a crisscrossing pattern with superficial scaling is present.
- The skin becomes less elastic and loses both its flexibility and its ability to withstand trauma, which may result in skin breakdown and subsequent infection.

## Causes

- There is a loss of natural moisturizing factors and moisture from the stratum corneum and intercellular matrix of the skin.
- Sebaceous and sweat glands normally maintain skin lubrication and control the oil and moisture in the foot, but they become atrophied when autonomic neuropathy occurs.
- Corneocytes are aligned parallel to each other in normal skin; xerosis causes structural changes to these cells and disrupts the surface, resulting in a rough epidermal surface.
- The dryness is due to the redistribution of blood flow in the soles of the feet by persistent and inappropriate dilatation of arteriovenous shunts. This activity diverts blood away from the skin surface. When this occurs in combination with alterations in the elasticity of the skin (due to nonenzymatic glycosylation of structural proteins and glycoproteins), the skin splits, creating portals for bacteria to enter.

Avoid products containing alcohol because their drying action compounds the problem.

## Treatment

Apply an agent to maintain skin moisture, such as an emollient lotion or cream, to the feet daily. Use moisturizers that contain urea or lactic acid.

- *Urea* works by enhancing the water-binding capacity of the stratum corneum. Long-term treatment with urea has been demonstrated to decrease transepidermal water loss. Urea also is a potent skin humidifier and descaling agent, particularly in 10% concentration.
- *Lactic acid* (in the form of an alpha hydroxy acid) can accelerate softening of the skin, dissolving or peeling the outer layer of the skin to help maintain its capability to hold moisture. Lactic acid in concentrations of 2.5% to 12% is the most common alpha hydroxy acid used for moderate to severe xerosis.
- Examples of products with urea or lactic acid include Atrac-Tain Cream, Eucerin 10% Urea Lotion, Lac-Hydrin 12%, and AmLactin Foot Cream Therapy.

**TEST your general knowledge about xerosis (questions 14 to 24).**

It's important to avoid:

- products that contain alcohol because they evaporate and their drying action compounds the original problem.
- petroleum-based products, which seal the skin surface and prevent what little lubrication made from evaporating. These products don't penetrate the surface of the skin and don't replace skin moisture.

## Patient education

Tell patients with xerosis to:

- minimize bathing to no more than once a day or even every other day
- use cool or lukewarm water
- pat, don't rub, to dry the skin

- avoid harsh soaps
- avoid lotions with dyes or perfumes.

Also explain how to apply—and how often to apply—skin moisturizers.

*Note:* Clinicians should routinely inspect the feet of patients with diabetes. ■

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**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. Read her blog, "Wound Care Swagger."**




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# How to set up an effective wound care formulary and guideline

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

Navigating through the thousands of wound care products can be overwhelming and confusing. I suspect that if you checked your supply rooms and treatment carts today, you would find stacks of unused products. You also would probably find that many products were past their expiration dates and that you have duplicate products in the same category, but with different brand names. Many clinicians order a product by brand name, not realizing that plenty of the product is already in stock under a different brand name.

A solution to this problem is to set up a wound care formulary and guideline. This intervention can help clinicians become comfortable and clinically competent on what products to use when, which promotes better outcomes with less product waste.

Setting up a wound care formulary can seem overwhelming. It must be done tactfully or your clinicians may not have "buy in" for the products you decide to use. Here are some tips that may help you streamline the process. Keep in mind that you can involve staff to help you as you work through these tips.

## Review current supplies

Start the process by going through all your current supplies. Label bins with the category of the product, for example, calcium alginate, hydrogel, and foams. Organize the brand-name products within the same category by placing them into the appropriate bin. As you check the supplies, put all expired products into an expired bin. You can always use them for teaching and demonstration purposes.

## Evaluate the products

Evaluate the products you have on hand with the appropriate clinicians to determine which products have good performance and outcomes within each category. You may want to work with your medical-supply distributor to obtain pricing on the products, especially if you have multiple brand names within a category that perform well.

## Set up a guideline

Once you determine what products you'll use within each category, set up a guideline on when and how to use them. Specify that nurses should write the prescriber's

order by category instead of brand name (for example, "apply adhesive foam dressing") and have prescribers do the same. Then have the guideline indicate which brand-name product the clinician should use in that category. This way, if you do change the brand-name product within that category, you don't have to obtain a new order.

