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Wound Care CANADA

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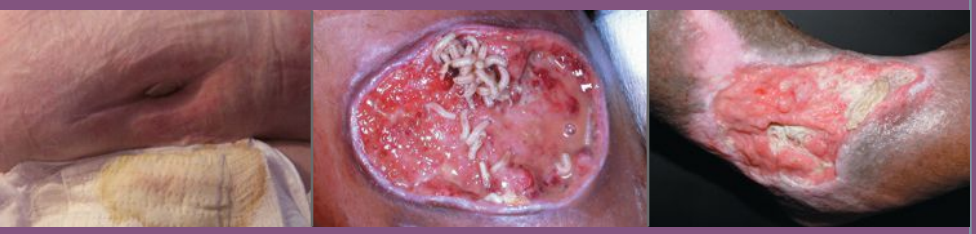

The Extent of Chronic Wounds in Canada: What We Know and What We Don't Know

Canadian Association of Wound Care
Association canadienne du soin des plaies

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1) Principles of best practice: Minimising pain at wound dressing-related procedures. A consensus document. London: MEP Ltd, 2004 Downloadable on www.tendra.com

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Focusing on Pressure Ulcers

Sue Rosenthal

In October 2004, two events began to focus the attention of both the Canadian public and wound-care clinicians on a single issue: pressure ulcers. The first major event was the publication in *Ostomy/Wound Management* of the results of the CAWC-sponsored study by M. Gail Woodbury and Pamela E. Houghton entitled "Prevalence of Pressure Ulcers in Canadian Healthcare Settings." While the public will not have read the article, many wound-care clinicians and other health-care professionals most certainly will. The study highlights, through the first hard numbers available on a large scale, how pervasive this often devastating—and preventable—condition is, in a variety of health-care settings across the country.

"Pressure ulcer prevention … can now be addressed in a methodical, co-ordinated manner."

For the public, the death of actor Christopher Reeve served uncomfortable notice that anyone, regardless of the availability of financial and caregiver resources, could succumb to the complications of a pressure ulcer. For the many Canadians who have loved ones in health-care facilities, particularly in long-term care, the implications are very scary indeed.

At *Wound Care Canada*, we are committed to furthering the awareness generated by these two pivotal events; therefore, we are devoting a large percentage of this issue to articles pertaining to pressure ulcers and to the results of the study.

As an indicator of quality in health care, pressure ulcer prevalence is a concern that can now be addressed in a methodical, co-ordinated manner. This issue of *Wound Care Canada* is the first step that the CAWC is taking to raise awareness of pressure ulcer prevalence among clinicians, patients and families, and policy-makers.

Sue Rosenthal, Editor

Sue Rosenthal, BA, MA, specializes in health and wellness communications and has been associated with the CAWC since 2000.

Coup d'œil sur les plaies de pression

En octobre 2004, deux événements ont commencé à attirer l'attention du public canadien et des cliniciens en soins des plaies sur un problème particulier : les plaies de pression. Le premier événement important a été la publication dans *Ostomy/Wound Management* des résultats de l'étude commanditée par l'ACSP de M. Gail Woodbury et Pamela E. Houghton intitulée « Prevalence of Pressure Ulcers in Canadian Healthcare Settings ». Bien sûr, le public n'aura pas lu l'article, mais de nombreux cliniciens en soins des plaies et autres professionnels de la santé l'auront certainement lu. L'étude souligne, à l'aide des premiers chiffres incontestables disponibles à grande échelle, à quel point ce problème souvent dévastateur est omniprésent et évitable, dans divers contextes de soins de santé partout au pays.

« On peut maintenant s'attaquer à la prévention des ulcères de pression d'une manière méthodique et co-ordonnée. »

Pour le public, le décès de l'acteur Christopher Reeve a servi d'avertissement déplaisant que n'importe qui, peu importe ses ressources financières et la qualité des soins qu'il reçoit, peut succomber aux complications d'une plaie de pression. Pour les nombreux Canadiens dont les proches se trouvent dans des établissements de santé, surtout de soins prolongés, les implications sont en effet très alarmantes.

À *Wound Care Canada*, nous sommes engagés à accentuer la sensibilisation générée par ces deux événements critiques; c'est pourquoi nous consacrons un fort pourcentage de ce numéro à des articles portant sur les plaies de pression et aux résultats de l'étude.

À titre d'indicateur de la qualité des soins de santé, la prévalence des plaies de pression est un problème qu'il faut maintenant aborder d'une façon méthodique et concertée. Ce numéro de *Wound Care Canada* est la première mesure que prend l'ACSP pour sensibiliser les cliniciens, les patients et leurs proches, ainsi que les décideurs à la prévalence des plaies de pression.

Sue Rosenthal, Rédactrice

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

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

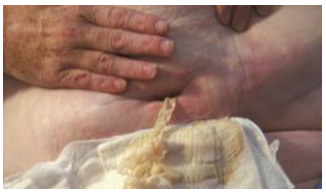
The CAWC was formed in 1995, and its official meeting is the CAWC annual conference held in Canada each year. The association's efforts are focused on five key areas: public policy, clinical practice, education, research and connecting with the international wound-care community. The CAWC works to significantly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

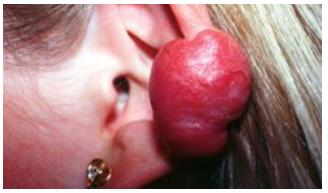
L'Association canadienne du soin des plaies est un organisme sans but lucratif regroupant des professionnels de la santé, des gens de l'industrie, des patients et des membres du personnel soignant fortement intéressés à l'avancement des connaissances pour le soin des plaies au Canada.

Fondée en 1995, l'ACSP organise, chaque année, au Canada, un congrès qui lui tient lieu de réunion officielle, le Congrès annuel de l'ACSP. L'association consacre ses efforts dans cinq domaines particuliers : les politiques gouvernementales, la pratique clinique, la formation, la recherche et la création de liens avec la communauté internationale directement impliquée dans le soin des plaies. L'Association canadienne du soin des plaies vise une amélioration significative du soin donné au patient, des résultats cliniques et de la satisfaction professionnelle des spécialistes en soin des plaies.

Features

CLINICAL PRACTICE





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Editor/Rédactrice
Sue Rosenthal
E-mail: WCCeditor@cawc.net

Associate Editor/Rédacteur adjoint
Catherine Harley

French Editor/
Rédacteur pour la version française
Louise Doucet

Scientific Advisor/
Conseiller scientifique
Heather Orsted, MSc, RN, BN, ET

Publisher/Éditeur
BCS Communications Ltd.
101 Thorncliffe Park Drive
Toronto, ON M4H 1M2

Editorial Advisory Board/
Comité consultatif de rédaction
Pamela Houghton, BScPT, PhD
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Advertising Sales/Publicité et vente
Steinman and Company
Phone: 416-782-2350
E-mail: WCCadvertising@cawc.net

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CAWC Events

Eleventh Annual Conference
Palais des congrès
de Montreal
November 12–15, 2005
Delta Centre Ville
Montreal, QC
www.cawc.net

Other Events

Wound Healing Society
Fifteenth Annual Meeting
May 18–21, 2005
Hyatt Regency Chicago
Chicago, IL
www.woundheal.org

WOCN: Thirty-seventh
Annual Conference
June 12–16, 2005
Paris Las Vegas
Las Vegas, NV
www.wocn.org

Canadian Association for
Enterostomal Therapy
Twenty-fourth Annual
Conference
June 22–26, 2005
"Pioneering to Empowerment"
The Fairmont Palliser Hotel
Calgary, AB
www.caetconference.ca

European Tissue
Repair Society
Annual Meeting
September 15–17, 2005
Stuttgart, Germany
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The Canadian Seating &
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September 21–23, 2005
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News from the Corporate World of Wound Care

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from Johnson & Johnson
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Traveler's thrombosis is really deep vein thrombosis (DVT). DVT is a blood clot that forms in a leg vein, often after a person has been sitting for a long time, a typical situation during long-distance travel. A DVT can flow through the bloodstream and lodge in the lungs. This is called a pulmonary embolism, and it has the potential to cause death.

Studies have indicated that wearing compression stockings during a long flight reduces the risk of traveler's thrombosis.

Call for Abstracts

The 11th Annual Conference of the CAWC is the ideal place for wound-care professionals to share their research findings, ideas and solutions. Past CAWC conferences have given presenters an excellent opportunity to link with colleagues from across Canada. Conference organizers have issued a call for abstracts on research for the 2005 CAWC meeting. Visit the CAWC Web site at www.cawc.net for details.

Visit **www.cawc.net** for the latest news and information.

When you see the Web Connect icon associated with an article, look for more information on the CAWC Web site at www.cawc.net. Click on *Wound Care Canada*.

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Surgical Site Infections in Community Care Clients

Early Detection and Rational Care through Recognition of Client-specific Risk Factors

BY Virginia McNaughton and Heather L. Orsted

In Canada, surgical site infections (SSIs) are the third leading cause of hospital acquired infections.[1] A retrospective incidence series study conducted in 1998 at a teaching hospital in Ontario identified that wound infections increase hospital-related nursing costs by as much as 51 per cent and that inpatient hospital costs directly related to the wound can be as much as $3,937 per infection.[2]

In the U.S., a prospective study assessed the clinical outcomes and resource utilization associated with SSIs recognized after discharge during the eight-week post-operative period. It was found that SSIs are the second leading cause of nosocomial infections, causing approximately 17 per cent of all hospital acquired infection.[3]

For those surgeries performed as inpatient procedures, shorter hospital stays, sicker patients and more complex surgical procedures contribute to increased numbers of SSIs diagnosed after discharge. It is estimated that 75 per cent of surgical interventions are performed as outpatients, increasing SSI detection concerns in the community.[4] Unpublished Canadian prevalence data suggest that in selected community-care sites approximately 30 per cent to 40 per cent of nursing visits involve wound care. Surgical wound care involves as much 50 per cent of these visits.[5] Recognition of a potential for surgical wound infection may be the most important issue when the discharge of a post-surgical patient is planned, yet there is often no formal connection between in-hospital and community surveillance.

Recognition of Infection

Where and when an infection is recognized in the discharged patient is a complex issue. Six different categories of patients (clients) can be identified in which surgical wounds can occur:

1. Patients discharged from hospital with an SSI independent with their care and under the follow-up of a surgeon/physician.
2. Patients discharged from the hospital with an SSI and admitted to home care or a long-term-care (LTC) facility.
3. Patients discharged from the hospital and admitted to home care or an LTC facility with a closed incision and with other health-care needs (e.g., mobility issues post hip surgery) who proceed to develop an SSI.
4. Patients discharged from hospital and admitted to home care after an SSI is detected in their doctor's office.
5. Patients who discover while at home that they have an SSI and care for it with physician/surgeon involvement.
6. Patients who discover while at home that they have an SSI and care for it independently without physician/surgeon involvement.

Careful review of these categories with further research into the most likely scenarios in specific

FIGURE 1

SSI Classifications (CDC)[8]

Category 1: Superficial incisional SSI involves only skin or subcutaneous tissue at the incision.

Category 2: Deep incisional SSI involves the deep tissues, including the muscles and fascia.

Category 3: Organ/space SSI involves any part of the body that does not include deep tissues, muscle and fascia, and that was opened or manipulated during the surgery.

communities will provide valuable information to surgeons, physicians and community nurses and assist them to effectively monitor their clients.

The timing of infection is important in determining whether or not it is related to the surgery. Bryant[6] states that SSIs occur within 30 days of surgery or within one year if an implant has been inserted and the infection involves the site of the surgery, while others have shown that most SSIs will occur within 21 days after the operation.[7]

Early recognition of the signs and symptoms of infection is crucial. Each home-care agency should standardize the definition of surgical site infection and ensure that all care providers are taught what to look for and who to notify should any of the signs and symptoms be discovered. The Centers for Disease Control in Atlanta, Georgia, classifies SSIs into three categories[8] (see Figure 1).

Knowing the client and their treatment course before, during and after surgery will help to predict those clients that are at higher risk for SSIs, thus mitigating the severity of the infection by initiating early prevention and/or treatment strategies. This information is not always immediately available, and the home-care nurse may have to "dig" for it. Clients deemed to be at risk will require more frequent monitoring, and the schedule of visits can be worked out with care managers to ensure appropriate, cost-effective monitoring.

Risk Factors for Surgical Site Infection

Risk factors that increase a client's risk of surgical site infection can be grouped into three categories: pre-surgical, surgical and post-surgical risks. Community-care nurses can influence many of these risk factors by thorough assessment and health teaching before and after surgery. Careful consideration of individual client risk factors will enable the community nurse to develop a realistic monitoring and care plan aimed at early detection and treatment.

Figure 2. Packing removal from sinus. Note the copious serosanguinous drainage.

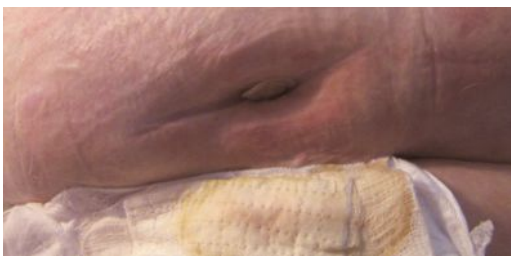

Figure 3. Post-op MESH graft failure. Sinus measures approximately 2.5 cm deep and approximately 1.5 cm wide.

Virginia McNaughton, BA, MPA (Health), RN, ET, is the Eastern WOCN consultant for Saint Elizabeth Health Care as well as the Regional Director (Ontario) for the CAET, a peer reviewer for *Ostomy/Wound Management* and *Advances in Skin and Wound Care*, a member of the CAWC Research Committee and an Academic Advisor with the CAET-ETNEP program.

Heather Orsted, MSc, RN, BN, ET, is the Chair of the CAWC Education Committee. She is a co-director of the University of Toronto's International Interdisciplinary Wound Care Course and has made major contributions to wound-care education both nationally and internationally.

