

Wound Care ADVISOR

PRACTICAL ISSUES IN WOUND, SKIN, AND OSTOMY MANAGEMENT

Official journal of National Alliance of Wound Care
and Ostomy

**When
and how
to culture
a chronic
wound**

**Wound
classification**

**Management of
venous stasis
ulcers**

**Wound care
in the home**

January/February 2014 • Volume 3 • Number 1
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Wound Care Advisor is written by skin and wound care experts and presented in a reader-friendly electronic format. Clinical content is peer reviewed.

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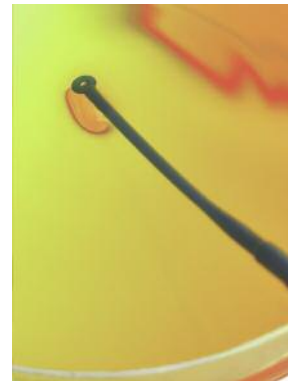
CONTENTS

January/February 2014 • Volume 3 • Number 1

www.WoundCareAdvisor.com

FEATURES

- 23 **When and how to culture a chronic wound**
By Marcia Spear, DNP, ACNP-BC, CWS, CPSN
A culture is a valuable tool in wound care if used correctly.
- 32 **Quality-improvement initiative: Classifying and documenting surgical wounds**
By Jennifer Zinn, MSN, RN, CNS-BC, CNOR, and Vangela Swofford, BSN, RN, ASQ-CSSBB
Interprofessional collaboration promoted a successful initiative to improve wound classification.



page 22

DEPARTMENTS

- 6 **From the Editor**
Have you made your New Year's resolutions?
- 8 **Clinical Notes**
- 12 **Best Practices**
Managing venous stasis ulcers
A case of missed care
Fifty shades of wound care at home
- 26 **Apple Bites**
How to apply a spiral wrap
- 28 **Business Consult**
Avoid surprises when connecting between care settings
Mastering the art of meetings
- 39 **Clinician Resources**
- 40 **NAWCO News**



page 17



page 20

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Have you made your New Year's resolutions?

A resolution is a serious decision or determination to do, or not to do, something. Traditionally, most New Year's resolutions focus on self-improvement: losing weight, giving up a bad habit, exercising more, being a better person. Because most of us spend about half of our waking lives at work, perhaps our work lives should be the subject of some of our resolutions. Here are a few work-related resolutions I've come up with:

- If your patient's condition doesn't improve after 2 weeks, reassess the treatment plan. Avoid weeks and weeks of no healing.
- Just say no to outdated treatment plans (such as wet-to-dry dressings, t.i.d. dressing changes, and hydrogen peroxide).
- Meet with suppliers and sales representatives on a regular basis. Set aside 1 day each week or month to find out what's new.
- Avoid putting tape on your patients' skin.
- Provide additional support for all discharged wound and ostomy care patients by scheduling routine follow-up via telephone calls, e-mails, letters, or in-person visits.

- Create a "Mini Me" by training and educating a colleague to cover for you when you're gone.
- Keep up with the social side of wound care. Follow wound and ostomy care pages on **Facebook** (including *Wound Care Advisor*), track Twitter trends through #woundcare and #ostomy, and connect with wound and ostomy care professionals on LinkedIn.
- Start a wound care team.
- Create or update wound and ostomy patient education handouts.



- Clean out and organize wound and ostomy supply closets.
- Organize a free ostomy appliance wellness clinic quarterly.

- Educate, educate, educate yourself and others through in-services, skill-of-the-week posters, wound care newsletters, skill fairs, webinars, national wound conventions, and supplier-sponsored training sessions. Share copies of **Wound Care Advisor** with colleagues.
- Update relevant policies, procedures, and protocols.
- Perform, obtain, or review **ankle-brachial index** or toe-brachial index results for all patients before applying venous compression wraps.
- Start an ostomy support group by creating your own, or partner with the **United Ostomy Associations of America**.
- Design a quick “how to” checklist form for non-wound care staff to follow.
- Play nice with others. Remember to

compliment, congratulate, appreciate, and listen to other’s opinions.

“Start by doing what is necessary, then do what is possible, and suddenly you are doing the impossible.”

– Saint Francis of Assisi

From myself and the staff of *Wound Care Advisor*, we wish you a beautiful, magical, and prosperous New Year!



Donna Sardina, RN, MHA, WCC, CWCMS,
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Editor-in-Chief
Wound Care Advisor
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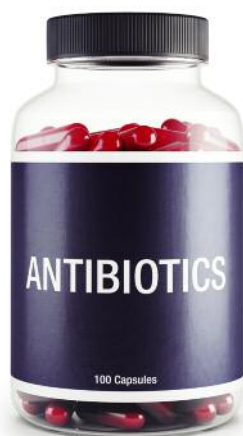
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Antibiotics and conservative surgery yield similar outcomes in patients with diabetic foot osteomyelitis

A study in *Diabetes Care* finds that antibiotics and surgery have similar outcomes related to rate of healing, time of healing, and short-term complications in patients who have neuropathic forefoot ulcers and osteomyelitis, but no ischemia or necrotizing soft-tissue infections.

“Antibiotics versus conservative surgery for treating diabetic foot osteomyelitis. A randomized comparative trial” compared two groups: an antibiotics group and a surgery group. Patients in the antibiotics group received antibiotics for 90 days, and patients in the surgery group received conservative surgery with postoperative antibiotics for 10 days.



BIA may help assess patients for lymphedema

A study published in *Lymphology* reports that bioelectrical impedance analysis (BIA) ratios are useful for detecting lymphedema in patients with breast cancer, giving clinicians more confidence in their assessment.

“L-dex ratio in detecting breast cancer-related lymphedema: Reliability, sensitivity, and specificity” analyzed data from 250 women, including healthy female adults, breast cancer survivors with lymphedema, and those at risk for lymphedema. The results demonstrate that survivors with lymphedema have significantly higher L-dex ratios, which shows the possibility of

using BIA to discriminate between those cohorts of women.

The researchers say that using a cutoff of L-Dex ratio $>+7.1$ (as was done in the study) “still misses 20% of true lymphedema cases.” Therefore, clinicians should “integrate other assessment methods (such as self-report, clinical observation, or perometry) to ensure the accurate detection of lymphedema.”

Offloading-improved custom-made footwear doesn't reduce incidence of plantar foot ulcer recurrence in diabetes

Use of offloading-improved custom-made footwear doesn't significantly reduce recurrence of plantar foot ulcers in patients with diabetes compared to nonimproved custom-made footwear, according to a study in *Diabetes Care*.

“Effect of custom-made footwear on foot ulcer recurrence in diabetes: A multicenter randomized controlled trial” included 171 patients with diabetes and neuropathy who had a recently healed foot ulcer. The patients wore either nonimproved custom-made footwear or custom-made footwear that improved and subsequently preserved offloading (–20% peak pressure relief by modifying the footwear).

However, the authors of the study note that high adherence with wearing the offloading-improved custom-made footwear reduced ulcer risk.





NPWTi may be helpful in infective wounds

An analysis of studies related to the use of negative pressure wound therapy with instillation (NPWTi) of antiseptics reports that instillation may be helpful in some patients with infected wounds, but more research is needed.

The review article “**Recommendations on negative pressure wound therapy with instillation and antimicrobial solutions—when, where and how to use: What does the evidence show?**” published in the *International Wound Journal* states, “some reports indicate an outstanding benefit of NPWTi for patients, using antiseptics such as polyhexanide and acetic acid in acute and chronic infected wounds and povidone-iodine as prophylaxis in contaminated wounds with potential viral infection.” The recommended soaking time is 20 minutes for each of the four to eight cycles a day.

The authors note that the prophylactic use of NPWTi with the substances described earlier “can be recommended in contaminated wounds that cannot be closed primarily with surgical means,” but emphasize that more rigorous studies are needed.

Simple compression bandages as effective as massage for lymphedema

A study that enrolled 103 women with breast cancer, 95 of whom were able to

be evaluated, has found that simple compression bandages are as effective as massage in the treatment of lymphedema.

In the study, “**Randomized trial of decongestive lymphatic therapy for the treatment of lymphedema in women with breast cancer,**” one group wore elastic compression sleeve and glove garments on the arm for 12 waking hours a day, while the other group received an hour of lymphatic drainage massage from trained therapists each weekday for 4 weeks along with exercise and skin care. After the month of treatment, patients in the massage group also wore an elastic compression sleeve and glove in the daytime.

No significant difference between the two groups was found in arm function, quality of life, or reduction of arm volume.

The authors of the study, published in the *Journal of Clinical Oncology*, noted that the failure to detect a difference “may have been a result of the relatively small size of the trial.”

Ostomy bag sensor app released

11 Health, a company based in the United Kingdom, has released **Ostom-I Alert**, a sensor that attaches to an ostomy bag and notifies the patient by sending an alert to an app on a mobile device when it’s time to empty the bag. Ostom-I, a single-use device, can last up to 11 months and costs \$79.99.

The device captures information about the volume of output over a time frame, which the patient can email. Data is also stored on a website, which also contains a list of **FAQs**.





Internet valid tool for diabetes self-management

Web-based strategies for self-management in patients with diabetes are a “viable option,” according to “**Internet interventions to support lifestyle modification for diabetes management: A systematic review of the evidence.**”

The authors of the study, published in the *Journal of Diabetes and Its Complications*, found nine studies that met their inclusion criteria. Two studies found improvements in diet and/or physical activity and two studies found improvements in glycemic control compared with a control. Successful studies included interactive components and opportunities for peer support. Those studies that reported on website utilization found that it decreased over time.

The authors note that future research is needed on the use of Web-based interventions in underserved communities.

Periop steroids increase risk of pressure ulcers in CV surgical patients

A study published by the *International Wound Journal* has found that administra-



tion of perioperative corticosteroids in patients undergoing cardiovascular (CV) surgery increases the risk of pressure ulcers.

