

Wounds Canada Fall 2019 Conference: Driving Change in Wound Care

October 3–6, 2019, Niagara Fallsview Casino, Niagara, Falls, ON



Session Summaries – Part II

Wounds Canada held its fall 2019 conference in Niagara Falls, ON, October 3 to 6. Local volunteers attended sessions and prepared the summaries that follow, which include highlights and practice pearls from expert speakers. These summaries reflect the remaining half of the sessions; the first half was in the Fall 2019 issue of Wound Care Canada.

THRIVING WITH CHANGE: HOW TO MAKE IT HAPPEN

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

Session speaker: Irmajean Bajnok

This session served as a follow-up session to Irmajean Bajnok's previous presentation about change and how to become an agent of change. She began by defining *change agency* and a *change agent*. Change agency relates to the power a group or individual has to make a positive difference. It is about empowering others to influence and make change. A change agent is one

who makes a positive difference through "power, confidence, skills and courage."

She suggested that "change is changing," and stated four different examples of how that is happening: disruptive change, acceleration of connectedness, diminished hierarchal power and change moving to the edge. Change is disruptive, as organizations are moving away from hierarchal structures. It is also disruptive as the model of care moves toward a patient-centred approach. As well, the demographics of care providers and recipients are changing. The pervasive use of technology is another reason for disruptive change.

This led to her next point: the acceleration of connectedness. The use of technology and social media has changed and will continue to change how we live our lives, deliver patient care and promote awareness. She quoted research suggesting that “just 3% of the people in the organization or system typically drive conversation with 90% of other people.” Technology and social media allow us to be more connected, and for information and knowledge to be obtained and shared. She challenged the attendees to think about how to harness such connectedness to our advantage in health care.

Change can be seen in organizations where there is less hierarchal power. She quoted Helen Bevan: “[We] still organize health and care like the tabulating machine company of 1917.” She then mentioned Jeremy Heimes and Henry Timms’ concept of “old power versus new power.” There is a shift from old power to new power, from currency to current, from power held by a few to power held by many, from being pushed down to being pushed in, from commanded to shared, from closed to open, and from transaction to relationship.

She also suggested that change is moving to the edge, meaning that change needs to be led from the actual point of contact, the so called “frontline” workers. Frontline workers should no longer be the last to know of changes but should be the ones to contribute to initiating change. She provided an example of a recent change project, #endPJparalysis, started by nursing professor Brian Dolan. The initiative is based on the idea that patients in pyjamas in the hospital are at higher risk of wounds, loss of muscle mass, falling, boredom and increased length of stay than patients who get dressed and get moving. This initiative went viral on social media, capturing international attention, and was estimated to have saved 710,000 hospital stay days.

She continued her session by providing different models of change, including Lewin, Kotter, Bridges, Canada Health Infoway, Roller Coaster of Change by Haines, the RNAO implementation toolkit, and the IHI psychology of change framework. She also talked about the role of habit in

our lives. We rely on habit to get us through the day and to be efficient. However, change begs us to modify or give up our habits—things that are “tough and scary to do.” She suggested that we need to change people’s mindset, not just their behaviour. They need to see why they need to change, not just what or how to change.

Key Points:

- Change is disruptive.
- Technology and social media accelerate our connectedness.
- There is a move away from the traditional hierarchal models, shifting from “old power” to “new power.”
- Change is moving to the edge, where front-line workers are initiating and contributing to change.
- There are different models of change. “All models are wrong, but some are useful.”

— George Box





SURGICAL WOUND COMPLICATIONS

Reporter: Susan Chandler, RN MCIScWH

Session speakers: Yasser Botros, Karen Cross, Johnny Lau

Karen Cross focused on the basic principles of reconstruction as they relate to skin grafts and flaps. She discussed how to recognize the factors that impact skin graft take and flap infection. She explored skin grafting techniques, types of skin grafts used, and skin graft survival and take. The reconstructive ladder was presented with types of wound closures from secondary intent through to free tissue transfer. Also discussed were complications of skin grafts, types of possible infections and reasons why dressings should be left *in situ* and removed as per surgeon's recommendations.

