

October 14–18, 2020

Wounds Canada 2020 Virtual Conference: Alberta Day

Stories, Partnerships & Strategies for
Wound Prevention and Management



Session Summaries

Wounds Canada held its fall 2020 conference as a virtual event October 14 to 18. The event incorporated the Alberta regional conference that had originally been planned for April but was postponed due to the COVID-19 pandemic, the national conference and the one-day Limb Preservation Symposium into a single mega event. The session summaries that follow include highlights and practice pearls from the Alberta regional conference day. While focused on the Alberta experience, they explore issues and share successes that will be of interest to readers all across Canada. Session summaries from the later four days of the conference event will follow in the next issue of Wound Care Canada and Limb Preservation in Canada.

CELEBRATING THE PATIENT AS A KEY DRIVER OF CARE

Presenters: Jessie Toews, Rod Wojtula

Summary: Heather Ibbetson, BN BA

This session featured two patients, Jessie Toews and Rod Wojtula, who described their experiences living with wounds and navigating health-care systems.

Toews was injured during a high school rodeo accident and has been in a wheelchair since. By

age 24, he had developed several pressure injuries. Despite the growing severity of these injuries, he did not seek immediate medical help. As a result, he became septic and almost lost his life. He had eight pressure injuries that required six surgeries and multiple skin grafts.

Once he became a collaborative participant in his care, he gained a sense of responsibility. He and his health-care team tried different dressings, packing and creams to treat the pressure injuries. He was



willing to try anything—including lying on his stomach for months if needed. He appreciated being part of a team during the treatment of his pressure injuries. For him, patient education and teamwork were keys to successful healing. He also noted that it is important that patients reach out and ask for help when they notice a pressure injury forming.

Wojtula is a 72-year-old commercial real estate broker and former athlete who lives with type 2 diabetes. For the last five and a half years, he has had a foot ulcer on the pad of his right foot. The wound has been reduced to the size of a pinhole but is not yet closed. Peripheral neuropathy led to a blister forming on his foot.

When he was first diagnosed with diabetes, he made immediate lifestyle changes, including giving up smoking and getting regular exercise. However, he required two bypass surgeries for peripheral arterial disease in each leg. He also had to travel from his rural area into larger cities for treatment. As a patient, he found that communication with his health-care team helped him adjust his expectations and keep himself responsible. For him, family support, effective planning and asking questions have been key in treating his ulcer.

Key Points

- Patient education and collaborative goal setting are vital.
- Patients need to find clinicians they can trust.
- It is important for patients to ask meaningful questions.
- Family support is essential for maintaining motivation.

IMPLEMENTING BEST PRACTICE IN ALBERTA: A DIABETES FOOT CARE CLINICAL PATHWAY

Presenters: Kathy Dmytruk, RD CDE;

Petra O'Connell, BSc MHSA

Summary: Heather Ibbetson, BN BA

Kathy Dmytruk discussed significant variations in foot screening practices in Alberta. For example, she found that primary care screening only occurred in cases of poor glycemic control. She highlighted the need for a systematic approach to increase screening and to create a team of health-care providers to address those with, or at a high risk for, wounds. To address this need, a clinical pathway was created with tools and resources for screening.

Petra O'Connell elaborated by discussing the evaluation of the clinical pathway and referring to surveys of foot care practices before and after pathway implementation. Results indicated there was a significant increase in screening across all health-care provider groups. Overall the results were positive. Barriers to full implementation of the pathway included access to treatment, travel costs and wait times. The use of this pathway also improved co-ordination of care and access to limb preservation services.

Next steps include continuing to implement the pathway across Alberta, increasing the number of high-risk foot care teams, integrating virtual health practices and developing standardized vascular referral guidelines across Alberta.



Key Points

- A systematic clinical pathway was developed to improve foot screening in Alberta.
- Surveys found that the pathway improved screening and care practices across Alberta.
- Ideally the clinical pathway will be shared across Alberta to provide tools for a greater number of health-care providers.

KEY CONSIDERATIONS IN WOUND PREVENTION AND MANAGEMENT: CHRONIC DISEASE AND MEDICATIONS/ NUTRITION/PAIN

Presenters: Laurie Parsons, MD FRCPC IMWCC; Ellen Mackay, MSc RD CDE; Eric Bly, DC MD IMWCC

Summary: Eliot To, DCh MCISc (Wound Healing) HBSc

Laurie Parsons opened the session by talking about the effects of chronic diseases and medications on wound healing. She highlighted several factors that can negatively affect wound healing, including local wound factors, organism level factors, age, nutrition, comorbidities, medications and lifestyle. These factors can be further divided into internal versus external factors.

She then discussed the effects of corticosteroids, long-term NSAIDs and chemotherapeutic agents on wound healing. All of the aforementioned medications can have a negative impact on wound healing—inhibiting wound repair, decreasing granulation tissue, reducing wound contraction, impairing cell division and impairing angiogenesis, to name a few. On the flip side, there are instances when such immunosuppressive medications are an integral part of treatment. When treating inflammatory wounds such as pyoderma gangrenosum, moisture-associated skin damage or vasculitic wounds, clinicians should maintain a balance between controlling the inflammation and impairing the normal wound healing trajectory.

Ellen Mackay discussed key nutritional considerations for wound prevention and management. She brought attention to the impact of poor nutrition and hydration on wound healing, discussed current and emerging strategies to address modifiable

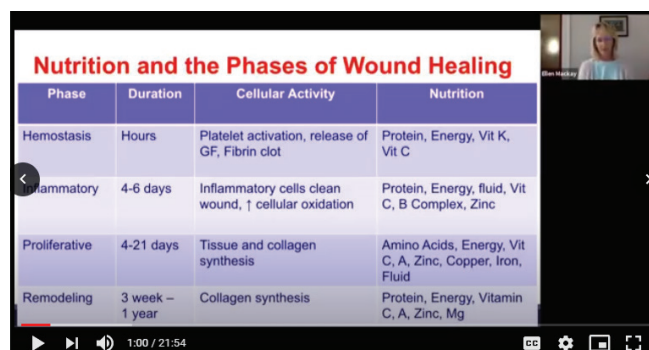
factors and presented strategies to support a person-centred approach to wound prevention and management. She outlined some of the necessary nutrients, amino acids and micronutrients for proper wound healing. These include, but are not limited to, vitamin A, B, C, zinc, copper, iron, magnesium and protein.

She highlighted that, according to a 2016 study, 45% of Canadians admitted to hospital care are malnourished. It is therefore paramount that patients are screened regularly for malnutrition. She mentioned several validated tools for screening for malnutrition and directed attendees to *Wound Care Canada*, where she published an [article](#) on validated screening tools for different patient demographics.