“**Perioperative corticosteroids administration as a risk factor for pressure ulcers in cardiovascular surgical patients: A retrospective study**”

analyzed 286 cardiac surgery patients; of these, 47 patients developed 57 surgery-related pressure ulcers, an incidence of 16.4%. The incidence of surgery-related pressure ulcers was significantly higher in patients who received corticosteroids compared to those who didn't receive corticosteroids.

The authors conclude that perioperative corticosteroid administration is an independent risk factor for pressure ulcers in CV surgical patients and recommend that corticosteroids be administered with caution in these patients.



Showers better than foot baths for cleaning chronic limb ulcers

“**Which cleansing care is better, foot bath or shower? Analysis of 236 limb ulcers**” finds that showering is preferred over foot baths for cleaning chronic limb ulcers. The researchers found that the incidence of loss of all toes or major amputation was significantly higher in the foot-bath group of patients compared to the showering group.

The study in the *International Wound Journal* concludes, “Clinicians should be cautious that inappropriate cleansing may cause ulcer infections to spread.”



SGAP flap feasible for reconstruction of sacral pressure ulcers

A study published in the *Journal of Wound Care* has found that a superior gluteal artery perforator (SGAP) flap for the reconstruction of sacral pressure ulcers has “good reliability and minimal complications” and is “highly recommended for the reconstruction of sacral pressure ulcers.”

“**Superior gluteal artery perforator flap: A reliable method for sacral pressure ulcer reconstruction**” included 15 patients. Success was defined as a healed wound within 30 days of the procedure. All of the wounds healed within 30 days of surgery, wound care, and culture-sensitive antibiotics. No recurrence of the pressure ulcer was noted during the follow-up.

FDA proposes rule on antibacterial soaps

The U.S. Food and Drug Administration (FDA) has issued a **proposed rule** to require



manufacturers of antibacterial hand soaps and body washes to demonstrate that their products are safe for long-term daily use and more effective than plain soap and water in preventing illness and the spread of certain infections. Under the proposal, if companies don't demonstrate such safety and effectiveness, these products would need to be reformulated or relabeled to remain on the market. The proposed rule doesn't affect hand sanitizers, wipes, or antibacterial products used in healthcare settings.

The FDA notes that although consumers generally view these products as effective tools to help prevent the spread of germs, there is currently no evidence that they are any more effective at preventing illness than washing with plain soap and water. In fact, some data suggest that long-term exposure to certain active ingredients used in antibacterial products—for example, triclosan (liquid soaps) and triclocarban (bar soaps)—could pose health risks, such as bacterial resistance or hormonal effects. ■

Managing venous stasis ulcers

Compression therapy, local wound care, dressings, antibiotics, surgery, and adjunctive methods play a role in management.

By Kulbir Dhillon, MSN, FNP, APNP, WCC

Venous disease, which encompasses all conditions caused by or related to diseased or abnormal veins, affects about 15% of adults. When mild, it rarely poses a problem, but as it worsens, it can become crippling and chronic.

Chronic venous disease often is overlooked by primary and cardiovascular care providers, who underestimate its magnitude and impact. Chronic venous insufficiency (CVI) causes hypertension in the venous system of the legs, leading to various pathologies that involve pain, swelling, edema, skin changes, stasis dermatitis, and ulcers. An estimated 1% of the U.S. population suffers from venous stasis ulcers (VSUs). Causes of VSUs include inflammatory processes resulting in leukocyte activation, endothelial damage, platelet aggregation, and intracellular edema. Preventing VSUs is the most important aspect of CVI management.

Treatments for VSUs include compression therapy, local wound care (including debridement), dressings, topical or systemic antibiotics for infected wounds, other pharmacologic agents, surgery, and adjunctive therapy. Clinicians should be



able to recognize early CVI manifestations and choose specific treatments based on disease severity and the patient's anatomic and pathophysiologic features. Management starts with a full history, physical examination, and risk-factor identification. Wound care clinicians should individualize therapy as appropriate to manage signs and symptoms.

Compression therapy

Treatment focuses on preventing new ulcers, controlling edema, and reducing venous hypertension through compression therapy. Compression therapy helps prevent reflux, decreases release of inflammatory cytokines, and reduces fluid leakage from capillaries, thereby controlling lower extremity edema and VSU recurrence. Goals of compression therapy are to reduce symptoms, prevent secondary complications, and slow disease progression.

In patients with severe cellulitis, compression therapy is delayed while infection is treated. Contraindications for compression therapy include heart failure, recent deep vein thrombosis (DVT), unstable medical status, and risk factors that can cause complications of compression therapy. Ultrasound screening should be done to rule out recent DVT. Arterial disease

must be ruled out by measuring the ankle-brachial index (ABI). Compression is contraindicated if significant arterial disease is present, because this condition may cause necrosis or necessitate amputation.

High compression levels should be used only if the patient's ABI ranges from 0.6 to 1.0. With an ABI between 0.9 and 1.25, the patient likely can tolerate treatment with four-layer compression or a long-stretch compression wrap. For patients with an ABI between 0.75 and 0.9, use single-layer compression with cast padding and a Coban wrap in a spiral formation.

Keep in mind that use of a compression wrap depends on the patient's comfort level and degree of leg edema. In patients who have mixed venous and arterial insufficiency with an ABI between 0.5 and 0.8, monitor for complications of arterial disease. Don't apply sustained high levels of compression in patients with ABIs below 0.5. (See *Comparing compression levels*.)

Pneumatic compression

The benefits of intermittent pneumatic compression are less clear than those of standard continuous compression. Pneumatic compression generally is reserved for patients who can't tolerate continuous compression.

Local wound care

Wound debridement is essential in treating chronic VSUs. Removing necrotic tissue and bacterial burden through debridement enhances wound healing. Types of debridement include sharp (using a curette or scissors), enzymatic, mechanical, biologic (for instance, using larvae), and autolytic. Maintenance de-

Comparing compression levels

Compression stockings should exert a pressure of at least 20 to 30 mm Hg at the ankle to be effective. Antiembolism stockings exert a pressure of 8 to 10 mm Hg at the ankle, making them inadequate and not recommended for treating venous insufficiency. Use of graduated compression stockings varies with patient factors, including signs and symptoms. For latex-sensitive patients, compression stockings without elastic are available.

Description of pressure	mm Hg (range)
Very light	7 to 15
Low	16 to 20
Moderate	20 to 30
High	30 and higher

bridement helps stimulate conversion of a chronic static wound to an acute healing wound.

Dressings

Dressings are used under compression bandages to promote healing, control exudate, improve patient comfort, and prevent the wound from adhering to the bandage. Vacuum-assisted wound-closure therapy can be used with compression bandages.

A wide range of dressings are available, including:

- hydrofiber dressings
- acetic acid dressings
- silver-impregnated dressings, which have become more useful than topical silver sulfadiazine in treating VSUs
- calcium alginate dressings
- proteolytic enzyme agents
- synthetic occlusive dressings
- extracellular matrix dressing
- bioengineered skin substitutes. Several human-skin equivalents created from

Other drugs used to treat VSUs

Besides antibiotics, pharmacologic agents used to treat venous stasis ulcers (VSUs) include the following:

- *Pentoxifylline* is a useful adjunct to compression bandaging and may be effective even without compression. It works by reducing platelet aggregation and thrombus formation. The drug also can be used as monotherapy in patients who can't tolerate compression bandaging. However, it's not the preferred treatment for VSUs.
- *Calcium-channel blockers*, such as diltiazem, nifedipine, and verapamil, are particularly effective against large-vessel stiffness and venous hypertension.
- *Aspirin* combined with compression therapy speeds ulcer healing and reduces ulcer size, compared to compression therapy alone. Adding aspirin therapy to compression bandaging generally is recommended in patients with VSUs, unless contraindicated.
- *Dermatologic topical corticosteroids*, such as triamcinolone, fluocinolone, and betamethasone, may reduce erythema, inflammation, pruritus, and vesicle formation.

Be aware that oral zinc, a trace metal, has potential anti-inflammatory effects. But recent studies found it has no benefit in treating VSUs. Also, diuretics may be prescribed for patients with other medical conditions that exacerbate lower-extremity edema (such as heart failure).

human epidermal keratinocytes, human dermal fibroblasts, and connective tissue proteins are available for VSU treatment. These grafts are applied in outpatient settings.

Antibiotics

Common in patients with VSUs, bacterial colonization and infection contribute to poor wound healing. Oral antibiotics are recommended only in cases of suspected wound-bed infection and cellulitis. I.V. antibiotics are indicated for patients with

one or more of the following signs and symptoms of infection:

- increased erythema of surrounding skin
- increased pain, local heat, tenderness, and leg swelling
- rapid increase in wound size
- lymphangitis
- fever.

Progressive signs and symptoms of infection associated with fever and other toxicity symptoms warrant broad-spectrum I.V. antibiotics. Suspected osteomyelitis requires an evaluation for arterial disease and consideration of oral or I.V. antibiotics to treat the underlying infection.

Other pharmacologic agents

A wide range of other drugs also can be used to treat VSUs. (See *Other drugs used to treat VSUs*.)

Surgery

Surgery can reduce venous reflux, hasten healing, and prevent ulcer recurrence. Surgical options for treatment of venous insufficiency include saphenous-vein ablation, interruption of perforating veins with subfascial endoscopic surgery, and treatment of iliac-vein obstruction with stenting and removal of incompetent superficial veins by phlebectomy, stripping, sclerotherapy, or laser therapy.

Patients should be evaluated early for possible surgery. An algorithm based on a review of literature indicates that patients whose wounds don't close at 4 weeks are unlikely to achieve complete wound healing and may benefit from surgery or other therapy.