The presentation by Yasser Botros focused on identifying risk factors and the clinical presentation of surgical mesh infections and how these should be managed. Risk factors for mesh infections are the same for any wound infection.

Johnny Lau led a lively discussion with all three

speakers on orthopedic hardware infections and the treatment or management of infections, using case studies to guide the debate.

Key Points:

- Skin graft survival and how it is achieved need to be fully understood to prevent skin graft failure.
- Skin graft take is influenced by multiple factors: graft, graft bed, environment and the immune system.
- Risk factors for mesh infections are the same for any wound infection.
- Skin flaps can be used as rescue or reconstructive options in infected beds, but they carry inherent risk.

MASD AND SKIN DAMAGE: CURRENT AND EMERGING PRACTICE

Reporter: Tim Murray, RN BScNP

Session speakers: Karen Campbell, Kimberly LeBlanc, Kevin Woo

Kimberly LeBlanc presented a case study of moisture-associated skin damage (MASD), illustrating the importance of skin care. MASD has multiple causes related to ongoing moisture on the skin.

Incontinence-associated dermatitis (IAD) can be misdiagnosed as a pressure injury; it often occurs in skin folds around the buttocks and groin, and patients often complain of itching and burning. Removing the moisture, cleansing effectively and managing incontinence are key in improving IAD. GLOBAID has developed an online categorization tool that is useful in managing IAD.

Pressure injuries can develop as secondary to IAD as the skin becomes more vulnerable when affected by incontinence moisture. Fungal infections can also develop, particularly when moisture-containment products like diapers are used.

Karen Campbell discussed skin tears, focusing on a 2018 clinical update from the International Skin Tear Advisory Panel (ISTAP). Skin tears are defined as traumatic wounds by mechanical force and can be partial- or full-thickness tears involving separation of the epidermis and the dermis.

The most common causes of skin tears are blunt trauma, falls while performing activities of daily living, dressing changes, position transfers, and injury from equipment. The prevalence of skin tears is 4–26% in long-term care, 4.5–20% in community care, 6.2–11.1% in acute care, 3.3–14.3% in palliative care, and 17% in pediatric care. ISTAP classifies skin tears into three categories: type 1, no flap loss; type 2, partial flap loss; and type 3, full flap loss. Management of skin tears includes controlling bleeding, cleansing the wound and approximating wound edges. Appropriate use of dressings to protect the flap is typically necessary.

Kevin Woo discussed common factors in the development of skin tears and MASD using the MINDS acronym: mechanical or moisture, intrinsic factors, noxious substances, drugs, skin allergens.

Skin frailty is a vague concept and needs more clarity. There are many risk factors that contribute to this, including age, hydration and loss of collagen. The exposome, which encompasses the totality of human environmental exposure from conception, is one factor in skin frailty. It includes an individual's genetic background, cognitive stresses, non-cognitive stresses and age-associated diseases.

Artificial intelligence (AI) is being developed to perform skin evaluation using algorithms. This technology uses a rating scale from one to five to assess nine factors. Using this evaluation, it is possible to categorize the frailty of the skin, but more research needs to be done to improve evaluation.

Key Points:

- MASD is often misdiagnosed as pressure injury.
- Moisture associated with MASD or IAD makes pressure injury more likely.
- Almost half of all skin tears are found without any apparent cause.
- There are three main risk factors for skin tears: general health, mobility and skin-related issues.
- More research needs to be done to categorize skin frailty and MASD.

BURNS

Reporter: Veronika Anissimova, RN BMedSc MCIScWH WOCC(C)

Session speakers: Mafalda Concordia, Shahriar Shahrokhi

Mafalda Concordia spoke about prevention, assessment and treatment of people with complex burn wounds. She outlined the priorities of nursing care in the acute, healing and recovery phases of burn management. These priorities include hemodynamic monitoring (sepsis, hypovolemic shock), pain management, management of psychosocial needs, rehabilitation and wound debridement.

She emphasized that the healing trajectory of the wound depends on the depth of the burn and skin involvement. Special attention must be paid to the psychological aspect of rehabilitation of individuals with complex burns. A patient's psychological health before the burn injury is often the best predictor of the mental health symptomology after the burn injury.

