SPRING 2014
VOL.12 NO.1

Wound Care CANADA

THE OFFICIAL PUBLICATION OF THE CANADIAN ASSOCIATION OF WOUND CARE

An Introduction to Health Policy

New Feature: A Day in the Life

Digital Photography: Tips and Techniques

Evidence-based vs. Evidence-informed Practice: What's the Difference?

Canadian Association of Wound Care
Association canadienne du soin des plaies

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Wound Care Canada

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Editor Sue Rosenthal
wcceditor@cawc.net

Art Director Robert Ketchen
wccproduction@cawc.net

Publisher Douglas Queen

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All editorial material published in *Wound Care Canada* represents the opinions of the writers and not necessarily those of the Canadian Association of Wound Care.

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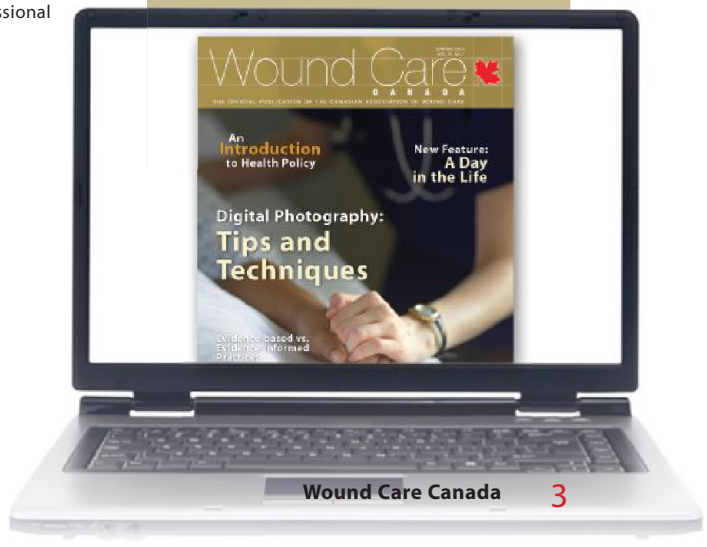
The Canadian Association of Wound Care (www.cawc.net) is a non-profit organization of health-care professionals, industry participants, patients and caregivers dedicated to the advancement of wound prevention and care in Canada.

The CAWC was formed in 1995, and its official meeting is the CAWC annual conference held in Canada each year. The association's efforts are focused on five key areas: public policy, clinical practice, education, research and connecting with the international wound care community. The CAWC works to significantly improve patient care, clinical outcomes and the professional satisfaction of wound care clinicians.

Don't Miss Out

Each time a new issue becomes available, subscribers will be notified by an email that contains a live link to the online magazine. If you are not already a subscriber, just send an email to info@cawc.net to get on the list. **It's free!**



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Attend the two-day Hands-on Skills Learning Series, Level 2 and Level 3

May 1 & 2, 2014, at The Delta Toronto East Hotel

LEVEL 2 AND LEVEL 3: PUTTING KNOWLEDGE INTO PRACTICE

The CAWC Learning Series is a two-day live program led by an interprofessional faculty of wound care experts. The program combines theory with case studies and practical hands-on activities. Wound care theory is presented through lectures, interactive discussions and hands-on sessions. Topics include: Prevention of Ulcers, Local Wound Care, Dressings 101, Lower Limb Assessment, Compression, Foot Care and Footwear, Pressure Management and more. Many different types of wounds are discussed in detail.

For more information and online registration, please visit:
www.cawc.net/en/index.php/educational/institute/registration-information

Organizations registering THREE or more staff will receive reduced pricing of $425 (+ HST) per person! Contact diana@cawc.net to redeem this promotion.

LEVEL 1: FOUNDATIONS OF WOUND CARE

Now offered as four online modules, available for purchase through the Ontario Hospital Association portal **www.oha.com/education/continuingeducation/pages/woundcaretrainingmodules.aspx**.

Please note that **Level 1 is a prerequisite for Level 2 and Level 3**. You might be eligible for an exemption from Level 1 if you have received comparable education or if you have extensive experience on the Level 1 topics. To apply for an exemption please contact diana@cawc.net.

SPACE IS LIMITED! REGISTER NOW!

Canadian Association of Wound Care
Association canadienne du soin des plaies

Hope and Relief through Knowledge and Skills

Well, we survived it. A long, tough winter sapped spirits right across the country, making our home and professional lives more difficult and less satisfying. Thankfully the warmer temperatures and longer days have provided relief and hope. That's the role of health-care professionals too, and this issue is full of articles to help you do just that.

The feature article in this issue is an "everything you ever wanted to know about digital wound photography but were afraid to ask" piece written by Elise Rodham-Nielsen and our own art director Robert Ketchen. Full of easy-to-understand technical details and images, it is sure to become a go-to tool for clinicians who want to master the art and science of documenting wounds.

Providing relief for a child with burns can be a difficult task, for the patient, family members and everyone on the care team. Our case study on a pediatric burn illustrates how important it is for teams, regardless of their geographical locations, to work together to ensure each patient gets the necessary—and in some cases quite specialized—care.

Do you know the difference between evidence-based and evidence-informed practice? After reading the excellent Research 101 article by Gail Woodbury and Janet Kuhnke you will!

In this issue we kick off two new items that will become regular features: a policy column by Karen Laforet and "A Day in the Life," which will profile a different member of a wound team in each issue to showcase the breadth of skills and experience required for a fully functional wound management group. Both features will provide you with a broad context into which your own wound management practice fits—and perhaps even provide inspiration as you develop and work with your own teams.

As always, our ever-popular Wound Sleuth allows you to test your diagnostic skills.

I hope you will find our line-up of excellent articles useful and worthy of sharing with your colleagues. To make sure they have easy access to the online magazine and can receive bulletins about it and other CAWC programs and publications, please encourage them to get on the mailing list by emailing info@cawc.net.

— Sue Rosenthal, Editor

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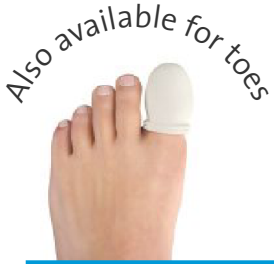

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2014: A Year of Change

By Greg Archibald, MD, CCFP, FCFP, President, CAWC,
and Douglas Queen, BSc, PHD, MBA, Executive Director, CAWC

Slowly but surely, governments around the world, including here at home, are taking an interest in wounds and the burden they place on our health-care systems.[1] Even though this may be driven by "budget desperation," we as a wound community need to encourage this interest and create momentum for change.[2]

In Canada we are ahead of the curve in innovation, yet we still need to ensure that the Canadian Association of Wound Care (CAWC) evolves to meet any challenges developing from this newfound interest.

Other national associations, some of which have existed for several decades, are using 2014 as a year for change. For example, the Australian Wound Management Association (AWMA) is considering changing their name to Wounds Australia.[3] Change is evident on the industry side as well, with many companies consolidating (e.g., Healthpoint and Smith & Nephew;[4] KCI and Systagenix[5]).

Upon celebrating our 20th anniversary this year, the CAWC also will be using 2014 as a year of transition. As one example, we will be changing our name from Canadian Association of Wound Care to Wounds Canada.

Some would suggest that these and other substantial changes are necessary steps in the evolution of our clinical specialty.[6] In the past few years, for example, national approaches to the research and delivery of advanced wound care practices have changed, leading to the creation of centres of excellence around the globe, such as the Australian CRC,[7] Welsh Wound Innovation Initiative[8] and Bradford Wound Prevention & Treatment Healthcare Technology Co-operative.[9]

In Canada, all of the building blocks are falling into place, and we feel that 2014 is the year of change and readiness for the CAWC as well, or, as we will soon be known, Wounds Canada.

As a community, let's not be passive! We need to continue to build momentum and exploit the interest of governments and politicians for the benefit of those living with wounds. This is not so much a call to action—as the wound care community is always energized around the needs of those with wounds—but rather a reminder to push that little bit harder on a door that is gradually opening more and more.

The CAWC will work to gain attention where it can, but we need our stakeholders to support us with an open heart—and more importantly with an open mind.

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News in Wound Care

Action 2014: Skin Health for Canada

A JOINT MEETING

Canadian Association of Wound Care
Canadian Association for Enterostomal Therapy

OCTOBER 30 – NOVEMBER 2, 2014 · WESTIN HARBOUR CASTLE HOTEL, TORONTO, ONTARIO

You will not want to miss out on **Action 2014: Skin Health For Canada: Discussing Best Practice in Skin, Wound, Ostomy, Continence and Lymphedema.** This will be a joint meeting of the Canadian Association of Wound Care and the Canadian Association for Enterostomal Therapy, in collaboration with the World Alliance for Wound and Lymphedema Care. This first-time initiative will offer education, research, skills and networking opportunities. Don't miss it!

When: Thursday, October 30, 2014, to Sunday, November 2, 2014
Where: Westin Harbour Castle, Toronto, Ontario

Stay tuned to www.caet.ca and www.cawc.net for more information.

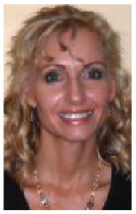
Canadian Association of Wound Care / Association canadienne du soin des plaies

CAWC News

New Board Members

The CAWC is proud to announce that the Board of Directors has two new members:

Barbie Murray, RN, has practiced in a variety of settings, including acute, community-based and palliative care, and has been involved in nursing education since 1988. She worked in Africa as a health educator, developing curriculum for nursing, midwifery and public health degree programs and benchmarking for practice standards. She currently co-ordinates the new MDLUC project, a leg ulcer specialty clinic, at the Halifax Infirmary (Capital District Health Authority) in Halifax, Nova Scotia.



DA (Andrew) Springer, BSc, DCh, FRSH, has been a practising chiropodist since 1983 in a variety of public and private practice settings. During his career he has been an active leader in the chiropody profession and participated in

CAWC 2014 Learning Series Dates

Register now for the CAWC Learning Series Levels 2 & 3:

Spring: Toronto, ON: May 1 and 2, 2014
Fall: Toronto, ON: December 4 and 5, 2014

Visit www.cawc.net for details and registration information.

a number of professional activities requiring leadership, vision, integrity and compassion. He is a member of the Ontario Diabetes Foot Care Task Force and the Program Advisory Council — Chiropody, Michener Institute for Applied Health Sciences.

Raising Awareness

The CAWC has been busy connecting with other interested bodies and getting the word out about wound care and diabetic foot complication prevention. In the first two months of 2014 alone, the CAWC was invited

- by the Hamilton Academy to present a session on wound care to physicians on January 29, 2014. The session was delivered by Dr. Asfaneh Alavi.
- by the Public Health Agency of Canada to present at a Fireside Chat—one of a series of free pan-Canadian discussions on population health improvement issues via telephone/Internet on January 30, 2014 (www.chnet-works.ca). The presentation, led by Dr. Gail Woodbury and Dr. Mariam Botros, was "Lessons Learned from the Diabetes Community-based Prevention Program PEP Talk: Diabetes Healthy Feet & You."
- to talk about the PEP Talk program at the Annual Central West Chronic Disease Prevention and Management Conference, in Brampton, Ontario on February 21, 2014. The session was delivered by Mariam Botros.
- to participate in The Unavoidable Outcome: A Pressure Injury Consensus Conference held by the National Pressure Ulcer Advisory Panel (NPUAP) on February 27, 2014, at Johns Hopkins University Turner Auditorium in Baltimore, Maryland. Nicola Waters represented the CAWC.

Diabetic Foot Canada

Recent Workshops

DFC presented its popular one-day workshop at Health Sciences North in Sudbury on March 28, 2014. (See the article on page 12.) To arrange for a workshop in your area, contact Mariam Botros at botros.mariam@gmail.com.