To help determine if surgery may be warranted, assess venous reflux using duplex ultrasonography, which can reveal

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Skin care for CVI patients

Adequate skin care with emollients or barrier preparations (such as petroleum jelly or zinc oxide cream, ointment, or paste) helps avoid skin irritation and maintain intact skin. Teach patients to apply moisturizer to the affected skin once or twice daily. However, caution them not to use lanolin-based moisturizers. Be aware that stasis dermatitis, an intense manifestation of advanced chronic venous insufficiency (CVI), can cause blistering and skin irritation with oozing.

CVI, assess physiologic dysfunction, and identify abnormal venous dilation. Consider a vascular consult for surgical management of patients with superficial venous reflux disease or perforator reflux disease.

Surgery aims to correct valve incompetence leading to increased intraluminal pressures. (Venous valve injury or dysfunction may contribute to CVI development and progression.) Surgical reconstruction of deep vein valves may be offered to selected patients with advanced severe and disabling CVI who have recurrent VSUs.

The literature shows that surgical vein stripping isn't superior to medical management. Endovenous laser ablation (EVLA), a minimally invasive procedure, yields greater benefits than vein stripping and other types of surgery.

Skin grafting

Skin grafting may be done in patients with large or refractory venous ulcers. It may involve an autograft (skin or cells taken from another site on the same patient), an allograft (skin or cells taken from another person), or artificial skin (a human skin equivalent). Skin grafting generally isn't effective if the patient has persistent edema (common with venous insufficiency) unless the underlying venous disease is addressed.

Adjunctive therapies

Adjunctive therapies, such as ultrasound, pulsed electromagnetic fields, and electrical stimulation, can aid in treating VSUs that fail to close despite good conventional wound care and compression therapy.

Patient education

Be sure to teach patients with VSUs about treatment and prevention to promote successful management. Advise them to:

- elevate their legs above heart level for 30 minutes three to four times daily (unless medically contraindicated), to minimize edema and reduce intra-abdominal pressure. Increased intra-abdominal pressure in severely and morbidly obese patients can increase iliofemoral venous pressure, which transmits via incompetent femoral veins, causing venous stasis in the legs.
- perform leg exercises regularly to improve calf muscle function
- use graduated compression stockings as ordered to prevent dilation of lower-extremity veins, pain, and a heavy sensation in the legs that typically worsen as the day progresses
- minimize stationary standing as much as possible
- treat dry skin, itching, and eczematous changes with moisturizers and topical corticosteroids as prescribed. (See *Skin care for CVI patients*.)

Also help patients identify risk factors for CVI (such as smoking and overweight), which can affect management. Teach them about therapeutic compression stockings, including their use, benefits, and care instructions. Remind them

(continued on page 19)

A case of missed care

By Lydia A. Meyers RN, MSN, CWCN

Missed care, a relatively new concept in the medical community, refers to any part of required patient care that is omitted or delayed. It's not the same as a mistake or error, but like them, missed care can negatively affect patient outcomes.

I want to share the case of a patient admitted into home health care for wound care. The case includes several areas of missed care from many different sources.

About Ms. Smith

Ms. Smith (not her real name), an 83-year-old woman, lives alone in a senior apartment complex. She is alert, with no signs of dementia. Two months before her first home care visit, Ms. Smith hit her right ankle on a table and subsequently developed a non-healing arterial wound. Her left leg showed scars from a previous wound that was diagnosed as pyoderma granulosum.

Ms. Smith was referred to a wound clinic for testing related to the non-healing right ankle wound. The testing showed that arterial flow was sufficient and there were no signs of infection. (See *Arterial and venous wounds*.) The clinic physician ordered compression for both legs. When Ms. Smith couldn't tolerate a three-layer wrap, she was switched to a gauze bandage roll and ACT™ wraps and the wound began to heal.

When Ms. Smith's regular home care nurse could not make a visit, another was sent. After removing the wrappings, the nurse found a blister on the left leg



and documented the new wound in the patient's medical record.

The original wound on the right leg healed in the next 3 months, and the wound on the left leg progressed to almost complete healing. Ms. Smith didn't feel comfortable with the wound center so her visits were cancelled. Her current home care nurse continued the treatment as ordered.

The home healthcare agency continued with the treatment as ordered by the physician until the left leg wound progressively increased in size. Ms. Smith was then referred to another wound clinic, where she received debridement and collagenase as a wound dressing. The wound increased in size after each debridement until it covered more than half of the lower leg. The wound clinic physician told Ms. Smith he would not continue her care at the clinic. The physician said amputation was the only option and that the patient had dementia, making her unable to make her own decisions.

Ms. Smith was upset at the idea of choices being made for her, as well as how the wound looked, so she called me to get advice. She accepted the recommendation to contact another physician, who

Arterial and venous wounds

Wounds like Ms. Smith's present challenges. Understanding the differences in signs and symptoms between arterial and venous wounds can help ensure the patient receives proper care. Unfortunately, sometimes a wound can have a combined origin.

Venous stasis wounds

Usually located on the calf and shin

Tend to produce moderate to heavy drainage

Brown staining on legs

Edema when legs left in dependent position; feeling of heaviness, throbbing, or aching in the legs

Erythema or redness occur with prolonged periods of dependence.

Wounds are irregular in shape; wound bed is red with granulation and yellow slough is present.

Arterial wounds

Usually located at the ankle or below, particularly at the toes. These areas are vulnerable because of decreased blood flow and the damage often occurs as a result of trauma.

Tend not to produce drainage

Dry, hairless, pale, tight, shiny legs

Pain and cramping with elevation of the legs, especially at night

There is an increased chance of infection related to the decreased blood supply.

Wounds are round in shape, with a pale, dry wound bed; black eschar often occurs.

Note: The gold standard for treating venous stasis wounds is three- or four-layer compression. The use of Ace wraps or Unna boots is not appropriate compression. Before applying compression, arterial studies must be done to ensure the wound is not of both venous and arterial origin, which would make compression contraindicated.

discontinued the collagenase. Subsequently, the wound started to slowly improve.

The fear Ms. Smith felt about her wound and how it looked was real. Left to continue with the same dressing and treatment, it would have continued to get larger. She could have lost her leg and then her independence.

Missed opportunities

The missed care in this situation was the lack of the correct dressing, lack of communication related to changes in the wound, and lack of patient-centered care. Worsening of the wound can be connected to the healthcare system involved in Ms. Smith's care. Her history of pyoderma granulosum meant the dressing should never have included collagenase and the wound should not have been debrided. The home health nurses failed to communicate to the wound clinic and the primary care physician about how the wound was worsening. The wound clinic physician did not discuss options with the patient. Part of the reason for the missed care was the agency required nurses to visit too many patients. The visits had to be shortened with the lack of time to do what was needed for the patient. Too often in health care, financial pressure takes priority over patient care.

So what can be done to avoid this type of missed care? The agency should monitor the nurses' workload so adjustments can be made as needed, particularly because overwork can lead to errors. The nurses and agency should collaborate to ensure patients' wounds are properly evaluated and that a healthy work environment is present. Kalisch writes that nurses with higher job satisfaction have fewer incidences of missed care.

A wound care team, with a certified

wound care nurse at the head, would help ensure proper assessment and interventions. The ideal team would include representatives from physical therapy, occupational therapy, dietary therapy, and nursing.

Finally, any time a provider or agency decides to no longer provide full care, the patient must be given options for where alternative care can be provided and a detailed “handoff” of the patient to the new provider needs to be made.

Improved care

Ultimately, Ms. Smith left the wound clinic and was evaluated by other physicians. Since leaving the clinic and no longer having daily debridements, her wound has decreased in size and new epithelial tissue is forming at the wound base. Two of her

three specialists have agreed that the leg can be saved, and Ms. Smith underwent a skin graft to promote additional healing. ■

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(continued from page 16)

to wear stockings every day to prevent venous edema and VSU recurrence. Finally, urge them to adhere to the plan of care and get regular follow-up care. ■

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Fifty shades of wound care at home

By Beth Hoffmire Heideman, MSN, BSN, RN, WCC, DWC, OMS

Fifty shades of wound care at home refers to treating the whole patient and the patient's caregiving supporters—not just the wound. Only by understanding the nuances, or shades, of a patient and his or her environment can clinicians best achieve desired outcomes.

Wound healing in home care depends on teamwork. Members of the team must

understand the unique situation of delivering care in the home and how to help patients adhere to the plan of care.

Differences between home and facility

Both a home and a facility create an environment that focuses on healing, but how each accomplishes that task differs.

In a facility such as a hospital, clinicians direct patient care, from the timing of meals to the delivery of medications. The expectation is that the patient/caregiver relationship follows the established plan of care in an environment that is controlled 24 hours a day. Access to ancillary support such as pharmacy, radiology, dietary, and laboratory is easy. All equipment, products, and staff conform to established standards, which promotes consistency in care.

The home, on the other hand, is an uncontrolled environment where care is delivered on a short-term, intermittent basis, as directed by the patient's insurer and based on Medicare guidelines. The expectation is that either the patient or caregiver will learn the treatment plan. Clinicians are expected to be self-reliant with the understanding that immediate clinical support will be via a phone call.

The patient is living in his or her chosen home environment, whether that is an assisted-living apartment, under a bridge, or in a mansion. This means that clinical staff never know what they will face at the patient's home: Will there be a large dog, running water, working lights, feuding family members, or durable medical equipment? In addition, the patient or caregiver may or may not follow the practitioner's plan of care.

Another important difference is patient



options. In a facility, healing is directed by controlling the setting and patient options. If a patient chooses to ignore the practitioner's directions, that individual can be asked to leave the facility. In the home, the patient can choose to ask the clinical staff to leave. That's why it's important to know that healing in the home is directed by understanding how the individual and caregiving constellation—friends, community, and family—function within the living situation. The home care staff works within those parameters to promote healing.