Glycemic control is also important to wound healing; hyperglycemia impairs wound healing and, therefore, must be managed via patient education, diet modification and titration of medications. She mentioned some emerging studies regarding supplementation for wound healing, including the use of arginine, glutamine, B-hydroxymethylbutyrate (HMB), collagen, omega-3 fats and probiotics. She concluded by outlining the importance of optimizing patient diet, which can be accomplished by using nutrient-dense foods, fortified foods, supplementation and/or enteral or parenteral nutrition.

Eric Bly discussed the effects of pain on wound healing and some current and emerging strategies for managing wound-related pain. He reminded attendees that “pain is what the patient says it is.” Pain can affect wound healing directly as well as impact the patient’s experience with the wound, which in turn can affect their adherence to the treatment plan and increase stress and anxiety.

He discussed commonly used topical medications,



Phase	Duration	Cellular Activity	Nutrition
Hemostasis	Hours	Platelet activation, release of GF, Fibrin clot	Protein, Energy, Vit K, Vit C
Inflammatory	4-6 days	Inflammatory cells clean wound, ↑ cellular oxidation	Protein, Energy, fluid, Vit C, B Complex, Zinc
Proliferative	4-21 days	Tissue and collagen synthesis	Amino Acids, Energy, Vit C, A, Zinc, Copper, Iron, Fluid
Remodeling	3 week – 1 year	Collagen synthesis	Protein, Energy, Vitamin C, A, Zinc, Mg

including ketamine (anecdotal evidence only), opioids and tricyclic antidepressants (for neuropathic pain). There is a lack of evidence on safety and efficacy for topical capsaicin, aspirin, clonidine and menthol for the treatment of wound-related pain. Adjunctive modalities, such as electrical stimulation, may decrease pain, but this is not well studied. Virtual reality (VR) is an intriguing emerging treatment for wound-related pain and may provide a distraction, increase patient comfort and decrease practitioner stress. More studies need to be conducted, however, to strengthen its validity. Last, he discussed the use of cannabis for wound-related pain, which may provide benefits; once again, more research needs to be conducted to validate its use.

Key Points

- Care is required when suppressing inflammation, as some inflammation is part of the normal trajectory of wound-healing.
- Corticosteroids exert a more rapid anti-inflammatory response (1 to 3 days) than other immunosuppressive drugs.
- Screen for malnutrition; it is present more often than one might think.
- Adequate hydration can improve skin health and decrease the risk of skin breakdown.
- Pay attention to possible micronutrient deficiencies.
- Pain is what the patient says it is.
- Managing pain is essential to managing chronic wounds.
- Worsening pain may indicate wound infection.

PRESSURE INJURIES AND MASD CASES

Presenters: Chester Ho, MD; Kimberly LeBlanc, PhD MN BScN RN NSWOC WOCC(C); Elizabeth Ernter-King, BN RN IIWCC
Summary: Eliot To, DCh MCISc (Wound Healing) HBSc

Kimberly LeBlanc began the session by introducing moisture-associated skin dermatitis/damage (MASD). MASD is a result of prolonged exposure of skin to hydration. It is, in essence, overhydrated skin that leads to skin damage. Sources of moisture can

Differential Diagnosis	
Incontinence Associated Dermatitis	Pressure Ulcer
<ul style="list-style-type: none"> -Bright red in Caucasians, subtle red in darker skin -Perineal or peri-genital skin, especially near anus, skin folds or beneath containment garments -One or more islands of erosion to extensive denudation of epidermis and dermis -Borders are diffuse -No necrotic tissue -Exudate: None or serous -Symptoms: itching or burning 	<ul style="list-style-type: none"> -Deep red, maroon to bluish/purple in sDTI, non-blanchable erythema in Stage I -Typically over a bony prominence -Varies from partial to full thickness -Demarcated borders -Black eschar or slough -Exudate: volume varies and type depends on wound state -Symptoms: pain, itching exacerbated by dressing change

include perspiration, urine/fecal materials and saliva/mucous. She discussed five types of MASD: incontinence-associated dermatitis (IAD), intertriginous dermatitis (ITD), periwound, peristomal and immersion (trench) foot. She then focused on IAD and ITD.

IAD is skin damage as a result of exposure to urine or stool. She presented a system by Ghent University—the GLOBIAD categorization tool. Patients with persistent redness are Type 1; patients with skin loss are Type 2. Patients presenting with and without clinical signs are categorized as Type A and Type B, respectively. The combinations of skin presentation and signs of infection give rise to four categories of IAD. She explained the importance of differentiating IAD from pressure injuries (PIs). They typically differ in presentation, location, wound margins, wound exudate and symptoms. The most significant complications of IAD are bacterial infections, subsequent pressure injuries and severe pain.

ITD is inflammatory dermatosis of opposing skin surfaces caused by moisture. These are common in inframammary, auxiliary regions and inguinal skin folds. A typical presentation of ITD is erythema (redness) that forms mirror images on opposing skin surfaces, which may become macerated, eroded, oozing and crusted.

She concluded by outlining MASD prevention and management strategies. Some notable recommendations are implementation of a structured skin care program, use of absorptive containment briefs and underpads, adequate nutrition, use of barriers against irritants, protection of denuded skin, cleansing with pH-balanced products, prevention of skin-to-skin friction and reduction of heat and moisture in skin folds. Most important is identifying and treating

the cause of the MASD. She also stressed the importance of implementing a multi-disciplinary approach in preventing and managing MASD.

Chester Ho discussed practice gaps of pressure injury prevent and management. He presented three main categories of gaps: knowledge, practice and systems. Examples include limited knowledge and training for staff, risk assessments not leading to action and lack of standardized reporting systems. He suggested helpful resources for PI prevention and management, including Wounds Canada's Best Practice Recommendations for the Prevention and Management of Pressure Injuries, Insite (Alberta Health Services) and Connect Care (an EMR system for the province of Alberta).

He noted that the population at highest risk for PIs is patients with spinal cord injuries (SCIs). PIs in patients with SCIs lead to lower quality of life, prolonged hospital stays, hospital re-admissions, high use of (recurrent) plastic surgery and high cost of care. Risk factors for patients with SCI include motor and sensory impairment, incontinence, malnutrition, psychosocial factors and support surfaces or durable medical equipment that can cause PIs.

He concluded by reminding attendees that prevention of PIs, especially in high-risk populations, should be "lifelong," and not only when patients are in the hospital. He listed five categories of self-management: structured education programs, telehealth, wheelchair skills training, risk assessment and feedback, and body-positioning skills training. These strategies are mostly based on studies of patients with SCIs; however, he believes these concepts can be extrapolated to other populations who may be at risk of PIs.

