

# ORAL AND POSTER ABSTRACTS

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### ORAL ABSTRACTS

#### Public Policy

##### #A. Skin Tears, State of the Science: Consensus Statements for the Prevention, Prediction, Assessment and Treatment of Skin Tears

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The appropriate management of patients with skin tears is an ongoing challenge for healthcare professionals. Skin tears are often painful, acute wounds resulting from trauma to the skin and are largely preventable. Healthcare professionals must be able to identify individuals at risk for skin tears, and aid in the prevention of these wounds and in their treatment when they occur. Despite preliminary studies that suggest skin tears may be more prevalent than pressure ulcers, there remains a paucity of literature to guide prevention, assessment and treatment of skin tears. As a result, these wounds are often mismanaged and misdiagnosed, leading to complications, including pain, infection and delayed wound healing. In addition, skin tears increase caregiver time and facility costs, cause anxiety for patients and families, and may reflect poorly on the quality of care delivered in a facility. In an effort to shift awareness toward this largely unheeded healthcare issue, a consensus panel of 13 internationally recognized key opinion leaders convened to establish consensus statements on the prevention, prediction, assessment and treatment of skin tears. The initial consensus panel meeting was held in January 2011, and was made possible by an unrestricted educational grant from Hollister Wound Care Inc. This poster details the consensus definition and statements, as well as recommendations for future research and steps toward establishing a validated, comprehensive program for managing skin tears.

#### Professional Education

##### #B. Development of an Education Booklet for Burn Survivors

Natasha Lowe BN RN IIWCC, Eastern Health, Torbay, Newfoundland

Burn injury survivors and their family members have a lot of questions and concerns when they are in the hospital and after they go home.

Until recently, our burn unit had an education booklet available to burn patients that included information about what to expect after a patient with a burn injury is discharged home from the hospital. I decided to develop an education booklet for our burn unit that could be given to patients and their families that would address important aspects of their hospitalization and care, as well as include information needed when they are discharged home. I availed myself of various sources of burn care information to develop this educational booklet. I reviewed literature sources, such as our skin and wound care manual, guidelines for developing written patient education from the Patient Education Committee, patient education booklets from other provinces and information obtained from websites related to burn injuries. I consulted with the wound care consultant, dietician, physiotherapist, occupational therapist, plastic surgeons and clinical educator of our hospital. I sent a survey to 18 former burn survivors, asking them to evaluate the current booklet and gave them an opportunity to tell me what they felt was important to include in a revised booklet. I received 10 completed surveys. Many burn survivors commented that they would have liked to have known more about the treatments they were receiving in hospital. They also commented that they felt they weren't prepared for the reaction of other people in their life and how to deal with it. This booklet is presently in the process of being printed once reviewed by the Director of the Patient and Family Education Committee for the surgery program. Recent burn survivors have already received this booklet, with positive response. A second survey has been sent to the participants of the first survey who requested a copy. I am presently awaiting their completed evaluations of the booklet.

#### Research

##### #C. Étude comparative sur leur efficacité et les coûts de surfaces d'appui utilisés dans la prévention des ulcères de pression

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INTRODUCTION : Les ulcères de pression occasionnent une hausse des taux de morbidité, de mortalité et des coûts. Il existe plusieurs surfaces d'appui sur le marché. Certaines sont très dispendieuses et les preuves de leur efficacité manquent de force. Buts : Établir le profil de location de deux surfaces d'appui habituellement utilisées pour prévenir les ulcères de pression et comparer l'efficacité ainsi

que les coûts par rapport à l'achat d'une surface statique gonflable (SSG) utilisée à usage unique. MÉTHODOLOGIE : Étude prospective randomisée et contrôlée avec 110 patients d'un centre hospitalier de soins aigus. Les sujets de risque modéré à très élevé ont été assignés soit au groupe contrôle des surfaces louées (surface préventive statique, n = 50, ou surface dynamique à faible perte d'air avec pulsation, n = 5) ou soit au groupe expérimental de surfaces achetées (SSG 3, n = 55). RÉSULTATS : Les analyses comparatives des résultats ont démontré aucune différence significative dans l'incidence des ulcères de pression entre le groupe contrôle (n = 6; 11 %) et le groupe expérimental (n = 2; 3 %) (p = 0,2706). Il n'y avait également pas de différence dans le confort des patients (p = 0,7129). Cependant, une différence significative fut constatée dans les coûts de location versus d'achat (16 086,00 \$ vs 3 364,00 \$) (p < 0,0001), la SSG3 étant nettement moins dispendieuse pour le même type d'épisode de soins. CONCLUSION : La SSG 3 est aussi efficace à prévenir les ulcères de pression des patients (ayant un risque de modéré à très élevé) que les surfaces louées tout en réduisant les coûts de manière significative.

#### #D. A Retrospective Study on the Incidence and Risk Factor Complications at Saphenous Vein Grafting Harvest Sites Following Aorto-coronary Bypass Surgery Procedure

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Incidence and risk factors for lower extremity complications (LEC) following saphenous vein graft harvest for aorto-coronary bypass surgery (ACB) are poorly documented in the literature. PURPOSE: This retrospective review aims to estimate the incidence of and identify risk factors for in-hospital postoperative LEC related to open vein harvesting (OVH) and endoscopic vein harvesting (EVH) following ACB. METHODS: 1,379 consecutive patient records were reviewed from one tertiary hospital for a 2-year period (2008–2010). Demographic information, comorbidities, method of vein harvesting (OVH versus EVH), and intraoperative and postoperative complications were recorded. Univariate analyses were performed to evaluate the association between patient-related factors and incidence of complications using chi-square or Fisher's exact tests. Multivariate logistic regression estimated odds ratios and 95% confidence intervals. RESULTS: The most common LEC was hematoma (2.83% of patients), followed by cellulitis (0.80%), incisional dehiscence (0.36%) and tissue necrosis (0.07%). The overall LEC rate was 3.92%. In univariate analyses, risk factors for LEC included postoperative leg edema (P=0.0058), old age (P < 0.0001), female gender (P=0.0302), EVH (P=0.0045), and delirium (P=0.0486). Patient comorbidities (e.g. anemia) tended to associate with LEC, but these findings were not statistically significant. Patients with LEC tended to stay in hospital for >6 days (P=0.0021). In multivariate analysis, postoperative leg edema, EVH, and age >60 remained statistically significant. CONCLUSION: The incidence of LEC among ACB patients is significant. Strategies to mitigate modifiable risk factors, in particular edema control, may improve patient outcomes and quality of life.

## POSTER ABSTRACTS

### Professional Education

#### #1. DELCK Team: Development of a Wound Care Resource for Clinical Nurses

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PURPOSE: In order to improve wound care protocols at the Renfrew Victoria Hospital, a team of interested clinical nurses was assembled and given the task of creating a work plan to achieve the objective of developing clear, consistent plans and guidelines to ensure

quality skin and wound care for patients. The team consisted of five frontline nurses with a passion for high-quality care and an interest in becoming the hospital's first best practice champions for wound care. OBJECTIVES: 1) To improve wound care protocols at the Renfrew Victoria Hospital; create a work plan to achieve this objective; develop clear, consistent plans and guidelines to ensure quality skin and wound care for our patients. 2) To develop a complete wound care program consisting of new policies, procedures and protocols, as well as a wound care resource manual. 3) Provide ongoing mentoring and support on a peer-to-peer basis to enhance frontline nurses' accountability and responsibility. METHOD: Under the guidance of the Vice President of Patient Care Services and a frontline nurse manager, the clinical nurses selected the Registered Nurses' of Ontario Best Practice Guidelines for risk assessment in the prevention of pressure ulcers to form the foundation of their evidence-based program. A literature review was also conducted to gain an understanding of the evidence behind the recommendations. Education was provided to the DELCK team to enhance their learning and expertise in wound care. Over a six-month period, the team developed a complete wound care program consisting of: new policies, procedures and protocols; a wound care resource manual; and ongoing mentoring and support on a peer-to-peer basis. CONCLUSION: The unique approach to the development of this program enhanced the frontline nurses' accountability and responsibility. The successful implementation of evidence-based practices has provided a systemic and consistent approach to quality care for our patients. The nurses continue to be a resource for their peers and audit compliance with this new program. A pressure ulcer prevalence survey was conducted pre-implementation in February 2010. The post-implementation survey was completed in February 2011 and results will be available soon. Chart audits reveal that the new tools are used consistently on all units.