Delivery of care in the home

How are 50 shades of wound healing performed in home care? Care is provided based on the mandated Medicare/Medicaid Outcome and Assessment Information Set (OASIS) and includes assessment, evaluation, and observation.

The first action taken by the clinician is to assess the patient and caregiver's life skills. The clinician determines the patient's, family's, and caregiver's life skills and how they handle change in their lives. Next, the clinician evaluates the patient's understanding of the clinician's role in promoting wound healing.

The knowledge from these two steps guides the clinician's development of a plan of care based on the patient's coping mechanisms and personal goals. In developing the plan of care, the clinician observes the home setting and resources available to the patient or caregiver, including both material (for example, chairs and beds) and people (caregivers) that will be helpful in implementing the plan. See *Care delivery in the home* for a summary of clinician actions in delivering care in the home.

Care delivery in the home

Here is a summary of key questions clinicians should ask so they can deliver better care in the home.

Assessment

Does this patient or caregiver:

- run from problems
- accept changes and work through them
- expect others to take over
- listen only to their own advice
- use drugs or alcohol
- procrastinate?

Evaluation of client understanding and relationship to healing

- How does patient or caregiver see their relationship to wound healing?
 - Are they dependent or independent thinkers?
 - Do they believe they are responsible or not responsible for the success of their healing?

Observation of home setting and resources

- What are the resources found within the home setting, both material and human, that could be used to promote wound healing?
For example:
 - wood to make risers for bed/chair
 - memory foam for offloading
 - heavy chairs for bed rails
 - friends, family, church members, or club members who can assist with physical care.

When the patient is nonadherent

Nonadherence occurs for multiple reasons, including treatment costs; mobility restrictions; diet limitations; mental health issues, such as feeling depressed, helpless, or hopeless; and inappropriate use of wound treatment products. Reasons for nonadherence that are specific to the home setting include declining to adapt the home to promote healing (such as offering a commode when the only bath-

room is not available to the client), refusing to remove trash, and unwillingness to use durable medical equipment to promote turning and repositioning because of the effect of the equipment on home décor.

The multidisciplinary team, with representation from nursing, rehabilitation, social work, and nutrition, meet to uncover reasons for nonadherence and develop interventions to promote compliance. The team also evaluates the wound assessments, comorbidities, and lab results.

One of the primary interventions is to promote empowerment. Empowered patients feel valued, and people who feel valued become active in their lives. Physical activity increases nutrition, endorphin release, oxygenation, and blood flow, all of which promote wound healing at the tissue and cellular level.

Techniques to promote empowerment include:

- Teach the patient or caregiver how to do the wound care.
- Deliver information in small packages; don't try to cover too much at once.
- Offer genuine praise.
- Restructure thoughts by rephrasing negative statements. For example, a patient says, "I'm not skilled enough to do the wound care." You can say, "You may feel that way, but look how you have been helping me with the care." Another example is the caregiver who says, "I'm not good enough to help my husband." In this case, you might reply, "You have been making his bed, making sure he has nutritious meals, and calling the nurse when there is a problem. These things demonstrate how worthy you are to help him heal."
- Let the patient and caregiver do what they can.
- Help patients and caregivers to work through any issues encountered and learn skills to promote healing.

Encouraging patients

Fifty shades of wound healing will occur when clinicians encourage patients to maintain their individuality and when clinicians adapt wound care to fit an individual's personality and caregiving support system. Clinicians should be non-judgmental, use positive humor, and promote independence. They should continually seek methods to adapt the plan of care as needed. Through this process, the patient receives quality care and healing time can be reduced. ■

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When and how to culture a chronic wound

A culture is a valuable tool in wound care if used correctly.

By Marcia Spear, DNP, ACNP-BC, CWS, CPSN

Chronic wound infections are a significant healthcare burden, contributing to increased morbidity and mortality, prolonged hospitalization, limb loss, and higher medical costs. What's more, they pose a potential sepsis risk for patients. For wound care providers, the goal is to eliminate the infection before these consequences arise.

Most chronic wounds are colonized by polymicrobial aerobic-anaerobic microflora. However, practitioners continue to debate whether wound cultures are relevant. Typically, chronic wounds aren't cultured unless the patient has signs and symptoms of infection, which vary depending on whether the wound is acute or chronic. (See *Differentiating acute and chronic wounds*.)

With chronic wounds, many clinicians find it more practical to treat local signs and symptoms, such as increased pain and drainage, erythema, friable granulation tissue, and edema. If these are present, a culture is indicated. For a patient with a suspected wound infection, cultures are important in diagnosing the infection, identifying the specific organism, and determining the number of organisms present. This information guides appropriate antibiotic treatment and is crucial in preventing antibiotic-resistant infections.

Techniques for obtaining a wound culture

When a wound culture is deemed necessary, what's the best technique for obtain-



ing it? The current literature on laboratory methods for diagnosing wound infections doesn't recommend a universal sampling technique or protocol. Three techniques can be used:

- deep-tissue or punch biopsy
- needle aspiration
- swab culture.

Differentiating acute and chronic wounds

In *acute wounds*, classic signs and symptoms are those of inflammation—erythema, pain, increased exudate, and warmth. These tend to persist beyond the 3 to 4 days of the initial inflammatory response. They can be masked or diminished by a compromised immune system, posing a challenge even for the most experienced clinicians. If you suspect an infection, consider obtaining a wound culture.

Chronic wounds, in contrast,

rarely cause classic signs and symptoms of inflammation or infection, so wound care providers must be especially vigilant. Be sure to obtain a thorough history and assessment, checking for:

- increased wound drainage amount and odor
- thick purulent or murky drainage
- epithelial bridging at the wound base
- discoloration and friability of granulation tissue

- increased tenderness or sudden pain.

These findings suggest the need to obtain a wound culture. Also, suspect a subclinical infection and consider obtaining a culture if a chronic wound doesn't improve after 2 weeks of treatment unless an explanation exists, such as a change in nutritional status or exacerbation of an underlying medical condition.

Deep-tissue biopsy

A deep-tissue or punch biopsy for a quantitative culture (which determines the colony counts per gram of tissue) is the gold standard for identifying wound bioburden and diagnosing clinical infection. A deep-tissue biopsy after initial debridement and cleaning of superficial debris with normal saline solution is the most useful way to detect invasive organisms. But quantitative biopsies are hard to perform, invasive, painful, expensive, and not available in all settings. Also, they

must be done by qualified and trained providers, who aren't always available.

Needle aspiration

Needle aspiration of wound fluid is a good alternative when there's little loss of skin, as in puncture wounds or postsurgical wounds with suspected abscess. Data from needle aspirations are reported in terms of colony-forming units per volume of fluid. Although less invasive than tissue biopsy, needle aspiration can be painful and results may underestimate bacterial isolates. Also, exudate must be present in the wound so that aspirate can be collected. Before needle puncture, the area must be cleaned thoroughly with normal saline solution.

Swab culture

In clinical settings, a swab culture is the most common technique used because it's practical, noninvasive, and cost effective. If done properly, it usually identifies the bacterial species of the infection and helps guide antibiotic therapy. The swab-culture technique for quantifying bacterial burden in burn patients, called *Levine's technique*, requires the clinician to twirl the end of the cotton-tipped applicator on a 1-cm² area of the wound bed with

A deep-tissue or punch biopsy for quantitative culture is the gold standard for identifying wound bioburden and diagnosing clinical infection.

enough pressure to cause minimal bleeding.

The most commonly used alternative to Levine technique is the *z-track* or *10-point swab culture*. This semi-quantitative culture is quick and most useful in a clinical setting. It's also inexpensive and reproducible. However, it may yield false-positive results, especially if wound-bed cleaning and preparation are inadequate or when only a culture of surface bacteria is obtained. A 2001 prospective study of 38 patients with chronic wounds from various causes evaluated the correlation between quantitative wound biopsies and swab cultures; 27 (74%) of the biopsies indicated infection. Simultaneous swab cultures of these showed infection in 22 cases. The researchers concluded that a quantitative swab culture is a valuable adjunct in managing chronic wounds.

Basic principles for obtaining a wound culture

Although guidelines exist for obtaining a wound culture, no single guideline is used universally. Nonetheless, no matter what technique you use, certain basic principles apply:

- Always obtain the culture from properly cleaned and prepared tissue to avoid obtaining only a culture of surface contamination.
- Collect the culture before topical or systemic antibiotics are initiated.
- Obtain a swab culture from a viable wound bed, as recommended by the Wound Ostomy and Continence Nursing Society guideline. Don't culture avascular tissue.

Follow these basic steps:

1. Irrigate the tissue with normal saline solution.
2. Moisten a swab with normal saline solution.
3. Swab a 1-cm² area of viable tissue for 5 minutes with enough force to produce exudate.

Wanted: A clinical practice guideline

The technique used to obtain a wound culture usually depends on the provider and clinical setting. If a clinical practice guideline existed, its use could yield more accurate and complete diagnostic information for true wound infections. The need for a universal evidence-based guideline is apparent. ■

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How to apply a spiral wrap

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.

Description

The spiral wrap is a technique used for applying compression bandaging.

Procedure

Here's how to apply a spiral wrap to the lower leg. Please note that commercial compression wraps come with specific instructions for proper bandaging technique. Be sure to follow these instructions to provide safe and effective compression.

- 1 With the foot flexed at 90 degrees, start the bandage at the center of the ball of the foot, with the lower edge of the bandage at the base of the toes.
- 2 Wrap either laterally or medially, using two turns around the foot to anchor the bandage.
- 3 Once the bandage is secure, take it across the foot towards the heel. Keep the bandage low on the heel, just taking in a small area of the sole of the foot.
- 4 Complete the turn around the heel, coming back towards the foot.
- 5 Enclose the foot, sealing the gap at the base of the heel.
- 6 Bring the bandage across the top of the foot to the ankle.