Shahriar Shahrokhi noted that an accurate measurement of the percentage of total body surface area (%TBSA) of a burn injury is crucial for calculating the estimated fluid resuscitation, determining the need to transfer to a specialized burn unit and determining the probability of mortality. The currently available methods of %TBSA estimation are inaccurate. Three-dimensional





PEDIATRIC WOUNDS

Reporter: Veronika Anissimova, RN BMedSc MCIScWH WOCC(C)

*Session speakers: Louise Forest-Lalande,
Irene Lara-Corrales, Michelle Lee*

Louise Forest-Lalande discussed epidermolysis bullosa (EB), a group of skin diseases that cause various degrees of skin and mucous membrane fragility. In EB, the skin becomes fragile when proteins essential for skin integrity are absent. This is a complex autoimmune disease requiring management by multiple specialities. Making a diagnosis of EB might not be easy and typically takes time. It is important to recognize that skin fragility in newborns is encountered in conditions other than EB. Although clinicians should consider EB if they see blisters developing in a newborn, a diagnosis cannot be confirmed just by looking at the baby's skin.

She discussed the important role of an NSWOC(C) in caregivers' and hospital staff's instruction in carrying out simple but important tasks such as handling the baby, swabbing, and taking a baby's temperature with an infrared thermometer.

Irene Lara-Corrales discussed classifying vascular anomalies into two different groups: vascular tumours and vascular malformations. Infantile hemangioma is the most common type of vascular tumour; about 10% of newborns have this tumor, and ulcerations happen in 15% of hemangiomas. Early white discoloration of vascular anomalies is a sign of progression of the ulceration. Laser and surgical excision can lead to healing and decreases in pain. One of the main barriers to practice change is the lack of knowledge regarding classification of vascular anomalies.

Michelle Lee discussed medical adhesives and medical-adhesive-related skin injuries (MARSI). She focused on epidemiology, prevention, assessment and treatment of these injuries.

Key Points:

- Caring for children with EB and their families is an ongoing challenge for all: the child, the parents and the interprofessional team.

systems have been developed to improve %TBSA calculation and consequently optimize clinical decision-making.

He discussed enzymatic debridement with a new removal agent as a safe and reliable tool for early eschar removal on the hands, feet and face of adults. It can be applied immediately after initial assessment and wound preparation. Selective debridement is non-surgical, fast and effective, and can be a first-line, minimally invasive therapy in situations of disasters and mass casualty events. This new removal agent is not available in Canada.

The classification of skin substitutes with recommendations to their usage, advantages and disadvantages were discussed.

Key Points:

- Pathophysiology and management of burns are dependent on the depth of the wound.
- Technology has and will continue to improve our ability to assess depth and size of burn. We need to be aware of the options and use them appropriately.
- Enzymatic debridement can be used as a tool in the care of burn patients, especially in mass casualty events.
- Skin substitutes and tissue engineering hold the key to the future of burn surgery.

- Avoid adhesives, hydrocolloids and hypertonic dressings in management of EB.
- Gently cleanse wounds with low-toxicity solutions: saline, water.
- Use pain analgesia before dressing changes.
- Not all vascular anomalies in pediatrics are hemangioma.
- Distinguish between vascular tumours and vascular malformations.
- Proper technique for application and removal of adhesive products should be used to prevent tissue trauma, improve patient safety and quality of life, and reduce health-care costs.

GRAND ROUNDS

Reporter: Crystal McCallum, BScN MCISC-WH

Session speakers: Zareen Ahmad, Stephanie Furtado, James Smith

After defining Raynaud's phenomenon, describing its typical presentation and the pathophysiology of the disease, and differentiating between primary and secondary disease, Zareen Ahmad used a series of compelling images and a case study to demonstrate the assessment, diagnosis and treatment of patients who present to her with Raynaud's phenomenon. In addition to traditional pharmacological methods to treat patients presenting with Raynaud's phenomenon and digital ulcers (e.g., calcium-channel blockers), she suggested keeping the whole body warm, having the patient wear mittens (not gloves), using electric hand warmers and space heaters, supporting smoking cessation and avoiding sympathomimetic drugs like decongestants, amphetamines and ephedra. She also advised asking patients about photosensitivity, mucosal ulcers, sicca, clotting, spontaneous abortion, joint swelling and cytopenia, as up to 37% of those with Raynaud's phenomenon may develop (or have) a connective tissue disease, requiring further assessment and a referral to a rheumatologist.