#### #2. Raising Awareness: Fraser Health's Commitment to Pressure Ulcer Prevention

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Fraser Health provides acute, out-patient, residential, home health, mental health and public health services to the largest geographical area/population (1.5 million) in BC. The performance indicators from acute, residential and home care (InterRAI Data & PixaLere Report, 2010) from two recent gap analysis reports and the latest community-based P & I study (2011), identified the need to implement a regional pressure ulcer awareness and prevention (PUAP) program. The Skin/Wound Steering Committee endorsed a novel approach to PUAP with five principles: 1) All patients can be at risk for PU. 2) The majority of PUs are preventable. 3) Good healthcare requires PUAP. 4) All healthcare providers play a role in PUAP. 5) PUAP requires a person-centred, team approach. A new 1-hour orientation program to raise the direct staff's awareness is the core of PUAP, by providing an overview of: how PUs develop; how PUs can be prevented; risk assessment with Braden Scale Assessment Tool; individualized care planning; and P & I study. TEAM APPROACH: To meet the learning needs of the anticipated large number of new employees from a variety of disciplines, this orientation program can be delivered in a group setting or via online learning. In addition to PowerPoint presentations, video clips are played at the beginning and end of the program to illustrate two patient care scenarios with different outcomes. Feasibility of the program will be evaluated by: the number of participants attending/accessing group/on-line orientation sessions; participants' level of learning via a questionnaire; and participants' level of satisfaction with content and delivery via a questionnaire.

#### #3. Implementation of Complex Therapy Concepts in Treatment of Venous Leg Ulcers

Katrin Will PhD, BSN Medical GmbH, Hamburg, Germany

In the case of chronic leg ulcers, successful healing cannot be achieved without a carefully designed concept of therapy, consisting of compression therapy and moist wound treatment. In order to gain further practical experience in the implementation of complex therapy concepts for treatment of leg ulcers in medical practice, 29 patients with chronic leg ulcers of venous and mixed etiology were treated with compression therapy and moist wound dressings under conditions of routine medical care. In 72.4% of all cases, the wound size reduced from 43.8% to 92.4%. In 51.7% of all cases, the wound healed completely. As the majority of patients had not experienced any progress in healing for extended periods of time due to their complicated health situation (e.g. underlying disease, adiposity, signs of infection, pronounced redness of the wound edges) and inadequate treatments, the healing results were rated very positively by both physicians and patients. In fact, the therapy could be implemented successfully without the use of any antibiotics by using an antimicrobial wound dressing. Patients who had worn compression stockings before perceived the compression system as a great relief, and superior to traditional standard stockings. The patients' well-being was substantially improved, which led to a high degree of patient compliance. This clearly shows that successful implementation of complex therapy concepts in daily medical practice is indeed possible and practically feasible. Furthermore, this approach to treatment of venous leg ulcers ensures a successful progression of wound healing and increased patient satisfaction.

#### **#4. Practice Improvements Related to the Use of Antimicrobial/Antiseptic Products**

*Karen Witkowski RegN BScN ET, Trillium Health Centre, Mississauga, Ontario*

The Advanced Wound Care Program at a large community healthcare facility is constantly addressing ways to improve the way care is provided to patients with wounds. The ultimate long-term goals of the Advanced Wound Care Program are to deliver consistent, sustainable, evidence-based wound care, thereby improving patient outcomes and demonstrating cost effectiveness. One problem that was identified early in the process of developing the program was the use and potential overuse/misuse of povidone/iodine antimicrobial solutions. Concerns raised around the use of the solution were infection control, questions about iodine uptake, practice questions, added steps, "messiness" of its use, the use of additional products with dressing changes and overall cost effectiveness. This poster will describe the process that the Skin and Wound Committee took to address the identified concerns through a detailed description of the evaluation and implementation processes of a new povidone/iodine antimicrobial product. The poster will also visually depict the educational tool that was developed to show correct application. A series of case studies will demonstrate the clinical effectiveness of the product. Through this experience, the problems related to the use of povidone/iodine solutions were addressed and the goals of the Advanced Wound Care Program have been attained with the introduction of a new povidone/iodine antimicrobial product.

#### **#5. Building Capacity in Pressure Ulcer Prevention: One Unit at a Time**

*Peggie Gairy BHSn IIWCC ETN CRN(C), Toronto Rehabilitation Institute, Toronto, Ontario*

**INTRODUCTION:** Pressure ulcers are an ongoing challenge in healthcare and are physical evidence of multiple causative factors, including immobility. Five years of intermittent classroom and "just-in-time" education on pressure ulcer prevention (PUP) in a complex continuing care hospital yielded no consistency or sustainability in practice. Lack of knowledge in risk assessment, prevention strategies and "no time" were identified as the main reasons for inconsistencies. A 14-week, single-unit-based theory and practicum on PUP resulted in sustainable practice change on that unit over a 10-month period.

**METHOD:** The problem was discussed with the unit manager and staff; educational support that included the following was provided: reviewed hospital policy on PUP; assessed risk factors, completed the Braden Scale (BS) and elaborated on meaning of score, and updated Kardex with interventions; basic skin assessment; impact of advanced age on pressure ulcer development; interprofessional role/collaboration in PUP; best practice guidelines for positioning; patient/family education; revised shift report form to include skin condition; and Braden scale routine reassessment dates. **RESULT:** Increased number of nurses independently completing risk assessment; unit champions to support PUP; one new stage IV pressure ulcer developed on pilot unit since the educational support; updated risk reassessment for all patients on pilot unit; two other units have since received educational/clinical support in PUP; all nurses being taught to check the therapeutic effect of chair cushions; monthly mattress checks for bottoming out and therapeutic effect of mattress covering currently happening on all units.

#### **#6. Prevalence and Incidence of Pressure Ulcers in a Non-acute Setting**

*Lilibeth C. Jones-Lim RN MN GNC(C), Baycrest, Toronto, Ontario*

Pressure ulcers (PU) negatively impact quality of life and result in significant health system expenditures. Woodbury & Houghton (2004) reported that the overall prevalence rate was high in Canada across all healthcare institutions (26%), with higher rates (29.9%) in non-acute settings. Thus, we aimed to conduct a prevalence and incidence study of pressure ulcers to provide benchmarking data to help the organization monitor trends, process improvement results and sustain quality improvement initiatives related to pressure ulcer prevention. The prospective study was conducted in a Canadian urban non-acute care geriatric facility. Teams led by trained surveyors performed a skin assessment of 577 inpatients. Patients who did not have a PU were subsequently examined after a time period to calculate the rate at which new PUs were occurring (i.e. incidence). The dates were chosen, as this was prior to the implementation of an organization-wide strategy that focused on PU prevention, including a new policy and educational sessions. As a result, the overall prevalence was found to be 21.84% for Stage I or greater and 12.65% for Stage 2 or greater. Incidence rates are reported by patient area. Also, patient profiles – including mean age, gender, Braden scores and location of PUs – are reported. The results will be used to provide an organization-wide perspective to quantify and benchmark within healthcare organizations. Results will help to evaluate the effectiveness of newly implemented pressure ulcer prevention strategies in subsequent prevalence and incidence studies.