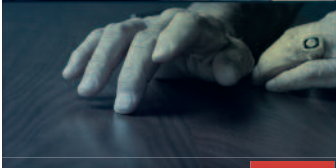
- 7 Complete the turn around the ankle.
- 8 Stretch the bandage to 50% capacity and wrap up the leg in a circular fashion, with each turn overlapping the previous layer by 50%.
- 9 Avoid wrinkles and creases in the bandage as this may cause skin breakdown and uneven compression pressures.
- 10 Finish 1 inch below the knee.
- 11 Upon reaching the knee, cut off any excess bandage and secure the bandage with tape. **Note: Do not** wrap down the leg with any remaining bandage as this would result in a tourniquet effect, pushing the blood flow back toward the foot instead of toward the heart.
- 12 If another application of the wrap is desired, cut the bandage and begin reapplying from the base of the toes, moving up the leg as before. ■

View: Spiral wrap application



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 (WCEL)**, copyright 2013.

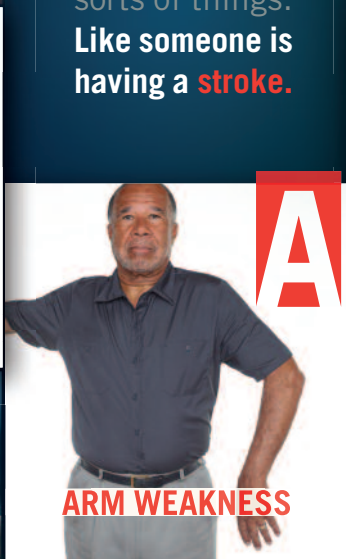


Body language can tell you all sorts of things. Like someone is having a **stroke**.



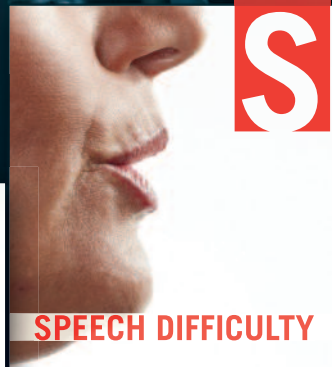
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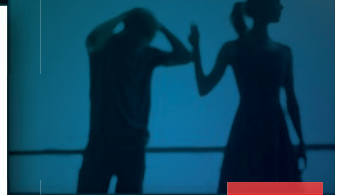
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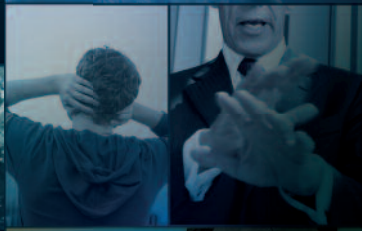
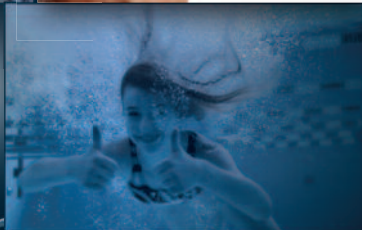
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Avoid surprises when connecting between care settings

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

As wound care clinicians, we know that an interdisciplinary, holistic approach to prevention and management of a wound is crucial to positive outcomes, no matter where the patient is being seen. Yet too often when a patient transfers from one care setting to another, the only wound information that's communicated is the current topical treatment. Most transfer forms only include generic spaces for "any skin concerns" and "treatments," with no prompts for obtaining additional information. In fact, clinicians in many care settings frequently report they had no idea the patient had a wound until he or she was admitted.

Here's how you can get the information you need to best care for the patient being transferred.

Ask the right questions

The more information you can obtain before the patient is transferred to your setting the more prepared and proactive you can be. Many intake questionnaires only ask if there is a "skin concern" and, unfortunately, the nurse providing the transfer information may not know that a wound care clinician is managing the wound. Even if the nurse states there are no skin concerns, ask if the patient is receiving any treatments—this question may reveal that a clinician is managing a wound.

If the patient has a wound or skin prob-

Bundling for transition success

Information about wounds is just one part of a successful care transition. "Care Transition Bundle: Seven Essential Intervention Categories" is helpful for identifying key interventions for care transitions.

lem, ask more questions to determine the current interventions and what has been attempted in the past, so you don't repeat strategies that weren't effective. It only takes one "They already tried this and it didn't work" experience for the patient to lose confidence and become frustrated.

The essentials

Whether you're gathering information for a patient to be admitted or providing information to someone in the next care setting, you should obtain or provide at least the following:

- location and type of wound
- current description of the wound
- current topical treatment
- treatments previously tried and their results
- procedures or surgeries
- nutritional support
- type of support surface for the bed
- type of support surface for the wheelchair
- turning and repositioning program
- any positioning devices (for example, heel-lift boots, foam wedges)
- incontinence management program.

Knowing this information will promote continuity of care and help reduce the number of "surprise" patients with wounds you didn't know about. ■

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

Mastering the art of meetings

Find out how to make meetings more effective and productive.

By Toni Ann Loftus, MBA, RN, MHA

Meetings are a powerful communication tool. They bring together people who can look at an issue from their own unique perspective and contribute to a solution acceptable to many disciplines. Generally, meetings are held to:

- discuss common issues
- brainstorm ideas for solving specific concerns
- make collaborative decisions about a shared concern or problem.

As a clinician, you may attend meetings as part of a group or committee tasked with, for instance, improving the work environment or developing best practices. If you've been asked to take on a group project, you may be the one who leads the meetings. Leading a meeting is a valuable skill anyone can learn. This article gives advice to help you get focused, stay on track, and achieve optimal meeting results.

Planning the meeting

Planning is crucial. First, determine the goal of the meeting. If group members will be held responsible for the tasks needed to accomplish the goal, develop an action plan that clearly states who's responsible for what.

Developing the agenda

A meeting agenda helps maintain the focus and structure for the meeting. The



purpose of the meeting should be the first line item on the agenda. Typically, one or two key people develop the agenda. If you're one of them, be sure to word the agenda clearly, along with actions that must occur or decisions that must be made. Agenda items should start with an action word, such as *review*, *formulate*, *select*, *decide*, or *vote*. Here are examples of complete action items:

- Decide on the best method for scheduling staff.
- Select an appropriate candidate to represent the group.
- Review changes to the policy.

Scheduling the meeting

To establish an optimal meeting time, identify the key people you think should attend. This can be one of the trickiest aspects of planning, but various strategies can make it easier. If possible, call these people and tell them about the meeting, its overall purpose, and why their attendance is important. If the budget permits, plan to serve lunch or light refreshments at the meeting.

Determining the meeting location

Once the meeting time has been decided, determine the location. Choosing the right location can go a long way toward making the meeting a success. When scouting loca-

Common ground rules

Stumped for ways to make more connections? Here are some ideas.

- Turn off cell phones.
- Treat other attendees with respect, even if you disagree with them.
- Send a substitute if you're unable to attend the meeting.
- Arrive on time.

Be sure to spell out the rules for conflict resolution. You might want to consider these:

- Have one person speak at a time.
- Make a sincere effort to listen to one another before responding.
- Agree to tackle the issues, not the person with whom you disagree.

tions, make sure the space will enable attendees to see and hear each other clearly.

Distributing meeting materials

Circulate the agenda to invitees in advance so they know what to expect and how to prepare for the meeting. If other materials will be distributed at the meeting, consider circulating these beforehand as well, so attendees have time to review them and formulate questions or prepare for discussion. (Or, when possible, direct them to an appropriate website instead of distributing paper documents.)

Provide enough information to give attendees basic knowledge. Condense it into outline format to reduce the amount of reading required. Be sure to explain how the materials or documents relate to the agenda. Don't distribute overly complex or technical data that require an expert's explanation.

The leader's role during the meeting

The leader's actions can make or break a meeting. Start the meeting at the scheduled time instead of waiting for everyone to arrive. Once people realize you start your meetings on time, they'll arrive on time.

First, welcome everyone. Allow for introductions in case attendees don't know each other. Discuss the ground rules, including those for conflict resolution. (See *Common ground rules*.)

Next, clearly state the purpose of the meeting, including desired outcomes. Review the agenda to keep attendees focused and help them understand what decisions must be made or what actions must be taken. Try not to stray from the agenda. If the meeting goes off track, redirect everyone back to the agenda topic at hand. To capture off-topic ideas, you can list them in a "parking lot" where they can be planned for and discussed at subsequent meetings. (See *Solving common meeting problems*.)

Arrange for someone to take notes during the meeting. These notes can be condensed into meeting highlights, which should be distributed to attendees as soon as possible after the meeting. At the start of the next meeting, review the highlights to refresh everyone's memory.

Getting everyone involved

For a productive meeting, all attendees must participate. To get everyone involved, open the meeting with a question everyone can answer in turn, going around the room. Make sure everyone has a chance to offer an opinion on an idea or action.

During brainstorming sessions, don't critique ideas as they're offered, and discourage others from doing this. The goal of brainstorming is to generate ideas first, and then discuss the options.

Before the discussion begins, make sure everyone knows how a final decision will be made—for instance, by a vote, majority rule, or consensus. Once a decision is made, summarize and restate it to the

Solving common meeting problems

This chart gives advice on how to solve or prevent problems related to meetings.

Problem	Solution
Key people don't attend.	<ul style="list-style-type: none">Reach out to key people before the meeting. Explain why you believe their participation is important.If possible, accommodate the schedules of key people when choosing a meeting date and time.
Participation is low.	<ul style="list-style-type: none">Some people are naturally quiet at meetings. Make sure everyone has been introduced.Allow a few minutes of social time before the meeting begins.If the group is large, break it into subgroups to discuss various aspects of agenda items before the general discussion.
Meetings don't adhere to the agenda.	<ul style="list-style-type: none">Redirect the discussion back to agenda items.If non-agenda topics arise, list them on a "parking lot" flip chart to help plan for the next meeting.Allow a few minutes at the end of the meeting to plan the next meeting.
Meetings don't end on time.	<ul style="list-style-type: none">Appoint a timekeeper to let attendees know when time to discuss a particular topic is almost up, and again when time has run out.Prioritize topics so the more important ones are discussed first.

group. This ensures everyone has heard and understands it. Near the end of the meeting, start planning for the next meeting by asking attendees to submit agenda items.