James Smith followed with a description of external beam radiation therapy and how it damages the basal cells of the epidermis, reduces

production of new cells and induces an inflammatory response, with peak damage occurring seven to 10 days post treatment. He discussed intrinsic and extrinsic factors that place patients at increased risk for radiation dermatitis (the most common side effect of radiation therapy), and locations of the body at highest risk (inframammary folds, axilla folds, groin/perineum/gluteal area and neck folds). Using images and case studies, he described the common presentation of radiation dermatitis and discussed the Radiation Therapy Oncology Group (RTOG) grading tool and Radiation Induced Skin Reaction Assessment Scale (RISRAS), each used to measure and describe the spectrum of radiation dermatitis. He then discussed treatment, suggesting bathing using gentle skin products, applying a moisturizer with a dimethicone component twice daily, avoiding extremes of heat and cold, and avoiding hot tubs, pools and lakes. He also stated that there have been some recent clinical trials using cyanoacrylates and silicone film-forming gel (separately, not together) to delay and reduce the severity of radiation dermatitis.

Rounding out the session, Stephanie Furtado used audience polling to work through a series of complex case studies involving neonatal and pediatric patients with multiple stomas or severe peristomal skin breakdown. She suggested that, because there is limited research to support decision making for this population, creativity and



an interdisciplinary team approach are required, and a positive outcome depends on clear and frequent communication with the health-care providers involved and the patient's parents.

Key Points:

- Manage most patients who present with Raynaud's phenomenon and have primary disease with warming and use of calcium-channel blockers.
- As there is little research on the prevention and treatment of radiation dermatitis, and as current best practice guidelines are largely based on expert opinion, approach the management of radiation dermatitis using the concept of moist wound healing.
- Build a team and find creative solutions to meet the emotional and physical needs of neonates and children with ostomies and peristomal complications.

PRESSURE INJURIES: CURRENT AND EMERGING PRACTICE

Reporter: Tim Murray, RN BScNP

Session speakers: Barbara Bates-Jensen, Chester Ho, Ellen Mackay

Currently there is no standardized mapping system and thus great difficulty in performing objective pressure mapping over time. When collecting data for pressure mapping, there is an overwhelming amount of data collection that occurs manually. Therefore, machine learning may be a solution to help predict patterns and trends through algorithms. Chester Ho discussed the developing role of pressure mapping devices that use machine learning in pressure injury prevention. Research is underway, and there is a proposal that uses machine learning to more accurately monitor and predict risks for developing pressure injuries. The machine learns how to recognize body parts and assess the duration and actual pressure exerted so that a particular body part can be analyzed over time. The computer produces optical data and can estimate the body's pose/posture and make calculations about risk.

Ellen Mackay discussed the challenges of performing nutrition-focused research. Malnutrition is one of the biggest risk factors for pressure injuries; however, there is not a universally agreed upon definition. Forty-five percent of Canadians admitted to hospital are thought to have a nutritional deficiency. Many factors contribute to this, including patients' ability to feed themselves.

There are three main etiologies of malnutrition: starvation-related, chronic-disease-related and acute-disease/injury-related. A new white paper by the National Pressure Injury Advisory Panel (NPIAP), the European Pressure Ulcer Advisory Panel (EPUAP) and the Pan Pacific Pressure Injury Alliance (PPPIA) focusing on malnutrition has just been released.

Extra arginine is needed when the body is under stress from episodes like trauma to the skin. The recommendation is 1.25–1.5 grams per kilogram of protein per day. There is no evidence to suggest that any rate of protein over 2 grams per kilogram per day is beneficial.