#### **#7. Wound Diagnosis: LEAVA – The Look Evaluate Analyze Verify Algorithm**

*Jason C. Liu BScOT(c) IIWCC MCIScWH, E. Bardgett; A. Turner; V. Provost. Peace River Professional Orthotics Clinic, Edmonton, Alberta*

**INTRODUCTION:** Healthcare practitioners need to provide a differential diagnosis to a presenting wound. Unless a clinician has received advanced wound care education, few are able to understand the cause, treatment and prevention of wounds. Misdiagnosis of a wound delays healing and affects a patient's emotional, physical and financial health. There are also increased costs within the healthcare system and a risk for medical liability. **OBJECTIVE:** To develop an assessment tool – the Look Evaluate Analyze Verify Algorithm (LEAVA) – that would allow beginner, novice and intermediate clinicians to differentiate and diagnose various wound etiologies and apply appropriate treatments. **METHOD:** Four postgraduate-level clinicians of various practice settings and healthcare backgrounds completed a database search and used group consensus to collect and analyze the most current information on chronic wound differentiation. **RESULT:** An algorithm was developed to differentiate acute wounds from chronic wounds. The algorithm further differentiates ischemic,

neurotrophic, venous stasis, pressure, malignant and uncommon wounds. **CONCLUSIONS:** This completed algorithm will be forwarded to a group of experts in the wound care field for content review to ensure all key information has been included. Future adjustments to the algorithm will be based on the feedback received from said group of experts in discussion with the authors. The completed algorithm will be used as an enabler for healthcare practitioners.

#### **#8. Building Capacity Through Engagement to Reduce the Prevalence and Incidence of Pressure Ulcers**

*Lilbeth Jones Lim RN MN GNC(C), Baycrest, Toronto, Ontario*

Building capacity describes the process that equips individuals with skills, knowledge, access to information and training to enable them to perform effectively and promote best practice. In response to the identified need that improved access to resources and education may improve their efforts, the focus of a new interdisciplinary program aims to reduce the prevalence and incidence of pressure ulcers through a multi-strategy, capacity-building approach. The Wound Warrior Program, together with comprehensive evidence-based policy and educational sessions, engages point-of-care clinicians with a passion for excellence in skin and wound care. Upon completion of the program, additional requirements for designation include evidence of participation in a unit-based activity (i.e. care planning, holding educational sessions). Further, the introduction of skin rounds enabled the interdisciplinary staff to develop and evaluate the effectiveness of preventive measures. In addition, electronic tools were introduced or modified that provide current evidence-based information on the prevention of pressure ulcers, including a reminder system in the electronic health record and access to an e-tool. Prior to the implementation of the program, a prospective prevalence and incidence study (n=577) was conducted, which found that the overall prevalence was 21.84%. Also, an audit and feedback system was devised, and demonstrated an increase in overall compliance in the assessment of PU risk. It is proposed that the implementation of a comprehensive strategy, including multiple interventions that engage staff, will build capacity among the interdisciplinary team and result in a decrease in a planned subsequent prevalence and incidence study of pressure ulcers.

#### **#9. Digital Photography of Wounds**

*Darcie Anderson RN BSN, Saskatoon Health Region, Humboldt, Saskatchewan*

**HYPOTHESIS AND BACKGROUND:** The effective combination of innovative technology and wound care clinical practice will improve client outcomes in rural home care. This educational project was developed for rural home care nurses (HCNs) in the Saskatoon Health Region (SHR) to provide rural HCNs with evidenced-based guidelines and education to obtain the acquired skill to consistently take high-quality images of wounds. It is part of an IIWCC selective project. As photography is not a basic skill taught in healthcare programs, and wound care practice necessitates digital photos of wounds for enhanced documentation, the need for digital photography guidelines becomes paramount in order to do so responsibly and professionally. **PRIMARY PURPOSE:** Development of a standardized clinical photography guideline for rural HCNs taking photos of wounds. **PARTICIPANTS:** SHR rural HCNs are currently piloting this educational program. **OBJECTIVES:** The rural HCN will: verbalize and demonstrate the procedure for successful digital wound photography, maintain client confidentiality, maintain infection control techniques and employ appropriate methods of storing images for documentation purposes. **MATERIALS AND PROCESS:** The process includes: a baseline audit, pre-educational interview, post-education quiz, a competency check-list, and an enabler tool. Data collection was obtained by means of surveys and chart audits, with ongoing post education chart audits to ensure quality and sustainability. **OUTCOMES:** Post-education includes HCN

knowledge and demonstration of program objectives, which currently show that all participants strongly agreed that digital photography education was relevant to their needs and that knowledge and skills will be used in the workplace to improve client outcomes. Implications for practice include: The rural HCN will obtain a high-quality objective adjunctive documentation regimen to the written record, a cost effective tool for interdisciplinary communication, a tool for enhanced wound assessment, and improved client outcomes and satisfaction.

#### **#10. Lean Approach to Prevent Pressure Ulcers**

*Rose Raizman RN ET MS, RVHS, Toronto, Ontario*

**BACKGROUND:** Pressure ulcers greatly influence quality of life for patients and cause economic burden on healthcare systems. Therefore, pressure ulcer prevention has received international attention with multiple guidelines, position papers and tools being developed to improve prevention and treatment. Utilization of these tools and guidelines usually requires additional resources, yet in light of budget restraints and the continuing mandate to do more with less, innovative approaches are needed. In 2007, after experiencing major financial challenges, our community hospital adopted a Lean management philosophy. Focused on the elimination of waste in hospital processes, Lean helped eliminate our budget deficit and improved quality of care. In 2010, when faced with unacceptable pressure ulcer rates, a Lean approach seemed an obvious choice. **OBJECTIVE:** To present a pressure ulcer prevention and management project developed using Lean. **MATERIALS AND METHODS:** We used an environmental scan, A3 events and value stream analysis to identify gaps and opportunities for resource reallocation. We used best practice guidelines, Kamishibai audits, and visual management boards to make and sustain improvements. **OUTCOMES:** The pilot unit pressure ulcer incidence has declined from 23% to 0%. Utilization of the Braden scale has increased from 0% to 80%. All newly hired nurses were trained in ulcer prevention, compared with the previous 0%. Similarly, previously minimal organization-wide nursing education on pressure ulcer prevention was increased to 50%, and hospital-wide prevalence dropped 30%. Two additional positions were created for pressure ulcer prevention without incremental spending. Adjustment of current computer documentation allowed ongoing data collection and initiation of alert system for early prevention strategies.

#### **#11. From Rent to Own: A Business Case Primer to Reduce Pressure Ulcers**

*Rose Raizman RN ET MSc, Rouge Valley Health Systems, Toronto, Ontario*

A 415-bed, multi-site community hospital faced higher than national average pressure ulcer rates. After comprehensive assessment, a number of areas were identified as lacking, e.g. lack of standard screening and intervention, and high costs for rentals. A cost benefit analysis of the last two years' pattern of rental spend was conducted to evaluate the current state, retrospective needs and to determine a potential budget for the program. The program was planned to ensure quick wins and sustainable outcomes, and was to be executed in stages. The business case was presented to the senior management team, which included a proposal to reallocate 30% of an annual budget for rent toward purchase of required surface mix, and to use potential savings to support the program. After the purchase of air mattresses and single-use microclimate management systems, a greater number of patients were able to benefit from appropriate surfaces. A surface allocation protocol based on a risk assessment tool was developed and implemented hospital-wide by conducting lunch and learn presentations and focused education about new surfaces. Within the first three months, there was a significant decrease in the incidence of pressure ulcers (e.g. 0% on the surgical unit), and funds were reallocated for the creation of a Save Our Skin team, which will concentrate on implementation of the following

stages of the wound program as well as education and monitoring protocol implementation at the point of care. Authors will share the business case that allowed reallocation of funds to the pressure ulcer prevention program, the protocol for pressure redistribution and microclimate management surface allocation, and lessons learned.