Key Points

- Incontinence-associated dermatitis (IAD) is often found in combination with pressure injuries and is a risk factor for pressure injuries.
- Intertriginous dermatitis (ITD) is often misunderstood, yet highly prevalent.
- ITD causes pain and suffering.
- There are many practice gaps in pressure injury (PI) prevention and management.
- The use of province-wide electronic medical records may be helpful for preventing and managing

PIs.

- Persons with spinal cord injuries (SCIs) are at very high risk of developing PIs.
- Self-management strategies for preventing PIs in SCI patients may be helpful for other patient populations.
- The management and prevention of PIs require a multidisciplinary approach.

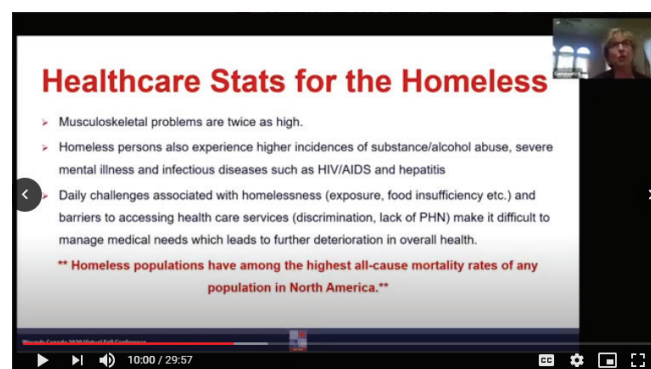
INDIVIDUALIZING APPROACHES TO WOUND PREVENTION AND MANAGEMENT

Presenters: Ashley Bissett, BScOT; Genevieve Wright, RN

Summary: Eliot To, DCh MCLSc (Wound Healing) HBSc

"If our clients are non-compliant, who needs to change?" Ashley Bissett asked rhetorically. She responded, "It's us!" She began the session by outlining the objectives: to discuss the unique needs and barriers of certain patient populations living with wounds, and to describe approaches to individualizing care for these patients. She reminded attendees that there are internal and external factors that can impact wound prevention and healing. These include personal health, environment, resources, social support and lifestyle factors. She said that "we are the experts in wound care, but the patients are experts in their own life." Person-centred care means that the patient, and their family and care partners, should be at the core of our management plans.

Genevieve Wright, a registered nurse who works with the homeless, began by defining *homelessness* and *Indigenous population*. She also took the



time to acknowledge the Land on which she lives and practises. Indigenous peoples, according to her, are overrepresented in the homeless population. Homelessness is closely associated with one's health and well-being; homelessness may complicate treatment and recovery, health problems may cause homelessness, and homelessness may cause health problems. She cited several alarming statistics regarding the homeless and comorbidities and mortality rates. Some commonly seen wound types among the homeless include diabetic foot ulcers, lower leg ulcers, porphyria cutanea tarda, abscesses and frostbite.

There are many barriers to practice change when working with the homeless. Wright outlined several solutions to overcome these barriers. Access to health care in the community is crucial. This includes nursing care within shelters, harm reduction strategies, knowledge of mental health and addiction concerns, trauma-informed care and medical respite/observation beds within shelters. Health-care practitioners must understand the needs of the homeless and the barriers they may face. Last, she encouraged attendees to take a two-eyed seeing approach—to recognize and respect both Indigenous and Western knowledge.

Bissett defined *dementia* and discussed common signs and symptoms. Dementia-related wound risk factors include decreased ability to practise self-care and follow recommendations, hygiene deficits, risk of falls, behavioural concerns (agitation and restlessness), incontinence, impairment in mobility and sensation, and nutrition and hydration deficits. She concluded with a case study of one of her patients. The individualized, patient-centred care plan for this individual included local wound care, pressure redistribution, fall risk management, pain management, agitation management and nutrition support.

Key Points

- Remember the unique needs of each patient.
- Consider internal and external factors impacting wound healing and prevention. Which of these are modifiable?
- Excellent care is about the whole person and their goals.

TIPS FROM THE EXPERTS: USE OF ADVANCED THERAPIES

Presenters: Pamela Houghton, PhD PT;

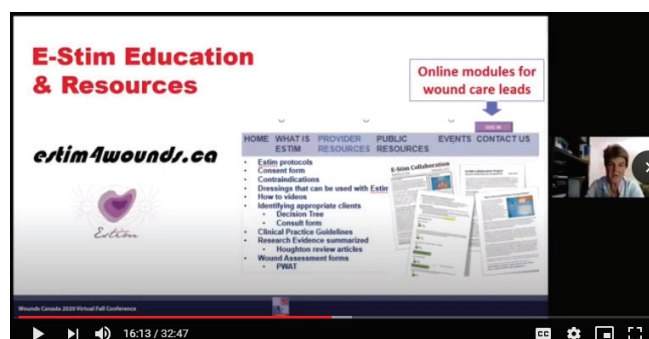
Kelly Sair, MCISC-WH BScPT

Summary: Eliot To, DCh MCISC (Wound Healing) HBSc

Pamela Houghton began by referencing the Knowledge to Action Cycle by Graham et. al. She highlighted the challenges with knowledge mobilization, translation and implementation that involve addressing many barriers to practice change. When implementing an advanced therapy there are additional barriers that may need to be overcome, including systemic factors (e.g., low research evidence), patient-centred factors (e.g., ineffective education) and clinical factors (e.g., availability of products).

She presented electrical stimulation (e-stim) as an example of implementing advanced therapies in wound care. While experimental and clinical evidence suggests e-stim can activate many wound healing processes and stimulate more rapid closure of many types of chronic wounds, this advanced therapy is seldom used by wound care clinicians.

She then presented "The E-stim Collaboration" project she is a part of. This was a best practice implementation project funded by Ontario Neurotrauma Foundation and the Rick Hansen Institute in 2015. More than 30 knowledge brokers across 16 sites and seven provinces of Canada met virtually to discuss strategies to promote the implementation of e-stim therapy so it is available to their patients. As part of the project, her team developed educational resources, which are available at estim4wounds.ca.



Kelly Sair presented an initiative of implementing e-stim as an adjunctive therapy for patients with wounds. At the beginning the barriers to e-stim therapy included time constraints, increased pressure to wounds due to travel time for patients, and parking costs. Her team then transitioned the use of e-stim into the community using a simple self-management approach. Patients and families are now delivering e-stim treatments independently, with education and support from health-care providers. The protocol for the use of e-stim was standardized for consistency:

- One type of machine (high voltage/pulsed current)
- 60 minutes per session, three to five sessions per week
- 100 pulse per second and continuous pulsing
- Switching polarity every Monday

She presented two case studies where this program was implemented. It included an audio anecdote from a patient's father (the patient had a coccyx pressure ulcer, which eventually closed). Both cases demonstrated improvement and success with the use of e-stim as an adjunctive therapy.