Barbara Bates-Jensen discussed the biophysical measures for detecting pressure injuries, including using surface capacitance methods and temperature/thermography. Surface electrical capacitance (SEC) uses electromagnetic waves to read inflammatory responses and predict tissue damage. This device is useful to gain an objective and metric measure to assess for damage. Often, individuals with darker skin pigment are more difficult to assess for tissue damage. Early recognition of damage is beneficial. The sub-epidermal moisture (SEM) scanner does this type of scanning and is available commercially. A moisture meter is one more device that can be used to assess for tissue damage. This is not new technology—it has been used in other areas such as burn severity and lower limb edema—and it is better at assessing damage than an expert using visual assessment measures. When comparing SEM with ultrasound and thermography, research literature supports the use of SEM, as ultrasound is often impractical.

Skin temperature is higher in patients with erythema or stage 1 pressure damage. However, this can also be difficult to measure. There is early evidence that cooling areas of erythema and pres-

sure injury can have a protective effect on the tissues. Thermography has some practical use; however, these are the early days, and the technology and practicality still have room to develop.

Key Points:

- Machine-driven pressure mapping is an emerging science that is useful for PI risk assessment.
- Address malnutrition early, and assume individuals are malnourished unless proven otherwise.
- Think about long-term preservation of muscle mass.
- Supplementation is not the “magic bullet.” Increased and optimized food intake is the best option when treating pressure injuries.
- Thermography has a budding relationship with pressure injury treatment, and it is improving and becoming more practical over time.

WHAT ELSE DO WE NEED TO KNOW?

Reporter: Susan Chandler, RN MCIScWH

Session speakers: Guy Chamberland, Karen Cross, Kimberly LeBlanc, Michael Stacey, Kevin Woo

This session discussed current and emerging practices (with evidence) related to the use of swabs, biopsies and diagnostic imaging to guide wound treatment. Speakers discussed how regenerative medicine is changing the ability to regenerate skin and tissue phenotypes. They also identified the current and emerging non-opioid strategies to effectively manage wound pain and the evidence to support safety and effectiveness.

The primary role of tests in relation to wound management is to determine the etiology and select the appropriate therapy. Re-evaluation during treatment of non-healing wounds is important to identify additional factors that are causing the wound to stall and to ensure optimal plans of care are followed for the underlying diagnosis.

Advances in regenerative medicine include gene therapy, the complete restoration of the skin's anatomy and physiology, and automated and robotic fabrication of engineered tissue, including the 3D printing of skin. Point-of-care



diagnostics assist in the quantitative evaluation of wounds.

Management of ischemic pain requires a multifaceted approach that can include heat therapy, offloading footwear, combined dietary nitrate and exercise intervention, extracorporeal shock-wave therapy, growth factors for angiogenesis, functional electrical stimulation, transcutaneous electrical nerve stimulation and blood pressure-lowering medication.

Key Points:

- Re-evaluate the wound and treatment course if the wound size has not changed or has gotten larger.
- Despite the existence of several proven traditional wound therapies, there is a lack of scientific standardization and validation.
- Botanical formulations can be effective for pain relief if administered at an adequate dosage.
- There is no evidence supporting the use of oral cannabis products for pain relief.



FOOD IS HEALING

Reporter: Sue Rosenthal, BA MA

Session speaker: Ellen Mackay

What we eat matters. Wounds are hungry and thirsty; they need a constant supply of nutrients, no matter what type of wound is present. Poor nutrition can prolong wound healing and can impact the immune system, making individuals more susceptible to infection. It is difficult to quantify the impact of nutrition care in terms of cost savings, but nutrition is a key component of care and should be considered by every member of the multidisciplinary team.

Malnutrition has many definitions, but essentially is caused by a reduced intake relative to the patient's need, which leads to poor physical and cognitive function. Insufficient energy intake, weight loss, loss of muscle mass, loss of subcutaneous fat, fluid accumulation and diminished functional status all put an individual at risk of becoming malnourished. About 45% of individuals admitted to hospital are considered malnourished. Screening for malnutrition can be done by anyone, as long as they are using a validated screening tool. Some tools are designed for specific populations such as people in acute care, or older adults (see page 25 for examples). Following assessment, a dietitian should be brought in to assess and create a plan for intervention.

