

# Wounds Canada Fall Conference: Exploring Integrated Wound Management

November 8–11, 2018, London Convention Centre, London, ON



## Session Summaries

### ADVANCED TOPICS: PILONIDAL SINUS (PS), HIDRADENITIS SUPPURATIVA (HS) AND EPIDERMOLYSIS BULLOSA (EB)

#### Session 25

*Presenters: Connie Harris, John Hwang, Afsaneh Alavi, Michelle Lee*

This session outlined how PS, HS and EB are being treated today, how treatment can be optimized, and how proper wound care is integral in the resolution of these skin lesions.

**John Hwang** discussed a surgical approach to PS and asked attendees to consider the question: "Why do these patients not heal?" Those affected by PS are often young and relatively healthy and *should* heal, but do not. He emphasized that the priority is preventing a primary lesion as well as preventing recurring disease.

#### Practice pearls for PS:

- Laser ablation and endoscopic pilonidal sinus treatment (EPSiT) can be used in first presentations of PS disease and in simple cases.
- Surgical flap repairs provide a tensionless repair of the PS.

- Sitz baths are great for comfort but are not effective for wound hygiene.
- Perineal wipes are most effective for proper hygiene.
- Involving the patient in proper hygiene and wound care practices is key to improving PS healing.

**Connie Harris** provided a community nurse perspective and re-emphasized Dr. Hwang's remark that the patient must be involved in their wound care.

#### Practice pearl for PS:

- The modified jackknife position provides better wound exposure and resolution of the issue of clenching during wound care.

Dermatologist **Afsaneh Alavi** discussed the use of laser hair removal as an effective means of preventing irritation and inflammation due to body hair. She also said that 0.5% chlorhexidine can be used for decontamination of PS, including those containing pseudomonas bacteria. Among wound dressing options, it was found that the best are dry, simple, clean and changed frequently.

For effective management of HS, the first step is early diagnosis. She explained that, unfortunately,

those affected are often young females who average 17 visits with physicians before getting an HS diagnosis. She discussed the psychosocial implications of HS on patients, as they experience painful, draining boils that can severely impact their quality of life. As a result, about 40% of HS patients suffer from depression.

#### **Practice pearls for HS:**

- Psychological counselling is important for patients with HS.
- Better results are achieved if the patient is optimized medically before undergoing surgical treatment.

Due to the rarity of EB, there is no protocol for treating EB patients, and practitioners are usually intimidated by the disease. The most successful treatment of EB begins with genetic testing to identify the subtype causing EB, which can then lead to a more individualized treatment plan. As **Michelle Lee** explained, EB causes constant pain and physical limitations, so psychosocial care is essential to ensure EB patients can live a relatively normal and happy life.

#### **Practice pearl for EB:**

- During wound care in EB patients, consider using silicone medical adhesive removers (SMARs) to prevent skin stripping.

## **VENOUS LEG**

### **Session 26**

*Presenters: Barbie Murray, David Keast, Adam Power*

This session outlined venous leg ulcer risk assessment tools, leg edema and its management, and indications for and effectiveness of surgical interventions for venous disease.

**Barbie Murray** began by providing an overview of three types of assessment tools and two new validated risk assessment tools used for patients with venous leg ulcers.

#### **Validated Risk Assessment Tools for VLU**

Using a validated assessment tool to identify a

patient's risk of not healing or of having a recurring ulcer can help better determine realistic care goals and encourage earlier decision making about specific interventions that can address barriers to healing. There are two new validated risk assessment tools for venous leg ulcers, the VLUR and the RECUR.

The VLUR measures the risk that a venous leg ulcer (VLU) will not heal in a 24-week period by categorizing this risk as low, moderate or high. This involves using an online app to calculate a risk score. This tool considers the patient's age, how long the ulcer has been present, whether the patient lives alone, calf and ankle circumference (cm), slough on the wound, wound size (cm<sup>2</sup>) and type of compression being used. Questions about these factors are asked at an initial assessment and two weeks later in a follow-up appointment. The tool gives a score related to risk, with low indicating the wound is likely to close (90%), moderate indicating a 20 to 25% chance of closure, and high indicating an 80% chance the wound will not close (at which point clinicians should consider adjunctive therapies and referral to a specialist). This tool also enables good follow-up, as it can be used at regular intervals and subsequent scores compared with the initial, baseline score.

The RECUR is a predictive tool that measures the risk that a VLU will recur within 12 months by categorizing this risk as low, moderate or high. Using this tool, clinicians consider the patient's history of leg ulcers, the type of compression being used, and whether the patient is living





alone, is moving around for at least three hours per day, is elevating their legs for at least 30 minutes per day and is using compression at least five days per week. Clinicians enter the patients' answers to these questions into an app that calculates a score related to risk, with low indicating a 10% risk of re-ulceration, moderate indicating a 30% risk of re-ulceration, and high indicating a 75% risk of reformation (the latter indicating the need for specialist referral).

#### Practice pearl:

- Choose validated risk assessment tools, such as the VLUR or RECUR, to aid in clinical decision making.

### Understanding Leg Edema and Its Management

**David Keast** explained that edema is an excess of fluid in the extracellular matrix, seen in the extremities. There are two types of edema: acute, such as that presenting with a sprained ankle, and chronic, which lasts more than three months, often as the result of systemic factors.

A failure of any component of the body's venous system (valvular insufficiency, obstruction or calf-muscle pump failure) can result in venous hypertension.

The lymphatic system is an open system that transports fluids and supports immune function. The circulatory system is a closed system. These two systems work closely together, so if there is an issue in either system, both can be affected.

Failure of the lymphatic system can be primary or secondary, the latter caused by trauma, malignant disease, venous disease, infection or inflammation.

### Managing Edema

Basic principles of management for leg edema include compression therapy, meticulous skin care, patient education, manual lymphatic drainage for lymphedema, and exercise to stimulate the calf-muscle pump.

### Compression Basics

A Cochrane review found that individuals treated with compression bandages experience better healing rates than those who do not use compression, and that multi-layer compression systems are more effective than single-layer systems. Compression stockings work because the compartments act like a closed system; the compression stimulates calf muscle activity and increases movement of blood flow and lymphatics, enhances muscle activity and increases hydrostatic pressure by helping movement into the capillary bed.