DFC eJournal

Check out the most recent issue of *Diabetic Foot Canada eJournal*, an important resource for wound management specialists, at www.diabeticfootcanadajournal.ca.

Join the Online Diabetic Foot Care Community

If you haven't done so yet, visit www.diabeticfootcommunity.ca and sign up to connect with other health-care professionals and to access documents relevant to preventing diabetic foot complications.

The Canadian Association for Enterostomal Therapy
Association Canadienne des Stomothérapeutes

CAET News

By Catherine Harley, RN, eMBA, Executive Director, CAET

The Canadian Association for Enterostomal Therapy (CAET) is working toward building collaborations to positively impact care delivery and outcomes for patients experiencing wound, ostomy and/or continence issues.

The CAET and the United Ostomy Association of Canada (UOAC) continue to partner on the promotion of the "Find an ET" program, which was launched in September 2013. Accessed from the www.caet.ca home page, this online search program enables people with ostomies to locate an ET nurse closest to their area of residence. The CAET also worked with the UOAC to support an "Ask an ET" column in the publication *Ostomy Canada*. Karen Bruton, RN, BScN, CETN (C), MclinScWH, will be answering questions on wound and ostomy in this publication.

The CAET has also joined forces with the UOAC and Toronto Ostomy to advocate for increasing the Assistive Devices Program (ADP) reimbursement for ostomy supplies for people living with an ostomy in Ontario. A letter-writing campaign to Premier Kathleen Wynne is currently underway.

The CAET is an active part of the Canadian Network of Nursing Specialties under the Canadian Nurses Association (CNA). The CNA is preparing to launch a new campaign to raise public awareness of the value of registered nurses. The objective of the campaign is to break through stereotypes to tell the real story of registered nurses. Watch for the launch of this innovative campaign in the spring/summer of 2014. The CNA biennial convention will take place June 16–18, 2014, in the centrally located Winnipeg, Manitoba, RBC Convention Centre. It will be a showcase of nursing solutions to some of health care's biggest challenges. For further information, please go to www.cna-aiic.ca/en/events/2014-cna-biennial-convention.

Wound Care Alliance CANADA

Wound Care Alliance Canada

The Steering Committee of Wound Care Alliance Canada (WCA) met in November 2013 to discuss the next steps from the Wound Stakeholders Meeting held September 19, 2013, in Mississauga, Ontario. A report from this meeting is available to all CAET and CAWC members in the news section of the CAET website at www.caet.ca. The WCA Steering Committee will continue to work on the strategic plan—with fundraising as a priority in 2014—as work continues on developing a Canadian Wound Innovation Centre of Excellence.

Regroupement Québécois en Soins de Plaies

RQSP

The Regroupement Québécois en Soin de Plaies has a new website. Check it out at www.rqsp.ca.

OntWIG Ontario Woundcare Interest Group

Ontario Woundcare Interest Group Update

5th Annual Symposium

The Ontario Woundcare Interest Group is excited to be hosting their 5th Annual Symposium at the White Oaks Resort and Spa, Niagara-on-the-Lake, Ontario on April 25, 2014.

This year's symposium, "Critical Perspectives in Evolving Ontario Wound Care Policy," will provide participants with the opportunity to dig deeper into the issues identified at last year's health-care strategy symposium that addressed wound care policy development and implementation. The 4th Annual Symposium's proceeding document is available online at www.ontwig.rnao.ca.

For registration information and more details on how OntWIG is shaping and influencing Ontario's health policy, check us out on Facebook or our website at www.ontwig.rnao.ca.

Call for Nominations

OntWIG has openings for the following Board positions: President-Elect and Policy/Political Action. If you are interested in learning more about these exciting opportunities, please contact Karen Laforet at ontwig@gmail.com.

Join the Diabetic Foot Community!

CAWC's new **Diabetic Foot Community** (**www.diabeticfootcommunity.ca**) houses all Diabetic Foot Canada programs.

The Diabetic Foot Community will provide

- peer-reviewed materials
- clinical enablers
- social collaboration tools

to support health-care clinicians who are focused on diabetic foot issues and improve patient outcomes.

The Diabetic Foot Community is one aspect of the Diabetic Foot Canada division that supports a multidisciplinary approach and uses the latest technology, evidence and teams of interprofessional experts to:

- provide education
- disseminate best evidence and educational tools
- raise awareness of the importance of preventing diabetic foot complications and amputations

Unique features encourage community engagement, collaboration, feedback and sharing. Real-time analytics show the relevancy of the diabetic foot content for health-care practitioners.

For more information about the Diabetic Foot Community and how you can join and participate, please contact Mariam Botros at botros.mariam@gmail.com or visit the Diabetic Foot Community and explore the content and features at www.diabeticfootcommunity.ca.

We want to hear from you!

Diabetic Foot Canada

Workshop Aims to Reduce Amputation Rates in Northern Ontario

By Mariam Botros, Janet Kuhnke, Robyn Evans and Bo Fusek

Canadians living with diabetes mellitus, and its serious complications, are increasing in numbers.[1,2] This is evident in Northern Ontario, which has a much higher rate of lower extremity amputations than the provincial average. As part of the North East LHIN's overall strategy to reduce these increasing rates, Diabetic Foot Canada (DFC) was invited to deliver the one-day Prevention and Management of Diabetic Foot Complications workshop onsite on March 28, 2014.

The workshop, hosted by Health Sciences North/Horizon Santé-Nord (HSN) in Greater Sudbury, was kicked off by Dr. Boji Varghese and Teresa Taillefer, who provided a key opening address to focus the day's activities and highlight the importance of this growing issue. Workshop content was delivered by Mariam Botros, Janet Kuhnke, Robyn Evans and Bo Fusek.

The care of patients with foot complications and foot ulcerations requires an interprofessional collaborative approach within a complex communication network for collaborative and integrative care.[3] To align with this requirement the workshop was attended personal support workers, diabetes educators, practical and registered nurses, chiropodists, pedorthists, social workers, dietitians, family physicians, nurse practitioners, case managers and pharmacists. In all, over 120 health-care workers from across northeastern Ontario attended.

The workshop content was also consistent with guidelines from International Working Group on the Diabetic Foot (IWGDF), Registered Nurses' Association of Ontario and the Canadian Diabetes Association, which recommend that health-

Twenty-four personal support worker (PSW) students from First Nations coastal communities along the James Bay coast attended. "Last year we travelled to the James Bay coastal communities, meeting with residents and health-care leaders who told us about the shortage of PSWs in the area and also about the need for more foot care to address the high rates of diabetes. We're pleased to help 24 residents take on this important work and also receive this specialized footcare training."

— Martha Auchinleck, acting CEO, of the North East LHIN

care systems need to incorporate the following recommendations into their system to support the reduction of foot complications:

- Implementation of interprofessional guidelines for education, screening and the treatment of all identified high-risk factors with criteria for quality improvement auditing
- Self-management and foot care education for patients with diabetes and their family/caregivers

- A system of regular screening (i.e., regular foot examinations) to detect people who are at risk, with frequency determined by risk
- Timely access to preventive foot care services at the point of care for people living with diabetes and a high-risk foot
- Establishment of interprofessional foot care teams/wound care teams for people with diabetes, and the creation of a timely referral pattern
- Timely and effective treatment for foot complications[4,5,6]

Diabetic foot ulcers and amputations are a costly problem to persons with diabetes, our communities and health-care system. A systematic approach of care is required to reduce the burden of this complication. Up to 85% of amputations can be reduced if sufficient attention is paid to the necessary measures. HSN provided an opportunity for policymakers and health-care professionals to work together to improve the care of persons with diabetes in their communities.

"By offering this training and allowing health-care workers to go back into their communities, we can ensure more people with diabetes have proper foot examinations. That will allow their health-care workers to catch potential problems earlier and come up with foot care plans, so ulcers don't develop to the point where there are serious effects, such as amputation. It's really better care for patients."
— Joanne Guizzo, Clinical Manager of Ambulatory Care Clinics at HSN, which includes the Diabetes Care Service

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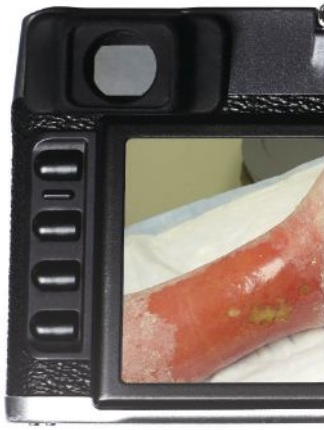


Remote Wound Consultation Series

PART 1:

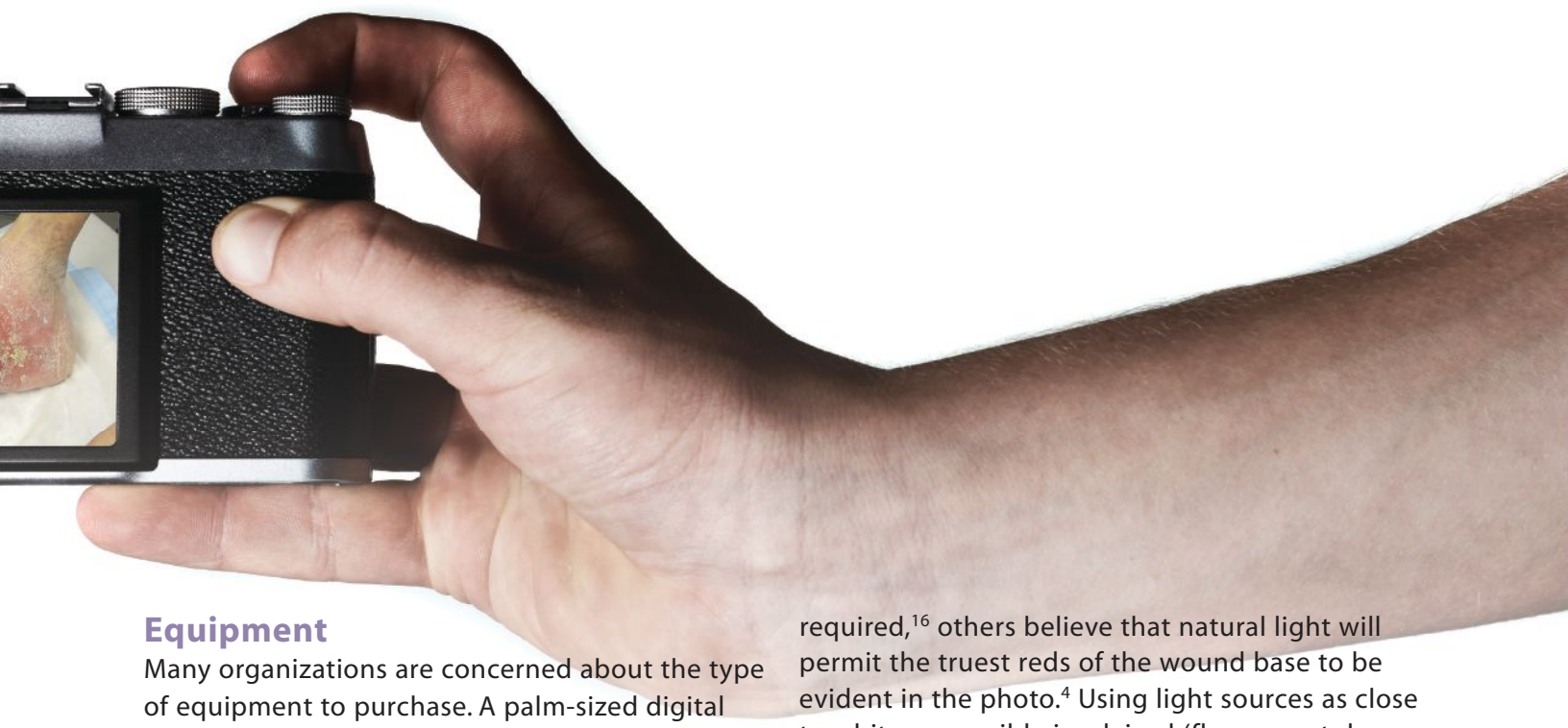
Clinical Digital Photography:

Tips and Techniques for Community Nurses

By Elise Rodd-Nielsen, RN, BSN, CETN (C), and Robert Ketchen, BASc, BID, ACIDO

Clinical digital photography is used increasingly in the community for the purposes of wound documentation and remote consultation.[1,2,3] The power to augment written notes with quality photos that detail the wound bed characteristics and wound edges is unsurpassed in its usefulness to provide a baseline record, to track wound progression[4,5,6] and to provide supportive evidence in the case of a lawsuit.[6] As the health-care workforce is put under greater pressure to increase capacity, more clients with chronic wounds are cared for by a greater variety of care providers. The ability to send a wound image with data to a wound management consultant or physician through electronic means facilitates the achievement of best practice care and collaboration between professionals and paraprofessionals.[7,8] It is not only beneficial for patients and professionals in rural and remote settings, but also for the care of urban patients with barriers to specialist access.[9]

In contrast to hospital and clinic settings, community practice brings unique constraints to clinical digital photography. Challenges arise related to the environment, equipment limitations and the lack of agency policies and procedures to support this practice. There are scarce resources available to assist home care nurses in producing high-quality photo documentation of wounds.[1] Digital wound images are frequently required for medico-legal purposes,[6] and achieving best quality is imperative and challenging.[8,10] This first of a two-part series will outline some practical tips and advice for the achievement of reliable and accurate digital wound images that take into account some of the restrictions related to this unique practice context. The second article in the series will address medico-legal, professional and patient privacy considerations for remote wound consultation policy development.



Equipment

Many organizations are concerned about the type of equipment to purchase. A palm-sized digital camera can produce high-quality images when space and weight constraints are an issue for a mobile health-care provider.[12,13] Camera features, such as a manually adjustable white balance to enhance true colours, can be helpful, but many of the value-added features of today's compact cameras, such as Wi-Fi or high-power optical zooms, are not. The most useful wound photos will be taken with the macro setting,[14] so purchase decisions should focus on cameras with a good macro ability, and that produce high-quality images.

A smooth, hard carrying case that is easily cleaned is essential for infection control purposes.[6] Some home care nurses find it practical to wear a headlamp when providing wound care in low-light situations, and these are small, inexpensive and portable. A tabletop tripod or monopod can also be helpful.

Mobile phone use for photography is regarded as posing unacceptable risks to patient security and confidentiality, which creates a potential for legal action against an individual clinician or organization.[6]

Tips for Lighting

Difficulty distinguishing true wound bed colour is one common challenge in digital photography, which is highly dependent on the source and amount of lighting available during photography.[4,8,15] While some argue that a flash is required,[16] others believe that natural light will permit the truest reds of the wound base to be evident in the photo.[4] Using light sources as close to white as possible is advised (fluorescent daylight or full spectrum bulbs rather than incandescent).[14] A visual comparison of skin tone with flash and without flash is presented in Figures 1A and 1B. To enhance the ambient light, position the client close to a window, turn on overhead lights and lamps and/or wear a headlamp while taking the photo with the flash turned off. Be aware that mixed sources of lighting can cause a colour cast (refer to the sidebar White Balance for an explanation of colour cast).

Macro photos taken with a flash can produce variable results in particular because wound exudate tends to create glare that reflects back the light, thereby obscuring wound bed colour and texture. However, in some homes, ambient light cannot be improved. In these cases, the author has found that putting a piece of "paper" tape partially or fully over the flash to mask it during photography can dampen the glaring effect and improve image quality. To solve the flash dilemma, some experts recommend the use of a ring flash,[16] although this equipment is used with a D-SLR camera more suitable in a fixed clinic environment.

Preparing Your Client

The client should be put in a comfortable position that allows the wound to be in a neutral, non-distorted position, in particular in wounds over joints and on the abdomen. Enlist help to hold limbs or

Flash

Most digital cameras come equipped with a built-in flash. This can be a useful feature in situations with poor lighting, but for the purposes of wound photography, the problems accompanying flash photography (glare, harsh shadows, overexposure, colour shift and more) can outweigh the benefits. If the flash can be turned off, or at least have its intensity decreased, and you can instead rely on existing lighting, you can usually sidestep the problems associated with the use of flash.

If you need to use the flash on your camera, or if your camera does not permit you to turn off the flash, you can almost always improve the photos you take by making the light from the flash more diffuse. Fasten something translucent over the flash (e.g., translucent tape, paper or tissue, making sure it is either white or uncoloured) or buy a commercially available snap-on flash diffuser. If your flash can be redirected away from the subject, then bounce it off a white ceiling or wall. Anything you can do to cause the concentrated point-source of light from the flash to become diffuse and reach the subject from many angles will result in softer shadows and less glare.

Be aware though that anything that lessens the amount of light available can result in longer exposure times, which can lead to blurred images, and/or a larger aperture setting, which can cause parts of the image to be out of focus. If you are using a tripod (see main article), a longer exposure isn't likely to be a problem. However, a larger aperture will result in a shallower depth of field, which is usually not what you want. (See more on this in the Focus and Depth of Field sidebar.)

Flash overexposure

No flash; daylight only

use rolled towels or pillows to support the patient and avoid patient fatigue. The wound should be thoroughly cleansed before photos are taken.

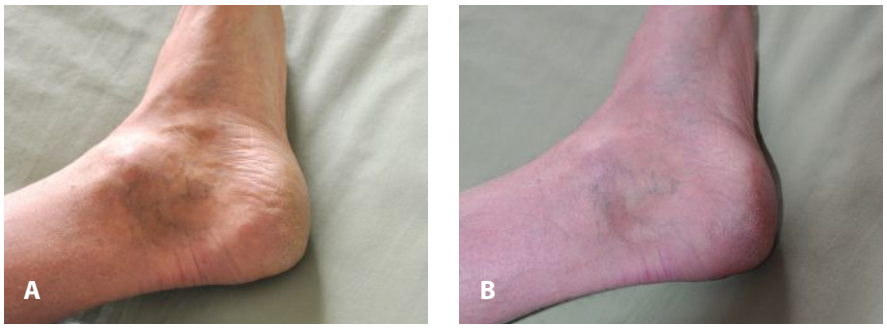
It is crucial to label the photo in order to link the photographic record to the patient. Remote consultants put themselves at risk by providing advice on an unlabelled photo. It is recommended to use a disposable measuring tape to record the date and a unique client identifier. In addition, the inclusion of a paper measuring tape in the image allows the viewer to compare an actual measuring tape to the one in the photo to judge if a 1:1 (actual wound size) or greater size (magnified) ratio was achieved when the macro setting was used.[14] Placing this scale in the same focal plane as the wound is important, as this is the only section that will be in focus.[6] This means that the camera should face the wound straight on and not at an angle. If the wound wraps around a rounded body part, several photos may be necessary to capture the entire skin defect. An arrow on the label indicating the direction of the patient's head provides wound orientation, and if there is more than one wound, the number assigned to the wound should be indicated on the label, or the wound location should be specified. Written notes should correspond to the same wound numbers indicated in the photo.

Camera Settings

Once the patient is comfortable and optimal lighting has been arranged, the camera can be removed from the case and the settings adjusted. The focus limit on the regular setting of a camera can be as great as 45 cm, which means that any photos taken closer than this distance will be out of focus.[11] The regular setting is appropriate when taking photos that include the surrounding skin and contralateral limbs, but photos of the wound bed should be taken using the macro setting.

Macro photography is a close-up photo that results in an image that is life-sized or greater-than-life-sized.[11] However, closing the distance between the camera and the wound also reduces the amount of light on the wound[11]

and requires greater stability; when light levels are lower, the lens stays open slightly longer. Finding the optimal distance between the camera and the wound using the macro setting will require some experimentation. Variables that affect the distance include the type of camera, size of wound, amount and type of light, and can vary with each patient.



Figures 1A & B. Effects on flesh tone colours between no flash (A, left) and flash (B, right) (automatic white balance)

The optical or digital zoom features should not be used in conjunction with the macro setting.[14] If it is necessary for the nurse to hold the patient in position and there is no help available, the use of the camera's self-timer feature can be helpful. Be sure to use a tabletop tripod, or place the camera on a hard surface.

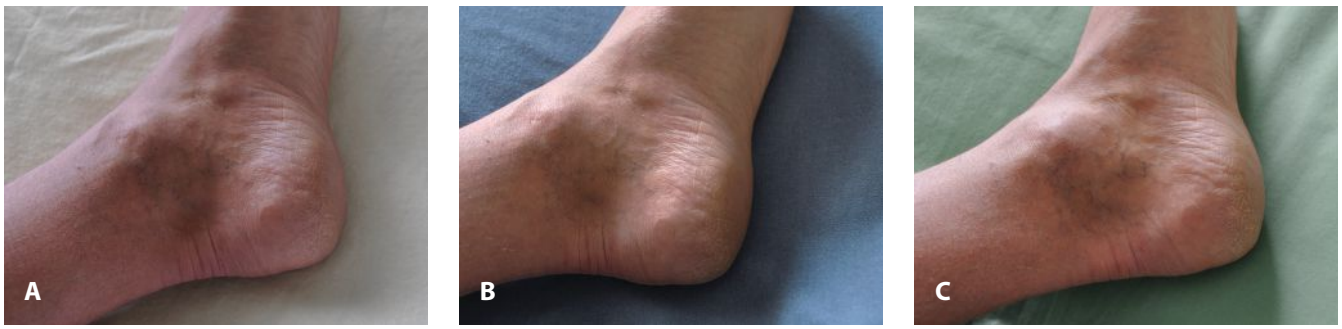
Fluorescent lighting will tend to cause a greenish or bluish tinge in the photo, whereas incandescent bulbs will create a yellowish tinge. Some cameras come equipped with a white balance feature that allows the user to get the most true-to-life colours. It is worth consulting the user manual to learn how to use the white balance feature, if it is not set automatically.[14]

Tips for Background

The background colour can affect the true reds in the photo. Non-reflective blues and greens are recommended.[6,14] The home-care nurse can use coloured towels, pillow cases or blue incontinence pads. See Figures 2 A, B, and C for a comparison of the same skin taken under the same lighting conditions with different backgrounds. It has been suggested that a colour reference chart or colour calibration label be placed in at least one of the photos to assist the remote consultant in distinguishing true colour.[8,16] This recommendation may be impractical unless a good source of inexpensive disposable charts is sourced.

Tips for Stability

While using a tripod for close-up photography is ideal, it is not typically practical in a home care environment. A monopod may be simpler to employ. Otherwise, if possible, rest the camera on a hard surface to take the photo, or use a tabletop tripod. Bracing your arms against your chest and taking the photo after exhaling and while holding your breath briefly can help, as can bracing the camera against something solid, like a door jamb or bureau, especially in low-light situations or when using macro settings. The use of the self-timer feature can also help when it is difficult to achieve stability while holding the camera.



Figures 2A, B & C. Comparison between (A) white, (B) blue and (C) green colour backgrounds; photos taken under same lighting conditions (automatic white balance)

White Balance

What is it?