Evaluating meeting results

The final step is to evaluate the meeting results, which is crucial for improving the process. At the end of every meeting, take a few minutes to elicit feedback—for instance, by distributing written survey cards or engaging group members to express their comments verbally. You may want to get feedback on how well the meeting was planned, whether it met stated objectives, how well the time was managed, quality of interaction among participants, and aspects of the meeting worth keeping—or avoiding—in the future.

Most of us have attended meetings that were poorly organized, ran too long, or made us wonder why we were invited. The knowledge you've gained from this

article can help you ensure no one ever leaves your meetings feeling like that. ■

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Quality-improvement initiative: Classifying and documenting surgical wounds

Interprofessional collaboration promoted a successful initiative to improve wound classification.

By Jennifer Zinn, MSN, RN, CNS-BC, CNOR, and Vangela Swofford, BSN, RN, ASQ-CSSBB

For surgical patients, operative wound classification is crucial in predicting postoperative surgical site infections (SSIs) and associated risks. Information about a patient's wound typically is collected by circulating registered nurses (RNs) and documented at the end of every surgical procedure.

Because of its predictive value, wound classification plays a valuable role in driving quality-improvement (QI) initiatives that incorporate risk-adjusted outcomes. Incorrect classification can lead to inaccurate outcome analyses and evaluation, possibly causing skewed results and invalid conclusions. For example, if a hospital consistently underclassifies surgical wounds, this may suggest it has a higher SSI incidence than expected based on patient risks. QI initiatives this hospital might implement to address the increased SSI rate may be invalid because the data points were skewed and didn't truly reflect patient risk. For accurate documentation, both surgeons and circulating RNs must understand the definitions of each wound class and the potential impact of inaccurate wound-class assignment.

Our QI initiative

When our hospital participated in the American College of Surgeons' National



Surgical Quality Improvement Project (NSQIP), we realized an opportunity existed to improve wound-classification documentation, because our documentation didn't accurately correspond with NSQIP definitions. Quality assurance (QA) staff and operative-services nursing leaders began to discuss this issue. Ultimately, the discussion involved surgeons and served as the foundation of our QI initiative on wound classification.

Before starting the initiative, we had to establish the prevalence of incorrect documentation. Through focused chart audits, we found a 5% to 32% discrepancy rate between the description of the detailed surgical procedure in the surgeon's dictated operative note and documentation of wound-class assignment in the operative record. This averaged to an 18% discrep-

ancy rate. We realized the goal of accurately capturing wound classification for each surgical procedure would require a collaborative effort by an interprofessional team of engaged nursing staff, surgeons, and QA staff. So we began our QI project by forming a team and mapping out a plan for success.

Recruiting a surgeon champion

When implementing a QI initiative that crosses professions, champions for each discipline involved should be identified and included. We quickly identified and recruited a surgeon champion to provide feedback and input from a physician perspective. He fully supported nursing's role in this initiative and interceded as an advocate for the project, patients, and nurses when disconnects with other physicians occurred.

As our interprofessional team discussed inaccurate wound classification and its potential impact on outcomes and initiatives, we realized this issue was multifocal and would require education of the entire surgical team. We also established a vision and goal for our initiative:

- *Vision:* At the end of every surgical procedure, the circulating RN would verbally confirm the appropriate wound classification with the surgeon.
- *Goal:* No more than a 5% discrepancy between the dictated operative note and documentation in the operative record system-wide by the end of the fiscal year.

To reach our goal, we committed to randomly auditing 20% of surgical procedures for each specialty at operating room (OR) sites in our health system monthly and reporting this information to stakeholders every quarter.

Implementation tools and resources

We knew intensive education supported

with tools and the resources to understand and assign wound classification would be essential. So we divided our efforts into two prongs: staff education and surgeon education.

Surgeon education prong

One of our first steps was engaging and providing detailed information to physicians and physician leaders about the intent, purpose, and goal of our initiative. After gaining support from the chief of surgery, our surgeon champion sent memos to all surgeons explaining the significance of wound classification, describing our QI project, and emphasizing the importance of their participation.

A laminated pocket guide attached to this memo presented the four wound classifications, their definitions, and examples of common procedures performed in the OR for each class. This gave physicians a consistent and clear definition of each wound class. The surgeon champion attended surgical services and infection-prevention meetings to continue the wound-classification dialogue with his peers. Posters describing our initiative were placed in all physician OR lounges.

Staff education prong

At an educational in-service, staff members at all seven OR sites received detailed definitions and descriptions of the four wound classes. To promote information retention, education occurred within the month before project implementation. An in-service also was provided to staff from other departments that deal with SSIs, such as infection prevention and QA. All staff, including circulating RNs and surgical technologists, received the same wound-classification pocket guide given to surgeons. In addition, the pocket guide was enlarged and posted as a laminated wall chart in all 54 ORs to ensure consistent wound-class definitions. (See *Surgical wound classifications*.)

Surgical wound classifications

The classification system shown here was developed to help clinicians identify and describe the degree of bacterial contamination of surgical wounds at the time of surgery. It was developed initially by the American College of Surgeons and adapted in 1985 by the Centers for Disease Control and Prevention.

Class I: Clean

- Uninfected operative wound where no inflammation is encountered and respiratory, GI, genital, and urinary tracts aren't entered.
- Wounds are primarily closed, and a drain (if needed) is connected to a closed system.
- Risk of infection: 2% or lower
- *Examples of clean surgical procedures:* lumpectomy; mastectomy; axillary node dissection; vascular bypass graft; exploratory laparotomy; exploratory or diagnostic laparoscopy; adhesion lysis; ventral, inguinal, femoral, or incisional hernia repair; thyroidectomy; parathyroidectomy; total hip or knee replacement; laparoscopic gastric banding; Nissen fundoplication; abdominal aortic aneurysm repair; carotid endarterectomy; Port-a-Cath® insertion; splenectomy; MammoSite procedure; endovascular stent graft; vena cava filter insertion; false aneurysm repair; splenectomy; lumbar laminectomy; craniotomy for tumor; rotator-cuff repair; temporal artery biopsy; carpal tunnel repair; coronary artery bypass grafting; transverse rectus abdominis myocutaneous breast reconstruction; stereotactic biopsy; ventriculoperitoneal shunting

Class II: Clean/contaminated

- Operative wound that enters the respiratory, GI, genital, or urinary tract under controlled conditions without unusual contamination when no infection or major break in technique has occurred
- Risk of infection: 5% to 15%
- *Examples of clean/contaminated surgical procedures:* cholecystectomy with chronic inflammation, colectomy, colostomy reversal, bowel resection for ischemic bowel, roux-en-Y gastric bypass, laryngectomy, incidental or routine appendectomy, small-bowel resection, transurethral resection of prostate, Whipple pancreaticoduodenectomy, abdominal perineal resection, gastrostomy tube placement, vaginal hysterectomy, dental extractions, alveoloplasty

Class III: Contaminated

- Open, fresh, accidental wound from surgery with a major break in sterile technique or gross spillage from GI tract; incision in which acute, nonpurulent inflammation is encountered (including necrotic tissue without evidence of purulent drainage, such as dry gangrene).
- Risk of infection: greater than 15%
- *Examples of contaminated surgical procedures:* cholecystectomy or appendectomy for acute inflammation, bile spillage during cholecystectomy, cholecystectomy for acute inflammation, open cardiac massage, bowel resection for infarcted or necrotic bowel

Class IV: Dirty/infected

- Old traumatic wounds with retained devitalized tissue; procedures with existing clinical infection (purulence already present in wound) or perforated viscera.
- Risk of infection: greater than 30%
- *Examples of dirty/infected surgical procedures or conditions:* incision and drainage of perirectal abscess, perforated bowel repair, peritonitis, appendectomy with perforation and/or pus noted, perforated gastric ulcer, ruptured appendectomy, open fracture with prolonged time in the field before treatment, dental extractions with abscess

Creating an audit tool

An audit tool that would capture and record data and run and produce meaningful reports to stakeholders was vital to our project's success. Our QA analyst created a tool that can:

- randomly select 20% of procedures for each specialty for audit at all seven OR sites
- automatically populate critical data points for further drilldowns and feedback (such as patient name, medical record number, surgery date, or surgeon) or record the circulating RN's documentation of wound classification
- enter important data points for focused drilldowns and feedback, including wound classification from the dictated operative note, comment section for additional notes, and name of staff member completing the OR record
- run meaningful reports with valuable feedback to stakeholders that would promote continuing focus for improved outcomes. One type of report was the OR record with a wound-class mismatch between the surgeon's dictated operative note and the circulating RN's documentation. Another was the wound-classification audit summary, which provided system-wide, site, and specialty data.

Continuing efforts

Our efforts to improve wound-classification documentation didn't stop with implementation of this QI initiative. We've maintained a continuous effort to identify and improve the tools and resources clinicians need to succeed. Nursing leaders sought solutions from staff on how to correct deficiencies. After the project launched, staff nurses were asked to give their perspectives on how it was progressing. Their feedback, which has been pivotal to our success, provided two crucial pieces of information:

- The nurses didn't believe all surgeons supported this effort. Some were frustrated by pushback from surgeons when

Nurses expressed uncertainty as to how to lead a conversation with surgeons about wound classification, and requested a script or set of leading questions to use at the end of every procedure.

trying to engage them in a wound-classification conversation at the end of a procedure. So our surgeon champion met with his surgeon peers and asked each one, "Are circulating nurses verifying wound classification with you at the end of every procedure?" To our nurses' credit, the surgeons' response was "yes." When surgeons admitted they had questions of their own, our surgeon champion addressed their questions and concerns directly.