Key Points

- Electrical stimulation (e-stim) has been shown to improve wound healing.
- Best practice guidelines and clinical practice guidelines support the use of e-stim as an adjunctive therapy.
- Choosing the appropriate patient for e-stim treatments is crucial.
- Individuals living the community can be trained to apply e-stim safely and effectively.
- Using a self-management approach to deliver advanced therapy empowered patients and their care partners and produced valuable improvements in quality of life.
- Keep e-stim treatment protocols simple and patient-centred.
- Successful implementation of advanced therapies requires management support and dedicated and consistent staff.
- Allot two to four hours per week to implement the program and provide support.

VIRTUAL WOUND CARE: LESSONS COVID-19 HAS TAUGHT

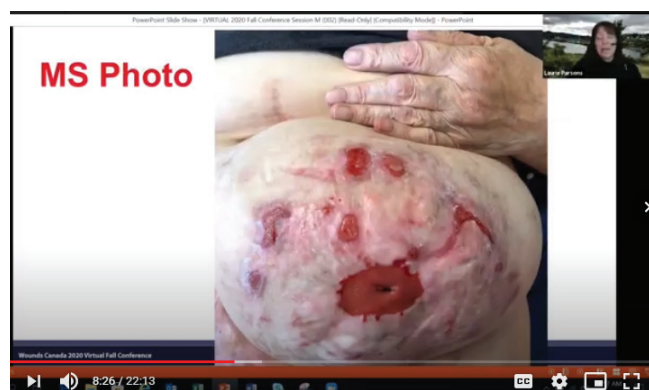
Presenters: Laurie Parsons, MD FRCPC IMWCC;

Kelly Sair, MCISC-WH BScPT

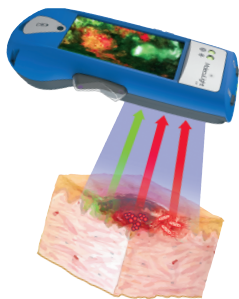
Summary: Eliot To, DCh MCISC (Wound Healing) HBSc

COVID-19 has forced us to live differently. This includes the way we practise medicine, including wound care. The pandemic seemingly struck overnight, and practitioners like Laurie Parsons, Kelly Sair and their respective wound care teams had to adapt quickly to continue to care for their patients. As Parsons said during the presentation, we "cannot put care on hold." Both presenters and their teams had to find solutions to provide care that was patient-centred, safe, effective and comparable to in-clinic settings, despite the pandemic and physical restrictions.

Parsons and Sair presented several cases in which they had made adjustments to continue to provide care virtually. In one case, Parsons coached a patient's family physician to perform a biopsy. In another, she was able to receive wound photos and access blood work online without seeing the patient physically. Sair shared the case of a phone consult (without photos) through which they were able to diagnose a serious diabetic foot infection. Subsequently they instructed the patient to go to the emergency department. Because of the consultation, the patient was able to avoid a potential amputation. Last, Sair presented a case where the patient had a pressure injury. The wound was deemed non-healing, as wound care resources were pulled during the early COVID response. They



New Dimensions in Wound Diagnosis and Management



Diagnosis:

Bacterial fluorescence, a unique and novel method of determining, in real time, bacterial bioburden and activity of bacterial species.^{1,2,3,4}

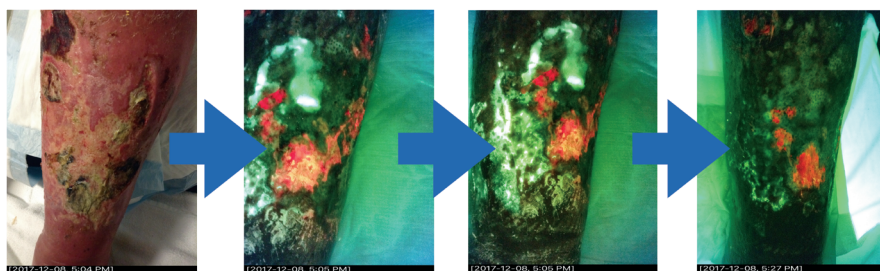
The MolecuLight i:X†

is an innovative, hand-held device which allows clinicians diagnosing and treating skin wounds to visualize fluorescence in wounds.

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ANTIMICROBIAL SKIN & WOUND CLEANSER AND GEL



Fluorescence Images



Standard Image

Baseline
Fluorescent Image

Post Saline
Cleanse

Post Modified Sodium
Hypochlorite Cleanse
(Anasept® Antimicrobial
Skin & Wound Cleanser)

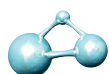
Management:

The use of Anasept® Antimicrobial Skin & Wound Cleanser in the reduction of wound bioburden and elimination of certain bacterial species is confirmed by bacterial fluorescence.



Excerpted from
"Shifting Focus: Implications of Periwound Bacterial Load on Wound Hygiene"

By Rosemary Hill BSN CWOCN WCC (C) and Joshua Douglas MD, FRCPC, ABIM
Infectious Disease and Critical Care Internal Medicine, Vancouver Coastal Health



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¹ DaCosta RS et al. Point-of-Care Auto-Fluorescence Imaging for Real-Time Sampling and Treatment Guidance of Bioburden in Chronic Wounds: First-in-Human Results, PLoS ONE, 2015.

² Ottolino-Perry et al. Improved detection of wound bacteria using autofluorescence image-guided wound sampling in diabetic foot ulcers. International Wound Journal, 2017

³ Rennie MY et al. Point-of-care fluorescence imaging positively predicts the presence of pathogenic bacteria in wounds at loads $\geq 10^4$ CFU/g: a clinical study. J Wound Care (submitted).

⁴ Hill-Douglas et al. Shifting focus: implications of periwound bacterial load on wound hygiene. Infectious Disease and Critical Care Internal Medicine, Vancouver Coastal Health.

were able to find an electrical stimulation (e-stim) machine in the facility. She and her team educated the nurse practitioner involved with this patient on how to use e-stim for the wound. As a result, the wound improved greatly over six weeks, and the patient was eventually discharged to a multidisciplinary team in the community.