1. Pre-operative, patient-related risk factors include
   A. Reason for the surgery
   B. Co-morbidities
   C. Smoking
   D. Nutritional status
2. Operative related risk factors include
   A. Nature of the surgery
      i. Emergent nature of the surgery
      ii. Clean or dirty surgery
         a. Abdominal surgery and surgeries in which a prosthesis is implanted are at higher risk for SSIs
   B. Nature of the healing pathway
      i. Primary, secondary or tertiary intention
   C. Course in hospital
      i. Length of stay
      ii. Untoward events
   D. Hospital system issues
      i. Specialty vs. general surgery
      ii. Product availability
      iii. Wound-care knowledge of caregivers
3. Post operative, home-health-care-related issues include
   A. Early detection and treatment of infection
      i. Up to 85 per cent of surgical site infections are diagnosed within 21 days of discharge[4] this can lead to a delay in treatment as clients may not have contact with a health professional during this time.
   B. Accuracy and completeness of information received by the agency
   C. Staffing issues
      i. Consistency of wound-care provider
      ii. Knowledge of wound-care provider
      iii. Availability and flexibility in wound-management products
   D. Availability of collaborative physicians with wound-care expertise

By targeting their teaching and intervention strategies to the identified risk factors community nurses can ensure that even with limited time for each client visit their interventions are effective.

Surgical site surveillance, diagnosis and treatment are care issues in the community. It has been shown that surgical site wound infection substantially increases the cost of care of post-operative patients and ties up professional care resources that might otherwise be available to clients residing in the community.[3]

In these times of rationalization of health-care dollars, it is important to ensure that clients in the community receive the appropriate surveillance of their post-operative wounds. By using the information presented here, community nurses can develop tools to identify those surgical patients discharged to the community who are at higher risk for surgical site infection. By knowing the client-specific risk factors and identifying those clients at high risk for infection, we can develop a visit schedule to monitor these clients' post-operative wounds, thereby ensuring the optimum utilization of our human resources. During these visits, a standardized wound assessment tool should be utilized to identify the signs and symptoms of infection and the need for treatment. Further site-specific research on where and when SSIs occur in our communities would provide valuable information for the development of client-specific "early warning" teach-ing tools to assist our clients in achieving their best possible, infection-free, post-operative outcomes.

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Case Study

The following case study demonstrates the complexity of post-operative wounds complicated by surgical site infections cared for in the community.

The client is a 48-year-old woman who lives in a two-storey home with her father. Her pre-operative risk factors include Type II diabetes, obesity and sleep apnea. Her medications include Glyburide, Celebrex, ranitidine, amitryptiline and morphine.

In 2003, she underwent a hernia repair with mesh that failed due to a surgical site infection. She underwent a second surgery to repair her abdominal hernia with new mesh in 2004. Her operative risk factors during both surgeries included the nature of the surgery (abdominal surgery has the risk of becoming dirty if the bowel is damaged), the use of mesh, the nature of the healing pathway (secondary intention) and her co-morbidities.

Because the surgery was performed in another city, the community nurses had no information concerning her operative and post-operative risk factors while in hospital.

Her current wound is the result of the second abdominal hernia repair with the use of mesh that has failed to completely heal. It is classified as a deep incisional infection since it occurred within 30 days of the surgery and involved purulent drainage and a wound dehiscence. She has a 3 cm opening that drains purulent foul-smelling exudate. She has no systemic signs of infection. She receives daily or twice daily irrigation with normal saline and gauze packing with a gauze abdominal cover dressing (see figures 2 and 3 on page 11).

The client's co-morbidities, the nature of her surgery, the use of mesh in the abdominal repair and her schedule of daily dressing changes increased the client's risk for infection. She disliked daily dressing changes. It was difficult for her to tolerate schedule changes or changes in staffing. The client's nursing team worked with her doctor to develop a dressing strategy that would meet the following goals:

- prevent infection
- manage the exudate
- reduce the odour
- promote granulation
- decrease the impact her dressing changes were having on her life by decreasing the frequency of visits

The community nurses monitored her carefully to ensure that antibiotic therapy would be started immediately should an infection develop. They were careful not to mistake the drainage from a now chronic wound for infection, but rather to look for systemic signs such as

- sudden onset of pain
- increased temperature
- increased fatigue
- sudden high glucose

Her dressings were changed to a silver impregnated absorptive rope dressing with an adhesive, waterproof, absorbent combination dressing that would prevent bacterial contamination of the wound. Because the client was quite active, a binder to prevent the frequent motion of her pannus was also suggested. This new combination of dressings stayed in place for two to three days and there was little odour between dressing changes.

The client continues to be infection-free; however, she has rejected the new dressing regimen in preference of daily visits. She will return to her surgeon to explore further options for healing, as she has not yet completely healed.

Conclusion

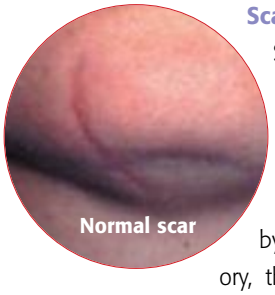
This case demonstrates the need for close collaboration between health sectors at the time of discharge and the issue of client preference. After trying the new regimen, the client rejected the reduced frequency of dressing change in favour of the daily dressings even though the goals set up by the team were being met. In the community, clients often confuse "frequent care" with "better care" and assume that the treatment they received in the hospital is the best treatment and that it should continue in the community. Clients require ongoing support and assurance that their care in the community is evidence-based and appropriate to their evolving needs.

Practical Scar Care

BY Deepak Mistry

The first consideration in scar treatment is prevention. Events that occur during the management of the open wound are influential. Providing a healthy environment for the wound to heal is most important.

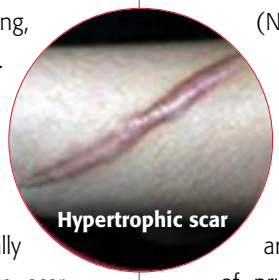
Once the wound is closed, treatment can begin to prevent too much scarring. Over the past two decades, several new therapeutic approaches to scar management have been reported. These new approaches promise to add substantially to existing therapeutic approaches. This article attempts to summarize most of these new concepts.


Normal scar

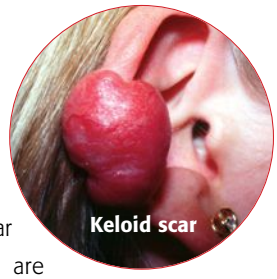
Scar Information

Scars are produced as the result of wound healing. Instead of replacing damaged tissue with regenerated identical tissue, human and most animal wounds are healed by filling the wound with scar. In theory, this allows faster yet less perfect wound healing. However, today most people would rather their wounds heal without scarring, even if this requires more time.

Scars can be limiting and disfiguring, particularly when the injury is extensive. The amount of scar produced is a consequence of many factors, including the extent of traumatized tissue around the wound, how long the wound remains open, the anatomic location, and genetically determined healing factors. When more scar forms than is desirable, the scar is considered hypertrophic. Initial rapid growth followed by gradual fading and shrinkage characterize hypertrophic scars over several years. This often leads to widened, unattractive skin defects.


Hypertrophic scar

Deepak Mistry, BSc, is a graduate of the University of Chicago and is currently involved in the research and development of new approaches to scar reduction at Avocet Polymer Technologies Inc.


Keloid scar

Some individuals have a genetically inherited disease characterized by extreme and excess scar production. These scars are called keloid scars, and they are very different than hypertrophic scars—although they do share some common features. Keloid scars tend to become much larger than the original wound. They usually persist and reoccur after surgical excision.

Anti-inflammatory Agents

Limiting inflammation is paramount to scar reduction. Inhibition of inflammation using corticosteroid injections is one of the oldest and most established approaches to scar management. The broad effects include inhibition of protein synthesis, including collagen and other extracellular matrix proteins. However, the adverse side effects of repeated injections as well as the frequent occurrence of skin depigmentation are major drawbacks to this approach. Steroids are not effective for treatment of older, asymptomatic scars that are less metabolically active.

Although non-steroidal anti-inflammatory drugs (NSAIDs) have been used to prevent internal scarring in arthritis for decades, they have only recently been used for hypertrophic and keloid scar management. Our experience suggests that the newer type-2 cyclo-oxygenase inhibitors are very effective in reducing symptoms of pruritus. They also seem to induce scar maturation and involution.

Salicylic acid and acetylsalicylic acid (aspirin) are powerful anti-inflammatory medications that are commonly used to treat skin inflammation-related ailments. Salicylates (two to five per cent) are com-

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monly used to control skin inflammation and are routinely used in acne treatment products. We have found topical salicylates to be among the most effective anti-scar agents. These agents should not be used on open wounds. Topical aspirin should be used under a physician's guidance because some patients, particularly asthmatics, may develop hypersensitivity.

Anti-histamines are commonly used to control symptoms of scar pruritus. However, they have other important anti-scar properties. Anti-histamines, particularly the H1 blockers, inhibit the inflammatory response, resulting in reduced scar formation and increased comfort. Reducing patient itching and scratching reduces the inflammation and the scar growth rate. Finally, anti-histamines in high doses are well known to inhibit collagen synthesis.

Inhibitors of Gene Transcription

The anti-cancer drugs mitomycin-c and 5-fluorouracil inhibit population growth of cells by blocking DNA replication. A single application in the first few days after wound closure seems to be effective in scar reduction under laboratory conditions. Further investigation will be needed to determine how this approach can be used clinically.

Acceleration of Scar Degradation

While steroids and NSAIDs act to limit scar production, other strategies act to induce or accelerate scar degradation. This approach may be the best for management of older hypertrophic scars and older keloids. The rate of tissue breakdown can be increased by both pharmacologic and physicochemical means.

Occlusive Dressings

After elastic pressure wrap dressings applied to healing burn scars were observed to be effective in the reduction of scar formation, 20–24 mmHg pressure garments have become the mainstay of scar prevention. The mechanism of action of pressure dressings is unknown because they remain effective even when they lose elasticity and pressure several weeks after daily use. Measurements show a decrease in wound metabolism with an increase in collagenase activity. Drawbacks to their use are primarily related to their thermal insulation and movement restriction.

Hydrogel and silicone sheeting have been used to control scar formation. Like elastic garments, the mechanism of action is not known, but hypotheses reported in the literature include induction of scar hypoxia, increased hydration of the epidermis covering the scar and increased scar temperature. Several reports have shown that hydrogel sheeting is equally effective as silicone and has fewer adverse side effects. Hydrogel sheeting has been approved by the U.S. Food and Drug Administration (FDA) as substantially equivalent to silicone for treatment of hypertrophic scars. Hydrogels have the added advantages of use as a drug delivery vehicle as well as having a higher heat capacity for buffering scar temperature.

Surgical Removal

The most common indications for surgical removal of scars are the following: large scars that are unlikely to be substantially reduced using medical therapy within a practical timeframe; scars that harbor infection; and scar contractures that hamper movement function. Surgical revision of hypertrophic or keloid scars is associated with a high recurrence rate. Gentle surgical technique is critically important because inflamed scar tissue produces a tremendous scar response to trauma. Adjunctive measures to reduce inflammation, skin tension and other factors are essential to reduce recurrence. Use of lasers and other burning techniques for scar removal is very controversial.

In order to reduce the scar recurrence rate after surgery, effective scar control medications should be initiated pre-operatively and continued post-operatively. Our experience suggests that most patients with scars large enough to require surgical excision require both systemic COX-2 inhibitors and long-acting H1 anti-histamines to induce scar degradation and reduce recurrence. Increasingly, our experience suggests that topical application of NSAIDs to healing wounds will be the most practical approach. Trans-epidermal delivery of these agents is enhanced by the application of an occlusive barrier such as hydrogel sheeting.

Conclusion

Hypertrophic and keloid scarring can be essentially reduced to inflammation mediated dermal fibrosis, suggesting that there is much insight into effective management that can be gleaned from dermatological and rheumatologic conditions of similar pathophysiology.

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The Extent of Chronic Wounds in Canada:

What We Know and What We Don't Know

BY M. Gail Woodbury

and
Pamela E. Houghton

In response to a lack of national estimates of the prevalence and incidence of different types of common wounds in various health-care settings in regions across Canada, a study funded by a research grant from the CAWC was conducted to determine, from existing current research data, the extent of chronic wounds in different health-care settings in regions across Canada. The proposal for this project is published on the CAWC Web site[1] and a description of the project was published in *Wound Care Canada*[2] (Volume 2, Issue 1) and is also available on the Web site.[3]

Existing data were sought about the prevalence and incidence of pressure ulcers, leg ulcers and diabetic ulcers in each health-care setting (acute care, chronic care/rehabilitation, long-term care, community), and the human and financial impact of these in Canada. Systematic computer and manual searches of library databases were done to locate studies published in peer-reviewed journals. Personal, telephone, and e-mail contacts were made to locate fact sheets created by other agencies (e.g., Canadian Diabetes Association, Heart and Stroke Foundation of Canada) and local/regional statistics about the extent of human and health-care costs associated with wounds in Canada. Liaisons were made with industry in an effort to access existing large databases. Liaisons were made with CAWC members through personal contacts, publications, educational forums, and the association's Web site. The request for information was posted on the CAWC Web site[4] and a survey was sent to individuals with data in an effort to standardize the type of information obtained. E-mail and telephone follow-up contacts were made to clarify the data that were sent.

Prevalence and incidence studies that were conducted between 1990 and 2003 and that were available between January and November 2003 were included. These studies were obtained from peer-reviewed published reports, unpublished studies, and wound-care company databases. All obtained studies were critically appraised using a modified version of recommended criteria for evaluating prevalence and incidence studies.[5] This process has been described previously.[6] The studies used to determine estimates of prevalence and incidence were those appraised to be of higher quality and homogeneous in that the presence of wounds was determined by direct examination.