A person loses about 1% of lean body mass

every year, especially between the ages of 40 and 60, making them more vulnerable to wounds. Exercise is the best way to reduce this loss of muscle mass. If a patient has a wound, clinicians should put weight loss programs on hold, even if the patient is obese. High body-mass index is associated with poor wound healing, so engaging a dietitian is key to optimize this aspect of care.

Several key nutrients are needed for optimal wound healing. Water helps deliver nutrients and removes waste. Sometimes, patients restrict water so they don't need to use the washroom often; clinicians need to ensure patients are getting adequate hydration. Calories are required to enable protein to be used in wound healing. Clinicians can consider adding snacks rather than more food at mealtimes to fulfill caloric needs. Fat is needed to spare protein and to help the body to absorb vitamins and metformin. Protein is essential for wound healing but is often one of the first nutrients to be avoided when chewing or swallowing is impacted. Vitamins and minerals, including zinc, iron, vitamin A, vitamin C and vitamin D, are also important and can be added through food or with a low-dose multivitamin.

Key Points:

- Wound care needs an integrated team; enlist a dietitian.
- Use validated screening tools to assess risk for malnutrition.
- Protein is needed for all phases of healing.
- Set up a hydration station in your unit or clinic.
- Equip wheelchairs with cup holders.
- Patients often have protein only at dinner; if protein need is high, spread it out to other meals and snacks.
- Offer foods first; supplement only if the patient needs it.
- Honour "protected" mealtime (don't schedule tests or appointments that interfere with meals).
- Food is medicine; patients need to know that they must eat, even if they aren't hungry.
- Eating alone is not fun; encourage family to show up at mealtimes.
- Advocate for nutrition and identify malnutrition early. 🍴



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Endoform 101

Endoform is an extracellular matrix (ECM) that supports all the phases of wound healing. Endoform is a collagen dressing that promotes healing in acute and chronic wounds and is widely accessible to wound care clinicians. This primer will introduce clinicians to the science behind Endoform and will provide information about its use to help clinicians determine whether this product can benefit their patients' healing outcomes.

Q1: What is an extracellular matrix (ECM) and what does it do?

An ECM is a network of biomolecules that provides structure for cells and gives tissues strength, elasticity and other physical properties. In some wounds, the ECM is damaged, meaning it is unable to support the healing process. In wounds that are stalled or healing slowly, protease activity destroys ECM at a rate that exceeds its ability to self-repair.¹

Studies in regenerative medicine have shown that using a functional ECM to supplement the chronic wound environment is a key strategy for moving stalled wounds into the proliferative stage of healing.¹ Advanced ECM technology means it is now possible to replace a patient's ECM with a dressing that works as a provisional ECM to support and guide cells. Endoform is one

such dressing that treats the pathology of wounds themselves rather than their symptoms.

Q2: What is Endoform?

Endoform is an ECM, derived from the stomach of sheep, that supports all phases of healing (Figure 1). Ovine cells are selectively removed while the composition and structure of the ECM is preserved. Endoform contains more than 150 unique matrix proteins, making its compositional complexity similar to native ECM.²⁻³ Endoform's porous structure allows cells to adhere, migrate and proliferate naturally.

The composition of Endoform's ECM enables it to interact with patients' cells during the phases of healing. Endoform is 85% collagen and 15% secondary molecules (Figure 2). By utilizing a diverse array of secondary molecules, Endoform imitates functional tissue ECM and supports wound healing and tissue growth.

Q3: How can Endoform change practice?

Endoform is indicated for the management of partial- and full-thickness wounds, pressure injuries, venous ulcers, diabetic ulcers, chronic vascular ulcers, tunneled/undermined wounds, surgical wounds, traumatic wounds and draining wounds.