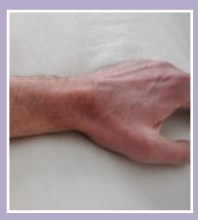
The type of light illuminating your patient will affect the overall colour of a photo, so if you need true colour (especially important in accurately recording the condition of wounds), you need to correct the camera's colour balance to compensate for any colour shift caused by the lighting. This correction technique is referred to as setting the white balance.

For example, regular tungsten incandescent bulbs impart a distinct yellow tone (also referred to as yellow cast) to your photo; fluorescent causes a green (or sometimes bluish-green) cast. Even the light reflected off painted walls or fabric can cause a colour cast. The naked eye sees the colour cast, but the human brain does a very good job at correcting for this without even realizing any sort of colour cast is present. The reality that a digital camera captures what it sees means that the colour cast in the photo becomes obvious—if left uncorrected—when viewing the photo later under different lighting conditions.

Incandescent lighting

Cloudy daylight lighting

Fluorescent lighting



White balance set properly

Why does it matter?

In a clinical setting, the colour of a wound can be an indicator of its current state, so accurate colour is essential.

What can you do about it?

Read your camera's manual and learn how to set the white balance. It is usually very simple, and a little practice is all it takes to master the steps needed. Get into the habit of resetting your camera's white balance for each set of photos or each lighting set-up. Some cameras will adjust white balance automatically and perhaps also offer preset white balance settings, such as sunlight, shade, fluorescent, etc., but you will not necessarily get the results you need or expect. On most digital cameras, white balance can be set manually by taking a test photo of something known to be neutral.

"White balance" is a bit of a misnomer, because it can actually be set with a neutral shade of grey just as effectively as with white. What is essential is that the colour is *neutral*. Many people use a plain sheet of white paper or piece of fabric, but many papers and fabrics have artificial brighteners to make them look cleaner and whiter to the human eye. The camera does not detect these brighteners the same way as the human eye though, and so something that looks plain white may not actually be neutral white; photos corrected to this supposedly "neutral" white may have a distinct colour cast. A better solution is to buy a "white card" or a "grey card" from a camera store. These are made to be truly neutral and can be used to set your camera's white balance properly. They are not expensive and are usually available in a range of sizes. Your card need not be very large—just large enough for you to take a test photo and adjust your camera's settings. Something large enough to hold in the photo while you shoot is ideal. (You need to be able to hold the card without it touching the patient, to avoid cross-contamination.)

When should you do it?

It does not need to be done for every photo; just once for every lighting situation. Note that if your lighting changes, you need to reset the white balance. For instance, if you are using natural light (i.e., daylight coming in through a window) and suddenly conditions outside change from sun to cloud, the white balance setting should be adjusted.

Step by step

1. Set up to take your photos.
2. Take your test shot first with the white card or grey card held near the point of interest in your photo.
3. Set the white balance using the test shot, as per your camera's instruction manual.
4. Take the rest of your photos.
5. Remember to reset your white balance every time your lighting situation changes.

It is possible to correct a photo's white balance after a photo is taken by using photo manipulation software, but because you must retain unedited, original files for medico-legal purposes, you reduce your file management obligations by setting up colour correction using white balance settings in the camera *before* taking any photos.

Tips for Infection Control

Infection control policies and procedures should be in place and address equipment and handling.[14] Ensure that the wound has been prepared and cleansed prior to removing the camera from the bag. Use hand sanitizer before and after taking the photo and avoid wearing gloves, as powder can damage the camera.[1] Treat the camera as you would a stethoscope or blood pressure cuff that is used with multiple patients during the day. Check with the manufacturer about the most appropriate means of cleansing the camera between clients, so as not to use chemicals that damage the screen or casing. Equipment should be carried in a hard case that is regularly cleaned.[6]

Tips for Wound Imaging

Not all wounds are amenable to photos for remote consultation purposes. Photos on hair-bearing skin, highly pigmented areas and mucosal lesions can pose challenges.[14] Ensure that the wound is cleansed before taking a photo to allow for a true image of tissue colours and textures. If there is concern, a photo of the back of the soiled dressing can be useful to record drainage colour, amount and consistency. Tunnels and undermining should be indicated using a cotton-tipped applicator placed within the wound, or parallel to it. Pre and post debridement photos are often taken.[6]

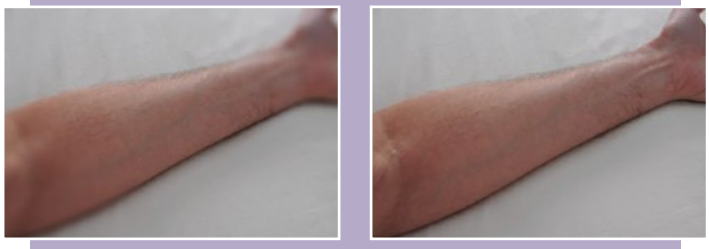
The entire wound should be in focus within the photo, and the depth of field should capture the entire depth of the wound[16] close enough so that underlying structures and tissue types can be identified. The focus should not be on the label, a common mistake. At least one photo should be taken that includes a large area of healthy surrounding skin in order to capture any subtle lines of erythema demarcation, which would otherwise be mistaken for normal skin tone, particularly in patients with rich skin colour. Alternately, an image that includes the entire limb taken with regular camera settings is suggested.

If the wound is on a limb, a photo that includes both limbs will allow contralateral

Focus and Depth of Field

Most digital cameras are equipped with autofocus and automatic exposure. They also allow you to turn off autofocus and to focus manually. If you are taking photos where the entire point of interest lies within the focal plane (see Glossary for a description), then autofocus will probably serve you well. But if your camera's autofocus insists on focusing on something other than your point of interest, then you should be prepared to focus manually.

What about depth of field (DOF) though? If your point of interest does not lie completely within the depth of field, you can improve the situation by deepening the depth of field, so that more of your subject is in focus. How do you do this? There are two main things that can conspire against you here: depth of field is shallowest when (a) you are at a close focal distance (which will be the norm for macro photos) and (b) the aperture is widest (which it will be when lighting is weak). Focal distance is something you may not be able to do much about if you need to be a particular distance from your subject to get the shot you require, but you can increase the depth of field (if your camera allows you to) by turning off the automatic exposure and manually adjusting to a smaller aperture (i.e., adjust to a higher F-stop). Be aware, though, that you can only do this successfully by increasing the length of the exposure (see the main article about using a tripod to stabilize your camera) and/or increasing the amount of light on your subject. A smaller aperture will result in less light entering the camera unless compensated for with longer exposure time and/or brighter lighting.

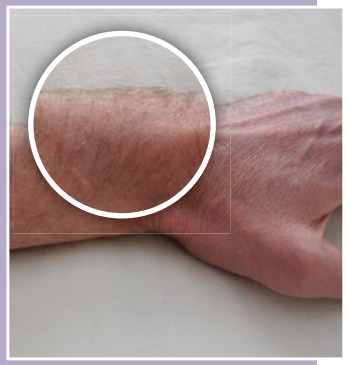


Shallow DOF Deep DOF

File Compression

Digital files can be very large if they have high resolution. There are techniques for compressing photos so they don't contain as much data. The advantage is that they don't take as much space to archive and as much time to transmit electronically. However, some compression techniques alter the photo and may be unsuitable or even disallowed from the standpoint of retaining an unaltered original. JPG (or JPEG) file format is a very common and efficient compressed file format, but it alters the photo by permanently stripping out "unneeded" data—data whose absence goes unnoticed by the viewer. This is referred to as "lossy" compression (as opposed to "lossless" compression, where no data are permanently stripped out). Furthermore, JPG photos may have been compressed with too great a degree of compression, resulting in an obvious (and permanent) characteristic shimmer or visual "noise" in the image (see examples, below). A photo with this visual noise is referred to as having digital artifacts, which is unacceptable in a clinical context. Most digital cameras save photos in JPG format by default, but usually with a minimal (and unnoticeable) degree of compression. Your camera may offer lossless compression alternatives. Read the manual to find out if it does and be prepared to make a decision based on file size and quality vs. convenience and speed of transmission.

High JPG compression (low quality)



No JPG compression (high quality)

comparison of edema and colour. It is also advisable to avoid including any hands in the image, and when this is required, the hands should be gloved.[6]

It is helpful to review previous photos and chart notes in order to replicate views. This allows for accurate comparisons over the course of healing. The front of the camera should be held parallel to the wound surface.[6] In order to protect patient identity, the photo taken should avoid angles that would include the patient's face or identifying features such as tattoos or jewellery.

Tips for Charting

Ensure that a specific consent for the digital image has been signed and is on the chart if there is any likelihood that the photo will be used for education or publication purposes or when information is transmitted to a consultant outside the circle of care.[6] Wound photos used for clinical trials require specific information and a separate consent. When a digital image is used as part of the standard or electronic documentation, consent is considered "implicit,"[9] but all consent needs to be informed.[17] Patients must understand that once taken, the photos are the ownership of the agency or institution as part of legal documentation. Patients have a right to view or obtain copies of the photos, as with other records. Verbal consent should be recorded in the chart.[6] It is recommended that when consent for wound photography is obtained from an incapacitated patient's substitute decision maker, the resulting photos be used strictly for clinical purposes.[6] It is advisable to incorporate the photo consent form into the general treatment consent[4] as the practice of clinical digital photography becomes more prevalent.

Taking careful notes enables comparable repeated images.[6] Notes can include the position of the patient during the photo if it is likely to affect the appearance of the size and any other particularities relevant to repeat imaging such as the approximate distance between camera and wound. It is important to indicate in the chart that a photo was taken so that

this can be cross-referenced to the stored digital image (if the photo is not printed). If photos are printed, these should be securely attached to the patient chart as well as noted in the chart in print.

Evidence supporting the use of photos alone as an alternative to direct clinical exam is conflicting. In studies on pressure ulcers, photos alone could not reliably convey the characteristics of a wound without accompanying clinical data,[18,19] whereas a study involving burns concluded that digital photography was a valid and affordable alternative to direct clinical exam.[20] Differences between the studies include the professionals involved (nurses versus doctors) and chronic versus acute wounds. The Photographic Wound Assessment Tool (revised) has proved to produce reliable results comparable to bedside wound assessments.[13]

Tips for Photo Processing

It is recommended to have a defined local policy on image processing to assist in an audit trail.[6] All poor-quality photos should be deleted directly from the camera at the time of capture. All raw, unmodified photos should be downloaded as soon as possible and labelled, at a minimum, with the word *original*, the date, client ID and wound number if applicable. Alternately, watermarking software can be used to ensure that photos are not edited or manipulated without permission.[14] Photos are admissible as evidence in any medico-legal suit.[6] If any alterations are made to the photo once it is downloaded such as re-sizing, colour adjustments, etc., the photo should be labelled as "altered" when saved. It is important to consider the quality of the computer screen used for reviewing digital photos, as this can also affect subtle colour differences in wound images.[14]

Tips for Medical Record Management

It is recommended that cameras reserved for wound documentation be treated as carefully as one would treat a patient chart. Cameras should be kept with the nurse during visits, not left in the car. Images that are left on the camera are not secure and there is a risk of a breach of confidentiality and patient privacy should the camera be stolen or viewed by someone outside the circle of care. Download images to a secure location as soon as possible and delete all images from the camera. If a patient asks to view their photos, be sure only their photos are seen while ensuring the privacy of other patients' images on the camera. Many patients request copies of their own photos; these requests should be treated as per institutional policies for any other part of the chart. An alternative is to offer to take a photo with the patient's own camera while in the home.

File Size/Photo Resolution

The size of photos is measured in megapixels (MP). Generally speaking, larger is better, because larger photos will have recorded more data and therefore better detail. File size is sometimes discussed in terms of resolution, but resolution is tied to the physical dimensions of the photo, and both must therefore be considered at the same time. Suffice it to say though, for a given physical dimension, high resolution means greater detail and is therefore generally more desirable. Preparing photos for publication and fully understanding the significance of resolution can be a very confusing and counter-intuitive undertaking for some, and a thorough explanation is beyond the scope of this article. However, many tutorials exist online that can help guide you.