In these unprecedented times, practitioners have had to embrace and adopt new tools and strategies to continue to deliver wound care. The use of technology to communicate with patients and colleagues and to provide virtual education for patients and colleagues are crucial in the midst of the COVID-19 pandemic. Other solutions Parsons suggested included development of an email account to receive photos, staff orientation for home visits, and the use of web-based patient-information databases for pertinent information like blood work results.

Key Points

- Health-care professionals cannot put care for the patients on hold.
- These are short-term solutions for an emergent situation.
- These strategies are not sustainable without a proper budgeting model.
- Patients like virtual care—and it is here to stay.
- Patients with significant comorbidities need face-to-face monitoring.
- Virtual care is a new skill for patients and practitioners alike.

WOUND INFECTION

Presenters: Ranjani Somayaji, MPH BScPT MD FRCPC; John Hwang, MD FRCSC

Summary: Eliot To, DCh MCISc (Wound Healing) HBSc

The objective of this presentation was to identify current strategies to prevent, diagnose and treat wound-related infections, and to discuss the importance of antibiotics stewardship in wound care. Ranjani Somayaji reinforced the importance of diagnosing wound-related infections systematically—by anatomy (superficial to deep), syndrome (“umbrella

of symptoms”) or etiology (pathogens). She also highlighted three helpful guidelines regarding diabetic foot infections: International Working Group for the Diabetic Foot (IWGDF) 2019, Diabetes Canada guidelines and Infectious Disease Society of America (IDSA) guidelines.

She highlighted important aspects of the IWGDF 2019 guidelines with regard to the diagnosis of diabetic foot infections:

- The diagnosis of diabetic foot infection is largely a clinical diagnosis, not based on swabs, cultures or specific tests.
- Practitioners should assess the severity of infections with tools such as the IDSA or IWGDF classification schemes.
- If the diagnosis of diabetic foot infection is not obvious, serum biomarkers such as ESR, CRP and procalcitonin may be helpful adjunctive measures.
- Electronic measurement of foot temperature and quantitative microbial analysis have been demonstrated to be useful in definitively diagnosing diabetic foot infections.

She continued to reference the IWGDF 2019 guidelines regarding the management of diabetic foot infections. Some highlights include:

- Consider hospitalization for patients with severe foot infections and patients with complex medical histories with a moderate foot infection.
- Use empiric, evidenced-supported antibiotics for the treatment of diabetic foot infections.
- Administer parenteral antibiotics for patients with severe foot infections, and switch to oral agents if the patient is clinically improving and has no contraindications to the appropriate chosen agent.



She then talked about antibiotic selection, reminding attendees to consider factors such as antibiotic susceptibility, clinical severity of infection, efficacy based on research studies, risk of adverse events and cost. Given the current realities of the COVID-19 pandemic, she urged attendees to consider challenges when using virtual care to manage patients with diabetic foot infections. Practitioners must consider the antibiotic strategies used, the best way to follow up with patients, consider risk balance and, ultimately, take a cautious approach.

She concluded by stressing the importance of infection prevention and control protocols and antibiotic stewardship. Infection prevention and control strategies include hand hygiene, sanitation, sterilization and outbreak management. Antibiotic stewardship is, in her words, “using the right drug, at the right time, for the right diagnosis, for the right duration, for the right patient.”

Key Points

- Wound infections are common and can be a challenge to diagnose and manage.
- Alternative strategies will be imperative to implement and evaluate in the current era.
- Infection prevention and antimicrobial stewardship measures are important aspects of health-care programs in wound healing.
- Future research is key to understanding the what, how and why of wound infection.

LOWER LEG ULCER CASES: ARTERIAL, MIXED AND VENOUS LEG/FOOT ULCERS/LYMPHEDEMA AND LIPEDEMA/ POPULATIONS AT RISK

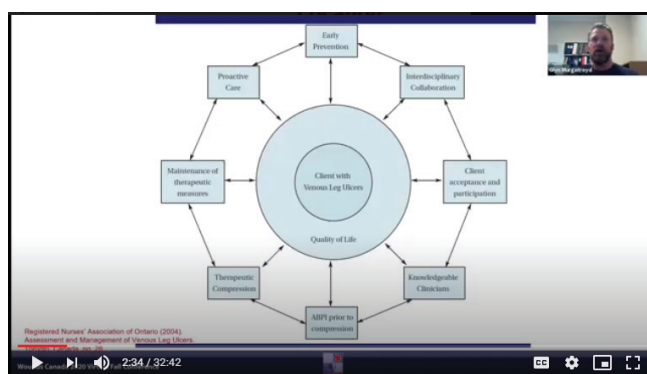
Presenters: Ahmed Kayssi, MD MSc MPH FRCSC;

Glyn Murgatroyd, BScOT BPEI; Ian Soles, RMT LMT(Vodder);

Heather Watt, BScOT CLT

Summary: Eliot To, DCh MCISc (Wound Healing) HBSc

The objective of this session was to describe current and emerging practices for the prevention, assessment and management of venous leg ulcers, arterial



ulcers, mixed arterial/venous ulcers, lymphedema and lipedema, as well as self-management strategies for patients with lymphedema and lipedema.

Glyn Murgatroyd began by outlining the pathogenesis of venous leg ulcers (VLUs). These include venous reflux due to valve dysfunction, obstruction and/or calf-muscle-pump failure. Venous return is dependent upon proper heart function, respiration (pressure changes within thorax), calf-muscle-pump action and movement of the ankle joint (i.e. the foot pump). He then outlined common signs of chronic venous insufficiency. These include “spider veins,” hemosiderin staining, stasis dermatitis and atrophy blanche. It is imperative that practitioners recognize these clinical signs, as chronic venous insufficiency predisposes patients to VLUs. The keys to effective treatment include proper patient education and early intervention, complete vascular assessment, a holistic management plan and compression therapy.

Ahmed Kayssi defined *arterial ulcers* and described their characteristics. He presented a brief review of the blood flow from the aorta to the lower extremities and emphasized the importance of understanding anatomy and blood flow. Proper diagnosis of arterial insufficiency should be made via a history and physical examination and palpation of pulses (femoral, popliteal, dorsalis pedis and/or posterior tibial). Other helpful tests include pallor on elevation/rubor on dependency, ankle-brachial index and Duplex ultrasound. The goals of treatment for patients with arterial ulcers are to preserve viability, preserve life, improve function and prevent deterioration. Angioplasty and bypass surgeries are two procedures that may help to restore perfusion.

Ian Soles presented an overview of the lymphatic system and outlined the staging system for lymphedema. He also discussed factors that may affect lymphatic flow as well as common signs and symptoms. Lipedema can often be misdiagnosed as lymphedema. Patients with lipedema typically present with lower bodies that are disproportionate to their upper bodies. Patients may also present with mixed lipo-lymphedema.