## DIABETIC FOOT

### Sessions 24 and 32

*Presenters: Charles de Mestral, Zaina Albalawi, Amanda Mayo, Ann-Marie McLaren, Jeremy Caul, Ahmed Kayssi, Yoko Schreiber, Bill Thompson, Sébastien Hains, Kyle Goettl*

These sessions discussed the burden of diabetic foot ulcers, addressing pins-and-needles foot sensations, tips and tricks for offloading, managing diabetic foot in Indigenous populations, treating diabetic foot infections, advances in diabetic foot management and rehabilitation after amputation.

### The Burden of Diabetic Foot Ulcers (DFUs)

**Charles de Mestral** discussed the importance of understanding the phases of the burden of a DFU. Many individuals with diabetes require treatment for foot ulcers, which can necessitate amputation, post-amputation treatment and end-of-life



care, each of which has a detrimental effect on patient quality of life. In addition, there are large financial costs associated with care. For example, amputation costs approximately \$600,000 per patient, which translates to about \$547 million dollars nation-wide each year. Using preventative services, it is possible to drastically reduce amputation rates. Annual foot checks are critical, but many patients aren't getting their feet properly checked, especially if their primary care provider does not have the knowledge required to perform the check. It is also critical for interdisciplinary teams to co-ordinate their efforts by communicating effectively and jointly deciding on and carrying out a comprehensive plan of care. Lack of preventative measures in large urban centres where the greatest concentration of specialists is located is seen to an even higher extent in northern Canadian communities, where patients generally do not have access to specialist care.

**Practice pearl:**

- The most successful health-care teams communicate effectively and use joint decision-making while carrying out the plan of care.

## Addressing Pins and Needles

**Zaina Albalawi** emphasized the importance of understanding the spectrum of diabetic peripheral neuropathy implications, identifications and management. The pins-and-needles sensation can be caused by diabetes, alcohol consumption, HIV, certain medication and several other factors, but 46% of the time it is idiopathic. It is not usually the result of neuropathy. Red flags include acute onset, asymmetric pain, motor predominance and progressive symptoms. Nerve fibre damage can be a combination of inflammation, ischemia or metabolic pain. Treatment is difficult because symptoms can occur for months or years, and hard work with the patient often does not create relief. It is critical to differentiate the types of pain and the symptoms to ensure the patient's sensation is not a presentation of a separate phenomenon. Unfortunately, very few medications provide substantial relief for patients.

## Tips and Tricks for Offloading

**Amanda Mayo** and **Ann-Marie McLaren** presented various case studies illustrating different methods of offloading. The **Wounds Canada Offloading Product Plantar Pressures in Diabetes Picker** provides more information about the devices they discussed.

**Practice pearl:**

- Selection of an offloading device depends on where pressure lies; therefore, pressure mapping of the foot can be beneficial for determining where you should be moving the pressure.

## Managing Diabetic Foot in Indigenous Populations

**Jeremy Caul, Ahmed Kayssi** and **Yoko Schreiber** relayed that many patients based in the Sioux Lookout area need to be flown into Thunder Bay to receive care. Unfortunately, this patient demographic sees a lot of "band-aid" care due to the lack of financial resources, education resources and health-care providers. As a result, Indigenous populations have amputation rates seven times higher than those in the rest of Ontario.

**Practice pearl:**

- While providing care, clinicians must take into consideration the patient's spiritual traditions and the social health determinants that are playing a role in care.

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### **Treatment of Infection in the Diabetic Foot: A Case-based Approach**

**Bill Thompson** urged attendees to assess whether there is an infection present before prescribing antibiotics to patients. Characteristics that indicate infection include redness, edema, purulence, sepsis, discoloured granulation tissue, undermining and foul odour.

#### **Practice pearls:**

- Don't forget to conduct a vascular assessment, and to rule out bone involvement.
- The 2012 Infectious Diseases Society of America Clinical Practice Guideline for the Diagnosis and Treatment of Diabetic Foot Infections is a great resource for information on this topic.

### **Advances in Diabetic Foot Management**

**Sébastien Hains** used an extensive case study to illustrate the importance of offloading. The case, which involved a large, multidisciplinary team conducting many complex, experimental interventions over a year and a half, saw barely any improvement. The ulcer was deemed non-healing. Two weeks later, the patient broke a hip and couldn't walk. Now, the ulcer is almost entirely healed. This illustrates that offloading is paramount to ulcer healing.

#### **Practice pearl:**

- The most common reason for delayed healing is inadequate offloading.

**Ahmed Kayssi** discussed why offloading is not always used effectively to care for ulcers. Two main reasons for this are a lack of hospital funding for devices and a greater pull for procedures that are reimbursed by insurance companies. He discussed switching to community-based care as a potential solution for this problem. Another reason is a lack of education among health-care providers in wound care. A fourth barrier is data gathering and sharing. Without consistent numbers to present to policy makers, it is difficult to implement change. Ideally, there would be a wound registry with a data-gathering platform easily accessible to health-care teams and their patients, but this is a long way off. To help, clinicians are encouraged to reach out to their colleagues, and to connect with and participate in the wound care community.

### **Rehabilitation after Amputation**

**Kyle Goettl** discussed the importance of ensuring patients are good candidates for prosthetics before making a referral: consider their readiness, financial stability, current level of independence, ability to perform activities of daily living and care support. Obtaining a prosthetic is hard work and involves several "mini victories" that lead to the bigger goal over a larger span of time. It is important to consider all elements within the large spectrum of available devices, including cost of the device, direct/indirect medication costs, cost of home/environmental modifications and cost of a driving assessment and training (if necessary). It is also critical to consider the patient's cognitive state: Is there someone there to assist if needed?

#### **Practice pearl:**

- Once your patient has a new prosthetic, ensure they are stepping and not hopping. The latter can create new ulcers and discourage healing.