By applying an ECM like Endoform, clinicians can see the wound moving through the various phases of wound healing. Using Endoform in the inflammatory phase helps prevent biofilm formation and guards against a broad range of organisms. In the chronic wound environment, wound proteases destroy ECM, leading to stalled status. Endoform is also damaged by elevated protease levels, a phenomenon that is visible, providing a simple, effective way to observe wound status (Figure 3).⁴⁻⁶ Once inflammation is controlled, epithelial and fibroblast cells adhere to the

Figure 1. Endoform®'s Role in Wound Healing

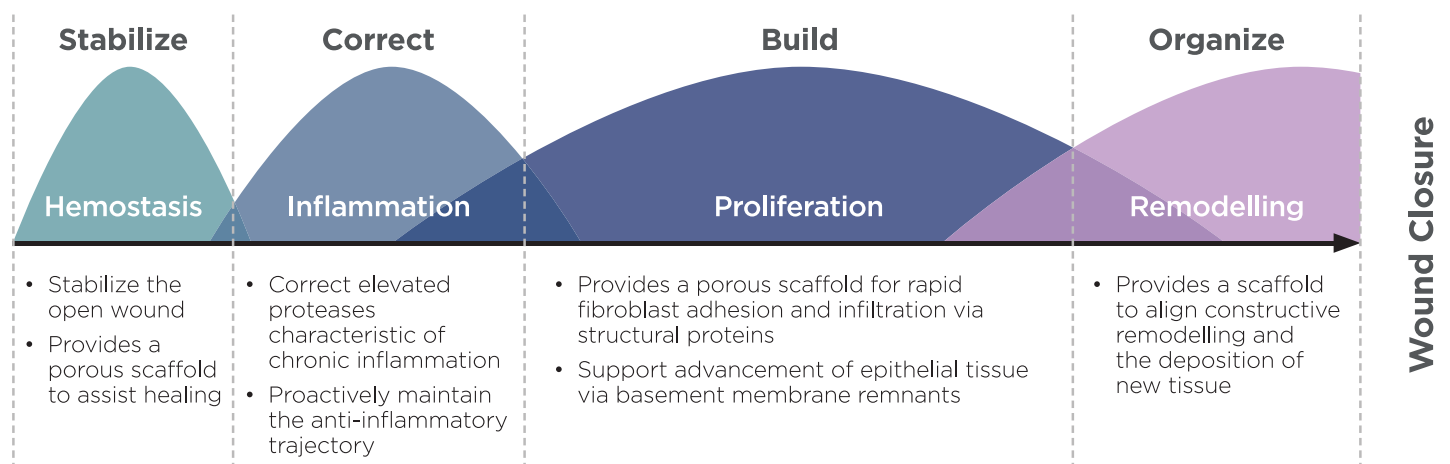
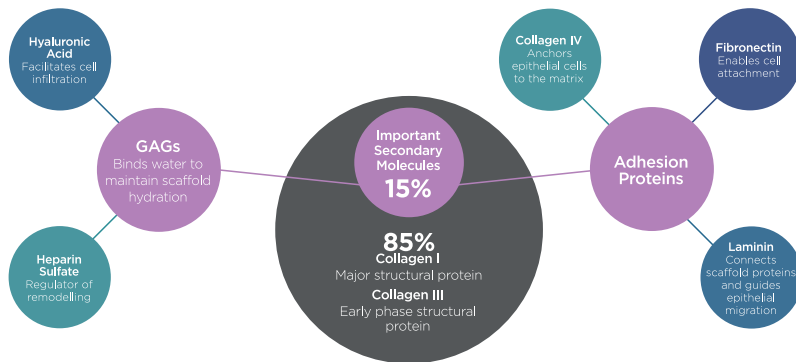


Figure 2. Composition of Endoform®

scaffold and begin to build new granulation tissue. At this point, residual Endoform will be observed in the wound at the subsequent dressing changes. It is important that the residual Endoform not be debrided, as this will remove

healed tissue; it can be left in place and rehydrated. Over time, Endoform is incorporated into the wound as new tissue is laid down.

Conclusion

ECM technologies such as Endoform have shifted modern wound care from managing the symptoms of chronic wounds to actively addressing their underlying pathology: missing or damaged ECM.

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Endoform acts as a visual indicator of wound healing. Wounds stalled in the inflammatory phase have high levels of proteases, which can't be seen. Seeing the presence or absence of residual Endoform is an important clinical tool.

Figure 3. Endoform® Consumption in the Wound

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