Heather Watt then presented the goals of treatment for patients with lymphedema, including reduction and maintenance of edema, improved skin health, reduced risk for infection, improved quality of life and self-management. She talked about the importance of establishing a three-phase treatment plan for managing lymphedema. In phase 1, the focus should be compression bandages, skin care, manual lymphatic drainage, patient education and exercise. Phase 2 is the transition phase, where patients transition from compression bandages to garments. In phase 3, the goal is to promote self-management strategies as well as maintenance care. She stressed that any condition causing edema can lead to lymphedema.

Finally, Soles focused on the future of lymphedema and lipedema, stating that there is promising research on surgical interventions, diagnostic tests, genetic testing and drug trials.

Key Points

- Proper education, early intervention, complete vascular assessment and a holistic treatment plan (including compression, when appropriate) are all keys to the management of venous leg ulcers.
- Arterial ulcers are a sign of chronic limb-threatening ischemia (CLTI).
- Patients with arterial ulcers should be seen by a vascular specialist as soon as possible.
- Management of gangrene is variable and can be done at time of revascularization or later.
- Management of lymphedema and lipedema requires the involvement of qualified lymphatic therapist who meets the Canadian Lymphedema Framework requirements.

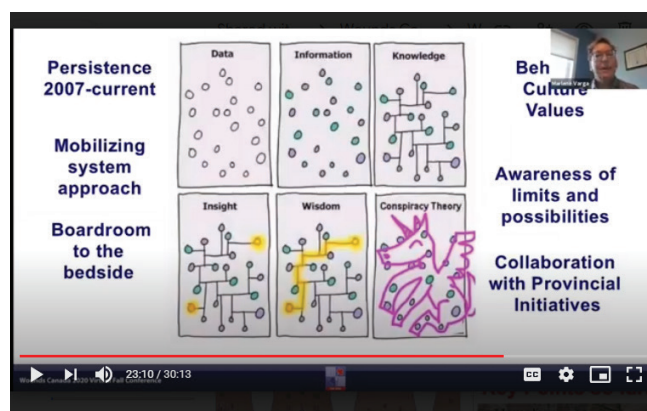
FACILITATING THE IMPLEMENTATION OF BEST PRACTICE IN ALBERTA: PRESSURE INJURY PREVENTION

Presenters: Charlene Brosinsky, BSN RN; Chester Ho, MD; Marlene Varga, MSc BScN RN

Summary: Eliot To, DCh MCISc (Wound Healing) HBSc

This session was designed to help attendees understand the current status of pressure injury prevention (PIP) in Alberta, recognize potential barriers and strategies related to PIP and discuss future opportunities to standardize programming and improve outcomes.

Charlene Brosinsky began by outlining the history of the Alberta Health Services (AHS) Pressure Injury Prevention Committee, established in 2014. She mentioned some of the achievements of the committee since its inception, including standardizing screening tools and processes, developing educational resources and implementing subspecialty collaboration. In 2017, the committee developed a point prevalence audit tool and pilot to evaluate the prevalence of pressure injuries. In 2019–2020, a prevalence study was conducted in collaboration with the Calgary zone's safe clinical practice program (SCPP). Data collected included the following: whether risk assessments were completed, number of pressure injuries, whether pressure injuries were hospital-acquired or present on admission and whether pressure injur-



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ies were related to medical devices. A staggering one in six patients had hospital-acquired pressure injuries. This provided opportunities for improvement in the areas of daily skin assessments, mattress selection, mobility plans, moisture management, nutritional interventions, patient and family education, and risk assessments.

Marlene Varga spoke about the Covenant Health Pressure Injury Prevention Program. She briefly outlined the history and the timeline of the program, including executive sponsorship, hiring of a clinical nurse specialist, and developing, piloting and implementing the program. Key components of the program included establishing policies, standardizing education and prevention tools and protocols, identifying champions and PIP team members, recruiting multidisciplinary teams and leadership, audits and feedback, and developing education platforms, toolkits and learning modules. She emphasized the importance of identifying barriers and facilitators when implementing a best-practice program like this, and of creating a multidisciplinary team.

Chester Ho concluded by outlining future opportunities for pressure injury prevention in Alberta. He talked about standardizing the measurement of prevalence and incidence of pressure injuries provincially through mandatory reporting and provincial electronic medical records. He stressed that collaboration among different professions and organizations is important, as is developing an approach from senior leadership all the way to the bedside (i.e. the patient).

Key Points

- There is a need for a standardized method to measure prevalence and incidence of pressure injury provincially (and nationally).
- To implement change, we must correctly identify barriers and facilitators.
- Implementation of change requires persistence.
- Clinicians must develop a “boardroom to bedside” approach when implementing best practices.

WOUND SLEUTH: DERMATOLOGICAL CONDITIONS

Presenters: Laurie Parsons, MD FRCPC IMWCC;

Danya Traboulsi, MD FRCPC

Summary: Heather Ibbetson, BN BA

Laurie Parsons and Danya Traboulsi discussed the importance of being a wound sleuth to understand and ensure proper treatment.

Traboulsi presented a case study of a 23-year-old female with type 1 diabetes and painful ulcerated plaques, necrobiosis lipoidica, on her left shin. These plaques have an unknown cause and are more commonly seen in women 30 to 40 years old. Venous hypertension may also have played a role. Ulceration is typically secondary to minor trauma or the trans-epidermal elimination of collagen. The plaques were not related to the patient’s glycemic control.

A biopsy was taken, and its findings resulted in the differential diagnoses of diabetic dermopathy, lipodermatosclerosis, panniculitis, morphea and extragenital lichen sclerosis. No clinical data supported a specific type of treatment. The first line of treatment was corticosteroids. Patients with necrobiosis lipoidica have a higher rate of diabetes-related complications, including peripheral neuropathy, retinopathy and limited joint mobility. Some 0.3% of patients with diabetes have necrobiosis lipoidica, and 15 to 65% of those diagnosed with necrobiosis lipoidica have diabetes.

Parsons then discussed pyoderma gangrenosum, a rare etiology of chronic wound. Some 50% of these wounds are idiopathic, and 50% have an underlying disease association. These wounds can have a differ-



ential diagnosis of infection (red, inflamed, warm), vasculitis and chemical dermatitis. There are five clinical presentations: classic, pustular, bullous, peristomal, pyostomatitis vegetans/pyoderma vegetans.