Low resolution (72 DPI)

High resolution (300 DPI)

Patient photo documentation should be stored and kept using the same medical records policies that are in place for the institution or agency. If no policy exists for the storage of electronic files, it is recommended that these images be stored on a password-protected flash drive in a locked file drawer. Retrieval and transmission of images should be done over a secure network; and any exchange over public or non-secured networks should be encrypted.[14] Check with your email administrator to determine if your email network is secure for this purpose. Encrypting messages protects the privacy of the contents by scrambling the content into ciphered code.[21] It requires that the recipient have a private key that matches the public key used to encrypt the message. This service is normally found in the "options" tab. Instructions for encryption can be provided by email providers.

Conclusion

Clinical digital wound imaging is a home-care practice that holds much promise to improve care outcomes for patients by providing an extra communication tool between collaborating care providers. However, practice in the home environment comes with certain challenges. The tips, techniques and policy considerations presented in this article should facilitate the process of image capture to improve wound management and consultation. Remote consultation policy considerations will be covered in the second of this two-part series.

The authors would like to thank Sabrina Hasham, PEng, MBA, LLM, for her critical review of this article.

Some photos in this article have been adjusted and enhanced for illustrative purposes.

***Elise Rodd-Nielsen** is an independent Enterostomal Therapy Nurse consultant who is known nationally for her unique skills in telehealth wound/ostomy service development and delivery. Elise has extensive experience as a clinical nurse advisor (ET) and wound/ostomy educator to nurses in First Nations, provincial and private community sectors in British Columbia, Manitoba, Saskatchewan, Quebec and Ontario.*

***Robert Ketchen** holds degrees in Mechanical Engineering and Industrial Design and has been working as a freelance graphic designer in Toronto for over 25 years. Robert has a diverse practice that includes corporate identity, music publication and health-related design. He is Art Director for* Wound Care Canada *and the CAWC.*

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A Final Word

To improve your picture-taking skills, read the camera manual, look at online tutorials and practise! The biggest advantage of digital photography over traditional film photography is that, once you own the camera, the photos you take are free. So go crazy; take photos of the same subject and vary every setting and lighting variable possible to discover what works and what doesn't. And try some of the preset modes on your camera if it has them: for example, "landscape" mode sets up your camera with a deep depth of field; "portrait" mode sets up a shallow depth of field; "night" mode keeps the shutter open longer while reducing the flash. You may find using a preset other than "fully automatic" gives you a shortcut to the results you seek. All it takes is a little time and you'll become thoroughly familiar with your camera in the process.

Glossary

Macro

Loosely defined, macro photography refers to extreme close-up photography; it can also refer to photographs that are simply greater than life-size. For the purposes of this article, the term refers to macro settings on your camera that facilitate the taking of photographs at a close distance.

White Balance

White balance is a setting on your camera that compensates for lighting that is coloured slightly and causes a shift in a photo away from true colour. (The colour of the light is technically referred to as colour temperature, and sometimes the terms *white balance* and *colour temperature* are used interchangeably.) For example, incandescent, or tungsten, lighting will cause photos to look distinctly orange or yellow; fluorescent lighting will cause photos to look greenish or bluish. Setting the white balance on your camera will compensate for this colour shift, resulting in truer colours and making photos look more like the real thing.

Flash Ring

A flash ring is a flash unit in the shape of a circular ring that fits around the lens of a camera. Its purpose is to create softer shadows by casting light on the subject from many angles at once.

Focal Plane

Focal plane refers to an area that is the particular distance from the camera lens that appears in focus. Anything lying in the focal plane will appear perfectly sharp in a photo, and anything to the front or rear of the focal plane will appear out of focus, or blurry. The distance between the camera and the focal plane is referred to as the focal length or focal distance.

Depth of Field

The depth of field (DOF) of a photo is the range not in the focal plane (i.e., lies to the front and rear of the focal plane) but still appears *acceptably* sharp in a photo. In other words, a "narrow" (or "shallow") DOF will appear in focus only near the focal plane, with anything in the foreground or background appearing blurry; the farther away from the focal plane, the more blurry things will appear. A "wide" (or "deep") DOF will have a greater distance from the focal plane where objects still look acceptably sharp to the viewer. (Refer to the Focus and Depth of Field sidebar for examples.) For the purposes of wound photography, it will generally be desirable to have as wide a DOF as possible. The DOF is a perceptual characteristic of photographs, and as such there is no precise dimension that defines it.

Encryption, Encrypting

Encrypting is the process of encoding information so that only authorized parties can decode and read the information. Digital photographs are essentially just electronic information and can, therefore, be encrypted. For the purposes of digital wound photography, encryption would be used for the purpose of protecting photo files from unauthorized access while they are archived and during electronic transmission from one user to another.

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Update 2014:

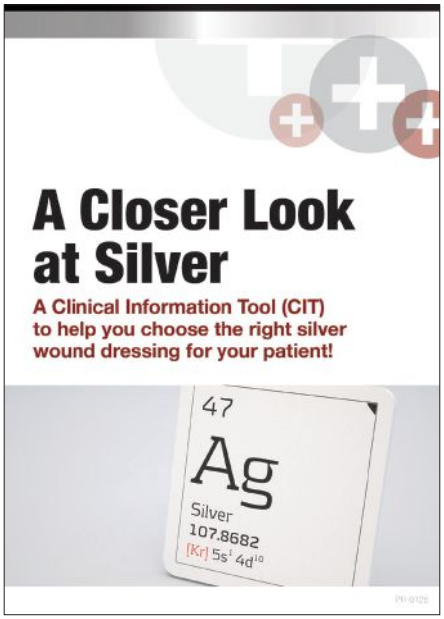
Take another look at SILVER

A discussion with Dr. David H. Keast

Wound care clinicians need up-to-date information about the choices available to them for all types of wounds. We asked Dr. David Keast, BSc, MSc, Dip Ed, MD, CCFP, FCFP, to bring his formidable background not only in wound care but also in chemistry to provide clarity on the sometimes confusing issue of silver, a common choice for addressing wound infection.

Q1: When is it appropriate to use a topical antimicrobial in a wound care protocol?

The presence of wound infection depends on the number of bacteria present, their virulence and the ability of the patient to fight infections. Wounds must be clinically assessed for level of bioburden. The level of bacterial burden can be assessed through clinical signs and symptoms. Wounds that are colonized have replicating bacteria on the surface with no tissue damage and do not need topical antimicrobials unless the patient is immunocompromised. Wounds with infection localized to the wound bed or with infection spreading to surrounding tissues are appropriate for topical antimicrobials. Spreading infection will require systemic antibiotics in addition to topical management.



Q2: There seems to be a lot of confusion around silver dressings, including how they work, when to use them and which ones are right for which patients. Why is this?

Silver is present in dressings in many different chemical forms and in many different types of dressings. This can be confusing to the clinician. First, a silver dressing should only be selected if a wound has been assessed as having localized bacterial burden or spreading infection. In some cases silver may be selected for prevention of infection in patients at risk. Second, the delivery vehicle should match the needs of the wound. Finally, patient acceptability and availability of the dressing must be considered. International consensus recommends a two-week challenge. If bacterial burden is clinically resolved the dressing should be discontinued. If the dressing is not effective an alternate antimicrobial should be chosen and the patient re-evaluated to determine if other factors have been missed. If the dressing is effective but there is ongoing need to manage bacterial loads it can be continued with regular reassessment.

Q3: The science behind silver in wound dressings is fairly complex. How can a health-care professional make sense of it all?

It is important to know that silver is only active as an antimicrobial if it has lost an electron to become a positively charged ion (Ag^{+}, Ag^{2+}, Ag^{3+}). Positively charged ions have a strong pull on electrons, which can disrupt proteins and DNA within the bacteria, causing cell death or the inability to reproduce. The more highly charged the silver ion the more disruptive it will be to bacteria. Because silver acts at multiple sites the risk of silver resistance is low.

Q4: How would you sum up, in a sentence or two, the best way for clinicians to incorporate silver into their clinical practice that will result in effective patient care and cost savings?

Silver dressings or antimicrobial dressings in general should only be used to manage a bacterial burden in a wound that is impeding wound healing. This requires a good and ongoing clinical assessment. Choose a dressing based on the needs of the wound and the needs of the patient, taking into account availability and cost-effectiveness.

For a more in-depth guide on the use of silver see *A Closer Look at Silver: A Clinical Information Tool (CIT)*. This resource is designed to provide a clear, easy-to-understand synopsis on silver, including **how, when** and **what type** to use for chronic wound management. Visit www.excitontech.com to download your free copy.

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Evidence-based Practice vs. Evidence-informed Practice:

What's the Difference?

By M. Gail Woodbury, BScPT, MSc, PhD, and Janet L. Kuhnke, RN, BSN, MS, ET

Most people agree that scientific evidence should be used to influence practice and that it will help clinicians provide "best" care for clients and families. For many years the term *evidence-based* has been used freely by health-care professionals—and more recently the term *evidence-informed* is used instead or as well. What do these terms really mean?

Evidence-based medicine was defined by Sackett et al. as the following:

> "Evidence-based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research. By individual clinical expertise we mean the proficiency and judgment that individual clinicians acquire through clinical experience and clinical practice."[1]

Although the evidence-based process was defined for physicians, it has been adopted by many professionals who refer to it as evidence-based practice (EBP). Over the years, critics of EBP have argued that it will turn clinicians into technicians who follow a recipe and that there is a tendency to forget the client's or patient's values and circum-

Qualitative studies and mixed methods studies that pose questions from the client's perspective are vitally important for informing practice, as they present information about patients' perceptions and understanding that cannot be obtained in quantitative studies.

stances with this approach. The EBP approach has become more overtly endorsing of clinical expertise and inclusive of client values, preferences and circumstances.

This updated explanation stresses the importance of patient factors, indicating that EBM or EBP requires:

> "... the integration of the best research evidence with our clinical expertise and our patient's unique values and circumstances."[2]

The meaning of *best research evidence*, *clinical expertise*, *patient values*, and *patient circumstances* are more clearly and specifically indicated.

What Is EBP?

The evidence-based process consists of:[2]

- Asking a well-developed answerable question
- Searching for evidence
- Evaluating/appraising the evidence for validity (truth), size of effect and applicability in clinical practice
- Integrating the critical evaluation with clinical expertise and the patient's unique circumstances and values
- Evaluating the effectiveness for next time

What kind of evidence is needed to answer clinical questions?

As indicated by the World Health Organization (WHO), "not all evidence is equally convincing. How convincing evidence is depends on what sorts of observations were made and how well they were made. Research evidence is generally more convincing than haphazard observations because it uses systematic methods to collect and analyse observations."[3]

Evidence comes from research studies that have investigated specific clinical circumstances. Often clinicians are interested in knowing if an intervention works or works better than another intervention. This is only one type of question that clinicians might ask. Clinicians ask many different types of questions, such as:

- How prevalent is a particular condition or complication?
- What is the most appropriate means of assessment or risk assessment?
- Which treatment is the most clinically effective? Cost effective?
- Which preventive strategy is the most likely to be followed?
- What are the patient's experiences or preferences?
- Which measure of outcome is the most appropriate?

Different types of clinical questions are answered best by different types of research studies. Some examples of the best research design to address different types of clinical questions are illustrated in Table 1.

Since clinicians often want to know which therapy works best, this is the question topic that we will illustrate. The words *therapy* and *intervention* mean the same thing and will be used interchangeably.