### Educate staff

Schedule inservices for all licensed staff, physicians, nurse practitioners, and other prescribers to explain the formulary and guideline. Hold a product fair on how to use and apply the various dressings, so clinicians become familiar with the options and don't order something not on formulary.

### Establish an approval system for products not on formulary

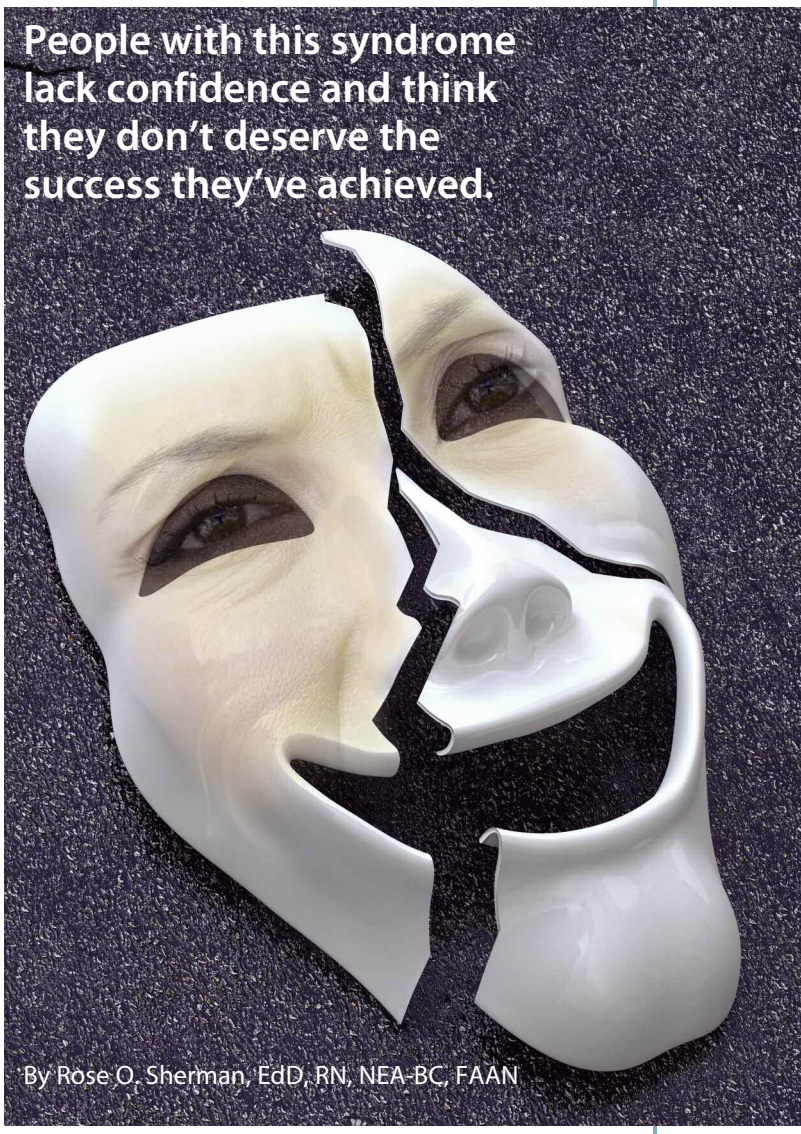
Work with your medical-supply distributor to set up an approval system if someone tries to order a product not on formulary. The distributor should also be able to run reports for you of the products being ordered so you can track them.

### Achieving your goals

Once you have your wound care product formulary and guideline up and running, you should see those piles of expired and unused products disappear and your current products used appropriately. And you'll be on your way to achieving the goal of providing good clinical outcomes in a cost-effective manner. ■

Jeri Lundgren is director of clinical services at Pathway Health in Minnesota. She has been specializing in wound prevention and management since 1990.

# Imposter syndrome: When you feel like you're faking it




By Rose O. Sherman, EdD, RN, NEA-BC, FAAN

*Colleen Jackson recently was promoted to a manager position on her unit. At first, she was thrilled with the opportunity to advance her leadership skills, but now she's having second*

*thoughts. She doesn't feel confident in her new role and worries how her team views her. She confesses to her manager, "I keep thinking someone will figure out how much I really don't know and question whether I should've been given the position. Sometimes I feel like an imposter. When I mention this to my friends, they tell me to 'fake it until you make it.' But I'm not so sure about that!"*

Colleen isn't alone in feeling like an imposter. In imposter syndrome, a person doesn't feel good enough, is unsure of what she's doing, and feels she can't live up to others' expectations. She may be afraid she'll be found out as an imposter at any moment. The syndrome is most common among women leaders who feel they don't deserve the success they've achieved despite external evidence of their competence. It's more likely in perfectionists who constantly compare themselves to others.