Prevalence of Pressure Ulcers in Canadian Healthcare Settings has been published in the peer-reviewed journal *Ostomy/Wound Management*.[6] Data were obtained from 18 acute-care facilities involving 4,831 patients; 23 non-acute-care facilities with 3,390 patients; 19 mixed health-care settings with 4,200 patients; and five community care agencies that

For recommendations for the conduct of prevalence and incidence studies in Canada to reduce bias in individual studies and to encourage uniformity visit the *Wound Care Canada* section of the CAWC Web site at www.cawc.net.

Research Glossary

Prevalence: The proportion of a group of people who have a condition. It is useful for planning health resources and for determining adherence with prevention and treatment guidelines and interventions.

$$\text{Prevalence (\%)} = \frac{\text{Number* of people with a particular type of wound}}{\text{Total number of people in the population}} \times 100$$

Incidence: The proportion of a group that develops a wound over a period of time, or the rate at which new cases arise in a group of people as time passes. It is useful for planning health resources and for determining adherence with, and effectiveness of, prevention/treatment guidelines and interventions.

$$\text{Incidence} = \frac{\text{Number* of people with new wounds in a specified period of time}}{\text{Total number of individuals at risk in the population during that period}} \times 100$$

$$\text{Incidence Rate} = \frac{\text{Number* of people with new wounds in a specified period of time}}{\text{Total person-time observed among the people at risk}} \times 100$$

*Numbers represent the number of people, not wounds

surveyed 1,681 patients. The generic term *non-acute* has been used in this project to describe long-term care, nursing homes, complex continuing care, skilled nursing facilities, rehabilitation, and geriatrics since some of these terms have changed over the past few years. Estimates of pressure ulcer prevalence were as follows:

- Acute care 25.1 per cent (95 per cent Confidence Interval* [CI] 23.8–26.3 per cent)
- Non-acute care 29.9 per cent (95 per cent CI 28.3–31.4 per cent)
- Mixed health care 22.1 per cent (95 per cent CI 20.9–23.4 per cent)
- Community care 15.1 per cent (95 per cent CI 13.4–16.8 per cent)

The overall estimate of the prevalence of pressure ulcers in all health-care institutions across Canada was 26.0 per cent (95 per cent CI 25.2–26.8 per cent).

Data concerning the incidence of pressure ulcers in health-care settings in Canada were obtained from three acute-care facilities involving 213 patients; 12 non-acute-care facilities with 1,045 patients; and three mixed health-care settings with 1,074 patients. Estimates of pressure ulcer incidence were as follows:

- Acute care 14.3 per cent (95 per cent CI 9.6–19.0 per cent)
- Non-acute care 10.6 per cent (95 per cent CI 8.8–12.5 per cent)
- Mixed health care 5.2 per cent (95 per cent CI 3.9–6.6 per cent)

No estimate of incidence was obtained from community care. The overall estimate of the incidence of pressure ulcers in all health-care institutions across Canada was 8.4 per cent (95 per cent CI 7.2–9.5 per cent). There were few incidence studies, and most of these estimates were derived in Ontario.

By combining information from studies performed across Canada, we also have a good estimate of the prevalence of all types of ulcers receiving community health service. The overall mean prevalence from these studies performed on patient populations receiving home care suggests that 35.5 per cent (95 per cent CI 33.9–37.1 per cent) of individuals in this health-care setting have skin ulcers due to various etiologies. One study recently published by Harrison et al. surveyed the number of patients with leg ulcers in an urban community and estimated that 0.18 per cent of the population had an open wound on their leg.[7] Clinical examination of this leg ulcer population using objective assessment tools revealed that 41 per cent of them were due to venous insufficiency.[8] An unpublished study that examined patients within home-care services in the Prairies suggested that seven per cent of patients receiving this service had leg ulcers.

While we have confidence in the pressure ulcer estimates of prevalence, our work has identified that there remains much information on the subject that still needs to be gathered. We have identified gaps in our knowledge of the prevalence and incidence of different types of wounds in health-care settings in regions in Canada. The charts on page 20 indicate with check marks (✓) the regions of Canada from which there were estimates of prevalence and incidence of ulcers.

* The 95 per cent Confidence Interval (CI) around the estimate of prevalence or incidence allows us to state that we are 95 per cent confident that the true prevalence or incidence value in the population is within the confidence limits. The formula for the 95 per cent CI has been published previously in Baumgarten M. Designing prevalence and incidence studies. *Adv Wound Care*. 1998;11:287-93.

M. Gail Woodbury, BScPT, MSc, PhD, is an Investigator, Program in Rehabilitation and Geriatric Care, Lawson Health Research Institute; and an Associate Professor, Department of Epidemiology and Biostatistics, University of Western Ontario, London, ON.

Pamela E. Houghton, BScPT, PhD, is Associate Professor at the School of Physical Therapy, University of Western Ontario, London, ON.

Location of Health-care Setting Estimates of Prevalence and Gaps

	BC	Prairies	ON/QC	Atlantic
Pressure Acute	✓		✓	✓
Pressure Non-acute	✓		✓	✓
Pressure Community	✓	✓	✓	✓
Leg		✓	✓	
Diabetic				
All Wounds Community		✓		✓

Location of Health-care Setting Estimates of Incidence and Gaps

	BC	Prairies	ON/QC	Atlantic
Pressure Acute			✓	
Pressure Non-acute	✓		✓	
Pressure Community				
Pressure Mixed	✓		✓	✓
Leg				
Diabetic			✓	
All Wounds Community				

From these charts it is evident that

- Estimates of pressure ulcers are available for all types of health-care settings from across Canada except acute and non-acute-care facilities in the Prairie provinces.
- There is less information about pressure ulcers in the community.
- There is very limited information about the prevalence of ulcers types other than pressure ulcers.
- There is limited prevalence information about leg ulcers in the community, and no study was located that provided an estimate of the prevalence of diabetic foot ulcers in any health-care setting or the whole population.
- Studies that estimate the incidence of new ulcers in various settings are sparse.

In addition to these regional gaps, there are few estimates of the prevalence and incidence of chronic wounds from the general population. Population estimates would be obtained from a health researcher or from a general survey of the population, which could be part of a national survey such as the Population Health Survey. Expense and methodological difficulties frequently prohibit obtaining such estimates. Therefore, we do not know the percentage of Canadians with chronic wounds, but this population value—percentage of Canadians—is the one often quoted by other organizations when lobbying the public or advocating for funds within the health-care system.

Very little information was found about the human and financial costs of chronic wounds. The average total cost per patient to heal pressure ulcers within a complex care facility was estimated to be $11,084 over an average of 192 days.[9] These costs include personnel, dietary, and supplies, as well as infrequent costs, such as beds and seat cushions, but not the hospital program cost. In a recent case study published in *Wound Care Canada* (Volume 2, Issue 1), the cost of care in the community is a similarly alarming figure of $27,600 for three months of care.[10]

Limitations of this project include

1. The term for health-care facilities with non-acute patients has changed over the past five years and is different among regions across Canada. Terms include long-term care, nursing homes, complex continuing care, skilled nursing facilities, rehabilitation, and geriatrics. Because of the varying terminology, we were forced to combine the results into a generic category, which we called "non-acute care." The combination of potentially dissimilar settings in this category may have inflated or deflated the estimates.
2. Most published and unpublished studies contained insufficient information about research methods, and not all necessary results were reported. Sometimes, information could be obtained by additional contacts with study authors. When information was not available, we had to assume that the specific methods were not used or the results were not obtained.
3. We recognize that the data do not represent all of the data collected from Canadian health-care settings. We know of at least three studies that had potentially relevant information, but the researchers could not provide this information because of the relatively short timeline over which we collected the data. Two companies with very large databases of information on this area did not provide us with data because of proprietary and confidentiality issues.

Sufficient data were located from published and

unpublished sources from across Canada to provide a reasonable estimate of the prevalence of pressure ulcers in various health-care settings (acute, non-acute, mixed and community). We are confident that these are valid estimates of the prevalence of pressure ulcers in Canada in these settings since they represent data from a total of 45 studies that surveyed over 14,000 patients in locations across the country. Although the individual study estimates of the prevalence of pressure ulcers vary widely, we have critically appraised the study methodology and found that studies with relatively poor methodological scores tended to underestimate ulcer prevalence. After deleting estimates derived from these flawed studies and combining estimates from similarly conducted high-quality studies, we have prevalence estimates based on sample sizes that are three to 10 times above those necessary to be 95 per cent confident that they represent true estimates of the prevalence of pressure ulcers. Prevalence estimates over the last five years suggest the prevalence of pressure ulcers has decreased but still remains above 20 per cent of patients in acute-care settings.

Areas for future Canadian work in this area include

- obtaining more information about the financial cost of care of chronic wounds
- determining the human costs of chronic wounds, i.e., quality of life
- determining the prevalence of non-pressure ulcers
- determining where wounds first occur through well-designed incidence studies
- advocating for the inclusion of determination of presence of wounds on national population health surveys

A summary of the study[11] and supporting slides are posted on the CAWC Web site.[12]

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3. The Extent of Chronic Wounds in Canada. www.cawc.net/open/wcc/1-1/Houghton.pdf. Accessed January 25, 2005.
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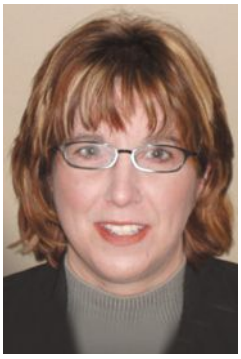
continued on page 52

The Challenges of Providing Cost-effective Quality Wound Care in Canada



BY Nicki Waters

Nicki Waters, RN, MSc (c), is a former member of the Skin and Wound Assessment Team, Calgary Health Region, and is currently working with industry in the wound-care field.

Increasing efforts to control health-care spending while maintaining high-quality care are evident worldwide.[1] As in other nations experiencing increased demand and an aging population, Canada is facing pressure to control health-care expenditure.[2] The emergence of new technologies constantly expands the choices available to health-care personnel and consumers, while providers become further specialized, and funding for health care becomes more threatened in the face of competing societal needs. At the same time, health-care consumers continue to expect quality care without dramatic increase to the taxes that fund it. In this climate of change, quality and value for the money spent in health care has become the primary focus of consumers, providers and funders.[3] Wound-care research continues to identify new techniques, including more efficient dressings and advanced technologies[4]; however, the task of transferring the science from the laboratory to the bedside remains one of the greatest challenges to providers.[5] In today's economic climate, where it is not feasible in practice to provide all available technology to all patients, choices have to be made.[6] This article will discuss the challenges faced by Canadian wound-care providers related to quality and cost-effectiveness in the management of chronic wounds and identify initiatives aimed at addressing them.

Chronic Wounds

Chronic wounds are usually defined as those that have not progressed as expected through the sequence of biological events that normally lead to wound closure[7] and are indicative of underlying diseases that affect their healing.[8] The management of chronic wounds places an enormous drain on health-care resources.[9] While it has been estimated that chronic wound care costs an estimated $10 billion annually in North America,[10] these figures are generalized from statistics collected in the United States. Unfortunately, wound care has not been viewed as a priority, and Canadian government reports on health-care costs do not include specific wound-care statistics.[3] Until recently, since no national estimates of the prevalence and incidence of chronic wounds in Canada existed, the true impact of this problem on the Canadian health-care system could not be determined. Fortunately, the recent Woodbury-Houghton study[11] has helped to correct a large part of this deficit. (*Editor's note*: See page 18 of this issue for a complete report on this study.)

Quality Care

While government initiatives aimed at improving health-care state, "Quality is central to the management and delivery of health services in Canada,"[12] it is evident that this can be interpreted from several

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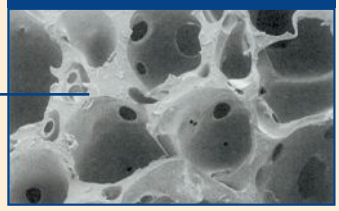

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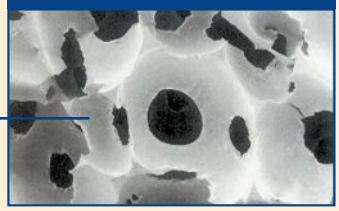

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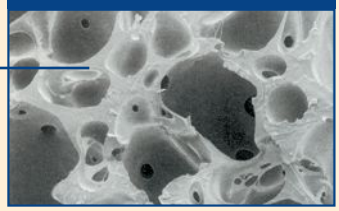

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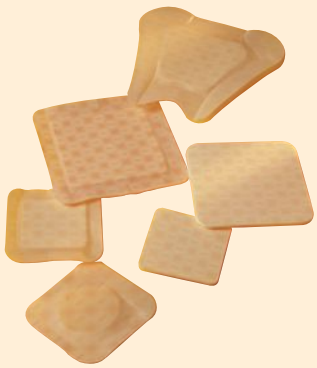

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different perspectives. Patients define quality in terms of how well their needs and expectations for care are met, while providers focus on the clinical effectiveness related to correctness of the diagnosis and to the appropriateness and efficacy of the treatment and care provided. From the system's perspective, quality is concerned with the efficiency and cost-effectiveness required to achieve desired health outcomes, while society may measure it in terms of value for money and benefits to the community at large. New directions in the delivery of health care mean that professionals involved must re-evaluate how quality is assessed and how information about the quality of care may be used as well as challenge existing definitions of quality.[13] Based on these principles, a recent Government of Canada workshop suggested that a quality Canadian health system would be client-centered, integrated, responsive and cost-effective.[12] However, performance measurement in Canadian health care remains in its infancy[14] with the first, limited report by the Canadian Institute for Health Information not published until 2000.[15]

Quality Wound Care

The aims of chronic wound management are to address patient concerns, correct intrinsic and extrinsic factors where possible and optimize the healing environment.[16] However, the fact that desirability of one specific outcome over another may differ markedly according to the values and preferences of both patients and caregivers makes the evaluation of quality care difficult.[17] Wound-care professionals may view wound closure as the optimal goal of treatment, while patients may consider alternatives such as pain control as the best outcome.[18] This combination of subjectivity and objectivity in the perception of quality wound care is reflected in the diversity of end points found in studies of wound interventions and compromises their external validity.[1] Barriers to quality chronic wound care can be identified at all levels. Issues such as lifestyle choices and lack of knowledge may affect care from the patient's perspective.[17] The lack of research-based guidelines and pathways influences care at the provider level[19] while the absence of a continuous quality improvement framework is a concern for the system.[12] However, challenges caused by fiscal restraints—arguably the greatest barrier—are common to all levels.