- Nurses expressed uncertainty as to how to lead a conversation with surgeons about wound classification, and requested a script or set of leading questions to use at the end of every procedure. To guide the discussion, an algorithm with talking points was created. (See *Wound-classification algorithm*.)

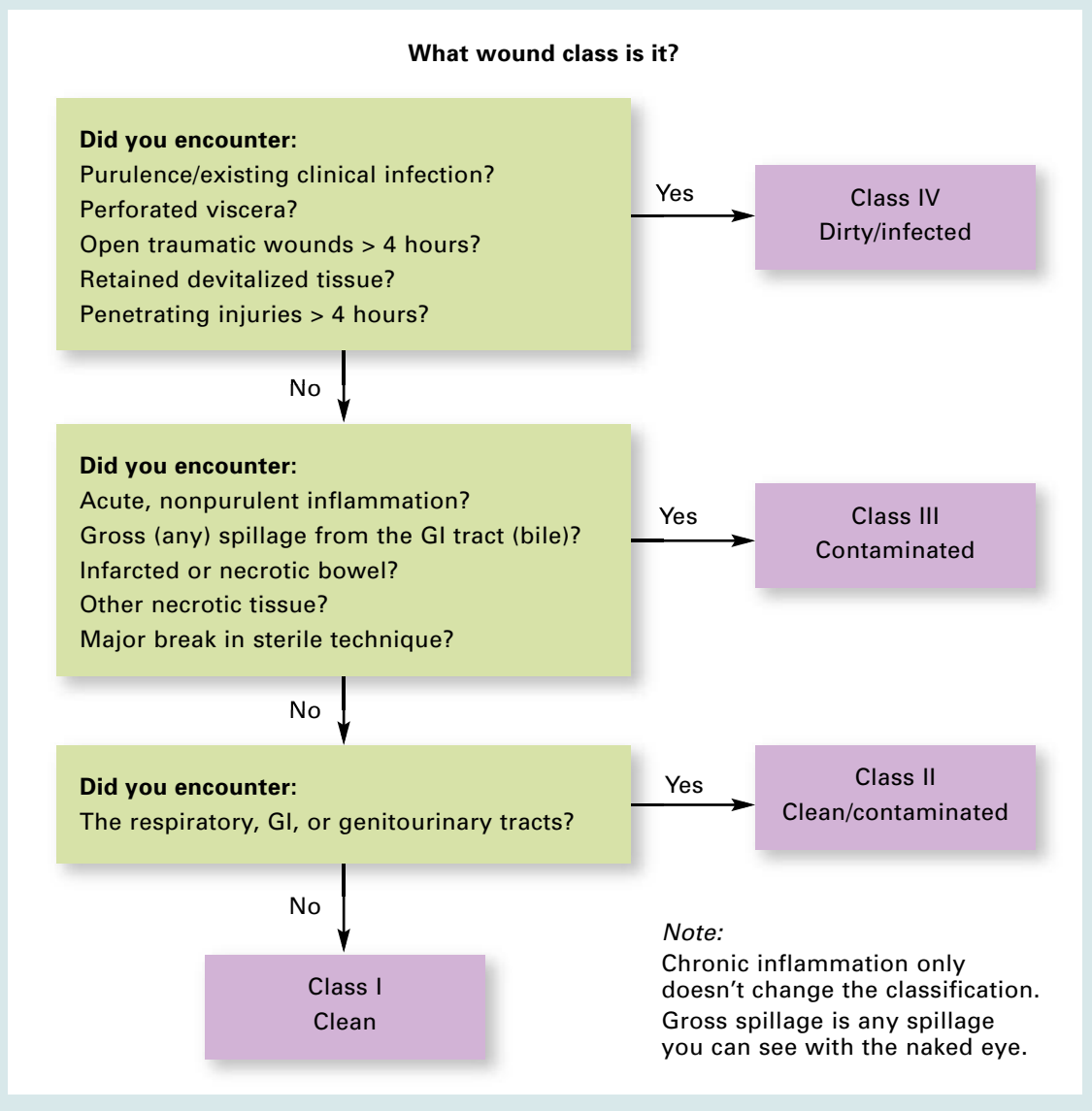
Nurses also received additional educational in-services on wound classification. Some involved a Jeopardy-like game, critical-thinking activities, Q & A worksheets, and quarterly questions. (See *Quarterly questions* below.)

Quarterly questions

Quarterly questions allow nurses to participate in a self-assessment exercise as they think about their practice critically. Each

Wound-classification algorithm

Two versions of an algorithm were created for the quality-improvement project on wound classification at Cone Health in North Carolina. The one currently used (shown here) arose from continued surgeon engagement and emphasizes the importance of interprofessional collaboration. Wound classification has been incorporated into our surgical checklist as a trigger to initiate this conversation between staff and surgeons.



quarter, a new question is distributed. Questions come in various formats, from those requiring short answers to crossword puzzles and riddles. Staff are encouraged to discuss the questions with their peers.

In each case, the operating room (OR) record showed a different wound classifica-

tion than the surgeon's dictated operative note indicated. The nurse's wound-classification documentation appears next to each case number. Read each case through the dictated operative note. Before reading the section titled "Correct wound classification and rationale," provide your own classification

and rationale based on what you've learned in this article. Then read that section to see if you were right.

Case #1: OR record indicated a class II wound.

Preoperative diagnosis: Acute appendicitis

Postoperative diagnosis:

1. Acute appendicitis
2. Right ovarian cyst measuring 5 cm

Dictated operative note: The patient is a female found to have acute appendicitis on workup tonight in the emergency department (ED) after being sent by Dr. D for abdominal pain...The stump was hemostatic. Appendage was placed in an EndoCatch bag and extracted.

Correct wound classification and rationale:

Class III

Appendectomy for acute appendicitis is a class III wound related to acute nonpurulent inflammation. Key clues from the dictated operative note: postoperative diagnosis of acute appendicitis and the patient's ED admission.

Case #2: OR record indicated a class II wound.

Preoperative diagnosis: Perforated sigmoid colon

Postoperative diagnosis: Perforated sigmoid colon

Dictated operative note: The correct patient and procedure were verified. A midline incision in the lower abdomen just skirting the umbilicus was used, and dissection was carried down through subcutaneous tissue and midline fascia...There was a lot of edema of the anterior abdominal wall. The peritoneum was entered under direct vision. There was grossly feculent, foul-smelling fluid free in the peritoneal cavity, which was suctioned. There was marked diffuse peritonitis. Small bowel loops were distended and matted with fibrinous exudates. The dissection was carefully carried down in the pelvis with blunt dissection, dividing inflammatory

adhesions. Several large pockets of grossly purulent and feculent material were entered and broken up; these were cultured. All loculations were completely broken up, suctioned, and irrigated.

Correct wound classification and rationale:

Class IV

Perforated viscera and stool in the wound indicate a class IV wound related to perforated viscera/ stool, which suggest the organisms causing potential infection were present in the operative field before surgery. Key clues from the dictated operative note: grossly feculent, foul-smelling fluid, marked diffuse peritonitis, grossly purulent and feculent material, cultures, and postoperative diagnosis of perforated sigmoid colon.

Case #3: OR record indicated a class II wound.

Preoperative diagnosis: Tonsillitis

Postoperative diagnosis: Tonsillitis

Dictated operative note: The patient was placed in the supine position and, under general endotracheal anesthesia, the tonsils were removed using blunt and Bovie electrocoagulation dissection. They were exudative. There was a considerable amount of purulent material, and the patient was placed on antibiotics again (I.V.) as well as Decadron. Once this was completed, the stomach was suctioned and the tonsillar beds were clear of bleeding.

Correct wound classification and rationale:

Class IV

Purulent material in the wound suggests the organisms causing a potential infection were present in the operative field before surgery. Key clues from the dictated operative note: exudate present, considerable amount of purulent material, the need for antibiotics, and postoperative diagnosis of tonsillitis.

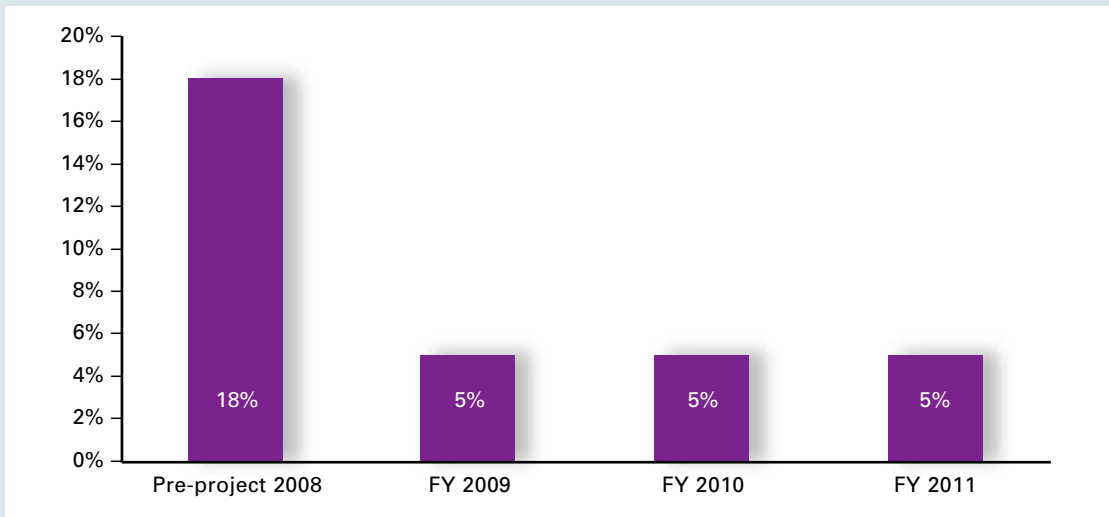
Project outcome

Our initiative to accurately capture the correct wound classification met the goal of a discrepancy rate of 5% or less for fiscal

System-wide wound-classification discrepancy rate, 2008-2011

Before the quality improvement (QI) project, the discrepancy rate between the surgeon's dictated operative note and documentation of wound-class assignment in the operative record ranged from 5% to 32%. This averaged to an 18% discrepancy rate.