Certain situations, such as taking on a new role, can lead to imposter syndrome. For instance, Colleen may think that because she was seen as qualified for her new role, others expect her to immediately have expert knowledge. If, like Colleen, you feel you don't deserve the career success you've had, you may experience deep feelings of inauthenticity and fear you'll be found out as a fake. (See *Inside the imposter syndrome*.)

In small doses, feelings of inadequacy may not be a bad thing, because they remind us to work on building our competency. But people with imposter syndrome feel a level of self-doubt that can lead to overwork and a paralyzing fear of failure. The fear of being unmasked causes incredible stress. Colleen and others like her may have unrealistic expectations of themselves in a new role—expectations that can compromise their success.

## Overcoming imposter syndrome

For people with imposter syndrome, the response to their success may rest too heavily on others' approval, recognition, and opinions. A wise mentor once told me we can easily overestimate how much time others spend thinking about us and our behaviors. Most people, she observed, are self-absorbed. This is important to consider, because the idea that Colleen is an imposter probably has never crossed her team members' minds.

Imposter syndrome can create performance anxiety and lead to perfectionism, burnout, and depression.

Imposter syndrome can create performance anxiety and lead to perfectionism, burnout, and depression. So learning how to manage these feelings is important. Cathy Robinson-Walker, MBA, MCC, who coaches nurse leaders, provides advice to help cope with imposter syndrome. Her recommendations include the six actions steps below.

**Discuss your feelings with a trusted mentor.**
Sharing your insecurities with someone you trust and respect can help you separate what's real from your perceptions of insecurity. A trusted mentor might inform Colleen she's making good progress as a beginning leader and that no one expects her to be an expert at this point. The mentor can provide guidance about specific areas where Colleen might need additional growth and how to best go about this.

**Pay attention to your own self-talk and consider whether your thoughts are empowering or disabling.**
Do you often say to yourself, "I achieved this only because I work harder than anyone else, not because I'm more competent"? Valerie Young, author of *The Secret Thoughts of Successful Women: Why Capable People Suffer from the Impostor Syndrome and How to Thrive in Spite of It*, makes a strong case that your internal script is a well-rehearsed pattern that serves as a key to feelings of being an imposter. She cautions that individuals with imposter syndrome may sabotage themselves as a way of holding back, due to feelings of being a fraud.

Instead, choose a different script and talk yourself down during times of self-doubt. Instead of thinking, "I'm the wrong person for this job," retrain yourself to say, "I have a lot to offer in this position."

**Make of list your strengths.**
Take the time to make a written list your strengths and what you contribute. Ask others for input, and refer to the list in times of self-doubt. If you're in a new role, remember that you were chosen for a reason. In Colleen's case, her supervisor saw her leadership potential. Also realize that most people overestimate their abilities; people with imposter syndrome underestimate theirs.

**Accept that perfection is unrealistic and costly.**
Trying to be perfect and feeling you need to "know it all" is unrealistic and can be costly on a personal level. Perfectionists typically believe anything short of a flawless performance all the time is unacceptable. But none of us can live a mistake-free life; we all make errors. Those with imposter syndrome hold themselves to impossibly high standards and feel shame, insecurity, and low self-esteem when they don't meet their own expectations. But progress, not perfection, is what really matters.

## Inside the imposter syndrome

The term *imposter syndrome* was coined by researchers Pauline Clance and Suzanne Imes at Georgia State University in 1978. These psychologists observed that some high-achieving individuals have a secret sense that they can't live up to others' expectations. Instead of seeing their failures and mistakes as performance feedback, they deeply personalize them. They may think their success is based on luck or timing, not their own experience, skills, or other qualities.

In many cases, feelings of imposter syndrome can be traced to early family or school dynamics, when a child received mixed messages about competency and individual achievements. According to Clance and Imes, imposter syndrome is most likely to occur in:

- persons for whom success came quickly
- first-generation professionals
- people with high-achieving parents
- members of minority groups
- students.