Cost-effective Care

The term *cost-effective* can be defined as, "economical in terms of tangible benefits produced by money spent."[20] While this may be easily assessed in relation to consumer goods, its application to health care is not as straightforward since the question then becomes whether the additional cost in both financial and personal terms is justified by the results achieved.[21,22] Tools such as The Quality Adjusted Life Year (QALY) that measure outcome as an arithmetical combination of the quantity and quality of life[21] are often used in health-related analyses, and attempts have been made to design cost-analysis tests specifically for health-care usage;[23] however, no "gold-standard" instrument currently exists.

Cost-effective Wound Care

While it is commonplace for results of wound-care studies to be classed as cost-effective, in reality, the lack of a standard method to calculate costs combined with large variations and flaws in methods used to quantify outcomes compromises the validity and transferability of these studies.[24,25] Chronic wound care incurs both direct costs, including those of the treatment itself and labour-associated expenses, as well as indirect costs such as loss of wages,[6,26] while intangible costs such as pain and suffering also factor into the equation.[17] In studies considering only the financial impact on providers, the critical issue of treatment costs being passed on to the patients or their families is overlooked.[21] Unless all aspects are considered, efforts to evaluate the full economic burden of wounds may be inadequate.[25] Additionally, any analysis of the costs involved in wound care cannot be complete without evaluating whether the wound may have been prevented. While the body of evidence pertaining to the benefits of wound prevention protocols is increasing,[27] studies identifying costs associated with prevention are limited. Despite initiatives aimed at focusing attention on health promotion,[28] the irony remains that, at present, payers may be more willing to finance treatment costs than preventative measures.[27]

Canadian Health Reforms

To understand the challenges related to quality of care and cost-effectiveness facing wound-care practitioners, it is necessary to view them in the context of reform, which is shaping the future of the Canadian health system. The Canada Health Act, created in 1984, is based on the principles of universality, accessibility, comprehensiveness, portability and public administration.[29,14] Its initial success in achieving these principles with relatively low per capita expenditure, particularly when compared to the U.S., has meant that health-care issues did not appear high on the government agenda during the following decade.[14] However, spending cuts fueled by the economic climate of the late 1980s and early 1990s, combined with several high-level reviews of the health-care system, resulted in massive structural reforms.[30] Although Canada's unique demographics have meant that care has traditionally been governed by each province or territory individually, further fragmentation has resulted in a large variation in standards and methods of care between areas.[29] It is evident that two main issues have arisen from these changes that directly affect wound-care provision in Canada: the trend toward community-based rather than facility-based delivery of care and the concurrent increase in costs passed on to the consumer.

Community-based Care

The shift in focus from an acute care to a chronic disease model worldwide has contributed to the increasing demand for home care.[31] An even greater factor in Canada has been the reduction in hospital budgets brought about by government cutbacks in spending, resulting in shorter hospital stays.[29] Consequently, most chronic wound care is now managed in a community setting.[5] Although all provinces and territories offer home-care programs, no national program exists, and Canadians face varying eligibility, cost, quality and access related to services.[32] Necessary changes to the supporting infrastructure have not kept pace with the demand. And despite a general acceptance that community-based care is more cost-effective, a recent extensive government study suggests that home care is "under-funded, under-valued and over-stressed."[33]

Costs to Consumers

As the focus continues to shift away from facility-based care, the influence of the Canada Health Act, which was designed to deal only with acute illness, has decreased.[29] This has resulted in the health-care consumer bearing a dramatic increase in incidental costs, including the cost of wound-related supplies in many areas of the country. A government document on health-care spending suggests that it makes little sense to guarantee public coverage for medically necessary services that are provided in hospitals but to provide only partial or no coverage when those same services are provided in the community or in the home.[3] However, the Canadian government-funded report "National Evaluation of the Cost-effectiveness of Home Care"[34] failed to evaluate financial costs borne by consumers and merely states that they "may be substantial." While programs such as the provincially funded Alberta Aids to Daily Living cover or cost-share dressings and other wound-related equipment for home-care patients with chronic conditions,[35] a substantial variation in levels of service offered in other areas still exists. A recent survey of wound-care professionals across Canada suggests that the widening gap between acute-care and community-based coverage remains an area of concern throughout the country.[36]

Rise in Technology

This increase in costs borne by the consumer is particularly apparent when viewed in the context of the rise over the past decades in the availability of new technology, which has resulted in an exponential increase in the types of therapies used to treat chronic wounds.[4] However, these therapies are often perceived as more costly by funders and in practice may only be available to those able to bear the financial costs personally or through the growing trend of privatization of services.[2] Debate over the ethics of a "two-tiered system" continues to rage with no obvious resolution in sight.[29] Opponents fear that Canada will tend toward a U.S.-style health-care system with inequitable availability of services, while supporters argue that privatization has in fact allowed more equality of access.[37]

Evidence-based Practice

The need to prove effectiveness of care while containing costs has resulted in the increasing trend toward evidence-based practice (EBP). Based on the concept that treatment options should be evaluated using rigorous research findings,[37] its aim is to reduce variability of care and make appropriate use of resources through the promotion of best practices.[43] However, Maynard suggests that EBP is not an effective cost-cutting tool since providing evidence-based care directed toward maximizing patients' quality of life may actually increase expenditure.[38] On the other hand, population-based "outcomes research" has repeatedly documented that those patients who do receive evidence-based therapies have better outcomes than those who don't.[39]

Evidence-based Practice in Wound Care

In wound care it is evident that cheapest is not necessarily best.[17] However, unless wound-care specialists are able to provide research-based evidence for new protocols, the possibility exists that funding decisions will be made by untrained individuals with repercussions for both patients and providers.[6] While randomized controlled trials, which are often a pre-requisite to funding approval, may be the most effective way to demonstrate the efficacy of a product, they are unlikely to demonstrate efficiency and cost-effectiveness. Adherence to the rigid criteria required to conduct these studies not only limits the ability of clinicians to extrapolate data for individual patient situations[40] but also delays unnecessarily the introduction of new technology due to the time and costs involved. The Canadian Co-ordinating Office for Health Technology Assessment was set up in 1989 to influence decision-makers regarding the effectiveness and cost of technology and its impact on health, thereby encouraging its appropriate use.[2] Nevertheless, it is evident that approval of a treatment does not guarantee its funding. For example, while hyperbaric oxygen therapy for the treatment of recalcitrant wounds was endorsed by the society in 1997, extensive lobbying supported by evidence-based cost-effectiveness analysis was required before the therapy was accepted for provincial insurance coverage in Alberta.[41]

Guidelines

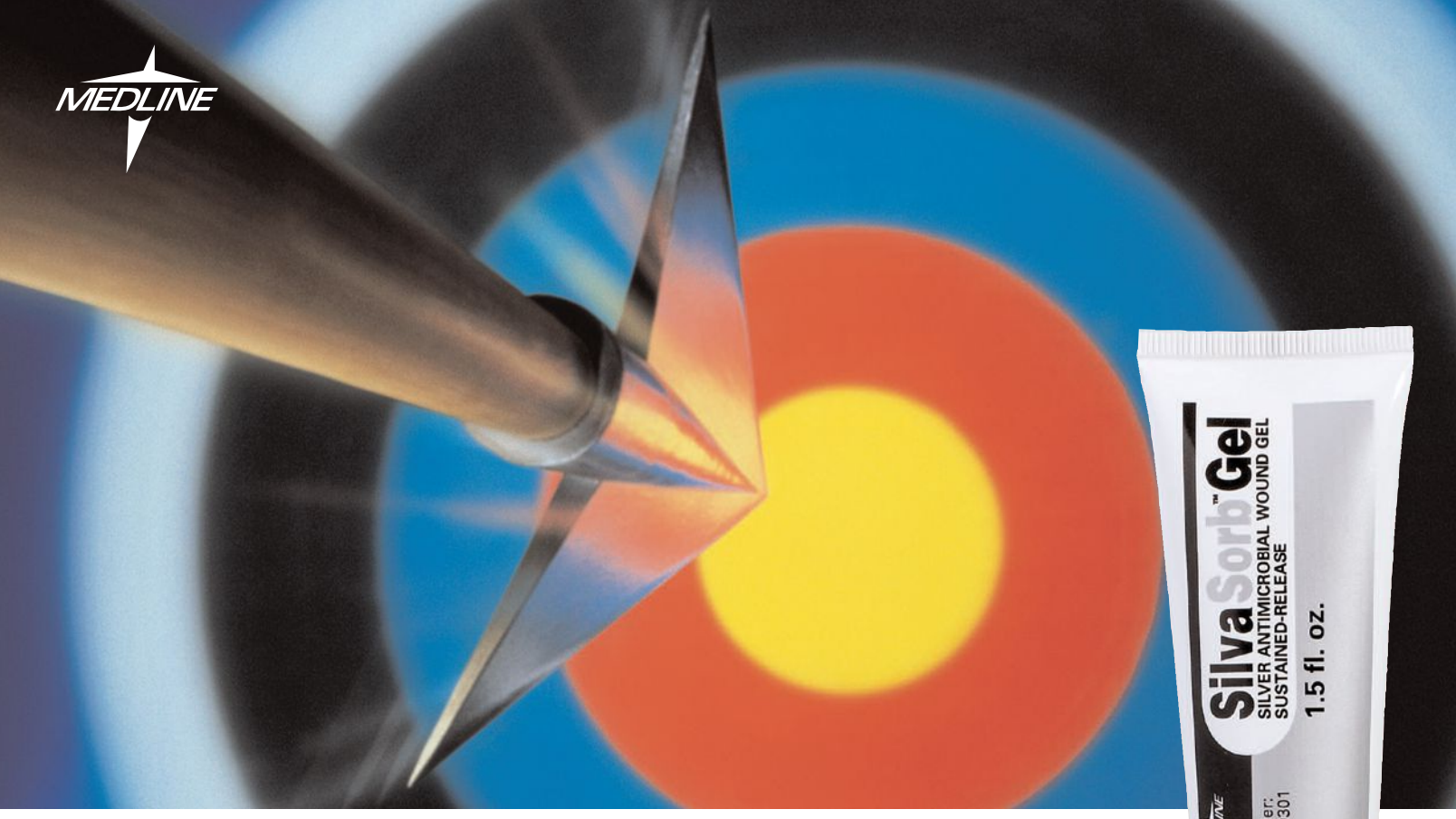
The sheer volume of research available means it is not feasible for all professionals to keep abreast of current findings. The task of translating the evidence into data that can be used to improve practice and approach potential funders is often accomplished through the implementation of clinical guidelines.[19] While the benefit of developing and adopting these tools is recognized, guidelines can be viewed as limiting the autonomy of clinical practitioners to make decisions based on individual patients and imposing the views of the policy-makers on the health service.[42,44] Continuous monitoring is needed to ensure that guidelines keep pace with evolving research.[43] The production and dissemination of recommendations for best-practice multidisciplinary wound care in Canada has recently been undertaken by the Canadian Association of Wound Care (CAWC).[44] The CAWC's use of *The Appraisal of Guidelines for Research and Evaluation* (AGREE) tool provides a valid framework in this process for both development and ongoing appraisal. The challenge of implementation and monitoring of these guidelines at a national level is being met through the creation of forums for the exchange of wound-related knowledge, while new initiatives to co-ordinate and improve the standard of wound-care education and research are evident Canada-wide.[45]

Conclusion

The 21st century has placed unprecedented demands on wound-care providers to provide quality care while maintaining cost-effectiveness in Canada.[44] While still in the early stages, initiatives aimed at reducing this tension are currently underway. These include efforts to establish the full impact of chronic wounds,[11] introduce and monitor evidence-based guidelines for best practice[44] and increase focus on wound education.[45] Although continuous monitoring of the effectiveness of these initiatives will be required, the often over-looked area of wound care is entering an exciting era in Canada, and wound-care providers are becoming better equipped to deal with the changes.

references listed on page 52

This article is adapted from an assignment submitted by Nicki Waters toward a PG Dip/ MSc in Wound Healing and Tissue Repair.



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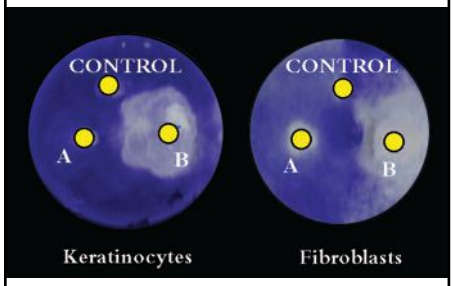

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An Interview with the **CAWC Directors on the Prevalence of Pressure Ulcers in Canada**:

Improving Wound Care in Canada

Dr. David H. Keast

INTERVIEWED BY Catherine Harley, Associate Editor, *Wound Care Canada*

The Woodbury-Houghton study on the prevalence of pressure ulcers in Canada has opened the door for wound-care leaders across the country to consider the changes that must be made to deal with this now well-documented problem. We asked the President of the CAWC, David Keast, as well as the chairs of the four foundational CAWC committees (Heather Orsted, Education; M. Gail Woodbury, Research; Leah Shapera, Clinical Practice; and Cathy Burrows, Public Policy) to comment on the study's implications for wound care in Canada in general and to describe how the CAWC will use the information to promote better wound care through its programs.