**Amanda Mayo** noted that only 33% of amputation patients will be walking two years post-op. Below-knee amputations are easier to manage with transfers and prosthetics; above-knee amputations are a lot of work. Clinicians should keep in mind that there is a high five-year mortality

rate for patients who have had an amputation. Connecting your patients with support groups is key to ensuring their well-being following an amputation. Remember: Exercise is medicine. If your patients weren't healthy before the amputations, are they going to be healthy after it? This is something to consider before proceeding with any plan of care.

## ADVANCED TOPICS: ACUTE BURN WOUND MANAGEMENT

### Session 33

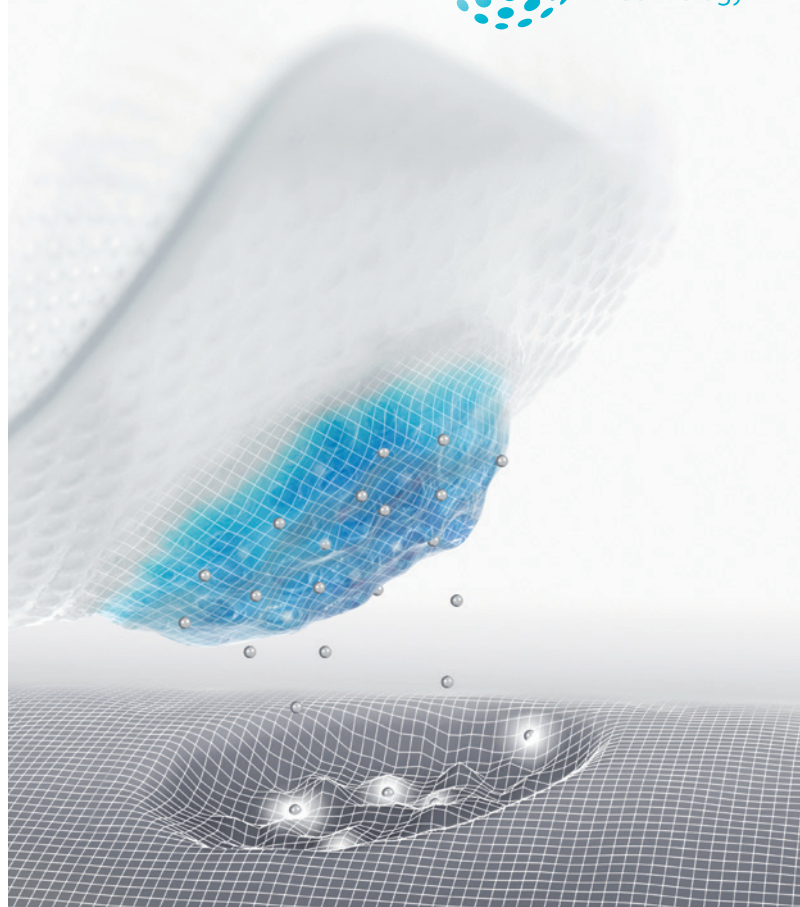
*Presenters: Marc Jeschke, Alan Rogers, Anne Hayward*

This session examined the pathophysiologic response to burn injuries in adults, recent advancements in wound coverage technologies in burn surgery, and social work following traumatic burn injuries.

**Marc Jeschke** began the session by introducing the pathophysiology and the severity of burn injuries. He emphasized that those affected by burns can be any age, and burns can happen anywhere. He explained how wound care is lacking in developing countries and how sharing burn-care knowledge is integral in improving burn care worldwide. He explained that burns have been a neglected injury, and that with 300,000 burn-related deaths globally each year, this area needs more attention and research. An important new issue is the rise in prevalence of antibiotic-resistant pathogens and the resulting increase in sepsis mortality. He stated that topical and systemic antibiotic therapies must be developed to address this. Another issue clinicians need to consider is the erosion of body mass by the increased metabolic needs created by burn wounds.

#### Practice pearls:

- The priorities in clinical management of burns are:
  - Assessing the airway, breathing and circulation
  - Basing treatment on burn size
  - Transfer to burn unit



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- Implementation of the Parkland burn protocol
- Time to IV

**Alan Rogers** outlined the current treatments for burns: debridement, tissue allografting and other grafting methods. He explored some of the dressings that can be used in the treatment of burns and explained how there is no one ideal dressing. He also elaborated on the many benefits of negative pressure wound therapy (NPWT) and how it can result in successful wound healing. He went on to discuss some of the barriers facing clinicians who specialize in the treatment of burns, including lack of leadership in burn research, lack of innovation in the field and how the treatment of burns is seen as being less-glorified work.

#### Practice pearl:

- The treatment of burns must be addressed using a team-based approach to ensure the best patient care.

**Anne Hayward** presented the often-overlooked aspect of patient care: the social and psychological effects of surviving a severe burn. She explained how survivors are often faced with new identities, intimacy issues, family dynamic issues, and the guilt and psychological trauma caused by surviving such a horrific event.

#### Practice pearl:

- The key to long-term successful patient care is a plan that provides patients with the proper social care when they return to the community.

in people with neuromuscular disorders. These diseases impair muscle function due to pathology affecting spinal cord motor cells, peripheral nerves, neuromuscular junctions or muscles. Examples include muscular dystrophies, multiple sclerosis, ALS, myasthenia gravis, Charcot-Marie-Tooth disease (CMT), Friedreich's ataxia and Parkinson's disease. Spinal cord injuries (SCI) are not neuromuscular disorders, but the physiological changes seen in patients are similar, especially if denervation is present, and can include the following symptoms: muscle weakness, numbness, paresthesia and muscle atrophy. Each of these symptoms also puts patients at an increased risk of developing pressure injuries. Neuromuscular disorders negatively impact patient quality of life by increasing fear and/or anxiety, necessitating changes in daily activities and potentially leading to complications such as infection, pain, fatigue and loss of appetite.

Patients with SCIs experience physiological changes and skin denervation, which lead to increased risk of skin breakdown and impaired healing caused by decreased fibroblast activity, abnormal vascular reactions and decreased blood flow. (See article on [page 10](#) for an extensive overview of SCIs.)