#### **#12. Stomp Out Heel Ulcers: A Pressure Ulcer Prevention Initiative in a Community**

*Richard Bishop BScN, Oakville, Ontario*

**PURPOSE:** Pressure ulcers located on the heels are the second most common anatomical site, after the sacrum/coccyx. The results of our organization's 2010 pressure ulcer prevalence survey revealed that pressure ulcers located on the heels were the most common site, accounting for 35 ulcers or 42% of all pressure ulcers identified. **METHOD:** A review of pressure ulcer prevention literature identifies that a multifaceted approach to any pressure ulcer prevention program should include early skin and risk assessments, pressure management, documentation, and patient and family involvement. Our program, Stomp Out Heel Ulcers, using this framework, included an algorithm to assess patient risk, methods to remove heel pressure, documentation of new facility-acquired pressure ulcers, and educational material directed to inform and educate patients and their families. We took this initiative one step further by reaching out to our community and producing a short video segment which aired on the local community cable network. **CONCLUSION:** This program was launched in early January 2011 with participation in a yearly, industry-sponsored pressure ulcer prevalence survey at the end of February. These early results demonstrated a 49% reduction in heel ulcers (from 35 to 17). It is postulated that this focus on heel pressure ulcers helped to reduce the overall prevalence of all facility-acquired pressure ulcers across the organization to 7.8% (down from 10% the previous year).

#### **#13. To Evaluate if a New Silicone Border Dressing Offers Increased Client Comfort**

*Richard Bishop BScN, Halton Healthcare Services, Oakville, Ontario*

**BACKGROUND:** Silicone dressings have been accepted and used in wound healing because of the increased patient comfort they offer. From a clinical perspective, we sometimes have to compromise between benefits of wound dressings (i.e. wound pain at dressing change and absorption capabilities of the foam, keeping the peri-wound skin healthy) and the ability of the foam to stay in place. **OBJECTIVE:** To evaluate the absorption and adhesion characteristics of a new foam dressing in managing moderately draining wounds in an inpatient population. **METHODOLOGY:** A 5-patient case series was done on an inpatient population in a community-based hospital. Patients were monitored for a two-week period. Evaluation criteria included frequency of dressing changes, peri-wound skin condition, decrease in wound size, ability to conform to the wound, patient comfort and ease of application. Wounds studied were of different etiologies and anatomical locations. **RESULTS:** In the initial results, we noticed that even though the silicone adhesive is only along the border, it is sufficient to hold the dressing in place. The dressing was able to manage the moisture without causing peri-wound maceration. The three-piece opening allowed for increased ease of application, and patient comfort was not compromised. **SUMMARY:** There are multiple product choices on the market aimed at patient comfort and moisture management. This dressing may be a suitable option for a variety of moderately draining wounds. Further investigation is required to suggest whether the new foam dressing would allow for a reduction in dressing change frequency.

#### **#14. Wounded No More**

*Catherine Fitzpatrick BScN MHC (p), Trillium Health Centre, Mississauga, Ontario*

**PROBLEM:** Despite a majority of nursing staff having attended wound care education there continued to be a higher than desired prevalence of hospital-acquired pressure ulcers and a lack of transfer of clinical knowledge to the bedside. **SOLUTION:** An interdisciplinary task force, with staff representation from all medical, ICU and complex care units met monthly for six months and established two goals: 1) Less than 5% hospital acquired prevalence of Stage II to IV pressure ulcers; and 2) Zero percent do no harm. The task force determined the factors that prevented the reduction of skin breakdown. Task force members became unit champions, sharing their newly acquired knowledge and mentoring colleagues. **WHAT WAS DISCOVERED:** Audits determined that Braden scales were being completed on nearly all patients on admission and on a weekly basis. However, Braden scores were rarely used to determine prevention strategies or care practices. As well, many staff had little knowledge of how to utilize equipment such as mechanical lifts, wheelchairs and beds to reposition patients, nor how to utilize other strategies and resources to offload pressure areas. **WHAT WAS LEARNED:** The primary focus of the task force needed to be on the prevention rather than the treatment of pressure ulcers. Highlighting Braden scale results and prevention strategies on each patient's revamped Kardex and whiteboard, posting interventions over each patient's bed, educating staff on prevention strategies, providing ongoing task member support and involving the patient and family in prevention, significantly reduced incidences of skin breakdown.

#### **#15. Heel Pressure Ulcer Prevention: The Journey within an Acute Care Facility**

*Debbie L Hanna Bull RN BScN MN, Bailieboro, Ontario*

**BACKGROUND:** In 2006, pressure ulcer (PU) rates at our regional 375-bed acute care facility were above international and Canadian benchmarks. Subsequently, a PU Prevention and Wound Treatment Program was implemented. By 2009, facility-acquired PU decreased by 50%. However, heel pressure ulcers (hPU) occurrence worsened. 5.8% of patients developed an hPU, ranking heels the number one location for facility-acquired PU's. hPU's are costly and can lead to osteomyelitis and limb amputation. **METHODS:** In 2009, an hPU prevention initiative was implemented following acceptance of a business case emphasizing the benefit in patient quality of life and cost avoidance. Protocol components included: utilizing a cushioned heel offloading device for patients meeting inclusion criteria, extensive staff education, timely accessibility to the device, ongoing monitoring and reporting of outcomes. **RESULTS:** Six-month data revealed that 43% of patients met criteria to use the device; of these patients, 37% were compliant, resulting in a 40% reduction in hPU's. 10-month data revealed 19% of the 44% of patients who met the criteria were compliant, resulting in a 28% decrease in hPU's. Interestingly, with 17-month data, only 17% of the 49% of patients who met criteria were using the device, yet only 2.6% of the patients had an hPU. **CONCLUSIONS:** Facility-acquired hPU rates have decreased 55% with an approximate cost avoidance of \$1.5 million dollars annually. Positive outcomes seen are a result of extensive staff education, risk identification, frequent skin assessment and device use as necessary. The challenge is to increase protocol compliance to further enhance outcomes.

#### **#16. Changing Practice is as Easy as PIES**

*Linda Norton BSc OT MScCH, Shopper's Home Health Care, Mississauga, Ontario*

**INTRODUCTION:** Manual tilt wheelchairs can be used to foster position changes and prevent or manage skin breakdown with clients who are unable to adequately shift their own weight. Manual tilt chairs have also been classified as a restraint in some long-term care settings. This has led to the removal of this beneficial piece of equipment from some long-term care settings in an effort to minimize restraints. **GOAL:** To create an environment where manual tilt wheelchairs are

considered a therapeutic device, and not automatically removed from a resident because it might be a restraint. **METHODS:** The Canadian Association of Wound Care (CAWC) has developed an approach to practice change where activities in four domains are identified: Practice, Institutional, Education and System. This model will be used to explore how the perception of manual tilt wheelchairs is changing from a possible restraint to a therapeutic positioning device. **RESULTS:** Change is beginning to occur. Chartwell Seniors Housing Reit has revised their policy on restraints. In this setting, where a manual tilt wheelchair has been prescribed by a therapist for a specific client, that chair is considered a therapeutic device, and documentation in the chart recognizing this fact is completed. **CLINICAL IMPLICATIONS:** Although creating practice change may seem impossible, the Practice, Institution, Education and System model described by the CAWC fosters the identification of do-able steps which will change practice.

#### **#17. Reduction in Readmissions for Persons with Venous Leg Ulcers: Enhancing a Venous Leg Ulcer Pathway**

*Eva Haratsidis BScN RN, Toronto Central Community Care Access Centre, Toronto, Ontario*

Persons with venous leg ulcers (VLU) suffer from a chronic disease state challenged by high rates of ulcer recurrence (20–70%). Research shows that recurrence is strongly influenced by patient adherence. Clients frequently readmit due to difficulty with stocking application, trauma to newly closed wound areas and inconsistencies in skin care and compression stocking wear. Due to the cause of the wound etiology and frequent readmissions, this client group represents a significant cost to the healthcare system. Typically, Toronto Central Community Care Access Center (TCCAC) clients are discharged to self-care post-wound closure, and readmission rates are high (54%). In an attempt to decrease readmissions, TCCAC and Calea revised the current VLU care pathway using best available evidence and completed an evaluation in the Fast Access to Supportive Treatment (FAST) centres. The revised pathway included: increasing client length of stay post stocking fitting to monitor skin care regime, protection techniques for the closed wound area(s) and reinforcement of compression stocking application. It was determined that these changes would decrease client readmission vs. current standard of care. The evaluation period was from October 2010 to March 2011. Of the 110 clients seen at the FAST centers, 3 (2.7%) were readmitted while 10 of 34 (29%) seen in home care required readmission. The chronicity of VLU requires a modified care pathway supporting clients with a self-management program that increases client independence and improved quality of life, while decreasing readmissions and costs.