Q Who do you believe needs to understand the results of the "Canadian Pressure Ulcer Prevalence Study" and why?

DHK: Pressure ulcers are not a disease but the result of many factors, including underlying disease states, poor nutritional status and failure to reduce pressure over bony prominences. Pressure ulcers are often regarded as a quality indicator in health care. As such, the results should be of concern to all people involved in health care, from the clinicians of various disciplines providing direct patient care, to academics, to administrators at all levels of the system, to governments and policy-makers. The results suggest there has been a serious failure at all levels to address the basic care needs of vulnerable populations.

Q How is this study important to the future of Canadian wound care?

DHK: Prevention and treatment of pressure ulcers are perhaps the most complex undertakings in the management of chronic wounds. They require the co-ordinated efforts of an interdisciplinary team to address the multiple underlying factors. Reduction of the prevalence of pressure ulcers in Canada will

Heather L. Orsted

M. Gail Woodbury

Leah Shapera

Cathy Burrows

demonstrate that Canadian wound-care clinicians have mastered the general principles of chronic wound management and that administrators have provided bedside clinicians with the resources and policy support required to provide exemplary care.

Q Where do you plan to communicate the study's results? How will you create awareness?

DHK: The CAWC is planning a multifocal communications strategy involving not only health providers but also administrators and policy-makers in governments. We also plan to empower patients and their families with the information necessary to advocate for best care practices. It will involve a co-ordinated effort among our key foundational committees: Education, Research, Clinical Practice, and Public Policy. We will employ a variety of communications strategies, including media awareness, communications targeted at governments and policy-makers, and information posters directed both to clinicians and to patients and families. The CAWC Web site will be revamped to provide information to all those visiting our site.

Q What are the implications of the Canadian Pressure Ulcer Prevalence Study in relation to the Education Committee and its activities?

HLO: The results of the study, as well as the identification of pressure ulcer education as a priority setting of our membership at the CAWC educational forum, have given the CAWC Education Committee its marching orders and direction for Canadian wound-care educational initiatives. It will be through CAWC committee collaboration that the Education Committee can build a program to support pressure ulcer prevention and management. We hope to offer educational opportunities, based on adult learning principles, that reach not only the clinician level but also the patient level.

Q What are the implications of the study in relation to the Research Committee and its activities?

MGW: The study is important because it provides vital information about the extent of chronic wounds in Canada and because it elucidates problems and gaps in our knowledge that will guide the future work of wound-care researchers.

The Research Committee will guide and encourage wound-care researchers and clinicians in activities such as the following:

- using improved research methodology for prevalence and incidence studies across Canada by endorsing the suggestions for minimizing bias (see the Web Connect component of the article on page 18)
- obtaining more information about the financial cost of care of chronic wounds
- determining the human costs of chronic wounds (i.e., quality of life)
- determining the prevalence of non-pressure ulcers through well-designed prevalence studies
- determining where wounds first occur, through well-designed incidence studies
- advocating for the inclusion of wound determination on national population health surveys

Q What are the implications of the study in relation to the Clinical Practice Committee and its activities?

LS: The results of the study will be critical in helping to direct the work of the Clinical Practice Committee over the next year and beyond. The data clearly show the extent to which pressure ulcers are a serious problem within various settings and populations in our heath-care system across Canada. The first step for the committee, in collaboration with the other foundational CAWC committees, will be to create an overall awareness of the extent of the problem. Following this, the Clinical Practice Committee will explore more specific strategies to enable better pressure ulcer prevention care and management practices that will ultimately improve the rates of pressure ulcer prevalence and incidence.

Q What are the implications of the study in relation to the Public Policy Committee and its activities?

CB: The study has identified that prevalence of pressure ulcers in Canada is approximately 25 per cent in many health-care sectors. This is an alarming number and must be brought to the forefront of awareness of both the public and policy-makers. The Public Policy Committee has agreed that awareness will be a large undertaking for the upcoming year. Therefore, the committee will advocate for the best possible wound-care practices by sending a clear message to governments at the local, provincial and federal levels as well as agencies and institutions through a poster campaign. A briefing note or position statement will be drafted that will acknowledge the incidence, prevalence and burden of pressure ulcer wounds and their impact on health and societal outcomes in Canada.

Get Your Questions Answered!

Do you have a question on wound care? Visit the CAWC Discussion Forum at **www.cawc.net** and get your question answered by colleagues from across the country.

How to Write an Abstract

BY M. Gail Woodbury, Melody Boyd, Virginia McNaughton and Diane Gregoire

This paper describes the elements required for an abstract to be accepted for poster or oral presentation of clinical or laboratory research for a conference, such as the Canadian Association of Wound Care (CAWC) conference.

An abstract is a precise, accurate, comprehensive summary of the contents of a presentation or poster. There are essential criteria required for abstracts.[1-4] Authors commonly leave out important details, which creates ambiguity.

A well-written abstract will convey the rationale for and purpose or objective of a research project as well as the methodology employed and the results and conclusions of the project, within the given word limit. Authors are advised to review and follow carefully the specific conference guidelines for abstract preparation, such as the number of words. This information can be found on most conference Web sites or can be obtained from conference organizers. The clarity of the words utilized in an abstract is extremely important to ensure that the reader is able to interpret the meaning of the research accurately. An abstract is a summary of research that has been completed; it is not an advance description of research to be done.

The essential components that are required when preparing an abstract are indicated as follows and illustrated in Abstract 2 (see page 33). For clarity, headings have been used in the abstracts in this paper. Sometimes, headings are requested in abstract guidelines, sometimes their use is discouraged, and often the author decides whether or not to use headings.

Title: The title should be succinct but explanatory and should reflect the project's objectives.

Author(s): (Follow conference guidelines for correct format.) All listed authors should have contributed to the project.

Introduction/rationale: Provide one sentence that concisely describes the topic to be investigated and the rationale for the study. This will lead to the purpose or research question raised by the literature and prior work.

Purpose or Objectives: One sentence (or two) describing the specific question you are investigating. Broad descriptions should be avoided, and this section should not contain a repetition of the title. Include information in terms of the population, intervention, control group, and outcome to be measured.

Method: A succinct description of the research in one or two sentences describing the study design and methods. Specifically, describe the patient population and sample size, appropriate control group, randomization of subjects, assessments procedures to ensure they are not biased (blinding), outcome measures (valid and reliable), the intervention and control intervention. A common mistake in writing this section of the abstract is to omit important details.

Results: Write one or two sentences about the results that correspond with the purpose or objectives of the study. Be specific. State only your main point(s). Usually, one is required to know the results of the study by this time and to report the actual numbers, indicating what statistical tests were utilized and the level of significance achieved. If the results are not included or if the author states that the results will be reported, the abstract might be rejected. This tends to be the area where most authors omit information that is critical for the reviewer who is selecting abstracts for presentation. The most common weakness in this section is the lack of results and statistical information when discussing the results.

Editor's note: Although this article is based on the requirements for Clinical or Laboratory Research abstracts, it can be used, with modifications, for abstracts in other categories.

The CAWC has published Clinical and Laboratory Research Review Criteria, which you can view in the *Wound Care Canada* section of the CAWC Web site at www.cawc.net.

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Conclusions: Write a single sentence that summarizes what you found, the implications (clinical usefulness) of your findings, and the future appplication.

The table below shows the CAWC abstract guidelines, indicating that the abstract content addresses four questions. The second column indicates the specific information.

Abstract 1 is a fictitious example of an abstract that has errors throughout. The reader is encouraged to review this abstract, identifying the areas of weakness.

Flaws[5] in Abstract 1 include the following:

- The introduction to the topic is too long.
- The purpose is stated in the methods.
- The methods section lacks details (randomization, description of population, description of methods of application, how wounds were assessed and by whom).
- The results section lacks detail about wound-assessment outcomes and statistical tests.
- The conclusion is stated within the results section.
- The acknowledgement suggests a conflict of interest.

Abstract 2 is a fictitious example of an abstract that has few flaws. The reader is encouraged to review this abstract, identifying appropriate elements.

Appropriate elements of Abstract 2 are included below:

- The title describes the study design and objectives of the project.
- The introduction to the topic describes the topic to be investigated and the rationale for the study (circumstantial evidence).
- The purpose describes the specific question in terms of the population, intervention, control group, and outcome.
- The methods section (although too long) describes the patient population, sample size, control group, randomization, outcome assessment procedures using reliable measures, the experimental and control interventions.
- The results section answers the question raised in the purpose of the study, indicating the level of significance achieved.
- The conclusion summarizes the result, indicating its importance, and includes areas for future investigation.
- The acknowledgement suggests no conflict of interest.

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Four Key Questions

Abstract content addresses four questions	Specific information to include
What was the problem?	Project topic introduction including rationale for the study (one sentence) and specific purpose of the study (one sentence).
How did the authors solve it?	Methods—study design, number of subjects, characteristics of the population, interventions (frequency, etc.), outcome measures (how and when they were collected) (one to two sentences).
What was discovered?	Results—main findings, specifically stated, with level of statistical significance; to answer question raised by the study purpose (one to two sentences).
What can be learned from the experience?	Conclusions, importance of findings, clinical applicability (one sentence).

ABSTRACT 1

Effect of Chocolate Growth Factor K1TKαT in Healing of Chronic Pressure Ulcers

Authors: Patricia Hamberg, Victoria McNeil, Georgia Wallace, George Smith.

Epithelialization is the resurfacing of a granular wound bed by epithelial cells. It is a vital occurrence in the progression of a wound to healing. There are two main theories associated with re-epithelialization: the Skating Theory and the Leap Frog Theory. The Skating Theory suggests that epithelial cells "skate" across the surface of the wound making their way to the farthest point and establishing a bridge. From this bridge, new epithelial cells can begin to "skate" across the surface of the wound establishing new bridges as they go. The Leap Frog Theory suggests that one cell moves out from the edge followed by a new cell that upon reaching the first cell actually springs forward to a new spot. Each succeeding cell "leaps" from cell to cell until there is not a cell to receive it and it is in its turn fixed in place ready to be a launch pad to a new cell.

Clinical observations have noted that certain types of wound dressings exhibit an enhancement of the re-epithelialization process that occurs during wound healing.

Methodology: To investigate these findings, a novel epithelial stimulant K1TKαT growth factor was applied to five patients of Dr. Hamberg's with Stage II pressure ulcers and the appearance of the wounds was assessed.

Results: Three of the five patients who received this treatment showed better wound appearance and improved cell migration in response to the K1TKαT growth factor dressing protocol. Results demonstrate that K1TKαT produces a significant improvement in the healing rate of chronic wounds. This K1TKαT growth factor is an exciting new treatment that should be considered for patients with chronic wounds to encourage re-epithelialization and the leap frog effect.

Acknowledgements: Dr. Hamberg was funded by Hershey Inc. to prepare this presentation and to attend this conference.

ABSTRACT 2

Randomized Controlled Trial of the Effect of Chocolate Growth Factor K1TKaT in Healing of Chronic Pressure Ulcers

Authors: Patricia Hamberg, Victoria McNeil, Georgia Wallace, George Smith.

There is circumstantial evidence that chocolate containing K1TKαT growth factor may increase proliferation of epithelial tissue in partial thickness wounds according to Cadbury, 1985.

Purpose: The ability of K1TKαT growth factor, versus no growth factor, in accelerating wound closure of Stage II pressure ulcers in elderly adult individuals with spinal cord injury (SCI) was investigated.

Methodology: Forty subjects (54–74 yrs old) with C4–C6 complete SCI who had Stage II pressure ulcers for at least six months who met standardized inclusion/exclusion criteria volunteered to participate in the study. They were randomly assigned to receive either K1TKαT growth factor (one mg/ml) administered daily via a gauze dressing or an identical dressing without KITKαT. All subjects in both groups had similar protocols of standard wound care, including pressure off-loading, nutritional intake, and daily activity during the 15-day treatment period. Healing was assessed at baseline, at five, 10 and 15 days of treatment by an assessor, who was blinded to group allocation, using a digital Dukassy wound measurement device, which previously was shown to reliably assess wound re-epithelialization. The proportion of wounds that were re-epithelialized was compared between groups using Chi square.

Results: Significantly more subjects in the K1TKαT chocolate growth factor group, 17 of 20 versus eight of 20 subjects who were treated with only gauze dressings, had complete re-epithelialization by day 15 of treatment ($p=0.003$).

Conclusion: The addition of K1TKαT growth factor to traditional gauze-based wound treatment may lead to faster closure of Stage II pressure ulcers in the elderly patients with complete C4–C6 SCI. Shorter time with pressure ulcers would improve quality of life and reduce the cost of care. Further research is warranted to confirm these findings and determine if other patient populations, such as elders living in a nursing home, may benefit from this "sweet" treatment.

Acknowledgements: This work was funded by an unrestricted research grant provided by The National Institute of Chocoholics Anonymous.

Distance Education: The Canadian Enterostomal Therapy Nursing Education Program Model

BY Susan Mills-Zorzes

Distance education, also known as distance learning, involves the acquisition of knowledge via avenues that differ from traditional education delivery methods. Physical attendance at an educational institution is not required.

The correspondence course, a mode of distance education familiar to most people, involves, predominately, the exchange of written communication. In contrast, Ian Mugridge defines current distance education more broadly, "as a form of education in which there is normally a separation between teacher and learner and thus one in which other means—the printed and written word, the telephone, computer conferencing or teleconferencing, for example—are used to bridge the physical gap."[1]

Distance education has both advantages and disadvantages. One major advantage is that programs are accessible and available to any individual at a convenient time and location. Geographic locale is not a barrier. The learners engage in independent study in their own homes, work at their own pace, and draw upon personal and educational experiences. The use of online synchronous computer conferencing for the delivery of distance education may partially negate this advantage because the learner must be online at a particular time.