## Treatment of Pressure Injuries

Goals of care for patients with pressure injuries should include reducing pressure, friction and shear, maintaining skin health, managing

## PRESSURE INJURIES

### Session 34

*Presenters: Jolene Heil, Morty Eisenberg, Karen Campbell, Ellen Mackay*

This session discussed the impact and management of pressure injuries (PIs) on people living with neuromuscular disorders, recent advancements in microclimate and PIs, and recent advancements in nutrition and PI care.

**Jolene Heil** and **Morty Eisenberg** discussed the impact and management of pressure injuries





incontinence and modifying skin risk factors such as nutrition, mobility and activity level.

Clinicians can provide pressure redistribution using devices that manage tissue load and microclimate. These include specialized mattresses, integrated bed systems and seat cushions or overlays. Low-air-loss mattresses help keep patients' skin dry, but clinicians need to ensure that individuals whose skin is already quite dry are not placed on these surfaces. To minimize friction and shear, clinicians should make use of trapeze bars and transfer and lift sheets. When offloading pressure from patients' feet, heels must often be offloaded separately when a patient is on a low-air-loss mattress. Most important, all surfaces the patient is encountering must be assessed, including wheelchairs, vehicles and commodes or shower chairs. Transfer procedures must be assessed as well.

**Practice pearls:**

- Turn the patient based on patient health, internal and external risk factors, and the surfaces being used. Consider using foam wedges, pillows and tilting wheelchairs for assistance.
- Watch out for wrinkled sheets or clothing, and catheters and tubing, as these can apply pressure to at-risk skin.

Additional considerations when treating patients with neuromuscular disorders are pain management, quality of life (often associated with dressing changes) and the psychological effects of medications.

**Practice pearl:**

- Clinicians need to provide information to the patient and their caregivers, empowering them to take control of their own care, which leads to better adherence to the plan of care.

Local wound care for patients with neuromuscular disorders includes tissue debridement, as necrotic tissue inhibits healing and is a medium for infection. Clinicians can consider autolytic, mechanical, sharp or enzymatic debridement depending on the specifics of the case and their level of expertise. Health-care providers must also consider a clinical diagnosis of infection, as this will affect the plan of care.



Clinicians should use dressings that promote moisture balance in patients who have neuromuscular disorders and are being treated for pressure injuries. Semi-occlusive dressings maintain moisture balance and provide a bacterial barrier to wounds. It is important to look at the peri-wound skin when choosing a dressing: maceration indicates too much moisture and the need for an absorbent dressing. Clinicians should remember not to over-pack pressure wounds, but rather to loosely fill the wound cavity. Finally, clinicians are reminded not to irrigate the wound bed if they can't see it—use wet gauze to gently clean the wound in these cases.

## Microclimate and Pressure Injuries

**Karen Campbell** discussed new developments related to microclimate and pressure injuries. High humidity decreases the stratum corneum's stiffness and plasticizes keratinocytes. Lower humidity results in drier skin, increasing the skin's susceptibility to mechanical damage such as cracks and fissures. We know that drastically increased or decreased skin temperature increases the severity of pressure injuries. Airflow also affects skin temperature, because increased moisture increases heat accumulation. This effect is seen when there are plastic sheets over mattresses or non-breathable bed pads. While microclimates don't directly cause pressure injuries, they indirectly affect their development as one of several factors that can increase risk of development and prevent timely healing.

**Practice pearl:**

- Clinicians should consider using breathable fabrics developed specifically for health care; the more skin adheres to the contact layer, the



greater the extent of deformation and shear and the higher the risk for developing a pressure injury.

As individuals with diabetes age, skin becomes stiffer and doesn't respond as well to pressure. It is good practice to keep skin cool and dry; increased stratum hydration concentration increases the coefficient of friction between skin and the support surface.

### A Note About Obesity

Obese patients store heat longer than leaner ones. These patients are at a potentially higher risk of developing pressure injuries, since producing sweat over long periods of time increases humidity and alkaline pH, increasing risk for fungal infections in skin folds.

### What's New in Nutrition and PI Care?

**Ellen Mackay** noted that malnutrition, or the inadequate intake of energy, protein and nutrients, is linked to pressure injuries, poor wound healing and increased risk of infection. About 45% of patients admitted to hospitals are malnourished. Dehydration, weight loss, low body mass index, decreased food intake, gastrointestinal disorders, depression, pain, undernutrition and inability to self-feed all increase risk of acquiring a pressure injury. As muscle and fat mass decrease, so does protection over bony areas of the body. In a malnourished person, wounds take longer to heal, because the body has less energy to allocate



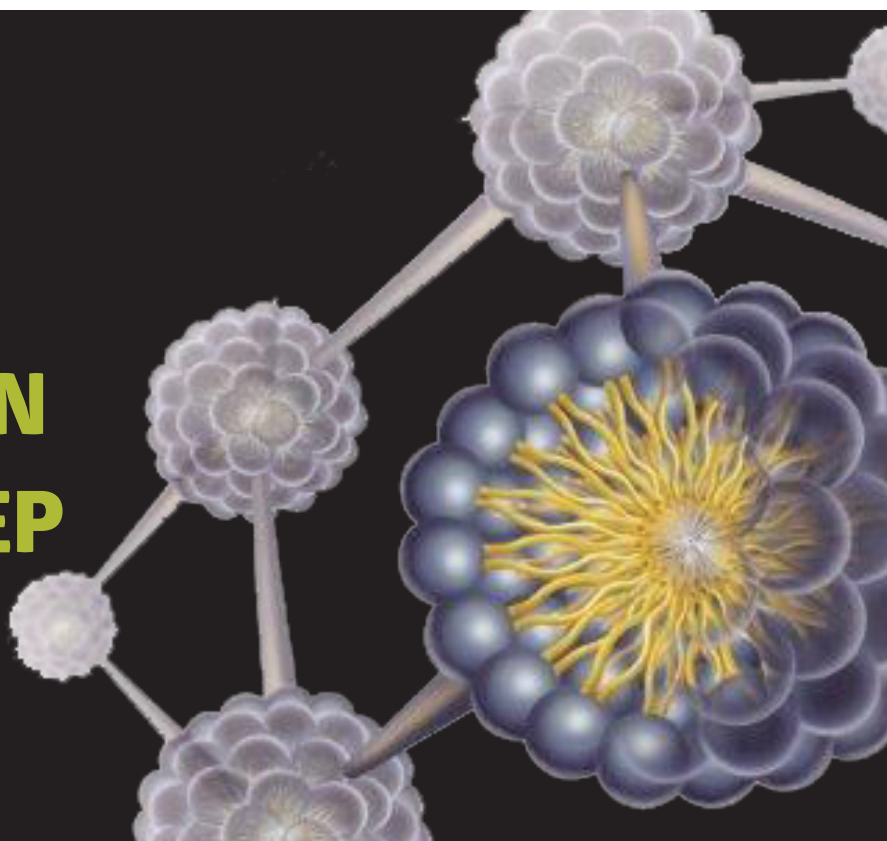
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to the healing process. Nutritional interventions enhance PI healing and can also reduce the direct medical cost of wounds by decreasing dressing material, health-care professional time, medications and “bed days.”