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**Know you'll need to develop your competencies at certain times in your career.**
Throughout your career, you'll go through periods when you're on a steep learning curve and will need to further develop your competencies. You may feel like a novice and have to work hard to build new competencies.

> Fear is a useful emotion as long as it doesn't escalate to the level of paralyzing behaviors.

Be honest about what you know and don't know, and seek advice from experts on your unit or in your organization. The simple act of saying, "This is new for me, and I'm working hard to learn this role" can be empowering. Colleen, for instance, might be surprised at others' reactions to hearing this from her. They might perceive her as a more authentic leader.

**Be willing to be uncomfortable and move through your fear.**
In *Fear of Flying*, author Erica Jong urges readers engaging in new experiences to feel the fear and do it anyway. Fear is a useful emotion, as long as it doesn't escalate to the level of paralyzing behaviors. Practice and preparation can help ease new leaders' fears. The fear of new challenges will never truly go away, but it can be managed.

## Building competence leads to competency

People with imposter syndrome generally are intelligent, thoughtful, and capable but lack self-confidence. Over time, clinicians like Colleen will grow out of feeling like an imposter as they build their competency and become more comfortable in their roles. Eleanor Roosevelt said, "I believe that anyone can conquer fear by doing the things he fears to do, provided he keeps doing them until he gets a record of successful experience behind him." If you feel like an imposter, this is good advice to ponder. ■

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# Compression therapy for chronic venous insufficiency, lower-leg ulcers, and secondary lymphedema

## Many compression systems are available. Which one is the right type for your patient?

By Nancy Chatham, RN, MSN, ANP-BC, CCNS, CWOCN, CWS, and Lori Thomas, MS, OTR/L, CLT-LANA

An estimated 7 million people in the United States have venous disease, which can cause leg edema and ulcers. Approximately 2 to 3 million Americans suffer from secondary lymphedema. Marked by abnormal accumulation of protein-rich fluid in the interstitium, secondary lymphedema eventually can cause fibrosis and other tissue and skin changes.

In lymphedema, the lymphatic system can't transport the lymphatic load effectively due to reduced transport capacity. Secondary lymphedema results from such factors as surgery, radiation therapy, injury, and obesity. When caused by chronic venous insufficiency (CVI), secondary lymphedema is termed *phlebo-lymphostatic edema* or *phlebolymphedema*. Phlebolymphedema incidence isn't fully known.

CVI generally develops over a long period due to increased pressure within the venous system. Changes in venous pressure may stem from any disruption that alters normal venous flow. Incompetent valves in the superficial or deep venous system and an altered calf muscle pump contribute to venous hypertension. Additional contributing factors include venous thrombosis, traumatic injury, obesity, pregnancy, sedentary lifestyle, prolonged standing, paralysis, and female gender.

**Read more about chronic venous insufficiency**

CVI-related venous ulcerations with secondary lymphedema (phlebo-lymphedema)

During initial patient evaluation, try to determine the cause of leg ulcers and underlying edema by obtaining a thorough history, performing a physical exam, and completing a diagnostic work-up. Once acute causes (such as acute cellulitis, deep vein thrombosis, or heart failure) are ruled out, a treatment plan can be initiated.

Compression therapy is the standard of care for CVI, venous ulcerations, and lymphedema-related ulcers. By countering the effects of venous pressure, compression therapy reduces edema and

promotes venous and lymphatic return.

Many compression systems are available. To choose an appropriate compression product for a patient with leg ulcers, you must have a thorough understanding of these products. However, this choice can be difficult because of lack of standardized compression classifications, confusion over terminology, and lack of evidence as to which type of compression system is most effective.

## Basic bandage materials

It's important to understand the type of material in the bandage system because this affects other aspects of the bandage. Compression bandage materials may be elastic, long-stretch, inelastic, or short-stretch bandages. The terms *elastic* and *long-stretch* (elastic/long-stretch) bandages are often used synonymously, as are inelastic and *short-stretch* (inelastic/short-stretch) bandages.

**Compression bandages may be elastic, long-stretch, inelastic, or short-stretch.**

Extensibility differs markedly between these two basic types. Extensibility refers to the degree to which the bandage can be stretched when pulled. Generally, an elastic/long-stretch bandage has a maximal extensibility greater than 100%, whereas an inelastic/short-stretch bandage has a maximal extensibility of less than 100%.