Not every student will succeed at distance study, as it is not an easy method of learning. Keegan identifies five serious obstacles for the distance learner working in isolation.[2] The student may have difficulty

- developing motivation and interest in the task
- initiating and maintaining motivation for study
- grasping the structure of the subject to be learned
- learning both analytical and instructive thinking
- evaluating progress in learning

The CAET Model

Canadian registered nurses interested in pursuing Enterostomal Therapy (ET) nursing practice urgently needed a Canada-based, bilingual Enterostomal Therapy Nursing Education Program (ETNEP). ET nursing, unlike many other nursing specialties, requires that registered nurses complete a recognized post-graduate program. Such a program had not been available in Canada since 1992 when both the French and English ET programs at the Université de Montréal and at the University of Toronto were cancelled. Subsequently, nurses attending programs in the U.S. noted the increasing disparities in the course content for Canadians. Major differences between the Canadian and U.S. health-care systems,

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Susan Mills-Zorzes, RN, BScN, ET, CWOCN (U.S.), is an American board certified Enterostomal Therapy Nurse. She practises in an outpatient wound, ostomy and continence clinic and is Director of the Canadian Enterostomal Therapy Nursing Education Program.

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Au chapitre des nouveautés sont inclus un atelier sur les orthèses/prothèses, les brûlures et des séances plus avancées portant sur les plaies oncologiques et pédiatriques, les greffes, l'épidermolyse bulleuse et l'oxygénothérapie hyperbare. Et ne manquez pas nos quatre super **ateliers post-congrès** ainsi que la séance sur les « plaies casse-tête »!

La **conférencière vedette Danielle Sauvageau**, une extraordinaire entraîneuse de hockey, nous inspirera tous en montrant comment le rapprochement des frontières et la création d'un effort d'équipe sont les composantes essentielles de dénouements réussis – sur la glace ou au chevet d'un malade. Notre **Banquet du Président** sera la fête du soin des plaies de l'année.

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The 2005 Call for Abstracts is now posted on the CAWC Web site (www.cawc.net).

L'appel de communications de 2005 est maintenant affichée sur le site de l'ACSP (www.cawc.net).

Canadian Association of Wound Care

Association canadienne du soin des plaies

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professional nursing issues, and entrance requirements, as well as the fluctuation in the value of the Canadian dollar were factors that persuaded the Canadian Association for Enterostomal Therapy (CAET) to commit to the establishment of an ET nursing education program in Canada.

Traditionally, Canadian ET programs were operated "for profit" by hospitals and academic institutions. Because CAET was not involved in the administration of these programs, it could not stop their closures. To prevent this situation from happening again, CAET made the decision to fund the development and maintenance of an independent ETNEP. The CAET program was launched in 1996 with Nicole Denis, RN, ET, MScN, as program director and student advisor.

To provide as much flexibility for the student as possible, the CAET program is designed as a home study (correspondence) program with additional communication by telephone and e-mail. Each learner receives written guidelines, textbooks, additional readings and videotapes. The majority of the student's learning takes place through interaction with the course materials (required reading and written assignments), feedback on written assignments, and midterm examinations. As adult learners, students are expected to direct their own learning and to organize a preceptorship to meet their individual learning needs. Students have 12 months to complete the program.

The Role of Enterostomal Therapy Nurses

Enterostomal Therapy Nursing is a specialty that applies advanced knowledge and clinical expertise to individuals with challenges in wound, ostomy and continence. Enterostomal Therapy Nurses provide consultation with interdisciplinary team members and are involved in the education of patients and other health-care professionals.

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1. The ET Nurse's Professional Role
2. Psychosocial Adaptation Processes
3. Ostomy and Continent Diversions
4. Fistulae, Draining Wounds and Percutaneous Tubes
5. Acute and Chronic Wounds
6. Urinary and Fecal Incontinence

The curriculum also includes a unique seventh module, which is a clinical preceptorship and specific assignments. The preceptorship component is a requirement and a strength of all accredited ET nursing education programs. In this module, the learner observes the practice of an excellent role model, actively links theory to practice, and forms collegial relationships under the one-to-one supervision of a practising ET nurse.

The ETNEP continues to evolve. Student program evaluations, CAET member input, and ETNEP Advisory Board recommendations have resulted in a number of program changes. The intent of the changes is to improve the course and enhance support for the learners. Each learner is assigned an academic advisor, who answers questions, oversees the student's progress and provides support to the student throughout the program. Students and advisors communicate by telephone and e-mail.

The CAET advocates for the highest quality of specialized ET nursing for individuals with challenges in wound, ostomy and continence care. The CAET's commitment to offering and administering a specialized nursing education program is a major way to fulfill this mission. On completion of the curriculum, the graduate is prepared to perform all functions of the ET nurse role, which can include consultation, patient care, education, research and administration.

To be considered for the program, the applicant must be a resident of Canada and a baccalaureate-prepared registered nurse with a minimum of two years recent clinical experience. More information is available at www.caet.ca.

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Possible Contributing Factors for Differences in Pressure Ulcer Prevalence Rates: A Pilot Study of Two Medical Units

BY Marlene Mackey, Susan Draper, Margaret B. Harrison and Elaine Friedberg

Marlene Mackey, RN, BScN, Corporate Co-ordinator Nursing Quality Improvement Department of Nursing Professional Practice The Ottawa Hospital

Susan Draper, RN, MScN, Clinical Manager, 6 East The Ottawa Hospital

Margaret B. Harrison, RN, PhD, Associate Professor, Queen's University School of Nursing Senior Scientist, Practice and Research in Nursing (PRN) Group Affiliate Scientist, Clinical Epidemiology Program, Ottawa Health Research Institute

Elaine Friedberg, RN, MHA, Research Associate, Practice and Research in Nursing (PRN) Group Queen's University

Background

Skin care and maintenance of skin integrity is an important indicator of quality care in hospitals. The Ottawa Hospital (TOH), an acute tertiary care hospital composed of five sites, has over the past 10 years developed a comprehensive data set from our annual Pressure Ulcer Prevalence (PUP) studies.[1,2,3,4] Specifically, the PUP data from the past several years have revealed significant differences in prevalence rates between the medical units on different campuses. Prevalence data provide a "snapshot" of pressure ulcers at a given point in time. They do not provide information helpful in understanding the reasons for these differences in prevalence rates. Thus, we conducted a pilot incidence study to identify unit and patient characteristics that might uncover contributing factors for the differences in prevalence rates on the units.

Study Methodology

Comparable medical units (identified as Unit A and Unit B) from the two large inpatient campuses participated in this pilot study. The study underwent review and received approval from the Ottawa Health Research Institute Ethics Board. The two main objectives were to document the occurrence of pressure ulcers over the 10-week study period and to profile the study units and their populations. Two of the study questions were as follows:

1. What is the prevalence and incidence of pressure ulcers on the study units?
2. What patient-related or unit-related factors are associated with the difference of prevalence and incidence of pressure ulcers on the units?

A prospective point prevalence (12 hours) was conducted followed by a cumulative incidence survey over 10 weeks. A Pressure Ulcer Incidence Data Collection Tool was developed from our standard prevalence tool that included admission data, the presence, site, and stage of all pressure ulcers, a daily record of skin and Braden Scale risk assessments.[5,6] Nurses completed this tool for each patient admitted to the study units on a daily basis. The indicators for the ulcer outcome measures are detailed in Table 1.

Data were entered, verified and

TABLE 1

Outcome Indicators

Point prevalence	$\frac{\text{Patients with a pressure ulcer on day one}}{\text{All patients present on the units on day one}} \times 100$
Cumulative incidence—defined as the proportion of people who develop a pressure ulcer during a specified period.[7]	$\frac{\text{All patients who developed a pressure ulcer during the study period}}{\text{All patients who were ulcer-free on day one and all patients who were admitted during the study period who were ulcer-free on admission}} \times 100$

analyzed using the SPSS-PC version 11.0 statistical software package. Descriptive statistics (means, medians and frequency distributions) were calculated to report both clinical and unit data; T tests (for continuous variables) and Chi square (for categorical variables) were used to determine if there were differences between the groups. A Braden Scale deficit was defined as a loss of one point or more on any of the subscales. This study was not intended (nor powered) to detect differences on which to base conclusions, but rather to generate hypotheses for future study.

TABLE 2

Comparison of Ulcer Rates, Unit Characteristics and Patient Populations

	Unit A	Unit B	Significance
Pressure Prevalence and Incidence Rates (All Stages)			
Point prevalence	47%	21%	.014
Cumulative incidence	12%	6%	.008
Unit Characteristics			
Daily RN staff	82%	89%	.482
Full-time RN staff	55%	63%	.430
Unit staff mix	RN & PCA	RN & RPN	—
Professional staff	82%	100%	.021
Occupancy rate	95%	97%	.402
Absenteeism	4.8%	4.4%	.620
Patient Population Characteristics			
Study population number	335	334	—
Age > 70	63%	56%	.066
Admitting service general and family medicine	93%	71%	.000
Emergency/Non-elective admission	99%	90%	.000
Co-Morbidities			
Renal disease	19%	9%	.000
Diabetes	27%	18%	.006
Cardiac disease	41%	31%	.009
Pulmonary disease	25%	31%	.068
Hypertension	36%	33%	.343
Braden Scale deficit on admission	94%	89%	.024
5-6 Braden Subscale deficits	47%	32%	.001
Number of co-morbidities	4.2	3.8	.039

Findings

Prevalence Estimates and Cumulative Incidence. During the 10-week study period, 19 per cent of patients (128 of the 669) on the two medical units were found to have ulcers. The point prevalence on day one for both medical units combined was 33 per cent (all stages). The incidence rate over the 10-week period for both units combined was nine per cent for all stages and four per cent for Stage II and greater ulcers.

Comparison of Unit A and B. The two units were similar in staffing characteristics except that Unit A was composed of registered nurses (RNs) and aides and Unit B had all professional staff consisting of RNs and registered practical nurses (RPNs). Their patient populations were significantly different, with the type of conditions and the admitting service with Unit A having more emergency or non-elective admissions and patients with higher numbers of co-morbidities. Unit A also had patients at greater risk of pressure ulcers. The characteristics of the units, the patient populations, prevalence estimates and incidence rates are presented in Table 2.

In comparing the population who developed pressure ulcers with those who remained ulcer-free on the units, several factors appeared to be important (Table 3). Patients who developed ulcers were older, had a greater number of co-morbid conditions, were more likely to be diabetic, and were more likely to have deficits in five to six of the subscales of the Braden Risk Assessment. No significant differences were noted between those patients with ulcers and those without in terms of gender, time in the emergency room and admitting diagnosis. A greater proportion of the patients on Unit A were noted to have the characteristics of the population likely to develop ulcers.

A small proportion (17 per cent) of the ulcers that were first identified as being Stage I ulcers deteriorated to a more serious stage during the study. Although the average time from admission to ulcer development was longer on Unit A (mean 16 days, median seven days) than on Unit B (mean 11 days, median five days), this difference was not statistically significant.

Discussion

The incidence rate (nine per cent for all stages) on these two units is in the lower range found in the literature where studies have reported incidence rates

TABLE 3

Profile of Patients with Pressure Ulcers and Characteristics of Unit Populations

Profile of Patients with Pressure Ulcers	Factor	Unit A	Unit B
Older	Mean age (years)	71	68
Have more co-morbidities	Mean number of co-morbidities	4.2	3.8
Have been in hospital longer	Average length of stay	11	11
Have a co-morbidity of diabetes	% diabetic	27%	18%
Have deficits in each of the Braden Subscales	% with six subscale deficits	29%	17%

between 1.1 and 21 per cent in acute-care settings[8,9,10,11] and 9.7 per cent for patients over 65.[12] Significant differences were found in the incidence rates for pressure ulcers (all stages) on the two units (Unit A with 12 per cent and Unit B with six per cent). Organizational characteristics, patient demographics and clinical factors differed on the units, which may help to explain the variation in pressure ulcer occurrence. Although this study was not set up to test the association between unit and population characteristics on the occurrence of pressure ulcers, there were some interesting findings relevant for further study. Unit A had a lower proportion of full-time staff as well as a lower proportion of RN staff than Unit B. A recent Ontario study[13] found that patients in hospital units where there were more RNs and RPNs had better outcomes on discharge. U.S. studies[14,15] have also documented that staffing mix and staffing levels make a difference in achieving positive patient outcomes. This relationship deserves more attention given the preliminary findings of this pilot study.

Patient population characteristics also appear to be important in terms of understanding varying rates of pressure ulcers on generically described "medical" units. The significant differences in Unit A's patient population, mean age, number of co-morbidities, and the number of Braden deficits likely are contributing factors for the development of more pressure ulcers compared with Unit B.

Conclusion

This descriptive cohort study provided preliminary information to explain to decision-makers how seemingly similar units may be quite different for the purposes of understanding pressure ulcer development. Findings from this study suggest that patients who have deficits in five to six of the Braden Scale subscales and four or more co-morbidities are at higher risk to develop pressure ulcers. Unit staffing mix and levels of staff appear to be an important unit characteristic worthy of further study with regard to pressure ulcer development. A large-scale prospective cohort over a longer period of time would contribute to understanding this relationship more. Other variables/factors that may also play a role in the disparity of prevalence and incidence rates on these units were not explored in this study. Factors to consider for future research include nursing skin-care practices, nurses' knowledge and attitudes regarding skin care, and more specific patient data such as illness acuity, nutritional status, activity levels and skin conditions.

Special thanks to the other members of the pilot incidence study team: Nicole Denis, RN, ET Nurse, MScN, and Sue Sarrazin, RN, ET Nurse.