There are many validated nutrition screening tools, including the Canadian Nutrition Screening Tool (CNST), Mini Nutritional Assessment (MNA®), Malnutrition Screening Tool (MST), Malnutrition Universal Screening Tool (MUST), Short Nutritional Assessment Questionnaire (SNAQ), and Nutri-eSCREEN.

In 2014, the National Pressure Ulcer Advisory Panel (NPUAP), European Pressure Ulcer Advisory Panel (EPUAP) and Pan Pacific Pressure Injury Alliance (PPPIA) released a white paper looking at the role of nutrition in pressure injury management. This paper extended guidelines to those deemed at risk for pressure injuries, emphasized the importance of collaborating with a dietitian to develop an individualized nutrition care plan, and noted the role of protein, arginine and micronutrient supplements in stage 3 or 4 PIs, or for individuals with multiple PIs.

The first thing clinicians should look at when dealing with nutrition and wound care is energy: wounds are hungry and require calories and protein to heal.

#### Practice pearl:

- Consider adding lots of cream to coffee, offering favourite foods, increasing snacks and drinks and encouraging multiple helpings at meal times. Patients should be offered food before considering nutritional supplements.

Arginine is an amino acid essential for stress or trauma recovery, including wound healing. Arginine, which can be found in soy, seeds, nuts, beans and chicken skin, promotes production of nitric oxide and collagen and protein synthesis, increases the tensile strength of a wound, and regulates insulin secretion and immune function. Some early work has been done on specialized oral nutritional supplements (ONS) that include protein, arginine, zinc and vitamin C. Results suggest that ONS might accelerate PI healing (based on PUSH scores and wound area), especially for

stage 3 and 4 pressure injuries.

Topical and oral probiotics have been correlated with improved wound healing. These probiotics accelerate granulation tissue and collagen deposition, which can result in a compressed wound repair cascade, more rapid progression of inflammatory events during wound healing and reduced infection risk.

At this time there is no specific dose, strain or duration of probiotics recommended for wound healing. It is generally safe to consider consuming fermented foods, probiotics and prebiotics. A clinical guide to probiotic products is available online at [www.probioticchart.ca](http://www.probioticchart.ca).

## INFECTION

### Session 47

*Presenters: Ranjani Somayaji, Gregory Schultz, Bill Thompson*

This session covered the basics of identifying wound infection, the significance of micro biomes and biofilms in wound care, and infection and antibiotic stewardship.

### Identifying Wound Infection: Now and in the Future

**Ranjani Somayaji** noted that the biggest challenge in wound care is that a lot of patients don't present like a textbook. They generally fall somewhere between a paper cut and a severe necrotic wound, and every plan of care will differ depending on the patient, the wound and the environment. The big players in infection are







bacteria (gram positive, gram negative, anerobic), fungi and viruses. For diagnosis, clinicians should consider the clinical signs and symptoms of infection observed, followed by wound cultures and other diagnostic tests (such as blood work and imaging) as indicated. An accurate diagnosis is important to determine the most appropriate plan of care. Critical criteria for infection include local and systemic signs and symptoms, and subjective and objective findings. Health-care providers can consider using radiology and microbiology for testing CBC, inflammation, imaging modalities, cultures (qualitative and quantitative) and number of bacteria in the wound. Understanding what is there is critical for deciding how to proceed with care.

### **The Significance of Micro Biomes and Biofilms in Wound Care**

**Gregory Shultz** discussed biofilms, a major player in infection, which cause chronic inflammation infection. Biofilms are identified in > 80% of chronic wounds but only 6% of acute wounds. Antibiotics kill only proliferating bacteria so, when biofilm is present, clinicians need to use antimicrobials as well. Biofilms are very difficult to kill, because oxygen diffusion to the centre of a biofilm is limited. This promotes the growth of anerobic bacteria, which in turn promotes synergy between the bacteria and continued growth.

#### **Practice pearls:**

- Extensive debridement is key when caring for a patient with biofilm present.
- Clinicians should consider changing the cycles of antibiotic use every two weeks to target different bacteria.

### **Infection and Antibiotic Stewardship**

**Bill Thompson** discussed the difficulty of using antibiotics properly; clinicians must choose the right antibiotic for the right bug via the correct route in the correct dose for the right amount of time—a lot of variables to consider. To choose the right antibiotic a clinician must take into account the patient and their comorbidities and other medications, and potential bacterial resistance. Basic principles for identifying the bug include epidemiology, susceptibilities, location/origin, inflammation, colonization and comorbidities. There is a lack of research looking into optimal length of time for antibiotics, so follow the culture. While using antibiotics, it is critical to continue with local management and debridement to support the wound environment. Barriers to the effective use of antibiotics include a lack of guidelines for use, autonomy of doctors in care planning, and a lack of feedback for antimicrobial susceptibility.

#### **Practice pearl:**

- Consult an infectious disease specialist for patients with diabetic foot ulcers: with these patients, look back over the past year and consider antibiotic history. For patients with osteomyelitis, consider a longer program of antibiotics.