## Bandage application methods

The next factor to consider is how much pressure the bandage system will exert on the limb and the effect of the materials on pressure. Gradient compression (where pressure is greater distally and gradually decreases proximally) is the basic principle for all compression therapies currently used.

To better understand the pressure exerted by a bandage and thus ensure safe and gradient compression, you need to understand and apply the Law of Laplace: pressure (P) = tension (T) divided by radius (R). This law is the basis for calculating pressure or simply determining if pressure is higher or lower in certain areas of the limb.

- *Tension* is the amount of stretch used on the bandage as it's applied; it's determined by the person applying the bandage. When you apply a bandage on a limb, are you stretching it to 100% of its extensibility or only 25%? Are you stretching equally along the entire limb, or using different amounts of stretch at certain parts of the limb? These are crucial considerations.
- When considering *radius*, think of a cylinder, or the conical shape of most limbs. When a bandage is applied to a cylinder or cone with equal tension (stretch), pressure is determined by the radius. A smaller radius (such as that of the distal part of the leg) has a higher pressure than a larger radius (such as that of the calf or thigh area).

When applying a compression bandage, always consider the Law of Laplace. What happens when you bandage a leg that has lost its cone shape—for instance, when the distal leg has a larger radius than the area proximal to it? If you apply the compression bandage to this limb with equal tension in all areas, the pressure will be higher proximally than distally; this wouldn't allow for the gradient compression most practitioners try to achieve. To avoid this mistake, you need to build up the limb regions appropriately with padding and foam to create the desired cylinder shape that ensures both a proper pressure application and gradient compression (much as you might place foam or padding around a bony prominence, such as the ankle or

foot.) Problem solving each individual case and applying key principles to the bandage system and bandage application can promote edema reduction and ensure appropriate compression.

Once you've applied the bandage, keep in mind how the bandage materials affect resting pressure and working pressure on the limb. *Resting pressure* refers to pressure on the limb from the bandage itself, generally while the patient is at rest or supine. *Working pressure* is the pressure created when the limb is moved and muscles contract against the bandage. An elastic/long-stretch bandage (such as an ACE™ wrap) has a high resting pressure and low working pressure. In contrast, an inelastic/short-stretch bandage (such as that used in lymphedema treatment) has a low resting pressure and a high working pressure.

Some clinicians believe inelastic/short-stretch bandages may be tolerated better than elastic/long-stretch bandages because of the variation between resting and working pressure. Research also shows that inelastic/short-stretch bandages are more effective than elastic/long-stretch bandages in reducing deep venous refluxes and venous volume.

## Multilayer bandages

Traditionally, multilayer short-stretch bandages are used during the decongestive phase of lymphedema treatment. In standard lymphedema compression bandaging, a trained clinician (typically a certified lymphedema therapist [CLT]) applies a series of short-stretch bandages of varying widths, in combination with padding, to ensure gradient pressure. This bandage system can be used to accommodate limbs of any size or shape, and can be applied from toes to groin as needed. The CLT determines the number of bandages and use of materials based on the patient's individual needs. Multilayer bandage systems are washable and reusable.

Multilayer bandages also are used to treat

**View: Application of a bandage**

CVI and related ulcerations. Many of these systems come as kits. Typically disposable, they're usually applied only from the base of the toes to the knee and can't accommodate the thigh or toes. However, the term *multilayer* can be confusing. Although it commonly refers to bandage systems with two to four layers, a multilayer bandage may combine inelastic/short-stretch and elastic/long-stretch bandages. Research has found that bandage systems made of elastic/long-stretch materials take on properties of inelastic/short-stretch bandages due to friction between the layers. Therefore, experts have proposed using the term *multicomponent* instead of *multilayer* bandages.