To help in searching for evidence to answer a clinical question, the question needs to be specific and frequently includes PICO and sometimes T elements.[2,4]

P Population or problem
I Intervention
C Comparison (if appropriate)
O Outcome(s) of interest
T Time

Example: For persons over age 65 with type 2 diabetes who are in assisted living, does implementation of a daily walking program compared with no walking program have an effect on weight and glycemic control over six months?

Table 1. Clinical question topics are addressed best by different types of research studies.

Question topics	Research study type
Treatment, therapy, intervention	Systematic review, randomized controlled trial (RCT)
Patient experiences/concerns	Qualitative study
Prevalence of condition or complication	Cross-sectional study
Cost effectiveness	Economic study
Disease course	Longitudinal study

Table 2. Places to find pre-appraised evidence

Type of evidence	Appraising group	Website
Systematic reviews	Cochrane Collaboration	www.cochrane.org
Canadian Clinical Practice Guidelines	Canadian Diabetes Association	http://guidelines.diabetes.ca
Canadian Best Practice Guidelines	Registered Nurses' Association of Ontario	http://rnao.ca/bpg
U.S. Guidelines	National Guideline Clearinghouse Agency for Healthcare Research and Quality, U.S.	www.guideline.gov
UK Guidelines	National Institute for Health and Care Excellence	http://guidance.nice.org.uk/CG/Published

Where can clinicians look for evidence to support clinical practice?

Although individual research studies can be sought and appraised, most clinicians either do not have the time or do not have the expertise to find and appraise research studies. Therefore, a good choice for clinicians is to locate synthesized clinical information (individual studies that have been appraised and combined following a rigorous process) such as best practice guidelines or systematic reviews. These are considered a higher level of evidence in the hierarchy of evidence addressing interventions. The hierarchy of evidence is also referred to as levels of evidence.

The Canadian Diabetes Association and the Registered Nurses' Association of Ontario have developed many excellent guidelines for diabetes and wound prevention, assessment and management. Table 2 presents a few examples of sites where synthesized (pre-appraised) information can be found.

If pre-appraised, synthesized evidence is not available, individual studies can be found by searching databases such as Medline, CINAHL and Embase. It is a good idea to seek the assistance of a health-care librarian whenever possible to help locate appropriate articles. After selecting articles, critical appraisal of the evidence is done to determine if the study is valid and relevant/important. Critical appraisal that is beyond the scope of this paper has been presented previously.[5]

Evidence-based practice (EBP) or evidence-informed practice (EIP) is a process for making informed clinical decisions. Research evidence is integrated with clinical experience, patient values, preferences and circumstances.

When should evidence be applied to practice?

Good quality evidence can inform practice if the studied population is similar to yours and if the intervention corresponds with your patient's values, preferences, circumstances, and available resources.

What is evidence-informed practice?

The EBP process described above relies on quantitative research studies that provide the highest levels of evidence for decisions about interventions and other practice topics such as assessment (diagnosis) and prevalence. Some people have argued that the evidence-based approach is too restrictive and that decision-making (for individual patients, for an organization, for a population) must rely on additional forms of evidence that are more inclusive.

Critics of EBP have suggested that information used to make clinical decisions in clinical practice should include more than evidence collected with the singular goal of reducing bias in intervention research and should include a variety of sources of research infor-

mation that address a wider range of goals.[6] Estabrooks has suggested that clinicians add "some of our own conventional wisdom and common sense" in the form of knowledge gained from qualitative studies.[7] As well, other sources include case reports, scientific principles and expert opinion.[4]

Although the term *evidence-informed* is used frequently of late rather than *evidence-based*, few authors have clarified the distinction. Miles and Loughlin promoted using the term *evidence-informed practice* to indicate that the process be person-centred rather than focused on the science of reducing the quantitative evidence, which, they claim, has taken humanity out of clinical practice.[8]

Sometimes people talk about using evidence-based methods to systematically search, select, appraise and summarize evidence and then use that information in conjunction with clinical knowledge/expertise and knowledge related to the patient or population to make evidence-informed decisions for an individual, group, setting or policy. Important international and national health organizations promote the idea of evidence-informed decisions—e.g., the WHO refers to evidence-informed policy making[3], and the Canadian Institutes of Health Research refers to evidence-informed decision making.[9]

Some people use the terms *evidence-based* and *evidence-informed* interchangeably without thinking much about what they mean. However, evidence-informed is used often these days and is the "catch-phrase" of choice as it appears to provide more flexibility regarding the nature of the evidence and its use; i.e., it implies that many different levels of evidence and types of evidence (described above) are needed and used to support decisions in clinical practice. Many people believe that "evidence-informed practice extends beyond the early definitions of evidenced-based practice."[4]

Evidence-based practice (EBP) or evidence-informed practice (EIP)? The terminology is less important than the approach. At the level of individual patients/clients, it is important that clinicians know the unique values, preferences and circumstances of their clients in addition to the scientific evidence that supports and informs their practice.

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Gail Woodbury *is an epidemiologist with a clinical background in physical therapy. She is on faculty in the School of Rehabilitation Therapy at Queen's University in Kingston, Ontario, and works as a research consultant.*

Janet Kuhnke *is an enterostomal therapist and a Baccalaureate nursing faculty member at St. Lawrence College/Laurentian University Collaborative Program in Cornwall, Ontario.*

Wound Sleuth

By Rob Miller, MD, FRCP Dermatologist
and Cathy Burrows, RN, BScN, MScCH (Wound Prevention and Care)

This 42-year-old female had been diagnosed with ulcerated necrobiosis lipoidica diabeticorum (NLD) in her 20s and had continual long-term management problems with her leg ulceration. Her diagnosis had been based on her clinical presentation of non-healing leg ulcers in association with juvenile diabetes. In addition, she had a biopsy done that was reported as showing histologic features compatible with this diagnosis.

The clinical presentation in Figure 1 shows non-healing ulcers in an edematous leg.

However, additional sleuthing revealed a more complete story. Doppler ultrasounds were subsequently taken that showed venous incompetence. After a long trial of compression stockings in addition to better glycemic control, her ulcers eventually healed and she has been ulcer-free for several years.

Learning points

Although the diagnosis of NLD had been entertained, the biopsy findings of many leg ulcers can be very non-specific and compatible with any variety of leg ulcer etiologies. Therefore clinico-pathologic correlation is always required.

Always suspect venous incompetence in any leg ulcer, as stasis ulcers are the most common etiology for leg ulceration. Doppler ultrasounds can help narrow down the cause. Certainly this individual's diabetes could significantly contribute to non-healing, but the diagnosis of necrobiosis lipoidica diabeticorum has a distinct clinical presentation and histologically displays vasculitis. Necrobiosis lipoidica is clinically characterized by yellowish patches and plaques with superficial blood vessels and cutaneous atrophy. Occasionally they may ulcerate, but this is generally uncommon.

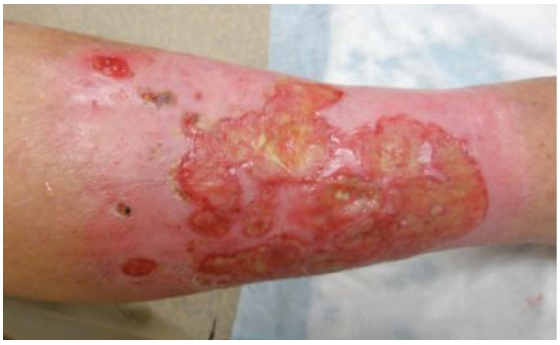

Figure 1. Ulcerated lower leg

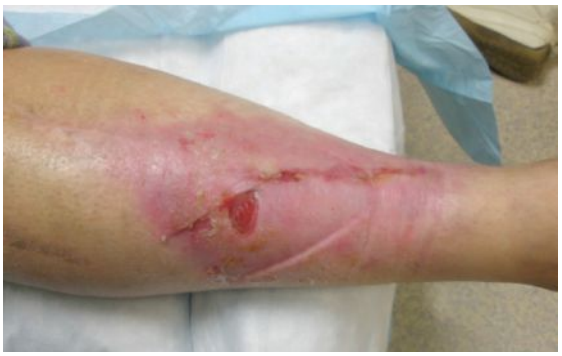

Figure 2. Leg during healing

Sustained and continuous compression therapy was an important aspect in achieving final wound healing in this individual.

Rob Miller *and* ***Cathy Burrows*** *are with the Wound Care Clinic, QEII Halifax Infirmary Site, Halifax, NS.*

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* Harrison et al.: The Canadian Bandaging Trial: Evidence-informed leg ulcer care and the effectiveness of two compression technologies. BMC Nursing 2011 10:20.

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NOVEMBER 2013

Presentation DIGEST

Venous Leg Ulcers: An Overview

By Karen Lorimer RN, MScN, CCHN (C)

This is a brief summary of a presentation given at the annual conference of the Canadian Association of Wound Care, in Vancouver, on November 6, 2013. It has been produced with the financial support of BSN Medical Canada.

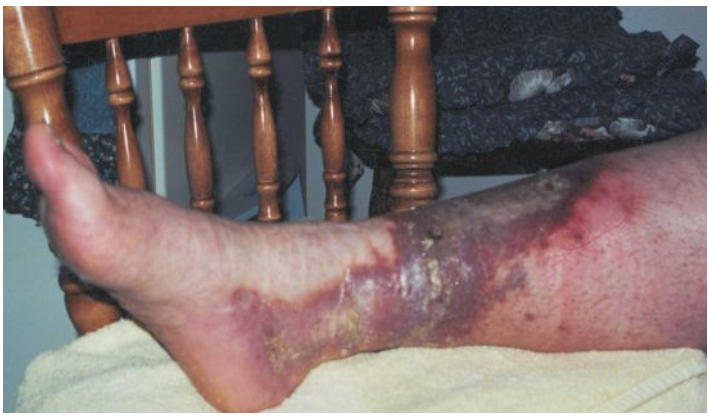
Venous Leg Ulcers: A Complex Condition

The population with venous leg ulcers (VLUs) presents as a complex group who experience long duration of ulceration and high recurrence rates. They are often coping with other chronic conditions that negatively influence wound healing and complicate treatment decisions. We need to support our clients to learn strategies to manage their chronic condition in order to improve healing and quality of life. This summary highlights the key points clinicians should keep in mind when diagnosing and treating clients with VLUs.

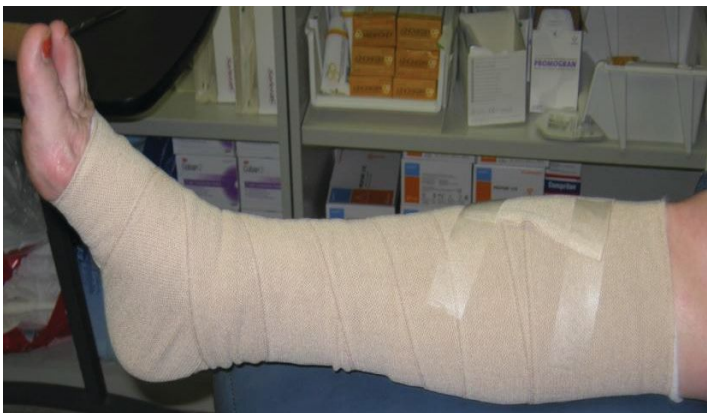
Rates of VLUs

The prevalence rate of VLUs in an Ottawa study (1999) was 1.8 per 1000 population in individuals over 25 years old. 75% were older than 65. The incidence rate for women older than 66 is almost double that of men. 64% reported a previous ulceration.