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### **Public Policy**

#### **#18. A Community-based Prevalence and Incidence (P & I) Study: An Evidence-based Study of Pressure Ulcer Prevention and Management**

*Marine Chan RN BSN MSN IHWCC GNC(C), Fraser Health, Vancouver, British Columbia*

Fraser Health provides acute, outpatient/residential/home health, mental health and public health services to the largest geographical area and population (1.5 million) in BC. Only three formal P&I studies have been conducted recently in acute care (prevalence rates: 28% to 80%; incidence rates: 16% to 27%). The estimated prevalence rates were 25% in home health; 60% of new clients had recent a hospital admission (Paxalere, 2010) and 12% were in residential care (InterRAI, 2010). The Skin Integrity/Wound Management Steering Committee aims to build a culture of quality and safety for pressure ulcer prevention and management. The community-based P & I study was conducted

in January and February 2011 to examine the root causes with an intersectoral collaboration and an interdisciplinary team approach. The study sites included acute care, residential care, and a home health office in the same community. The assessors were WCCs, ETs, nurses, OTs and RDs from other sectors and sites. To complement their skills, the WCC/ET/experienced nurses teamed up with the OT/RDs. In residential care, RCAs also participated. The prevalence rates were 37% in acute care, 27% in residential care, and 42% in home health. The incidence rates were 17% in acute care and 2% in residential care. The next step is undertaking five sequential, phased-initiatives with an inter-sector/interdisciplinary collaboration to implement a sustainable pressure ulcer prevention program, as follows: 1) A one-hour pressure ulcer prevention orientation program for new employees. 2) Braden Scale pressure risk assessment/prevention of skin breakdown guidelines (2011) for clinical practice. 3) A level-one skin/wound care education program for nurses and interdisciplinary staff. 4) Advanced wound skin/management modules for clinical leaders/champions. 5) Educational materials and resources for patients and caregivers.

#### **#19. Influencing Accreditation with Pressure**

*Marlene A. Varga RN BScN IHWCC, Covenant Health, Edmonton, Alberta*

It is estimated that 2.5 million pressure ulcers (PU) are treated in acute care facilities within the United States (Reddy et al., 2006). In the United Kingdom, the cost of treating PU is 1.4–2.1 billion pounds, which accounts for 4% of the NHS expenditure (Bennett et al., 2004). As a result, there is a significant threat to the economy and public health around the world (Sen et al., 2009). Pressure ulcers have a negative effect on the health-related quality of life of individuals (Hopkins et al., 2006; Essex et al., 2009). Accreditation Canada (2011) outlines practices for safety within health authorities, including implementing evidence-based protocols to prevent PU in long-term care only. PU prevalence and incidence studies were performed 2007–2010. With ethical approval, data was collected through head-to-toe assessment and staged using NPUAP Guidelines (2009). Prevalence rates were 34% (CI 27.4–41.1%), while incidence rates were 29% (CI 14.5–43.4%) in 2007. With implementation of an evidence-based PU program, clinical practice has improved. This contributed to a decreased prevalence (19% in 2009; CI 12.9%–25.1%) and incidence (19% in 2009; CI 8.7%–28.6%). In 2010, there was an increase in prevalence to 32% and incidence rate to 27%. During the first 2 weeks of hospital admission, PU can occur in 9% of individuals (Frankel et al., 2007). Reducing PU is a high priority. Research and awareness has prompted a province-wide PU prevention committee. It is suggested that AC 2011 should include acute care in standards for PU prevention.

#### **#20. Multidisciplinary Wound and Comprehensive Lower Leg Edema Management**

*Cynthia Timinski RN BScN MN NP, Alberta Health Services, Edmonton, Alberta*

Gottrup, Nix and Bryant (2007) note that no single discipline can meet the complex needs of a patient with a wound; the best outcomes are achieved through a well-educated and dedicated team striving for the provision of holistic care. Integrated Supportive Living (ISL), in Edmonton, AB, has established a multidisciplinary wound/comprehensive lower leg assessment (CLA) clinic to address the needs of clients with multiple medical and psychiatric comorbidities who often lack a family physician, family support and access to community resources. Professionals actively involved in the clinic include a nurse practitioner, enterostomal therapist and an occupational therapist. Also accessible are a pharmacist, dietician, physiotherapist and social worker. The clinic was developed in response to the need for comprehensive assessment/treatment of wounds and lower leg edema. Without combined attention to pressure reduction, infection, necrotic tissue, tissue perfusion, nutrition, mobility, pain and psychosocial issues,

chronic wounds do not heal (AAWC, 2005). Communicating through an interdisciplinary approach is crucial to ensuring that patients are receiving care that is timely and that follows current, rapidly changing, evidence-based practice (Wallach, 2002). The clinic setting integrates science into holistic, client-centred practice. Standardized assessment and documentation, medication review, CLLA (including ankle brachial indices and toe brachial indices), sharp tissue debridement, specialized footwear and fabrication of custom insoles/offloading, as performed by designated professionals, has enabled the clinic to successfully address the client need within the assisted-living program.

#### **#21. Evidence-based Recommendations for Conservative Sharp Wound Debridement**

*Elise Rodd-Nielsen [for Cathy Harley RN BSN CETN(C)], Independent Consultant, Cantley, Quebec*

Conservative sharp wound debridement (CSWD) is recognized as an important intervention in the rapid preparation of the wound bed for healing, yet in North America there is a lack of standardization regarding policy, education and practice guidelines. Over 20 months, a group of enterostomal therapy nurse volunteers compiled, organized and developed evidenced-based recommendations on CSWD from the available literature. The recommendations are based on a compilation of literature published between 1991 and 2010, focusing on the adult population with wounds where CSWD could be implemented as an intervention. The recommendations were derived through a consensus process that analyzed emerging themes from both the soft literature (opinion, case studies) and higher-level research. Levels of evidence were assigned to the recommendations. Validation of the recommendation headings and content was obtained from 29 volunteer national and international stakeholder reviewers from Canada, the US, the UK, Italy, Brazil, Australia and Mexico. The ten recommendations encompass the domains of policy, clinical practice, etiology-specific wounds and education. A summarization will be given of the development process, challenges faced, and the web-based technologies used in this national/international collaborative effort.

#### **#22. Regionalization of Comprehensive Diabetes Care in Guyana, South America**

*Brian Ostrow MD FRCSC, University of Toronto, Guelph, Ontario*

**PURPOSE:** To develop a community-based diabetes care program inside the multi-level public health system in Guyana, South America. **METHODS:** Regionalize the benefits of the Guyana Diabetic Foot Project–Phase 1 (46% reduction in major amputations) to 6 Administrative Regions (90% Guyanese population) and target 15,000 people with diabetes. Training and clinical targets are the highest-level priorities of diabetes care in developing countries in three streams: Stream 1 – foot care for high risk persons; Stream 2 – glycemic control to HbA1c <9% and blood pressure control to less than 160/95 mm Hg; Stream 3 – integrated expansion of the key opinion leader pool from 7 to 11. Thirty-six training sessions by Guyanese key opinion leaders targeting 353 healthcare workers. Develop training modules and specific enablers in diabetes education, glycemic control and blood pressure treatment. Ten visits by Canadian diabetes/wound care experts to train the trainers and monitor results. Employment of project manager and clerical staff. Rehabilitation and supply of 7 new regional diabetic foot centers with the interprofessional model and provision of appropriate equipment. Develop the public HbA1c testing capacity **RESULTS:** The project is ongoing. The logistic and infrastructure elements have been established. The first cohort of 192 trainees, from 89 facilities, has received training in medical and foot care. Three regional foot centers are operational. More than 1000 screenings for high-risk foot status have been completed. **CONCLUSIONS:** This model has important implications for healthcare delivery in low-income settings.