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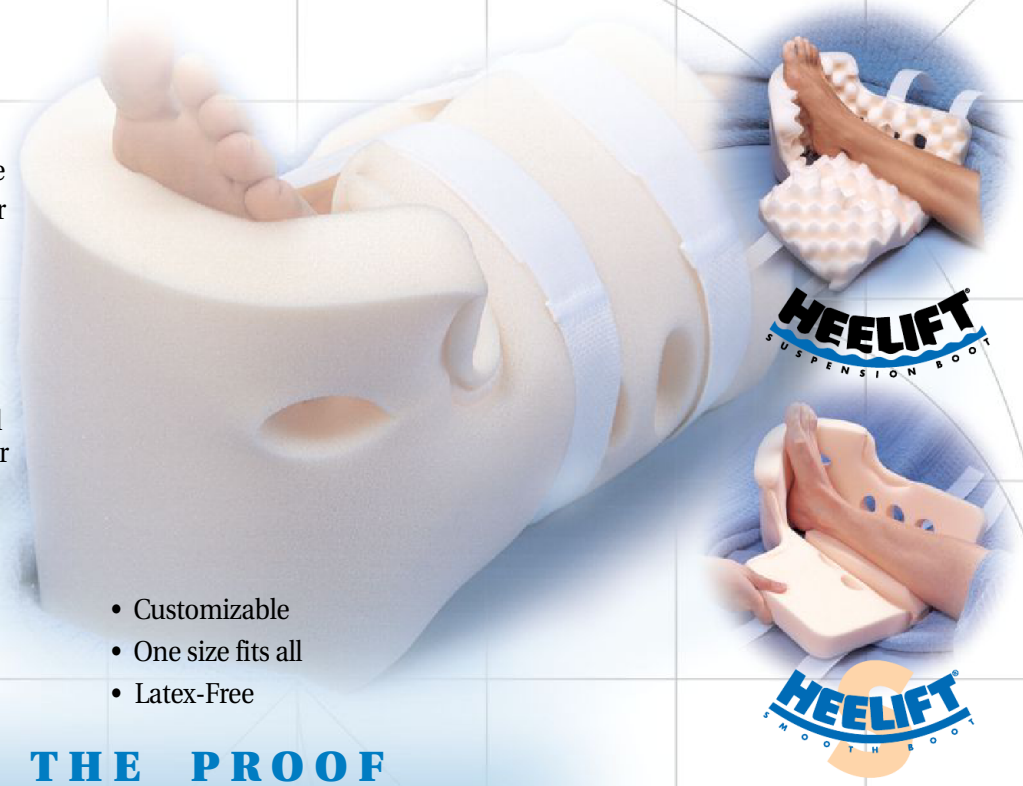

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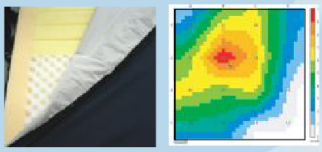

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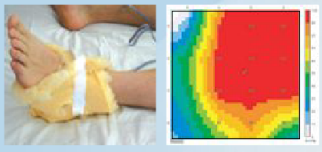
Maximum pressure	100
Center of pressure	2.8, 2.4



Heel Pillow

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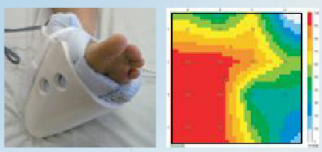
Variation coefficient	40.5%
Standard deviation	28.1
Average pressure	69.4
Maximum pressure	100
Center of pressure	2.1, 2.5



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Web Connect

Larval Debridement Therapy in Mexico

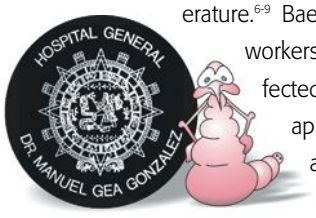
BY José Contreras-Ruiz, Adan Fuentes-Suarez, Marcia Karam-Orantes, Maria de Lourdes Escamilla-Mares and Judith Domínguez-Cherit

The benefit of maggots in wound healing has probably been known to humankind for ages. In Mexico, healers and herbalists comment, mainly through oral tradition, that maggots were known by the ancient Mayan culture to be beneficial in infected necrotic wounds. However, no written evidence indicates that they were actually placed deliberately on the wounds.[1]

The Hospital General "Dr. Manuel Gea González," a National University of Mexico-affiliated teaching hospital. The wound-care centre is based within the Department of Dermatology, and wound care is taught as part of the dermatology residence.

Among the earliest records of the benefit of maggots in wounds are those from Ambroise Paré (1517–1590), D.J. Larrey, Napoleon's chief surgeon (1766–1842), and J. Jones and J.F. Zacharias during the American Civil War (1861–1865).[2-5] All of these physicians during different wars recorded in their memoirs and reports that those patients who were infested with maggots did not develop gangrene; however, none of them purposely treated patients to this end.

It wasn't until 1928 that William Baer, an orthopaedic surgeon who had served in World War I and was later based at Johns Hopkins, decided to treat patients for osteomyelitis with sterile maggots. This was the first time that maggots were introduced in the medical literature.[6-9] Baer and one of his co-workers, S.K. Livingston, perfected the disinfection and application of maggots[5,10] and, given that antibiotics were not readily available at that time, maggots became such a popular treatment that even a pharmaceutical company began distributing them.[3,8] With the arrival of antibiotics and better surgical techniques, the interest in maggot debridement therapy (MDT) gradually disappeared in the early 1940s.



The medicinal maggot logo.

Our wound-care centre at Hospital General "Dr. Manuel Gea González" first became interested in this therapy in 2001. As we were searching for new developments and evidence in wound care, we encountered additional literature on maggots, including an old paper by Sherman et al.[11,12] where maggots had been reintroduced to medical practice by his group with the idea of having an alternative to antibiotic abuse. As described by these authors, maggots possessed potent enzymes that could liquefy necrotic tissue, competed with bacteria, and secreted substances that could destroy bacteria. Reports also exist on maggots treating meticillin-resistant *Staphylococcus aureus* in wounds.[13-15] As we became more interested in the topic, the following passage caught our attention in one of the papers:

> "Maggot therapy offers several advantages to conventional wound care in rural and tropical regions of the world, where highly skilled surgeons, technologically advanced resources, or even electricity may not be readily available. However, we are not aware of maggot therapy now ongoing in any other countries, except perhaps as isolated events."[16]

José Contreras-Ruiz, MD, graduated from Universidad La Salle in Mexico and has served internships and residencies at Jackson Memorial Hospital, Miami; Department of Dermatology, National Institute of Pediatrics, Mexico City; Hospital Angeles del Pedregal and Hospital General "Dr. Manuel Gea González," Mexico City. He is currently completing a wound-care fellowship at Women's College in the department of dermatology at the Dermatology and Wound Care Daycare Centre in Toronto.

Web Connect

For more information on contraindications to maggot debridement therapy, visit the *Wound Care Canada* section of the CAWC Web site at www.cawc.net.

This obviously appealed to our socioeconomic reality, so we decided to test the idea. Our experiment with MDT began.

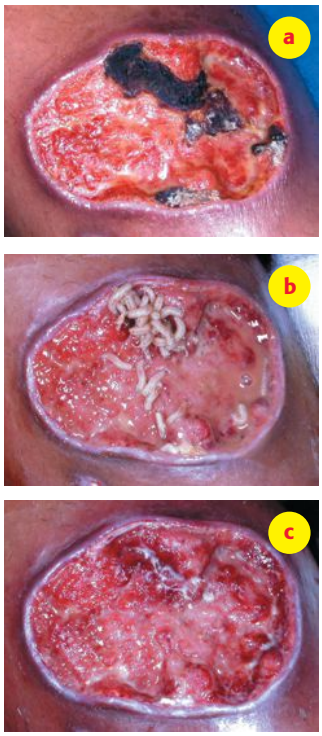
The Process

At the beginning of 2002, we captured numerous species of flies using homemade fly traps. Not all species are suitable for MDT because they invade living tissue. With the aid of an expert entomologist at the National University of Mexico, we selected the proper non-harmful species, *Lucilia sericata*.

We then manufactured a homemade cage using acrylic panels, fine weave tulle fabric, and silicone. The amount spent up to this point of the project was only about $80 (all figures in Canadian dollars). The fly cage kept the species from contamination with fruit flies or other sarcophagic insects. Breeding maggots was also very cheap ($2 per week) since all they needed was water, sugar and a piece of liver, as per information published elsewhere.[17]

We then had to sterilize the eggs to prevent contamination of wounds. This has been a complication reported with the use of non-sterile maggots.[18]

To assist us with sterilization, we contacted the microbiology department at our hospital (Hospital General "Dr. Manuel Gea González"), who then became involved in the process. Instead of chlorine, we used ortophtaldehyde for eight minutes to disinfect the surface of the eggs and placed them in blood agar for future use. This is just a minor modification from the method that has been described in the literature.[5,8,10,19] Once the technique had been optimized and we had established proper microbiology controls to prevent contamination, we decided to treat the first patient.



The first patient treated at the centre with MDT. a) Before treatment. b and c) After 24 hours of therapy.

Treatment Begins

In July 2002, we treated the first patient, a woman who came to us for a very painful venous ulcer covered with areas of hard eschar. We thoroughly explained the method to her, and she consented to trying it for 24 hours. To our fascination, after 24 hours the wound bed looked clean and the eschar had been debrided (see pictures below).

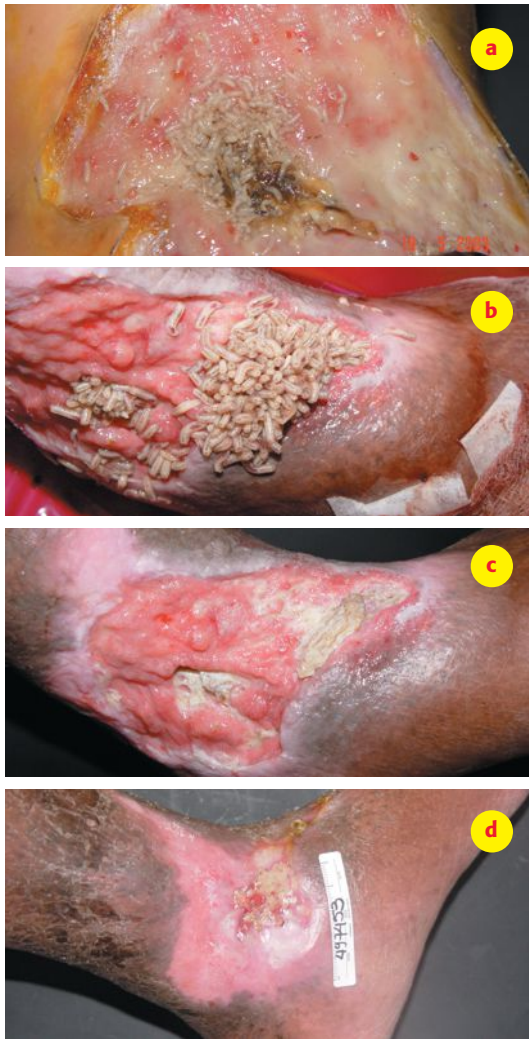
After that, we started treating all types of ulcers with varying degrees of success. As the word spread about our centre using MDT, the media became interested in the topic, and we participated in several programs on national television. After that, more patients became interested in the therapy and came to our centre requesting treatment. As a result of the attention, our centre became flooded with patients requesting MDT, and we have never had to talk a patient into treatment since. Additional media coverage helped educate the public (and patients) and dispel the misinformation about the treatment.

A Maggot Shortage

The number of patients became overwhelming, and we started suffering a shortage of maggots because the flies were not laying enough eggs. As more very ill patients arrived requesting MDT, we had to start using eggs normally destined for enlarging our fly population. Eventually, the number of flies decreased, and we ran into a vicious cycle that almost brought the project to an end. We needed more flies. We devised new cages

and solved that issue, but then sterilization became our limiting factor since the microbiology department was now using up time dedicated to clinical work for the process of egg disinfection. A group meeting was held, and we worked together to optimize the process even more by disinfecting more eggs together. This gave us time to think about further steps to take.

By now, we had been contacted by several researchers interested in the basic research and breeding of maggots. As maggots are not patented and can be bred by anyone, we were happy to share our experience. Now, we have two outside providers of medicinal maggots that cost only $40 per vial of 500–1,000. This has allowed the microbiology department to stop producing maggots. And although patients now have to pay for their treatment, two patients can share one vial, and the cost becomes only $20 per treatment in a public hospital setting.



Another patient treated with MDT. a) Before treatment. b) Application of the maggots in the wound. c) After 48 hours immediately after opening the cage-dressing. d) Wound after cleansing. Note the healthy granulation tissue present at the wound base.

The Present

Between 2001 and 2005, we have applied more than 200 cycles of MDT. In our facility (a public general teaching hospital), MDT has now been accepted as another method of debridement by hospital authorities, patients and staff. We have treated venous, pressure and diabetic foot ulcers with excellent results. We have since acquired important experience on which subsets of patients benefit more and which patients would potentially be harmed by MDT.

We consider proper selection of the patients the most important issue to achieve these results. We do not treat patients with inadequate vascular supply (unless the patient understands that healing is not the goal), patients with bone infection (unless we apply maggots to "clean" the bone before surgical removal), or any other contraindications to MDT that have been recommended in the literature.[7,20-24] [See the Web Connect on page 42 for more information on contraindications.] As with any other type of debridement, established guidelines on debridement must be followed.