### **ADVANCED TOPICS: PYRODERMA GANGRENOSUM (PG) AND OTHER VASCULITIC WOUNDS**

### **Session 48**

*Presenters: Afsaneh Alavi, Gary Sibbald*

This session looked at how to treat patients who have PG, and discussed other vasculitic wound types.

PG is difficult to treat. It is not an infection, but rather a neutrophilic disorder resulting in an inflammatory disease. PG has a genetic component and often overlaps with inflammatory bowel disease. PG also has common associations with polyarthritis and hematological disease.

There are four morphologies of PG: ulcerative,

pustular, vegetative/granulomatous and bullous, the latter of which is more common in non-solid neoplasia such as leukemia. PG has pathergy, which means it occurs when minor trauma causes flare-ups in the disease. This often occurs in surgical sites and piercings, where the disease may first be observed.

Diagnosis of PG is key: look for a characteristic grey-coloured border and abnormal and traumatic scarring. A biopsy of active, grey border material is useful for excluding other diagnoses. Keep in mind that pseudoepitheliomatous hyperplasia can mimic PG. The best treatment for PG is administration of immunosuppressants and local wound care. Corticosteroids and biologics can be considered. Clinicians must also keep in mind that PG is extremely painful; social and psychological impacts must be kept in mind during treatment.

## MOISTURE-ASSOCIATED SKIN DAMAGE (MASD)

### Session 49

*Presenters: Kevin Woo, Rosemary Kohr, Lina Martins*

This session discussed assessment and categorization of MASD, recent advances in the prevention and management of MASD, and prevention and treatment strategies for peristomal skin damage.

### Assessment and Categorization of MASD

**Kevin Woo** outlined the six key causes of skin damage, which can be remembered using the mnemonic MINDS:

**M**echanical trauma from friction, skin tears and skin stripping

**M**oisture

**I**ntrinsic factors: Skin aging is associated with anatomical and physiological changes that increase susceptibility to skin disease and functional disorders

**N**oxious chemicals and irritants including strongly alkaline feces or urine

**D**rugs, such as steroids (long-term use), and diseases of the skin, such as psoriasis

**S**kin allergens



### Pathophysiology of MASD

Moisture that comes into contact with the skin in the form of urine, feces or cleansing materials can cause physical irritation, increase permeability of the skin and decrease barrier function, which leads to bacterial overgrowth, cutaneous infection and weakened skin. MASD often results in pain, burning, itching, tingling and/or inflammation. When weakened skin is combined with friction, a pressure injury likely will result. The Ghent Global IAD categorization tool (GLOBIAD) has divided MASD into four categories to help clinicians determine the type of treatment needed to manage the problem.

### Advances in Prevention and Management of MASD

**Rosemary Kohr** noted that excess moisture and bacteria results in a higher skin pH (alkaline). When feces are present, digestive enzymes become active on the skin itself, and the barrier function of the skin does not work properly. When this occurs, it is essential for clinicians to determine and treat the underlying cause. Consider what is causing the moisture build-up: incontinence, skin folds, diaphoresis, wound drainage?

To prevent complications, prepare and protect the skin. Clean the skin, but remember that bar soap is alkaline, reducing the normal acid mantle, and that almost all soaps leave residue that is difficult to get rid of. Consider using a perineal cleanser; the goal is to remove feces and maintain



normal pH. Ensure moisture level is appropriate; skin that is too wet is five times more likely than dry skin to develop MASD, and skin that is too dry is two and a half times more likely to ulcerate than normal skin.

When cleansing skin, avoid perfumed soaps and rough washcloths that can result in new friction injuries.

#### **Practice pearl:**

- Avoid using sensitizers such as lanolin and perfumes and look for products with a pH between 4 and 7.

### **Barrier Products**

Barrier products provide protection to skin in the form of ointments, creams, pastes or films. Petrolatum and zinc can be used, but be sure to find the ones that are clinically indicated. Dimethicone provides a neutral base, as it has no sensitizers. Liquid films are a new formulation composed of polymer with cyanoacrylate. They are durable up to seven days, are flexible and can stretch while in place, can be applied to wet, macerated skin and don't require removal.

### **Our Reality Today**

Assessment and treatment are more complex and require more attention than ever before. Clinicians need to consider ways to cut down on busy work by using products and technologies available to help. Patients and care providers may feel that less frequent protection applications demonstrate bad care, so it is critical to provide education and demonstrations on how new products work better than older ones requiring more

frequent applications. While there is a perception that these newer practices and products are costlier, they focus more heavily on prevention, reducing care costs and improving patient quality of life.

### **Peristomal Skin Damage: Prevention and Treatment Strategies**

**Lina Martins** discussed prevention and treatment strategies for individuals with peristomal skin damage. Approximately one million people in North America are living with an ostomy, and an additional 100,000 will undergo ostomy surgery in the next year. Seventy percent of these patients will experience stomal or peristomal complications.

Peristomal dermatitis is inflammation and erosion of skin adjacent to a stoma, related to exposure to urine or stool. Risk of developing peristomal MASD is higher in individuals who perspire heavily, those with a body mass index greater than 30, those with exposure to external moisture sources and older adults.

Peristomal skin should be assessed using visual inspection and focused patient history (especially related to pouching method and management), and treatment should consider economic and lifestyle factors. To aid in assessment, clinicians can use the ostomy skin tool (OST), the Canadian Ostomy Assessment Guide (COAG) or the Peristomal Skin Assessment Guide (PSAG).

When treating peristomal skin damage, enlist a nurse specialized in wound ostomy and continence (NSWOC) or a wound-ostomy-continence nurse (WOCN). Treatment should always be directed at alleviating skin damage while maintaining an effective seal. It is crucial that clinicians select appropriate skin barriers based on the stoma and abdominal contours and that patients adhere to optimal pouch wear times and use of appropriate accessories.

#### **Practice pearls:**

- Maintain an effective and predictable seal between the skin and the skin barrier, and reapply *before* leaks happen—about every three days.