"The importance of a comprehensive client assessment to determine correct etiology of the wound cannot be underestimated. This involves completing a thorough clinical history, physical assessment and screen for arterial insufficiency."
— Karen Lorimer



A client with a venous leg ulcer receiving care in his home, the most common site of care. Note the presence of hyperpigmentation, lipodermatosclerosis, erythema and scaling of the leg. The extensive skin changes extending from the medial malleolus to the anterior leg indicate this man has had longstanding venous insufficiency.



Comprilan provides compression by creating a rigid cuff for the muscles to contract against. It has a lower resting pressure than elastic bandages and therefore may be a safer and more easily tolerated product for some clients. Because it is reusable, it is a good choice for those clients with copious drainage requiring daily bandage changes.

CAUTION

The status of circulation in the leg is paramount for confirming the diagnosis and eliminating others. To screen for arterial insufficiency the clinician must do an Ankle Brachial Pressure Index (ABPI), to assist in determining a safe level of compression bandaging. This must always be done in combination with the comprehensive client assessment. An ABPI in isolation is meaningless.

The main contributors to the development of VLUs are incompetent veins, an inadequate calf muscle pump and an obstruction of the vein. These conditions cause venous stasis and venous hypertension, leading to venous dilation, valve distortion, reflux, edema, capillary hypertension and endothelial leaks. Although the exact mechanism is unclear, the changes in the macro and micro circulation result in the chronic inflammation responsible for skin changes and ulceration.

Confirm the Etiology

The first step in treating a suspected VLU is to confirm the etiology. This is necessary to eliminate other diagnoses that may require contraindicated treatment options and to provide the framework for a management plan.

The clinician should ask about or look for a number of risk factors for venous disease, including advanced age, history of deep vein thrombosis, obesity, diabetes, varicose veins and multiple pregnancies. A history of coronary artery disease, smoking, elevated cholesterol or immune deficiency may point to factors associated with arterial or a non-venous etiology.

The physical assessment may reveal varicosities, edema, hyperpigmentation, atrophe blanche, scale and erythema, lipodermatosclerosis and an inverted champagne bottle appearance. An ulcer located on the medial malleolus is a strong indicator that it is a VLU.

Co-morbidities

60% of individuals with a VLU have at least four co-morbid conditions in addition to the leg ulcer. In a 1999 Ottawa study, 20% of clients with a VLU had diabetes. In 2011, the percentage of VLU clients with diabetes had climbed to 33%.

Manage as a Chronic Condition

Once a diagnosis of VLU is confirmed it is important for the care team—which always includes the patient—to create a plan of care that focuses not just on the wound but on the underlying causes and contributors. Statistics indicate that co-morbidities are common in individuals with VLUs, and unless underlying causes are addressed there is a high probability of recurrence. ■

Treatment

- Prevention
- Compression for life
- Walking/exercise to activate the calf muscle pump
- Leg elevation
- Good skin care
- Avoid common allergens (antibiotic ointments, lanolin)
- Pentoxifylline
- Seek medical help at the first sign of recurrence
- Follow the principles of wound care (DIME), including use of a simple non-adherent dressing

Presentation Digest is a production of the Canadian Association of Wound Care (CAWC)—info@cawc.net.
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Case Study

From Here to There and Back Again: A Child with a Burn

By Kimberley Lamarche, RN NP, DNP, and Rosemary Kohr, RN, PhD

Burn wounds present distinctive challenges to health-care professionals, both in terms of medical management and patient care sensitivity. The gold standard for the clinical management of burns includes appropriate dressing choices based on research to mitigate the risk of infection, reduce pain during dressing changes and promote optimal wound healing. In rural settings without a dedicated burn unit, the challenges are compounded, especially in the pediatric setting.

The aim of this case study presentation is to provide a detailed account using photographs and literature relating to the effective use of a silver wound dressing in the management of a partial-thickness burn wound in a pediatric patient.

Background

As a result of a traumatic explosion in a fishing hut, an 11-year-old girl sustained partial-thickness burns to her fingers, hand, forearm, elbow and biceps area. The accident took place in rural Nova Scotia in an area that is not served by a dedicated burn centre. Initial pre-hospital treatment included a 15-minute cold-water shower while awaiting transport.

The burned hut

"Nurses and physicians caring for individuals with wounds need to avail themselves of education regarding current best practices in wound healing."

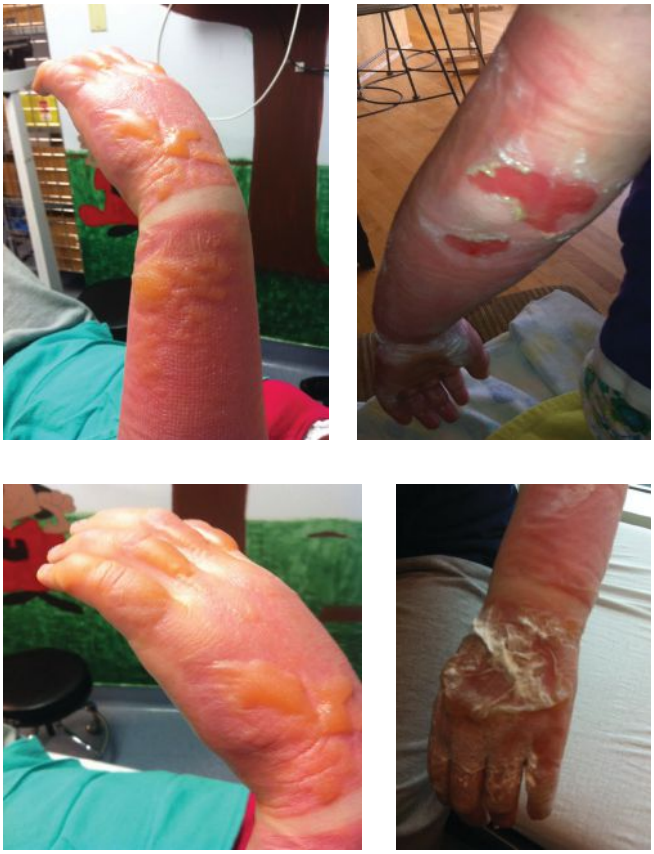
Treatment

After assessment in the local emergency room (ER), the child was assessed by a pediatrician and admitted for four days to the pediatric unit of the local hospital. After initial debridement in the ER and on the unit later that night, daily dressings were applied by non-wound-care experts using varying methods involving coating the affected area with an antibacterial cream and applying gauze.

Dressing treatment, Day 2

From the patient perspective, the daily removal of the old dressings produced anxiety and pain. Pain control was attempted with initial morphine PCA and later oral codeine.

There was little initial progress noted, with the wound remaining wet and producing purulent drainage. *Staphylococcus aureus* was found, and the patient started cephalexin on day five.

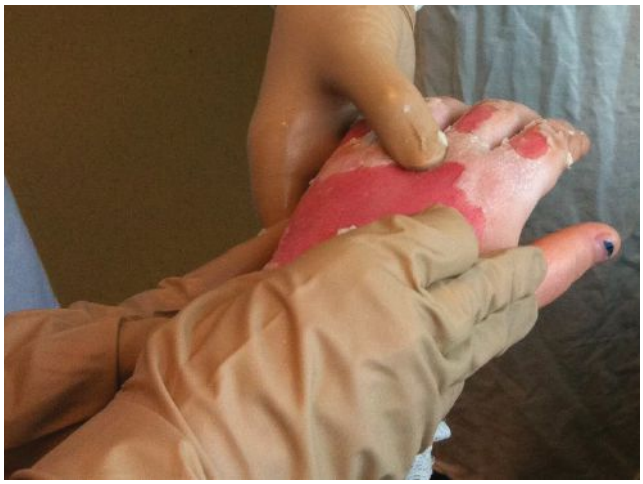


Wound progression on hand and elbow

Specialty Care

Once assessed by a burn team at the tertiary care centre, the child had access to occupational therapy, burn nursing services and pediatric plastic surgeons.

The entire hand and arm were extensively debrided, and a soft, absorbent, non-woven wound dressing with fluid-absorbing technology was applied.



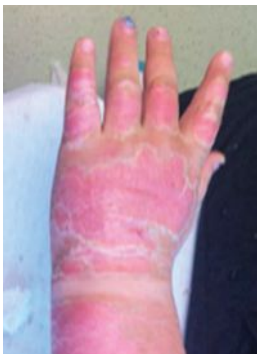
The debridement process

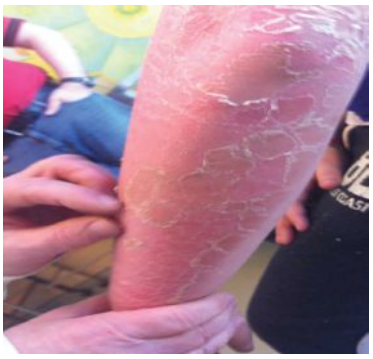
As the dressing incorporates antimicrobial silver, it also had efficacy against pathogens such as methicillin-resistant *Staphylococcus aureus*, vancomycin-resistant *S. enterococcus*, *S. aureus*, *Pseudomonas aeruginosa*, *Candida krusei* and *Bacteroides fragilis*. The dressing was kept in place for five days, and the patient returned to her home community.

The child had decreased pain for five days (due to the avoidance of daily dressing changes) and although she was still experiencing pain, her more prominent symptom was severe pruritus (which was effectively treated with cetirizine).

"Burn wounds present distinctive challenges to health-care professionals."

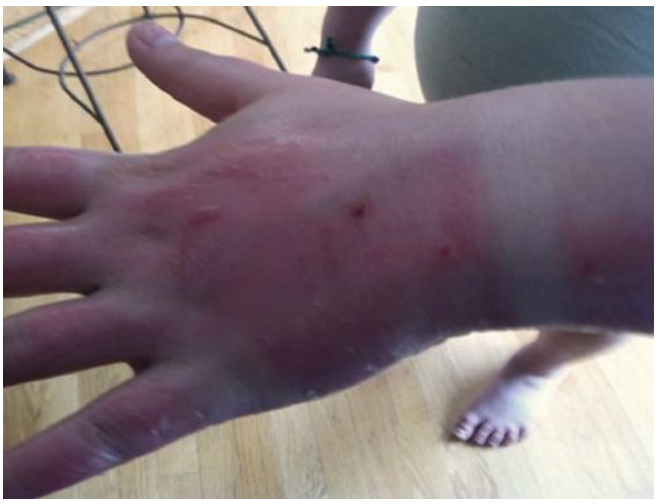
When the patient returned to the plastic surgery specialty clinic, the silver-impregnated dressing had gelled and was easily removed without pain or emotional trauma. The dressing did not adhere to the underlying tissue and slid off the fragile re-epithelializing tissue wound without any residue. Follow-up was arranged in the child's home community with the pediatric surgeon at a visiting clinic and resulted in the confirmation of healing with a minimum of scarring and no residual functional changes.





Post dressing appearance of hand and elbow

Following the removal of the dressing, the only requirement was continual application of a moisturizing barrier cream to protect the skin.



Post moisture application

Long-term management included sun protection with an SPF protective sleeve and post-traumatic stress counselling sessions with a psychologist. Yearly attendance at the Nova Scotia Fire Fighters Burn Treatment Society camp provided an opportunity to connect with volunteer professionals as well as other children who had been burned.

Learning

This case was particularly interesting, as it demonstrates the continuum of care of a pediatric patient from a rural setting to a local community hospital through to a specialized tertiary care children's hospital and then back to the rural setting for follow-up. In addition to the case study of a silver wound dressing with fluid-absorbing

"Referral to specialized care enabled the child's needs to be met."

capabilities, the importance of timely medical referral of a rural patient is stressed. In this situation, referral to specialized care enabled the child's needs of pain control and wound healing to be met. Appropriate knowledge regarding wound management with dressings that optimize healing and minimize infection potential is crucial. Nurses and physicians caring for individuals with wounds need to avail themselves of education regarding current best practices in wound healing.