## **Research**

#### **#23. Wound of Necrotizing Fasciitis with Underlying Pyoderma Gangrenosum**

*Eric Marcotte MD MSc, Department of Surgery, Centre Hospitalier Universitaire de Sherbrooke, Sherbrooke, Quebec*

Pyoderma gangrenosum is a rare ulcerative disease for which medical control is often difficult. It is characterized by the phenomenon of pathergy. We present a case of pyoderma gangrenosum that was complicated by a soft tissue necrotizing infection of the perineum and the thigh. An extensive surgical debridement was performed and there was important deterioration under negative-pressure wound therapy. There were also many infections by multiresistant *Pseudomonas aeruginosa*. We describe the multidisciplinary management with immunomodulators, corticosteroids and immunoglobulins, as well as cadaveric and autologous skin grafts. Once the disease was controlled medically, the grafts allowed for progressive granulation and contraction of the wound. Because it is a long-term treatment, collaboration between the teams, as well as devoted personnel and the motivation of the patient, are key elements in the management of such a case.

#### **#24. Risk Factors for Venous Leg Ulcers: A Systematic Review**

*Kelly Heron RN BScN CETN (C) MCISc(WH), Windsor Regional Hospital, LaSalle, Ontario*

**INTRODUCTION:** Literature indicates that venous leg ulcers are common and costly, and their development is difficult to predict. If risk can be identified, strategies can be put in place to prevent or reduce the likelihood that ulceration will occur. **PURPOSE:** To determine if risk assessment tools exist for the prediction of venous leg ulcers. In the absence of existing risk assessment tools, we sought to identify predictor variables that could be included in the development of a predictive risk assessment tool. **METHOD:** A systematic review using key search terms was conducted using PubMed, HaPI, CINAHL, Scopus and Embase. By title and abstract, 21 articles were identified and reviewed independently. Of these, 8 research articles were chosen based on a set of predetermined criteria. The methodological quality of the articles was determined utilizing the Scottish Intercollegiate Guidelines Network (SIGN) checklists. **FINDINGS:** No risk assessment tools were found, but numerous risk factors were found. Because the studies were diverse – e.g. population investigated, study design, endpoints – it was not possible to combine results. Despite high odds ratios (OR) for several risk factors, e.g. previous venous ulceration (OR 19.4; 95% CI, 14.5–25.9), history of deep vein thrombosis (OR 17.6; 95% CI, 2.9–106.8), few common risk factors were identified. **CONCLUSIONS:** While a valid, reliable and predictive risk assessment tool was not found for clinician use, variables were identified that could be included in the development of such a tool. Further research is required.

#### **#25. Prevalence of Skin Tears in Long-term Care Facility**

*Kimberly LeBlanc RN BScN MN CETN(C), KDS Professional Consulting, Ottawa, Ontario*

The appropriate management of patients with skin tears is an ongoing challenge for healthcare professionals. Skin tears are often painful, acute wounds resulting from trauma to the skin and are largely preventable. Healthcare professionals must be able to identify individuals at risk for skin tears, and aid in the prevention of these wounds and in their treatment when they occur. Despite preliminary studies that suggest skin tears may be more prevalent than pressure ulcers, there remains a paucity of literature to guide prevention, assessment and treatment of skin tears. As a result, these wounds

are often mismanaged and misdiagnosed, leading to complications, including pain, infection and delayed wound healing. In addition, skin tears increase caregiver time and facility costs, cause anxiety for patients and families, and may reflect poorly on the quality of care delivered in a facility. This poster will highlight the findings of a point prevalence study conducted at a 114-bed long-term care facility in Eastern Ontario. While further research is needed to determine the prevalence and incidence of skin tears across healthcare settings, the results of this prevalence study provide a much needed first step in establishing a Canadian database on the prevalence of skin in the elderly population.

#### **#26. Effectiveness of Manual Lymph Drainage Plus Compression on Volume Reduction for Lower-extremity Lymphedema: A Systematic Review**

*Andrea C. Turner BSN MClSc(c), University of Western Ontario, Victoria, British Columbia*

**OBJECTIVE:** To determine the benefit of manual lymph drainage plus compression for the management of individuals with lower extremity lymphedema. **METHODS:** Electronic databases [CINAHL, Cochrane Library, PubMed, Embase, SCOPUS and ProQuest] were searched using the following key search terms: lymphedema, lymphoedema, lower extremity, leg, compression, manual lymph drainage [MLD], complete decongestive therapy [CDT] and compression. Clinical studies reviewed included those in which the participants received treatment with MLD in conjunction with compression, as part of CDT for lower extremities. The primary outcome measure investigated was volume reduction of the affected limb. A secondary outcome was health-related quality of life [HRQoL]. **RESULTS:** Nine articles (n=1475 legs) examined the effect of MLD plus compression to reduce volume in lower extremity lymphedema. No studies were found that included a comparison group. Downs and Black scores for methodological quality ranged from 7/44 to 33/44. All 9 studies reported that MLD was associated with a decrease in leg volume, with reductions ranging between 22% and 88% by 4 weeks. Two studies reported that HRQoL improved with volume reduction. **CONCLUSIONS:** A comprehensive review of existing literature revealed there are several poorly controlled clinical trials that document the effect of MLD plus compression on edema associated with lower extremity lymphedema. However, the benefits of this therapy must be confirmed in further research involving properly designed controlled clinical trials.

#### **#27. Managing Skin Tears in the Elderly Population with a Non-Adherent Silicone Contact Layer: A Case Series**

*Kimberly LeBlanc BScN RN MN CETN(C) IIWCC, KDS Professional Consulting, Ottawa, Ontario*

Skin tears are a common problem that healthcare professionals face when caring for the elderly. These frequently seen wounds are the result of trauma to the skin from shearing, friction or blunt injury. Skin tears can cause stress to the patients and their families and are often challenging wounds for the healthcare professional providing care. The elderly are at a higher risk for skin tears due to the fragility of the aging skin, flattening of the basal cell layer and impaired circulation. While prevention of skin tears is the primary focus for managing this problem, healthcare professionals working with the elderly population must be equipped to manage these challenging wounds when they occur. In recent literature, there has been an increase in the attention given to these wounds; however, there has been no gold standard developed for their management. Through case study format, this poster will review one treatment option available for skin tears. We will show pictorially the use of a non-adherent silicone contact layer in the care of five elderly patients living in a long-term care facility. Their wounds ranged from partial to full thickness skin tears. These case studies will include case history, and initial and final assessments of the wounds, including photos of the skin tears initially

and after 4 weeks of treatment, the treatment plan, the problems encountered, patient outcomes and implications for the future.

#### **#28. Point Prevalence of Chronic Edema in a Long-term Care Facility**

*Kimberly LeBlanc BScN RN MN CETN(C) IIWCC, KDS Professional Consulting, Ottawa, Ontario*

Chronic edema of the legs is a complex, underappreciated and progressive medical condition. For the elderly, who have an increased risk of developing skin tears, pressure ulcers and other skin wounds due to changes associated with aging, those who have chronic edema have an additional causative factor which puts them at increased risk for developing wounds. It has been reported that lower leg edema is an increasing medical problem, particularly in the aging population. However, there is limited published data pertaining to the prevalence of chronic edema in the long-term care population in Canada. This poster will highlight the findings of a point prevalence study conducted at a long-term care facility in Eastern Ontario. While further research is needed to determine the prevalence and incidence of lower leg edema across healthcare settings, the results of this prevalence study provide a much-needed first step in establishing a Canadian database on the prevalence of chronic lower limb edema in the elderly population living in a long-term care facility.