- Demonstrate to patients the correct use of products and provide instruction on avoiding or limiting behaviours that may interfere with the seal between the pouch and the peristomal skin.
- Ensure patients recognize the characteristics of healthy versus unhealthy peristomal skin, and the importance of seeking treatment when things go wrong.

When managing peristomal skin damage, always try to determine and treat the cause by identifying and addressing any contributing factors. Consider whether consultations with or referrals to other health-care providers are needed.

## ARTERIAL LEG

### Session 53

*Presenters: Robyn Evans, Ahmed Kayssi, Christine Murphy, Sudhir Nagpal*

This session discussed medical and surgical management of peripheral arterial disease (PAD), and presented attendees with an interdisciplinary team model, demonstrated by a limb-salvage program at The Ottawa Hospital.

#### Medical Management of Peripheral Arterial Disease (PAD)

**Robyn Evans** noted that PAD is the leading cause of limb amputation. Remember: a single artery can cause a problem. No one vascular test is perfect, so refer to a vascular surgeon when in doubt.

#### Surgical Management of PAD

**Ahmed Kayssi** discussed the importance of understanding the anatomy of veins and arteries, and how they connect. Goals of treatment of PAD might include reserve viability of veins, improved function and prevention of deterioration.

#### Limb Salvage at The Ottawa Hospital: An Interdisciplinary Team Model

**Christine Murphy** and **Sudhir Nagpal** presented an overview of a clinic in Ottawa where three vas-

cular surgeons, nurses, one plastic surgeon and a wound care nurse work together as a team. The model features customized charting for the clinic so that all members of the team have access to patients' complete information, including photos, care summaries, previous closures and dressing information. Clinic activities include vascular examinations and interventions, clinic debridement, skin graft closures and patient education. The goals of this care centre are the use of fewer antibiotics, fewer hospital admissions, fewer community care and emergency room visits, higher clinician competency, increased resources and research, and an overall better patient outcome through specialized care close to home. The main challenge of implementing this type of program large-scale is convincing stakeholders to fund the project. This requires extensive data collection and research at the clinic that will show concrete cost benefits.

## ADVANCED TOPICS: SCLERODERMA ULCERS

### Session 54

*Presenters: Zareen Ahmad, Afsaneh Alavi, Deirdre O'Sullivan-Drombolis*

This session described the pathophysiology and management of scleroderma ulcers, specific challenges of these ulcers, and the benefits of physical therapy for patients with scleroderma.



**Zareen Ahmad** outlined risk factors for developing scleroderma ulcers, including genetics, environment and exposure to toxins. Prevalence estimates vary widely and may be increasing over time; however, there was no standard classification for these ulcers before 1980. Patients with scleroderma ulcers have poor quality of life, with most suffering from depression, anxiety and intimacy issues.

Classification factors include:

- Skin thickening on the fingers
- Fingertip lesions
- Telangiectasia
- Abnormal nailfold capillaries
- Pulmonary arterial hypertension and/or interstitial lung disease
- Raynaud's phenomenon
- Systemic sclerosis-related antibodies

There are two classifications of scleroderma ulcers: localized or systemic (either limited or diffuse).

Clinicians should monitor patients for changes such as change in bowel continence and sexual dysfunction and provide a multidisciplinary approach to patient care. In some cases, a hematopoietic stem cell transplant can help manage the disease.

It is important to control symptoms of Raynaud's disease in the distal phalanges and to monitor for sclerodermal renal crisis, which is marked by a sudden increase in blood pressure and acute increase of creatinine. Monitor, too, for GI involvement such as GERD, bacterial overgrowth and constipation. Hand manifestations can result in neuropathy so, with these patients, consider stretching and massage as preventative measures.

**Afsaneh Alavi** described different classifications of digital ulcers, including those on bony prominences, those with calcinosis (chalky discharge), those on lower limbs and those with gangrene. Remember that pitting scars cause fissures known as pseudo-ulcers that mimic the clinical presentation of scleroderma ulcers.

Clinicians should follow regular wound care principles with a special emphasis on pain

management. Treatment generally includes a combination of vasodilators, prostanoids, PDE-5 inhibitors, endothelin receptor antagonists, low-dose acetylsalicylic acid and cycles of immunosuppressants or immunomodulators. Digital ulcers often prove difficult to dress, so clinicians are encouraged to use whatever works for each individual patient.

**Deirdre O'Sullivan-Drombolis** described the ways physical therapy (PT) is important in the long-term treatment of scleroderma. PT can prevent and slow complications of the disease and can improve overall health and endurance. When creating a PT plan of care, always set patient-appropriate goals and involve the patient in their care and progress. Always consider psychosocial aspects when determining the best plan of care for your patients.

## SURGICAL WOUNDS

### Session 55

*Presenters: John Hwang, Valerie Winberg, Johnny Lau, Gregory Schultz*

This session covered what to do when things go wrong with surgical wounds and looked at specialized care for surgical site infections in orthopedics.





## Preventing Surgical Site Infections

Clinicians should pre-wash surgical sites to aid in micro-organism management. Patients should have blood glucose levels of less than 11 mmol/L pre-operation. Transfusion of blood products should not be withheld from surgical patients, and an increased fraction of inspired oxygen should be administered both during and after the surgical procedure.

Risk factors for developing a surgical site infection include age, sex, body weight, smoking habits, hypertension and the presence of diabetes. While dressings may provide protection and absorb exudate, a Cochrane review found that there is no single dressing recommendation for all surgical wounds.

Be aware of patient-specific risk factors, and minimize or eliminate these risks when possible (e.g., through smoking cessation and/or diet change). Local risk factors for surgical wound complications include impaired surgical site healing, infection, edema or elevated tissue perfusion, ischemia and the presence of foreign objects. Systemic failures such as inflammatory disorders, malnourishment or vascular disease also increase patient risk.

## Specialized Care: Surgical Site Infections in Orthopedics

**Gregory Schultz** noted that infections are a major complication of implant surgeries and can occur years after the surgery is conducted. *Staphylococcus aureus*, *S. epidermidis* and *P. aeruginosa* are the major strains of bacteria that have been isolated in these infections.