Four-layered compression wrap consisting of both short-stretch and long-stretch materials

Multicomponent short-stretch compression bandage for phlebolymphedema treatment, including toe wraps, cotton liner, foam padding, and short-stretch bandages in varying widths applied distally to proximally

## Quick guide to compression bandages

This chart gives examples of inelastic/short-stretch, elastic/long-stretch, and multicomponent compression bandages. (No product preference is intended.)

| Material and extensibility | Product examples |
|---|---|
| **Inelastic/short-stretch bandages**<br>Less than 100% extensibility | Comprilan® bandage<br>Rosidal K® bandage<br>Zinc oxide bandage (nonmodified) |
| **Elastic/long-stretch bandages**<br>More than 100% extensibility | ACE™ wrap<br>Coban™ wrap<br>SetoPress® bandage<br>SurePress® bandage |
| **Multicomponent bandages**<br>May combine short-stretch and long-stretch materials | Coban™ 2 Layer wrap<br>Modified Unna boot (Unna paste wrap, absorbent cotton layer, self-adhesive wrap)<br>Profore®, Profore Lite® bandage |

This terminology change and an understanding of how bandaging materials work enhance communication between clinicians who use traditional lymphedema compression bandages and those who use various wound-management compression systems, as they work together to treat phlebolymphedema patients. (See *Quick guide to compression bandages.*)

## Which bandage system should you use?

As described above, clinicians must consider several factors to determine the type of compression bandage to use. Also, research is underway to identify the best form of bandaging, the sub-bandage pressures of different materials and applications, and physiologic responses to varying degrees of compression. Besides choice of material, bandaging technique and clinician experience in applying bandages also play a role in bandage effectiveness. You must consider each patient individually and choose and apply the materials properly. This is especially critical for phlebolymphedema patients with ulcerations, for whom a multicomponent bandaging system may be more appropriate than certain products traditionally used in wound management. No matter which bandage system you use, be sure to follow the Law of Laplace when applying it to ensure safe and successful edema reduction.

There are endless ways to combine various compression bandages and garments to meet a patient's needs. Also consider contraindications to compression, such as cardiac edema, acute infection, acute deep vein thrombosis, and severe arterial disease.

In patients with an arterial component, keep in mind that you'll need to adjust compression level to accommodate the compression wrap and the compression hose/garment system while treating the ulcer and once it is healed. Other patient factors to consider include sensory deficits, cancer, diabetes, paralysis, hypertension, cognitive status, and allergies—as well as age, functional ability, social support systems, and financial status.

In managing phlebolymphedema and ulceration, a multidisciplinary team approach and patient participation in and understanding of treatment are paramount. Appropriate diagnosis and treatment recommendations must rest on a sound understanding of pathophysiology and compression therapy. Across all disciplinary levels, competency demonstrations in using compression therapy, as well as compression therapy contraindications, should be mandatory. Recommendations for future study include research to establish phlebolymphedema prevalence, a consensus on appropriate compression systems for treatment, and a consensus on transprofessional terminology for disease classification and compression therapy. ■

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# Clinician RESOURCES

Here are resources that can help you in your busy clinical practice by giving you information quickly. Don't miss out!

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- pressure-ulcer prevention points (**available as a PDF**)
- **registered nurse competency-based curriculum: pressure ulcer prevention**.

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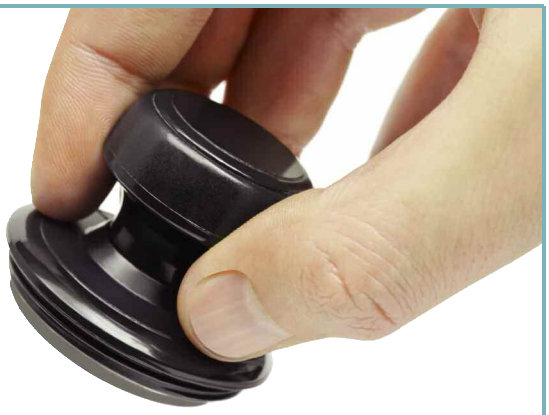


## Quality assurance resources for long-term care

The resources in "**Quality Assurance Performance Improvement (QAPI) Resources**" are targeted toward those working in long-term care. The list includes links such as:

- **Advancing Excellence in America's Nursing Homes National Campaign**, which has resources and tools for nursing homes to improve in several different areas
- **Implementing Change in Long-Term Care**, a detailed guide on how to engage nursing home staff in the change process
- **The Long-Term Care Improvement Guide**, developed by Planetree in partnership with Picker Institute.

## Prescription assistance programs


Do you have patients who need help paying for their prescriptions? "**Understanding Prescription Assistance Programs**," from the National Council on Patient Information and Education, explains how these programs work and provides resources. ■

## Eastern Region: WCC 1-Day Conference and WCC Meeting Wound Assessment and Palliative Wound Management Seminar

As part of our ongoing work with the LINC (Leadership Initiative Networking Coalition) initiative, the National Alliance of Wound Care and Ostomy (NAWCO) is pleased to announce the second regional 1-day wound conference and WCC affiliate meeting on Tuesday, September 24, 2013.