MDT has provided an alternative to the amputations that are so common for people with wounds in our country. Sadly, we still live in an era where amputation is believed to "save money to the system." In our practice, most of these patients are rendered inoperable because operation suites are too crowded to perform major surgical debridements. The good news is

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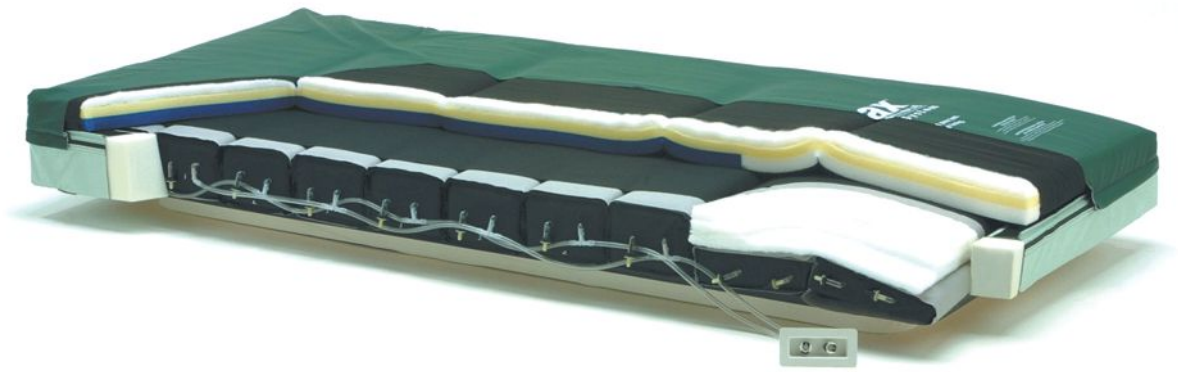

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that many of the patients who were scheduled for amputation have been healed with MDT and proper wound care.

The usefulness of MDT has extended beyond Mexico City, and now specialists in Monterrey, Guadalajara, Veracruz and Tampico are using MDT as another method of debridement.

The Future

Now that MDT has a place in the Mexican wound-care armamentarium and is widely used, we felt the need to demonstrate the evidence of its benefit compared with standard care. There are some randomized controlled trials on the subject in the literature comparing MDT with enzymatic, autolytic and mechanical debridement and indicating MDT as faster, safer and more efficient. We are currently in the process of publishing our results comparing MDT with standard surgical curettage and application of silver in venous ulcers. We are also undergoing two more trials on diabetic foot ulcers and pressure ulcers. One of the main difficulties in performing this type of research is that funding has to come from our own pockets, since no outside resources are available.

In the future, we plan to continue performing trials and analyzing the literature on the topic to try to establish proper guidelines for use as well as indications and contraindications that will help clinicians in other areas of the country and in other developing countries in the proper selection of patients who would benefit the most from MDT.

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Canadian Association of Wound Care News

Education

Three Key Initiatives for Education Committee

The Education Committee will be focused on three primary initiatives in 2005: completing the S1 and S2 revision, working collaboratively with other Canadian professional organizations toward the creation of Canadian wound-care certification (see The Last Word, page 54), and supporting the development of a national pressure-ulcer-prevention awareness program.

The committee continues its work of supporting the delivery and evaluation of high-quality educational programs, including the CAWC's bilingual conference in Montreal this fall.

CAWC Annual Conference

Mark November 12–15 on your calendar, and make plans to be in beautiful Montreal for the 11th Annual CAWC Conference. The theme of this year's conference is Bridging Wound-care Communities. You won't want to miss it!

Conférence annuelle

Inscrivez les dates du 12 au 15 novembre à votre agenda et prévoyez être dans la belle ville de Montréal pour la 11e Conférence annuelle de l'ACSP. Le thème de la conférence de cette année est Réunir les communautés de pratique en soin des plaies, et vous ne voulez pas manquer cela!

Research

Critical Review Tool Available Soon

In a session at the 10th annual CAWC conference, the Critical Review of Articles Presentations tool was used to evaluate a good and a bad abstract. The so-called CRAP tool (*Editor's note*: nothing like a little scatological humour to get the point across!) is a series of questions designed to guide clinicians and readers in their literature and educational review. The committee plans to make the CRAP tool available through *Wound Care Canada* in fall 2005 in the form of either a tear-out sheet or a quick reference guide.

Public Policy

Focus on Pressure Ulcer Prevention

The Public Policy Forum was held at the CAWC's annual meeting in Calgary in November 2004. This year's topic was the release of the Woodbury-Houghton pressure ulcer prevalence study. A panel discussion by the committee members addressed how wound management and funding were supported in each province, leading to an open dialogue among the 100 members in attendance. The take-away message was that there was disparity across the country in how these issues were managed. To increase awareness, the committee will work to support the development and delivery of a national pressure ulcer prevention campaign. The aim of the campaign is to make available information on prevention, best practice guidelines, and education for both clinicians and the public to address pressure ulcers in Canada.

You've Got Questions, We've Got Answers

The CAWC Discussion Forum, at www.cawc.net, is the only place in Canada accessible to every wound-care clinician in the country. It's a great way to tap into a national network of wound-care professionals. Visit it today!

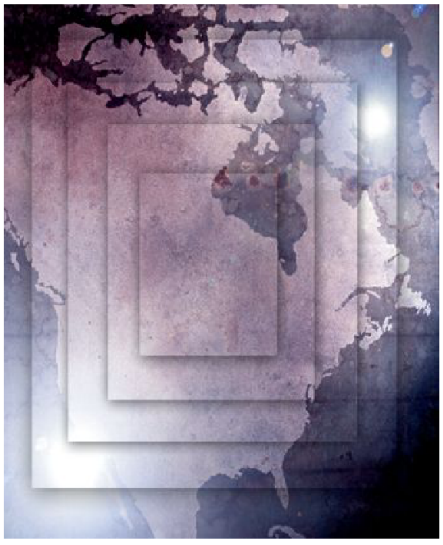
Karen E. Campbell, a Nurse Practitioner in a London-based health-care facility, was recently awarded a CAWC educational scholarship. She decided to go back to school and enrol in the PhD program in Rehabilitation Sciences in the Faculty of Health Sciences at the University of Western Ontario (UWO). This doctoral program was established in 1998 and is based on the World Health Organization's (WHO) model of International Classification of Function and Disability (ICF) with fields of study in body structure and function, activity, and participation. Karen shares the classroom with her colleagues from a variety of health-care disciplines, including Occupational Therapy, Physical Therapy, Kinesiology, Speech-language Pathology, and Audiology.

This interdisciplinary PhD program is a thesis-based program with minimal course work. It encourages participants to focus their time on developing the knowledge and skills needed to design and perform clinical research.

Wound care is an ideal area of practice that fits with this interdisciplinary doctoral program; previous topics have included looking at the effectiveness of new wound-care therapies and the development and validation of new wound-assessment tools. Over the next four years or so, Karen will work with the support of advisors Dr. Pamela Houghton and Dr. Gail Woodbury on a doctoral thesis that will focus on implementing best practice guidelines for the prevention of heel ulcers.

Karen is fortunate to have the support of her program director in the facility in which she works, which will allow her to focus some of her time on her doctoral studies. In return, the facility will benefit from the implementation and evaluation of a wound-care program and from the training of an experienced clinician who, upon completion of the program, will be able to lead her own research program independently. Interdisciplinary PhD programs like the one at UWO will help promote wound care in Canada by providing training of wound-care clinicians in research skills needed to design and conduct high-quality clinical research in this field.

For more information about the doctoral training program, contact Dr. Pamela Houghton at the University of Western Ontario. phoughto@uwo.ca or 519-661-2111 ext. 88862.



International Partnerships

Improving Wound Care in North America

The CAWC hosted the North American Wound Care Council (NAWCC), a group of wound-care affiliated associations and societies, during the CAWC's November 2004 annual conference. Despite the disparate histories, constituencies and mandates of the individual groups, the council quickly came to consensus on a mission and vision. Once the participating associations and societies have ratified the official NAWCC position, it will be published in *Wound Care Canada* and on each NAWCC members' Web site. NAWCC is a major step forward for wound care in North America.

Along with a representative from Mexico, the participating organizations are

- Association for the Advancement of Wound Care (AAWC) www.aawc1.com
- Canadian Association for Enterostomal Therapy (CAET) www.caet.ca
- Canadian Association of Wound Care (CAWC) www.cawc.net
- National Pressure Ulcer Advisory Panel (NPUAP) www.npuap.org
- Wound Healing Society (WHS) www.woundheal.org
- Wound, Ostomy and Continence Nurses Society (WOCN) www.wocn.org

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

CAWC Welcomes New Board Members

The CAWC is pleased to announce that Dr. M. Gail Woodbury has been elected to the CAWC Board of Directors for a three-year term.

CAWC Board Holds Retreat

The CAWC Board held its annual winter retreat in Toronto in January 2005. An education session was held that focused on dealing with the media and presenting a cohesive message. As the Board and its committees move toward raising the public profile of the CAWC and initiating a public awareness campaign on the prevention of pressure ulcers, the valuable lessons learned in this session will be put to good use.

Web Connect

Articles of Interest

Literature Review

Reviewers

Heather Orsted, MSc, RN, BN, ET,

Chantal Leduc, Inf BSc, ET

Louise Forest-Lalande, Inf MEd, ET

Should Alternative Endpoints Be Considered To Evaluate Outcomes In Chronic Recalcitrant Wounds?

Authors: Enoch S, Price P

Source: World Wide Wounds. www.worldwidewounds.com/2004/October

Reviewer: Heather Orsted, MSc, RN, BN, ET,

The Web site www.worldwidewounds.com is an excellent resource to the clinician and currently offers over 50 high-quality articles free to download.

In this article, Enoch and Price look at the challenging problem of the recalcitrant wound and consider the time-honoured end point of "wound closure" as an unrealistic and unattainable goal of care. Often patients recognize a recalcitrant wound before the clinician as they change their focus from healing to symptom control. How many times have we heard patients say, "if only the odour was less" or "I could handle it if it wasn't for the pain." This paper looks at quality-of-life endpoints that may be more realistic and meaningful to the patient with complex health issues that can affect wound healing and closure. The authors offer the reader surrogate and intermediate endpoints to guide wound management toward realistic outcomes. This article should be required reading for all clinicians interested in advancing their wound-care practice.

Modalités pratiques d'utilisation de la VAC Therapy en milieu hospitalier. Rapport consensuel d'experts

Auteurs: Téot L, Castède JC, Lantier L, Léger P, Meaume S

Publication: *Journal des plaies et cicatrisations.* Tiré à part. Juin 2004 Tome IX N° 44, P 3–10

Révision: Chantal Leduc, Inf BSc, ET; Louise Forest-Lalande, Inf MEd, ET

Cet article renseigne le lecteur sur la technologie de pointe en matière de cicatrisation en milieu humide qu'est le traitement des plaies par pression négative (TPPN).

Il décrit de façon exhaustive cette thérapie, explicitant son mode d'action ainsi que ses indications et contre-indications cliniques. Il fournit de plus des recommandations sur la durée de la thérapie.

Outre la présentation de toutes les étapes de la réfection du pansement, on y retrouve un tableau décrivant les modalités pratiques d'utilisation de la TPPN. Finalement, un algorithme décisionnel sert de guide dans la prise en charge chirurgicale en milieu hospitalier. La portion de cet algorithme concernant la cicatrisation non chirurgicale gagnerait toutefois à être plus détaillée aen ce qui concerne l'indication de la TPPN et ce, pour mieux guider l'intervenant.

À un moment où la TPPN est de plus en plus utilisée, cet article peut servir de référence pour assister les professionnels en soins de plaies lors du développement de protocoles adaptés à leur institution.

Web Connect

To read an English version of this review, please visit the *Wound Care Canada* section of the CAWC Web site at www.cawc.net.

If you didn't receive this copy of *Wound Care Canada* by post, make sure you get on the mailing list for future issues. Send us your name and address at cawc@sympatico.ca.

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The Question of Certifying Wound-care Specialists

BY Heather Orsted and Kathryn Kozell

We are often asked by our wound-care colleagues what courses they can take or what exams they can write to become "certified" wound-care specialists. We hear time and again that many clinicians want to be identified as having met recognized academic and clinical requirements in wound-care practice. And while universities and community colleges in Canada do provide recognized diploma courses in wound care, to date there is no approved certification program related to wound care.

Through our discussions, we've discovered that there is quite a bit of confusion about this issue. Complicating matters is the presence of individuals and organizations claiming to offer certification, when, in fact, any certification they give has no general application in Canadian health-care settings. For example, wound-care certification programs imported from other countries do not provide the same standard of education that is available in Canada and are not approved or recognized by the Canadian Nurses Association.

To clarify the situation and to provide guidance, we've worked together with our colleagues to research this issue and come up with some information we hope will be enlightening. First, a couple of definitions.

Accreditation refers to a process whereby a professional or educational organization reviews an educational program and determines that the program meets its educational standards. The organization, through accreditation, recommends these programs to its members as suitable for their continued education.

Certification is a process in which a professional or educational organization administers a testing process to determine if applicants meet a standard of knowledge, skills and attitudes. Through certification, an organization informs the public that an individual meets its competency standards in the designated field of practice.

The good news is that the Canadian Association of Wound Care (CAWC), in collaboration with the Canadian Association of Enterostomal Therapy (CAET), is developing a strategic plan in conjunction with other Canadian professional bodies toward the formation of recognized wound-care certification in Canada.

As this work continues, we think it's important to present the official position statement that these two bodies have drafted regarding this issue:

"The Canadian Association of Wound Care and the Canadian Association for Enterostomal Therapy support the development of a Canadian wound-care certification program through the appropriate professional channels. The CAWC and CAET believe that Canadian wound-care certification is best supported through the development of wound-related knowledge, skills, and attitudes in Canadian educational, competency-based programs. The CAWC and CAET urge wound-care clinicians to carefully examine wound-care educational programs that purport to offer wound-care certification to determine if they meet rigorous Canadian educational standards."

For more information, please contact Heather Orsted via e-mail at hlorsted@shaw.ca.

Visit the CAWC Web site at **www.cawc.net** for the latest wound-care news and information. **For our francophone readers:** The French side of the Web site is expanding, with added articles, news and information. Other articles will appear on the Web site as they become available.

Heather Orsted, MSc, RN, BN, ET, is the Chair of the CAWC Education Committee. She is a co-director of the University of Toronto's International Interdisciplinary Wound Care Course and has made major contributions to wound-care education both nationally and internationally.

Kathryn Kozell, RN, BA, BScN, MScN, ACNP/ET, is the President of the Canadian Association for Enterostomal Therapy.

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