Biofilms are communities of bacteria encased in a self-producing matrix of polysaccharides, protein and DNA that provide high levels of tolerance to neutrophils, antibodies, antibiotics and antiseptics. Biofilms are present in a high percentage of chronic wounds and implanted medical devices, where they can impair healing by stimulating chronic inflammation, leading to elevated levels of proteases and reactive oxygen species (ROS) that degrade proteins essential for healing. Biofilms are extremely inflammatory.

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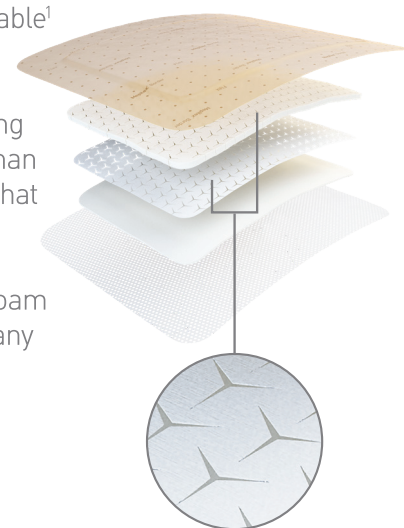
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#### Practice pearl:

- Bacteria in biofilms are difficult to kill, but negative pressure wound therapy can be effective in treating biofilm infections in orthopedic patients.

### Preventing Post-surgical Wound Complications

**Johnny Lau** noted that surgical wound complications are associated with higher risk of ICU stay, hospital readmission, depression and death. To optimize surgical outcomes, clinicians should work to control blood glucose, improve immune function, address malnutrition, improve vascular status and optimize skin condition. Furthermore, patients should be encouraged to stop smoking, and the use of immunosuppressive drugs should be suspended.

Post-surgical wound complications put an enormous strain on health-care systems, but there are numerous modifiable risk factors that can be addressed to lower risk of complications.

## PATIENTS' AND CLINICIANS' EXPERIENCES OF WOUND CARE IN CANADA

### Session 60

*Presenters: Ken McLellan, Linda O'Rourke, Kevin Woo*

This session gave attendees an overview of the patient and clinician experience across the wound care continuum in Canada.

**Ken McLellan** did not have a family doctor and had what he thought was a bunion on his foot that he was self-treating. This "bunion" turned out to be a diabetic foot ulcer that required immediate amputation. He moved to Parkwood, where he received excellent care. He participated in Wounds Canada's Diabetes, Healthy Feet and You program (formerly known as the Diabetes Peer Education Program) to avoid losing his independence and is still active in the support community. He advised that everyone have a general practitioner and go for regular check-ups. Don't just go when something is wrong, he said, as it is important to be proactive with one's health.

#### Practice pearl:

- Care should be a collaborative effort between a general practitioner and the patient.

**Linda O'Rourke** is a caregiver for her mother, who for most of her life has had a wound on her ankle that's moved between healing and re-ulceration. The wound had been healed for 20 years until a skin tear resurfaced the problem, and her mother was sent down a "rabbit hole" of treatments, eventually leading to amputation. She explained that her mother bounced back, but notes it is critical we understand the complexities of caring for the elderly and making sure they understand the expectations of their self-care. As a caregiver, she now knows she should have asked more questions about her mother's care, but at the time she didn't have the knowledge to do so. She should have ensured that a detailed health history be taken, and then asked what type of wound it was, what the treatment plan was and why the ulcer wasn't healing. She also noted that she should have asked for education and training about providing care, and for information about addressing pain. She urged attendees to do as much as possible as caregivers: ask questions and be a part of the plan of care.

#### Practice pearl:

- Practitioners should create a guide for patients and caregivers to use to ensure they know the right questions to ask.

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## WHO'S WHO IN WOUND CARE

### Session 61

*Presenters: Jason Altenberg, Susie Jin, Ellen Mackay, Deirdre O'Sullivan-Drombolis, Surkhad Peerzada*

This session brought together wound care experts of varying disciplines and specialties to discuss members of the typical wound management team, and the role each team member plays.

**Deirdre O'Sullivan**, a physiotherapist, emphasized the importance of learning what your colleagues do and how they can support a team approach to wound healing. Physiotherapy can have a great impact in wound prevention and care by improving strength and mobility and addressing nerve pain. When wounds aren't healing, physiotherapists can assist in treating underlying causes; wound care is within their scope of practice. Exercise is a critical component of health and wellness.

Dietitian **Ellen Mackay** reminded attendees that wounds are hungry! When a patient has a wound, nutrition must shift. If you are caring for a patient with diabetes, blood glucose targets can

be met through a planned diet. The wound must be nourished through food, but sometimes there are impediments to nutritional support such as tooth structure, swallowing difficulties or financial constraints preventing the patient from eating a balanced diet. Meeting nutritional goals must focus on the patient: their likes and dislikes, their support system and their socio-economic situation. Menu planning and supplements can assist patients in ensuring they receive adequate nutrition while their bodies work to heal a wound.

**Susie Jin**, a community pharmacist, encouraged attendees to communicate with their colleagues: pharmacists should ask their patients' permission to call their health-care provider and have a conversation with them. Each time a patient comes into the pharmacy, pharmacists should do a medication check, and consider why the patient is still taking each medication and whether it is still needed. Pharmacists can also help clients find supplies such as compression stockings or socks. In this community role, pharmacists can provide information and support for patient self-management and increase patient awareness of what their medications do.

**Jason Altenberg** and **Surkhad Peerzada** represented administrators in this panel, emphasizing the importance of creating interprofessional teams and providing these teams with constant, active support. Administrators can also consider developing partnerships with other facilities to foster a team approach to healing. They noted that creating equitable services is what will help reduce barriers to care. To do this, systems need to invest in research to determine who is affected by the greatest number of barriers, and then target these populations specifically. Furthermore, the pair suggested the use of peer support and facilitator programs to encourage empathy and share lived experiences. This serves to humanize the disease or condition and improve social support for patients. Administrators need to ensure patients are receiving information about how to make a complaint; this allows growth in the system. Finally, administrators can encourage the creation of interdisciplinary teams, which not only save money but also provide better care for patients living with or at risk of developing wounds. 📌