Clinicians should consider disease associations, such as idiopathic, autoimmune, inflammatory bowel disease and malignancy. In its inflammatory phase, debridement can lead to pathergy and worsen the process. Inflammation must be controlled. Immunosuppressive medications are often required; however, infection should first be excluded as an underlying cause, because immunosuppressants can mask and worsen infection. Biopsies can help rule out other causes.

Parsons also spoke about hidradenitis suppurativa. Again, it is important to treat inflammation early to prevent scarring, as well as control pain and odour. Early treatment can also give hope and promote lifestyle changes. Finally, she noted how crucial it is to have an experienced team to treat these conditions.

Key Points

- An experienced team is best when treating these disease processes.
- Rule out infection before initiating treatments like immunosuppressives.
- Biopsy can be used as an effective diagnostic tool in these circumstances.

ACUTE TRAUMATIC AND SURGICAL WOUNDS

Presenters: Lindsay Burnett, MN BScN RN; Maria Celis, MD

CCFP(COE) FCFP CWSP; John Hwang, MD FRCSC

Summary: Heather Ibbetson, BN BA

Lindsay Burnett first discussed burn injury management. Total body surface area (TBSA) is a key in the classification of burn wounds. Burns can be classified by wound depth, noting whether the burn is superficial, partial-thickness or full-thickness. These categories roughly correlate to first-, second- and third-degree burns. Full-thickness burns have no perfusion, no sensation and require surgery. Partial-thickness burns are often initially described as indeterminate, as they can be either superficial or

deep. Superficial burns are not included in TBSA calculations and are pink, painful and perfused.

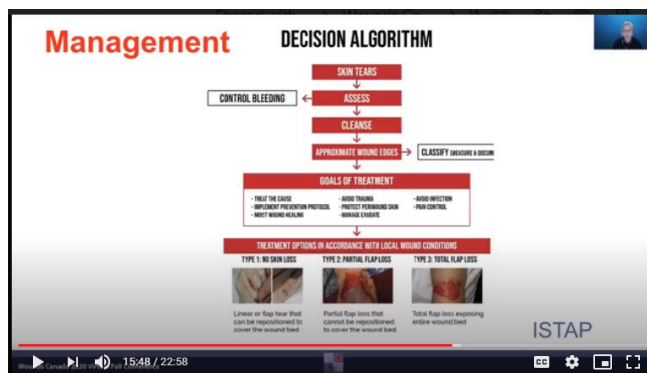
Burns that do not heal within 21 days will do better with surgical intervention to avoid scarring. Surgery can be done for debridement and split-thickness skin grafting, dermal regeneration templates, allografts, amputation, flaps and skin substitutes. Burn management should focus on preventing the wound from becoming more severe, removing necrotic tissue, minimizing infection, encouraging healing and decreasing the incidence of scars.

Maria Celis then focused on skin tears. The skin flap is a portion of skin unintentionally separated due to shear, friction or blunt force. There are three ISTAP classifications for skin tears. Type 1 involves no skin loss. Type 2 has a partial skin flap that cannot be repositioned to cover the wound. Type 3 has a total loss of the skin flap.

She presented a case study of an 86-year-old woman. The patient had several risk factors, including chronic disease, polypharmacy, skin fragility, impaired mobility, ADL dependence and a history of skin tears. The treatment aimed to stop bleeding, cleanse the wound and approximate the edges. The goals were to manage exudate and protect the periwound area.

Dressing selection should be based on the type of skin tear and amount of exudate. The ISTAP product selector is a good resource when deciding on a dressing. Finally, she highlighted that prevention and risk reduction are essential. It is important to determine the risk, use emollients, educate health-care professionals and patients and conduct regular skin assessments.

John Hwang spoke about "when surgical wounds



go wrong." He said clinicians need to complete a thorough patient history and wound assessment. Further, they should be aware of systemic factors, such as comorbidities, age and lifestyle. Patient priorities should also be taken into account. He then presented the case studies of five surgical wounds. Each patient was carefully assessed before the decision was made for surgical intervention.

Key Points

- It is important to use TBSA when classifying burns.
- Prevention and risk reduction are important for reducing skin tears.
- Careful patient history and thorough assessment are essential.
- Patient priorities must be discussed.

DIABETIC FOOT ULCER (DFU) CASES: ARTERIAL, MIXED AND VENOUS LEG/FOOT ULCERS/LYPHEDEMA AND LIPEDEMA/POPULATIONS AT RISK

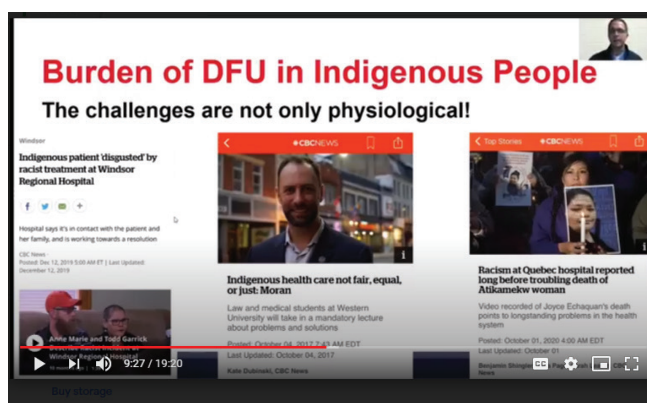
Presenters: Karim Manji, DPM, FACFAS;

John Rahman, Certified Orthotist; Ahmed Kayssi, MD MSc MPH

FRCS

Summary: Heather Ibbetson, BN BA

Karim Manji discussed low-, moderate-, high- and urgent-risk diabetic foot ulcer cases. Low-risk cases have no signs of deformity, peripheral vascular disease (PVD), neuropathy or skin and nail changes. The patients may also have access to good footwear. These cases can be managed through mediating risk factors, patient education and surveillance. Moderate-risk cases involve structural changes, pre-ulcerative lesions such as a callus, and a burning or tingling sensation. Risk factors should be managed, education and surveillance provided, and follow-up provided every three to six months. High-risk cases involve the formation of an ulcer, previous amputations, non-palpable pulses, loss of protective sensation and claudication. The wound should be healed as soon as possible, and steps taken to manage moisture, infection, pressure, edema and perfusion. Urgent-risk cases involve an infected ulcer or wet gangrene. These cases may also have acute



swelling and absent pulses. They should be referred to the emergency department, and to the "toe and flow" team (if available) to assess and manage infection and ischemia. To overcome the barriers to effective management, he highlighted the importance of practitioner education, a multidisciplinary approach and strong lines of communication across the spectrum.