After the QI project was implemented, we met the goal of a discrepancy rate of 5% or less (fiscal years 2009, 2010, and 2011). Some of our OR sites exceeded that goal and consistently demonstrated a 0% discrepancy rate.



year (FY) 2009—a rate we maintained for FY 2010 and 2011. Some of our OR sites exceeded that goal, demonstrating a 0% discrepancy rate. (See *System-wide wound-classification discrepancy rate, 2008-2011*.)

During this time, almost 14,000 dictated operative notes were audited. Other successful project outcomes included enhanced communication among OR team members, national recognition through podium presentations at national conferences, and selection as one of the five best practices by the American College of Surgeons' NSQIP in 2011.

Our project demonstrated the power of interprofessional teamwork, which strengthened collegial relationships among staff. We encourage all clinicians to engage in important conversations with peers and ask crucial questions that help transform practices in your setting. ■

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Clinician RESOURCES

Greet the new year by tapping into some new resources.

Free app for patients with Crohn's Disease

GI Buddy is a free tool from the Crohn's & Colitis Foundation of America that patients can use to stay on top of managing their Crohn's Disease or ulcerative colitis symptoms. Patients can record what they eat, track their treatment and well-being, and access detailed reports. Patients also can access a video of tips for using GI Buddy, which is available online and as an iPhone app.



Toolkit on diabetes and coronary artery disease

People with diabetes have heart disease death rates about two to four times higher than those without diabetes. Use the “**Diabetes and Coronary Artery Disease ‘Make the Link’ Toolkit**,” from the American Diabetes Association, to help your patients understand the connection between diabetes and coronary artery disease (CAD).

Patient education information is available on the following topics:

- Diabetes and CAD
- Understanding CAD
- CAD symptoms, diagnosis, and treatment
- Taking care of type 2 diabetes
- Taking care of your heart
- Getting the very best care for your diabetes
- Know the warning signs of a heart attack
- Protect your heart: Make smart food choices

- Learning how to change habits.

You can download each PDF or the entire toolkit.

Pressure ulcer posters

The National Pressure Ulcer Advisory Panel has created **four posters** that cover Best Practices for Prevention of Medical Device-Related Pressure Ulcers. In addition to the general poster, you can download versions for long-term care, critical care, and pediatric populations.



Discharge toolkit

The Agency for Healthcare Research and Quality is seeing red, but in a good way. Its “**Re-Engineered Discharge (RED) Toolkit**” is designed to help hospitals develop effective processes for discharging patients.

RED consists of 12 mutually reinforcing actions, including expediting transmission of the discharge summary to clinicians accepting care of the patient and providing telephone reinforcement of the discharge plan.

In addition to a **training program** to help with implementation, the toolkit includes “**Taking Care of Myself: A Guide for When I Leave the Hospital**,” a PDF booklet for patients. ■

Take advantage of NAWCO professional resources

The festivities of the holidays are just a wonderful memory. Now it's January—a great time to start planning your wound care and ostomy adventures for the new year. Is it time to advance your career with a new certification or career opportunity? Here are a few ideas that can help you.

Expand your expertise to the next level with an additional certification

National Alliance of Wound Care and Ostomy (NAWCO) offers four **highly recognized certifications** that can help you expand your expertise:

- DWC® Diabetic Wound Certified
- LLEsm Lymphedema Lower Extremity
- OMS™ Ostomy Management Specialist (the industry's leading wound care certification)
- WCC® wound care certified.

We encourage you to consider pursuing an additional certification and, if it's time, to recertify your WCC.

Build your arsenal with more continuing education

NAWCO and our education partner, Wound Care Education Institute (WCEI), are offering several venues for **continuing education** in 2014. You can attend 1-day live seminars, online webinars, and, of course, the annual Wild on Wounds (WOW) conference. WOW is the official WCC wound conference.

Tap into career resources

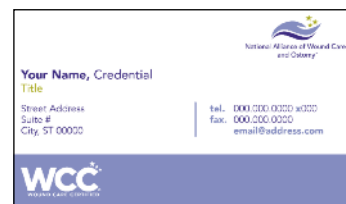
If 2014 is the time for you to pursue a new

career, access resources from NAWCO to help you prepare for the challenge. We feature "Wound Care Careers," our exclusive wound care **job board**. We've partnered with more than 250 other healthcare associations from around the country to drive dozens of wound care opportunities to our job board monthly. The service is free to use. We encourage you to register and post your résumé (anonymously if you choose) for employers to review. You can even enhance your résumé with some optional services for added exposure. Additionally, through the NAWCO member association **login page**, you can use other free resources, such as résumé and cover-letter templates, interviewing presentations, and more.

Build awareness for your credential and wear your certification with pride

We invite you to shop our **online clothing store**. You can choose from shirts, sweaters, scrubs, and lab coats. For a limited time, you will receive a free gift with your order.

To help promote your credentials, we offer professional business cards and note cards through our **online print shop**. It's easy to place an order for high-quality, personalized business materials.



Consider helping with a 1-day wound seminar

Are you interested in helping NAWCO host a local 1-day wound care seminar? **Contact us** to learn how you can become involved.

New certificants

Below are WCC, DWC, and OMS certificants who were certified in October and November 2013.

Ana Abellard
Achamma Abraham
Whitney Abrokwa
Cary Acopiado
Diana Adams
Margaret Adler
Melissa Agrimanakis
Tita Aguilar-Niere
Christina Albright
Suzette Alison
Debora Allen
Jaqueline Alvarez
Julie Alvez
Nasmath
Amegankpoe
Vicky Amon-
Perpetua
Tracey Anderson
Cheryl Anderson
Kathie Anderson
Gabriela Andrade-
Lopez
Maria Anoché
Grace Arce
Stephanie Ardis
Adriana Arias
Celida Arroyo-
Terrana
Ashley Atkinson
Kelly Aurand
Marissa Aurellano
Katherine Bagan
Janeen Bair
Richard Baisley
Hattie Baker
Sharon Baker
Janeen Ball

Laura Banike
Sharon Barber
Lori Barkhaus
Kaprice Barkley
Rebekah Barrette
Michael Bascon
Janice Bates-Garcia
Shelly Batts
Laura Bauer
Mary Baur
Hailey Bechtel
Daniel Beecher
Mariamma Bellamy
Jennifer Bellantese
Karen Beneway
Jamie Bennett
Stephanie Benton
Stacy Benton-
Robinson
Michelle Berentsen
Laura Berger
Gail Bernard
Elena Bertolino
Juli Betterton
Connie Betts
Dana Beyers
Katherine Bickel
Karen Bierlein
Jowana Billingly
Heather Bills
Averyl Blake-Fraites
Kimberly Blum
Tammy Bobbitt
Debi Boehme
Deborah Boehning
Colleen Bonsack
Stephanie Bonte

Sally Borzick
Kelley Boss
Patricia Boudo
Pamela Bowman
Joan Braasch
Debra Bracken
Wendy Braithwaite
Bernice Bramble
Re'Jane Branch
Mary Bray
Andrea Brennan
Helen Brennen
Maria Brewer
Anelsa Brooks
Jamilia Broussard
Rebecca Brown
Doris Brown
Paula Brown
Maureen Browne
Tracy Brunkow
Sheila Buchanan
Jana Budde-Lang
Hector Buison
Monica Burger
Marlene Burgos
Stewart
Tobi Burie
Mary Burnette
Tandy Burton
Lindsay Cabras
Janice Callahan
Victoria Camacho
Simone Campbell
Jean Cannon, MD
Arlene Caparruva
Efren Capistrano
Kary Cappaert
Tammy Cardella
Cheryl Cardwell
Josephine Carrillo
Lee Carroll
Susie Carter
Ivy Carty

Laura Cassidy
Virginia
Castrogiovanni
Michelle Caswell
Olga Catarino
Mary Caverly
Wai Chan
Angela Chaney-
Grant
Peter Chaskes
Susan Checki
Dawna Cheshire
Anita Chinapen
Erica Christen
Bogdan Ciobotaru
Roslyn Cipriano
Jennifer Clarin
Sara Clark
Neisha Clarke
Carolyn Collins
Scott Colombo
Nicole Combs
Melinda Conner
Ashley Consalvi
Isabel Contreras
Barbara Contri
Tina Cook
Jillian Coolidge
Mark Cooper
Patricia Coppola
Bertha Corral
Kate Corriero
Laura Cortes
Lorrie Cottrell
Marie Coupet
Ashley Cox
Shelly Cox
Mary Craven
Amy Creason
Erin Creedy
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Cathy Thornton
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Laurie Yorke
Aubrey Young
Catherine Zamora
Xoana Zampieri
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Patti Zeitler
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Jennifer Zingo

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Kathie Anderson
Grace Arce
Ashley Atkinson
Sharon Baker
Kathy Baker
Janeen Ball
Mary Baoku
Sharon Barber
Merlene Barton
Laura Bauer
Mary Baur
Elmer Bautista
Laura Berger
Lora Bierce
Tammy Bobbitt
Colleen Bonsack
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Re'Jane Branch
Lisa Brening
Helen Brennen
Diana Briggs
Crystal Brocksmith
Glenn Buckner
Marlene Burgos
Stewart
Tobi Burie
Carole Burke
Loretta Bushnell
Lindsay Cabras
Fides Capuyan
Dawn Cash
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Susan Checki
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Dawna Cheshire
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Mary Groeschen
Sheila Groves
Shannon Hamel
Marcella Harper
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Ma Hermoso
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