#### **#29. A Wearable PRFE Device for the Healing of Chronic Ulcers**

*Ian Rowe PhD, BioElectronics Corporation, Frederick, Maryland*

**INTRODUCTION:** Pulsed radio frequency energy (PRFE) has previously been used to successfully treat longstanding diabetic and venous stasis ulcers. In this case study, a miniaturized, lightweight wearable PRFE (RecoveryRx) device was used to treat 3 patients with diabetic foot ulcers and 1 patient with a venous stasis ulcer. **METHODS:** The ulcers were present on the 4 patients for greater than 3 months and had failed to heal after 4 weeks treatment with conventional therapies. These treatments included debridement, offloading, Promogran matrix and sterile dressing for the diabetic ulcers, and multilayer compression therapy for the venous stasis ulcer. A lightweight, battery-powered, wearable form of PRFE device was introduced as a treatment and was used 6 to 8 hours per day for a period of 6 weeks. Wounds were evaluated, and wound size recorded, on a weekly basis. **RESULTS:** All ulcers after 1 week of PRFE therapy showed improvement and wound size was seen to decrease. The patient with the venous stasis ulcer reported significant pain relief after 2 weeks of treatment, and after 6 weeks a 95% reduction in wound size was achieved. Two patients with diabetic ulcers achieved complete healing after 3 weeks of treatment, and the remaining diabetic ulcer patient had an 88% reduction in wound size after the 6-week study period. Continued PRFE treatment after the 6-week study period resulted in complete healing of both the venous stasis ulcer and the remaining diabetic ulcer. **CONCLUSION:** PRFE treatment delivered in the form of a wearable lightweight patch appears to offer promise in the treatment of recalcitrant chronic wounds.

#### **#30. Evaluation of a Highly Absorbent Foam Dressing**

*Kimberly LeBlanc BScN RN MN CETN(C) IIWCC, KDS Professional Consulting, Ottawa, Ontario*

Through the absorption of exudate, topical wound dressings protect the peri-wound skin from moisture damage and maintain the wounds' moisture balance. When the topical dressing is unable to contain the exudate, results may include: wound deterioration, peri-wound maceration, frequent dressing changes, altered patient comfort and increased nursing time. This poster looks at five institutionalized patients and explores the performance of a newly formulated highly absorptive foam on wounds with copious exudate. Wounds that

did not previously have their exudate well-contained were selected via chart review. The wounds of these five patients required daily foam dressing changes due to the volume of wound drainage, and it was felt that they would benefit from a more absorbent product. Outcome measures included an assessment of peri-wound skin (including maceration), presence of strike through, leakage and required frequency of dressing changes. All five patients demonstrated fewer dressing changes with less peri-wound maceration.

### **31. Light Compression Therapy in Leg Edema Management for the Long-term Care Elderly**

*Ye Feng, NP MN BScN, YCH/MSH, Scarborough, Ontario*

**INTRODUCTION:** Managing elderly patients with leg edema and leg ulceration due to venous insufficiency but unable to tolerate therapeutic high compression bandages presents a clinical challenge in the long-term care (LTC) setting, particularly when diuretics use is usually not effective in treating leg edema due to venous insufficiency in the geriatric population. **PURPOSE:** To evaluate the effectiveness of light compression therapy in managing leg edema in the LTC geriatric population. **METHOD:** A multi-centre study to investigate 29 patients ranging from 66 to 98 years old at 19 LTC facilities, who presented with unilateral or bilateral leg edema treated with an elasticated tubular bandage. Inclusive criteria included venous insufficiency, CHF, post DVT, lymphedema and cellulitis. The compression pressure used was 5–10 mm Hg. Patients at high risk of combined arterial insufficiency were started with less than 5 mm Hg pressure. The widest part of the calf was measured before initiation and at 1 to 6 weeks later. **RESULTS:** A decrease in calf size ranging from 2 cm to 10 cm within a period of 1 to 6 weeks resulted in decreased use or discontinuation of diuretics. No voiced complaints of pain or obvious complications were reported and the nursing staff appreciated the easy and simple technique used to apply and monitor the application. **CONCLUSION:** Light compression with an elasticated tubular bandage achieved significant success in managing leg edema for the LTC geriatric population. An increase in compliance, optimal outcomes and cost effectiveness, with a decrease in nursing time, were achieved.

### **32. Evaluation of Turn and Position Product to Reduce the Incidence of Pressure Ulcers in Postoperative Cardiovascular ICU Patients**

*Linda Flockhart BScN, University Health Network, Toronto, Ontario*

**BACKGROUND:** Despite efforts to reduce pressure ulcers in critical care patients, the prevalence of nosocomial pressure ulcers ranges from 8.8 to 10.4% (VanGilder et al., 2009). Immobility and moisture are two risk factors associated with an increased risk of skin breakdown. The turn and assist product (TAP) is a new device designed to offload pressure from bony prominences and control the microclimate to reduce the risk of moisture and pressure-related skin injury. **OBJECTIVE:** To evaluate the effectiveness of implementing a turn and position system on the incidence rate of sacral ulcers in the CVICU. **METHOD:** Specially trained wound care resource nurses in the CVICU perform weekly skin and chart audits on all patients in the 22-bed unit using the pressure ulcer staging guidelines developed by the National Pressure Ulcer Advisory Panel to identify all pressure ulcers attributable to their ICU stay. Incidence rates for sacral ulcers were compared for the 11 months prior to the implementation of the TAP product with the incidence rates of sacral ulcers during the 3 month trial. **RESULTS:** Pre-trial, the average number of ICU-related sacral ulcers among the 517 patients observed was 7.2 per month (mean 0.15), compared with 2.3 per month (mean 0.042) during the 3-month trial (n=165). This represents a significant sacral incidence reduction of 68%. **CONCLUSION:** There was a reduction in the incidence of sacral ulcers attributable to ICU stays during the implementation trial of a TAP. The results are encouraging and warrant further evaluation and research.

### **#33. Protect Our Patients' Skin (P.O.P.S.)**

*Heather Morrow RN, Headwaters Health Care Centre, Orangeville, Ontario*

At an 87-bed acute and complex continuing care facility, options were needed for the prevention of incontinence-associated dermatitis (IAD) that would enhance staff efficiency and improve patient care. **OBJECTIVE:** To provide best practice patient care by preventing skin breakdown in incontinent patients. **METHODOLOGY:** Pre-implementation skin assessments were conducted on incontinent patients over 3 separate days on medical, surgical and rehab floors. Of those identified with incontinence, a total of 24 patients with compromised skin integrity were found. In-servicing was provided for staff in the use of 3% dimethicone barrier cloths, chosen for their ease of use. After a six-month period using the 3% dimethicone-based barrier on incontinent patients, a repeat sampling was carried out with a result of only 5 exhibiting IAD. **RESULTS:** Hospital-wide implementation of 3% dimethicone barrier cloths resulted in a 79% decrease in IAD. The added benefit was the reduced development of pressure ulcers and the related time and expense associated with caring for this type of wound. Further to improved and more efficient patient care, gone is the need for creams and lotions. **CONCLUSION:** With the implementation of 3% dimethicone barrier cloths, we are able to protect our patients' skin from exposure to excessive moisture and reduce the risk of skin breakdown related to IAD.

### **#34. Interprofessional Team Approach to Wound Management in Long-term Care**

*Selina Hune PhD MScNP BScN RN, Southlake Regional Health, Willowdale, Ontario*

Optimal wound healing requires accurate assessment, infection management, moisture balance, removal of non-viable tissue, the use of proper wound care products and a pressure-reduction surface. An outreach nurse practitioner team worked with seven nursing homes conducted a study to determine effective and cost-efficient ways to select wound care products to achieve moisture balance in order to maximize wound healing outcome. **METHODS:** A multi-centre study with an information-oriented sampling of six residents who suffered from infected Stage III, IX, or unstageable wound(s) with moderate to high exudates. Self-adherent foam dressings and calcium alginate were compared for their efficiency. Residents were referred to a dietician for nutritional assessment and an occupational therapist for pressure-reduction surface consults. **RESULTS:** After a two-week use of the selected calcium alginate Ag to pack wounds and silicone self-adherent foam dressing used as outer dressing, wound exudate was controlled and necrotic tissue was reduced. All wounds showed significant improvement over four weeks, with an average wound size reduction of 20% and a noticeable reduction of necrotic tissue. Four ulcers were completely healed. No maceration of the surrounding skin was noted. Residents reported less pain on dressing changes. Nurses reported that the dressing was easy to apply. **CONCLUSION:** A team approach to wound products selection based upon the ability of products to control infection and moisture in wound healing or maintenance improved patient outcome. Calcium alginate Ag was effective in debridement and antimicrobial effect. The use of silicone self-adherent foam dressing is effective in moisture balance. A pressure-reduction surface helped to prevent ulcers from developing.