The conference will be held at **Peters Place** in Bridgeville, PA, from 8:00 A.M. to 3:00 P.M., followed by the WCC® meeting from 3:15 to 4:15 P.M.

During the conference, the speakers will discuss the goals of palliative wound management, including such challenges as wound odor, excessive bleeding, exudate, necrotic tissue, pain, periwound breakdown, itching, body image, and caregiver skills. You'll also learn about various wounds encountered in palliative care and discuss topical products and interventions you can use for wound management.

The conference speakers will be:

- **Nancy Morgan**, RN, BSN, MBA, WOC, WCC, DWC, OMS. Nancy combines her expertise of wound care instruction and wound management program development with her business management and marketing knowledge. She is a nursing entrepreneur who is an experienced and recognized international presenter. Nancy's motivational teaching style has inspired healthcare professionals across the nation. Her entrepreneurial spirit led her to cocreate the Wound Care Education Institute (WCEI).

- **Gail Hebert**, RN, BSN, MS, CWCN, WCC, DWC, OMS. Gail has been a registered nurse for 35 years and has practiced in the area of wound care for more than 20 years. She holds BS and MS degrees in nursing, and is certified in wound care through NAWCO and WOCN (Wound, Ostomy, and Continence Nurses Society). A former director of nursing in long-term care (LTC) and current holder of an LTC administrator's license in Virginia, Gail has practiced in a variety of settings, including community education and hospice.

This conference has been approved by the California Board of Registered Nursing, Provider Number 14094, for 5.0 contact hours of continuing education credit.

Registration is $70/person and parking is free. Registration includes admission to the program, handouts, lunch, vendor product/service showcase, and continuing education credits. Space is limited—register now to ensure you get a seat. There will be no refunds.

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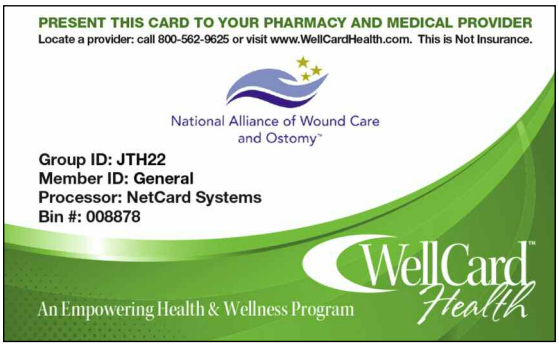


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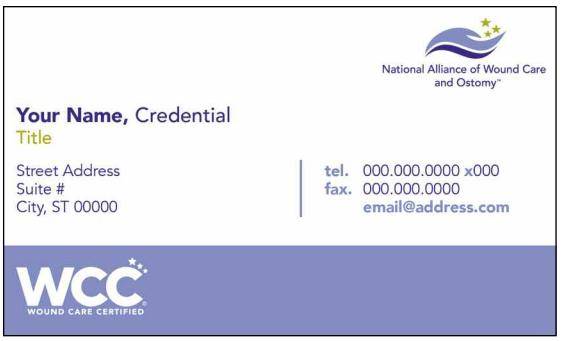


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Below are WCC, DWC, and OMS certificants who were certified or recertified in April and May 2013.

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As the official journal of WCC®s, DWC®s, and LLE℠s, the journal is dedicated to delivering succinct insights and pertinent, up-to-date information that multidisciplinary wound team members can immediately apply in their practice and use to advance their professional growth.

We are currently seeking submissions for these departments:

- ***Best Practices***, which includes case studies, clinical tips from wound care specialists, and other resources for clinical practice
- ***Business Consult***, which is designed to help wound care specialists manage their careers and stay current in relevant healthcare issues that affect skin and wound care.

If you're considering writing for us, please click here to review our Author Guidelines. The Guidelines will help you identify an appropriate topic and learn how to prepare and submit your manuscript. Following these guidelines will increase the chance that we'll accept your manuscript for publication.

If you haven't written before, please consider doing so now. Our Editorial Team will be happy to work with you to develop your article so that your colleagues can benefit from your experience.

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