John Rahman highlighted the significance of physiological factors such as PVD in the formation of ulcers. Properly fitting footwear is key in ensuring that diseases such as PVD and neuropathy do not cause or worsen foot ulcers. Offloading devices such as removable cast walkers have been shown to effectively improve healing times. Costs and coverage can vary for offloading devices, with removable cast walkers being a cost-effective option. Appropriate footwear and offloading are essential for prevention and can diminish pressure areas on the high-risk foot.

Ahmed Kayssi examined the increased risk for diabetic foot ulcers experienced by Indigenous populations in Canada. Indigenous populations are more likely to be marginalized and unsupported and to have a greater burden of chronic diseases. They are also less likely to have access to comprehensive health care. Indigenous populations face historical, social and political discrimination that has led to geographic isolation, substandard infrastructure and inadequate educational opportunities. The physiological risk factors and systemic discrimination result in a seven-fold increased risk of developing diabetes. Diabetic foot ulcers occur at a younger age and more often result in leg amputations in Indigenous popu-

lations. To address these inequalities, health-care teams and policy makers need to address geographical isolation, historical discrimination and mistrust, and lack of medical access in Indigenous communities. To create a diabetic foot ulcer prevention program in Indigenous communities, people at risk must be identified, screened and evaluated using validated risk scoring systems. Health-care teams must work with Indigenous communities to build capacity and address the challenges to preventative care.

Key Points

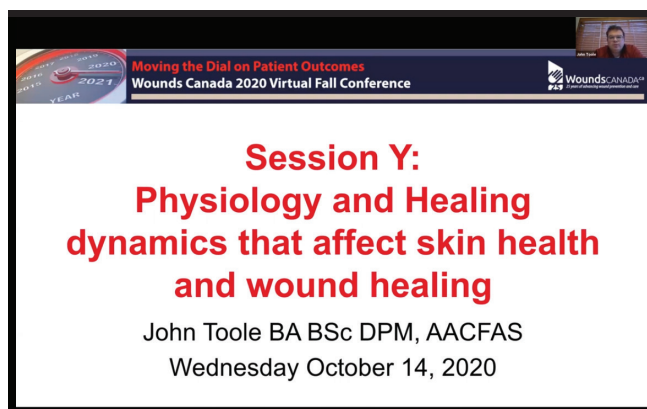
- It is important to develop and use a diabetic foot ulcer assessment and management process across the continuum of care.
- Footwear is essential to the prevention and management of diabetic foot ulcers.
- Physiological and social factors complicate the treatment of diabetic foot ulcers in Indigenous populations.
- Prevention of DFUs in Indigenous populations involves preventative care and capacity building.

PHYSIOLOGY AND HEALING DYNAMICS THAT AFFECT SKIN HEALTH AND WOUND HEALING

Presenter: John Toole, BA BSc DPM AACFAS

Summary: Heather Ibbetson, BN BA

In this presentation on the physiological dynamics that affect wound healing, John Toole noted the significance of phases of wound healing. Hemostasis occurs within the first 24 to 48 hours and involves vasoconstriction, the clotting cascade, platelets and degranulation. The second phase revolves around inflammation and can last one to seven days. During this phase, vasodilation, leukocyte migration, and neutrophils and macrophages act to remove debris. There is also lymphocytic activity at the site. The third phase involves proliferation and can last from four to 24 days. In this constructive phase, tissue continuity is re-established. Fibroplasia, collagen synthesis, angiogenesis and epithelialization occur. In the fourth and final phase, maturation of the wound site occurs and can last for one to two years.



Collagen is matured, remodeled and strengthened.

He highlighted several key factors that affect the healing process. First, comorbidities such as diabetes, renal disease, peripheral vascular disease, obesity and smoking can have a significant impact on the healing process. Hypoxia and vascularity are also factors that play a substantial role. Nutrition must be considered, especially the patient's consumption of protein, and vitamins A, C and D. He concluded by stressing the importance of offloading and considering the patient's social history in treatment.

Key Points

- Health-care workers should recall the stages of wound healing when treating patients.
- Consider comorbidities such as diabetes, renal disease and PVD, and their impact on wound healing.
- Lifestyle is an important aspect of the wound healing process. Factors such as smoking, obesity and nutrition impact the ability of the body to heal.

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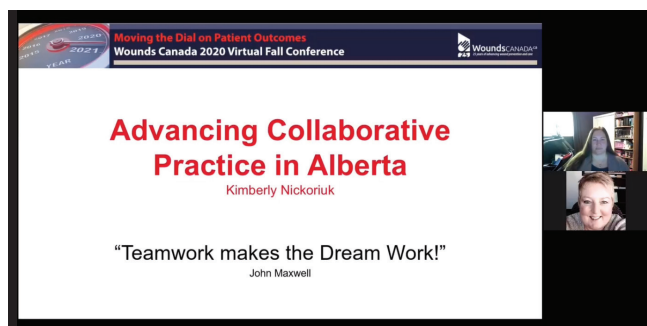
ADVANCING COLLABORATIVE PRACTICE IN ALBERTA

Presenter: Kimberly Nickoriuk, BN RN

Summary: Heather Ibbetson, BN BA

Kimberly Nickoriuk discussed wound care plans and their many components. Some of these include pathophysiology, governance and policies, skin and wound products, clinical practice resources and the interdisciplinary team. *Evidence-based* care is often strict, informal and inflexible in its use of guidelines. *Evidence-informed* care plans are adaptable to changes in key factors. *Person-centred* care involves the patient as a participant in the care-planning process.

She focused on a survey completed in Alberta that found five different zones with five different systems. These systems were disconnected from one another and had no core education or minimum standards, no clearly defined interdisciplinary roles, and multiple streams and core documents. To address these disconnects, the provincial wound and skin care product formulary was streamlined, a provincial Skin and Wound Committee was established and connections were made with strategic clinical networks. Clinical care topics were also added to the wound care and prevention CCT.



She highlighted how collecting data from paper-based forums is time-consuming and inaccurate. Instead, a website, MyAHS Connect, allows patients to connect with care teams. Through this site, care can be provided in collaboration "with" patients instead of "for" patients.

Key Points

- Evidence-informed care plans are adaptable to factors that can change.
- Person-centred care is essential, and the patient should be involved in establishing goals, defining roles, and in building meaningful relationships with the team members.
- In Alberta, a survey found five different zones with five different systems—a situation that was remedied through province-wide initiatives. 🇨🇦

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Subject A:



Week 1



Week 8



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1. Cutting KF. Honey and contemporary wound care: An overview. *Ostomy Wound Manage.* 2007;53(11):49-54. 2. Lusby PE, Coombes A, Wilkinson JM. Honey. A potent agent for wound healing? *J Wound Ostomy Continence Nurs.* 2002;29(6):295-300. 3. In-house data.

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