Note: Permission to use photos with identifying features was granted for use in this article.

Kimberley Lamarche *is a primary healthcare nurse practitioner and educator. She is Assistant Professor, Centre for Nursing and Health Studies, Athabasca University. She has a firm belief in the scholarship of practice and maintains a part-time practice as a Primary Health Care Nurse Practitioner in Cape Breton Island, Nova Scotia. She can be reached at lamarche@athabascau.ca.*

Rosemary Kohr *is a wound care specialist and consultant, with over 20 years experience in wound care across the continuum of care. She is an Adjunct Professor, University of Western Ontario, and author/editor of the chapter on Skin/wound care in Potter and Perry's* Fundamentals of Nursing. *She provides wound care education workshops through Kohr Consulting and can be reached at kohrconsulting@gmail.com.*

Food for Thought

- Access to clinical wound care/burn expertise should be utilized using available technology (e.g., video conferencing), particularly when geography or timing is an important consideration.
- Appropriate dressings should address pain management needs as well as antibacterial considerations, particularly in burn patients.
- Education re: up-to-date approaches to frontline wound care is essential for health-care providers across the continuum of care, particularly in tertiary pediatric settings where traumatic wounds are not often seen.
- Communication between care providers, families and patients re: wound management, especially relating to traumatic wounds, should address not only the physiological care needs but also the psychological needs of the patient and family.

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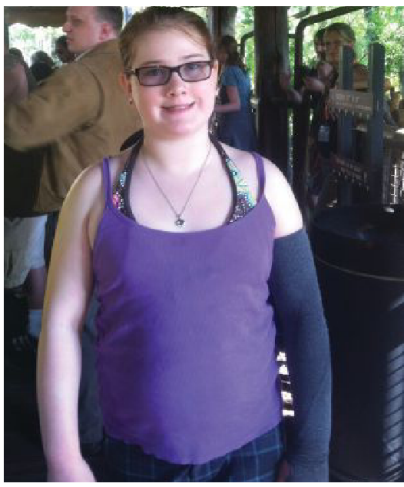

The patient with a sun protection sleeve

A new issue of Diabetic Foot Canada e-Journal!

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An Introduction to Health Policy

By Karen Laforet, RN, MCISc, PhD(c)

Health-care governance has seen tremendous shifts over the last 50 years: consolidation and deconstruction of health authorities, public-private partnerships (P3), resource constraints, changes to service delivery funding and informed consumers as patients. Policy has helped to shape a number of these changes. Within this upheaval, health professionals are being called to take action—specifically in the area of policy and politics. This "call to action" while not new, is unclear in exactly what the "call" looks like.[1]

Why is it essential to increase one's understanding of policy process and analysis? Policy and politics go together. Policy, an important element in all organizations, is central to how organizations manage themselves, exercise authority and align resources to support implementation and evaluation.[2] Health professionals (HPs) need to develop and enhance their "political competence" in order to understand, influence and use policy effectively.[3] An understanding of policy and policy analysis is a prerequisite for advocacy—a critical component of wound management. For too long, HPs, especially nurses, have been noticeably absent within the health policy arena.[4, 5,*] Absence from the decision-making process has resulted in implied acquiescence to other's agendas rather than giving voice to patients' needs. Who is better to provide an interdisciplinary perspective than those delivering wound care? Compared to other areas of health care, wound care has been under-serviced, fragmented, poorly funded and under-prioritized.[6] The only way to make positive change is at the policy level with a rigorous and defensible approach.[2]

Policy development and policy analysis are perceived as mysterious, obscure processes, around which are many theories and much rhetoric. This series of articles will bring clarity to the issues. Taking a more practical approach, this first article in the series will provide definitions and set the framework for policy analysis. Following this, three practical tools for analysis will be presented, using recent provincial decisions affecting wound care delivery as examples. Bringing this work all together will be a discussion on ways to enhance policy acumen and political competence as a prerequisite for change in wound care practice, education and research.[7] These articles will help move policy development and analysis from the hands of a "chosen few" into the mainstream so everyone committed to improving the lives of persons with wounds can contribute in this important, though sometimes neglected, area.

Policy: What It Is

According to the Oxford Dictionary, policy is defined as "a course or principle of action adopted or proposed by an organization or individual: e.g., a course of policy and wisdom."[8] Stated a different way, a policy includes a goal and the means

to meet that goal. The World Health Organization (WHO) defines health policy as the "decisions, plans and actions that are undertaken to achieve specific health-care goals within a society."[9] For the purposes of this article, policy arising out of all levels of health care will be categorized as professional, public or organizational.[10]

Professional policy may take the form of a resolution or position statement. The Ontario Woundcare Interest Group's (OntWIG) resolution to Accreditation Canada to include pressure ulcer prevention as a required operation procedure (ROP) for hospital accreditation is one example of this kind of policy.**

Public policy is a formal document that addresses an issue with a recommended solution. Usually referred to within the context of provincial or national policy, the finished product may be in the form of a white paper or framework document. Two provincial examples are "Enhancing Community Care for Ontarians (ECCO)," a white paper developed and disseminated by the Registered Nurses' Association of Ontario (RNAO),[11] and "Fewer Wounds, Faster Healing," a framework document developed by the OntWIG.[6] The more recent Canadian Association of Wound Care (CAWC) Diabetic Foot Canada project is an example of a national policy initiative. Collaborating with the Public Health Agency of Canada and the Canadian Diabetes Association, the CAWC creates and disseminates national policy recommendations for diabetic foot management.[12]

Organizational policies are generally institution- or company-specific policies. These are the ones clinicians and managers are most familiar with. These policies provide specific direction on a topic or course of action. An example would be a hospital's policy on patient admissions.

Policy Development

Governments and health-care organizations are under intense scrutiny to do more with less. The current trend for policy-making focuses on what works, how efficiently and cost-effectively the policy may be implemented and what outcomes need to be measured. Within this context is the ongoing debate regarding the importance of best research evidence. On the one hand, proponents for best evidence argue that the selection, evaluation and implementation of research are critical to policy development and implementation processes.[13] Opponents argue research evidence is only one component and any quest for best evidence may delay important decisions. While evidence is important, policy analysis is useful in filtering where and when rhetoric is supported by practice.[1,14] Health professionals must understand how decisions are made in order to influence and shape policy development and implementation.

Policy Analysis

Policy analysis refers to an inquiry that is directed toward a proposal for a specific health policy—essentially asking the questions: What is the governance process? Why is it being done? Will it

make/has it made a difference?[2,10] With roots in political science, health policy analysis can assist in understanding and building knowledge of the policy process. Historically, much of Canadian health policy analysis has focused on the hospital service element in areas such as hospital service agreements, health-care funding reform and pharmacy costs.[2] Policy analysis, like wound management, is interdisciplinary and problem-centred. Analysis is heavily influenced by the health-care discipline framework used and the reason for the analysis, and therefore it is imperative for clinicians to understand policy process.[2]

The steps in policy analysis, to be discussed in the next issue, are similar to the wound bed preparation paradigm[15] and the nursing process—elements of practice that clinicians use every day.

** Registered Nurses' Association of Ontario (RNAO) is the exception and is a strong political voice in Ontario. For more information, visit www.rnao.ca.*

*** More information on the resolution is available at http://ontwig.rnao.ca.*

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Karen Laforet *is Director of Clinical Services for Calea Home Care, located in Mississauga, Ontario, and an adjunct faculty member for the Masters of Clinical Science: Wound Healing program at Western University in London, Ontario.*

A Day in the Life of a Physical Therapist

By Deirdre O'Sullivan-Drombolis, BScPT, MCISc (Wound Healing)

Patients with wounds—chronic wounds in particular—often have significant difficulties with movement and the ability to perform functional activities. Many of the impairments that are underlying causes of wounds actually contribute to those mobility difficulties, including muscle weakness, decreased range of motion, decreased sensation, poor balance and pain. For these reasons, patients with wounds have the right to a skilled and knowledgeable multidisciplinary team that includes a physical therapist.

Though one doesn't typically think about a physical therapist when thinking about wounds, wound care is well within the physical therapist's scope of practice. In Canadian provinces such as Alberta, British Columbia and Quebec, physical therapists have long provided direct wound care, while changes in HPRAC legislation in Ontario have recently given physical therapists the authority to provide direct wound care. All physical therapists have the required skills necessary to treat the underlying impairments that affect patients with both acute and chronic wounds.

A Typical Day

I don't only treat patients with wounds, but I do spend a large portion of my day working with an interdisciplinary team to help those who are affected by wounds. My day typically starts with rounds to see which inpatients I need to see. I also have a small outpatient clinic. I do comprehensive assessments to identify patient-centred concerns, underlying causes of the wounds and local wound care needs. Based on these assessments and in collaboration with the team—the patient, physicians, nurses, occupational therapist, dietitian and others

The Road to Wound Care

When I first graduated from the University of Western Ontario as a physical therapist, I never dreamed that I would be working in wound care. After working at our local hospital as both an inpatient and outpatient therapist and taking some additional university courses, I began to notice the number of patients with wounds and the terrible cost to their quality of life. I was also shocked to see that very few of these patients were treated using best practices or even some of the basic evidence-based treatments I had learned about, such as compression therapy, total contact casting and therapeutic modalities. This prompted me to join the University of Western Ontario's inaugural Master of Clinical Science: Wound Healing class, which started my career in wound care.

as required—I develop a treatment plan and goals. I participate in treatments that involve both direct wound care, such as dressing changes, debridement and use of therapeutic modalities to promote wound healing—as well as those that don't, such as exercise prescription to increase strength and range of motion and improve endurance, mobilization, use and prescription of equipment such as gait aides or offloading devices, transfer practice and treatments to help with edema and pain. I also educate patients. I continually reassess my patients to ensure that the proposed treatment programs are effective. I'm involved in their discharge planning as well.

Beyond Patient Care

My role in wound care doesn't stop with direct patient care. I believe strongly in advocating for patients with wounds to have access to a skilled, knowledgeable team that practises evidenced-based management. I belong to various committees and associations, both locally and nationally, that are focused on improving the quality of wound care for patients. Recently, I have been working with my management to develop policies and procedures surrounding wound care. Educating staff here at the hospital and health-care professionals nationwide is my favourite part of my job.

My work is rewarding and fun. I get to spend time truly getting to know patients and help them bring about positive changes in their lives. I also work to help my fellow health-care professionals treat their patients effectively and with confidence.

While not all physical therapists have a special interest in wound care like I do, all physical therapists have the necessary training to help patients with wounds by treating many of the impairments that must be addressed every day.

Are you a PT interested in wound care?
Contact Deirdre for more information on the Canadian Physical Therapist Wound Care Collaborative, at cptwcc@gmail.com.

Deirdre O'Sullivan-Drombolis *is a graduate of the Master of Clinical Science: Wound Healing program at the University of Western Ontario. She is adjunct faculty within the program and at the Northern Ontario School of Medicine. She is Wound Care Team Lead and staff physical therapist at Riverside Health Care Facilities and a member of the CAWC's Board of Directors.*

Top Seven
Reasons to Refer to a PT

1. Calf-muscle-pump retraining
2. Gait training and gait aid prescription
3. Safe exercise prescription, including cardiovascular, strengthening and endurance for people with compromised heart or lung function or those with impaired limb circulation
4. Offloading and pressure redistribution for those with mobility restrictions or who use a wheelchair
5. Treatment of pain
6. Edema management
7. Stimulation of healing using theraputic modalities (e.g., electrical stimulation therapy, ultrasound, ultraviolet light)

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