### **#35. Team Approach to Product Selection and Chronic Wound Management in Long-term Care**

*Selina Hune PhD MScNP BScN RN, Southlake Regional Health, Willowdale, Ontario*

**PROBLEM & OBJECTIVES:** The long-term care population is predominantly over 70 years of age, with multi-system illnesses, cognitive decline and mobility challenges, making wound healing a

challenge. A long-term care outreach nurse practitioners team worked with the nursing homes to conduct a study to determine a team approach to product selection in wound management. **METHODS:** A multi-centre study with an information-oriented sampling of 20 residents who suffered from infected chronic wound with necrotic wound bed. Medical grade active *Leptospermum* honey calcium alginate dressing (ALH) and foam dressing with adhesive were used to treat infected wounds when other treatment regimens had failed. **RESULTS:** After three weeks' treatments with medical grade honey dressing and covered with adhesive foam dressing, all wound beds were clear of necrotic tissue. After two to five months, the wounds had improved noticeably, i.e. reduced in size or completely healed. The most significant finding involved a 92-year-old resident who suffered from an infected chronic lower leg wound with protruding necrotic tendon and black necrotic tissues. After three months of ALH treatment, the wound size had decreased from 13.5 x 7 cm to 10 cm x 5 cm. Healthy tissues had grown over the entire tendon and amputation was no longer needed. **CONCLUSION:** A team decision is appropriate for the selection of wound management product use based upon the ability of products to control infection, moisture balance and degree of wound healing or maintenance. The wound care team has determined ALH as an effective first- or second-line therapy for debridement, antimicrobial effect and moisture balance in wound healing.

### #36. The Braden Scale: Are We Identifying Long-term Care Residents at Risk?

*Machelle Wilchesky BAH MA PhD, Donald Berman Maimonides Geriatric Centre, Montreal, Quebec*

Pressure ulcers (PU) are both a health concern and an indicator of the quality of care provided to residents of nursing home facilities. A few studies have evaluated the validity of the Braden Scale (BS) within the long-term care population, and have found it to be of only modest sensitivity and specificity, and some studies question its validity entirely. We took advantage of a longitudinal evaluation of a training and monitoring program for the reduction of PU to evaluate the sensitivity and specificity of the BS at various cut-off levels within our institution and determined that it was differentially valid when comparing mobile versus immobile residents. A total of 31 (8.5%) residents had a PU at baseline, and a further 53 developed a PU during the one-year study period which saw both prevalence and incidence falling from 9.02%–4.01% and 7.23%–2.63%, respectively. A BS cut-off score of 18 was found to provide the best measure of sensitivity (range: 33.3%–64.3%) and specificity (range: 57.4%–59.3%) when assessing the entire population at risk. Among residents with immobility deficits, sensitivity improved (range: 61%–86%) at the expense of markedly lower specificity (range: 14.2%–19.8%). Reducing the cut-off value to 16 improved BS performance within this population subset. For patients without immobility deficits, the BS exhibited poor validity. The BS Friction and Shear component was associated with a statistically significant protective odds ratio of 0.42 (95% CI: 0.30–0.68) and exclusive use of a Friction/Shear cut-off score of >2 improved validity (sensitivity: 59%; specificity: 68%) for the mobile resident population.

### #37. Sequential Use of Advanced Wound Care Products in Healing Dehiscid Surgical Wounds

*Helen Arputhanathan RN BScN IIWCC, VON, Toronto, Ontario*

This poster will describe and provide pictures of the sequential use of advanced wound care products to facilitate healing by secondary intention of a dehiscid surgical wound. The goal of treatment and the use of each product will be identified along with the product description and clinical outcomes at the different stages of healing. A post-appendectomy with peritoneal abscess presented as an open abdominal wound which developed into an abdominal hernia. Initial assessment upon discharge from hospital with measurement of

8 cm x 3.7 cm x 2 cm, undermining 2–3 cm around wound, copious exudate levels, rolled edges 6–12 o'clock and attached edges 12–6 o'clock, 100% friable granulation tissue. In the inflammatory phase, silver with alginate was selected to decrease the bioburden, and wound bed preparation. In the proliferative phase, collagen/silver/ORC dressing was used to provide protection of the wound from infection and granulation to fill depth of wound. For epithelialisation, a povidone-iodine nonadherent dressing was chosen. Secondary dressing was a hydrolytic dressing for exudate management until 90% epithelialisation occurred. For the remaining 10% epithelialisation, due to minimal exudate, the secondary dressing used was a nonadherent pad. Clinical outcome is successful wound healing over 6 months. The extended healing time was due to the abdominal hernia. This challenging case study summarizes the clinical experience of how sequential use of advanced wound care products during the appropriate phase of wound healing contributes to optimal wound outcomes.

### #38. Evaluation of a New Silicone Foam Dressing: Patient and Caregiver Satisfaction

*David Keast MSc MD FCFP, Aging, Rehabilitation, and Geriatric Care Research Centre, London, Ontario*

**INTRODUCTION:** Dressing selection should consider the form and function of the dressing. Functions such as ability to absorb or donate moisture, to promote autolytic debridement and to maintain bacterial balance should be considered. Dressing selection must also account for patient preference, caregiver preference and skills, as well as available resources. Evaluation of a new dressing should include patient and caregiver acceptability as well as performance parameters. **PURPOSE:** To assess patient acceptance and performance of a new silicone adhesive foam dressing. **METHODOLOGY:** Patients with moderately draining wounds of any etiology were treated. Treatment was provided by study nurses with twice weekly visits for 4 weeks. Outcome measures assessed at all visits included: wound surface area, Photographic Wound Assessment Tool (PWAT), peri-ulcer skin score (PWSS), Verbal Numeric Pain Score, patient satisfaction questionnaire, nursing satisfaction, and wound photographs. **RESULTS:** 7 patients with 10 wounds were enrolled. No patients were intolerant of this dressing. Within 4 weeks, mean wound surface area decreased from 8.2 cm<sup>2</sup> to 3.9 cm<sup>2</sup> with 3 wounds that closed. Mean pain score decreased from 4.0 to 2.7. Mean PWAT scores decreased from 10.7 to 5.3 and mean PWSS decreased from 1.3 to 0.6. **DISCUSSION:** All 10 wounds showed improvement over 4 weeks with average size reduction of 52%. Patients reported satisfaction with the silicone foam compared to the previously used dressing and found dressing changes were atraumatic. **CONCLUSION:** This silicone foam adhesive dressing performed well in all performance characteristics and was well-rated by both patients and nurses.

### #39. Retrospective Clinical Case Studies of Effectiveness of Inelastic Band

*Jason C. Liu BScOT(c) IIWCC MCIScWH Peace River Professional Orthotics Clinic, Edmonton, Alberta*

**PURPOSE:** To complete a cost comparison of elastic versus inelastic compression bandaging in the treatment of wounds and/or volume reduction of clients with edema or lymphedema. **METHODS:** Retrospective chart reviews were completed on twelve clients who received compression therapy and wound treatment for ulcers caused by venous insufficiency or lymphedema, or who received treatment for volume reduction of lymphedematous legs. All clients had measurements taken of the wound surface area or leg circumference at baseline and then monthly. Wounds were initially treated with standard wound care and elastic compression bandages. Clients with lymphedema initially were treated with elastic bandaging. The treatment for all clients changed to include inelastic bandages. A cost

comparison of treatments before and after the initiation of inelastic bandages was calculated. RESULTS: All wounds which failed to close with elastic compression system closed with inelastic compression system. The study also showed that the inelastic compression system is able to manage venous edema and lymphedema in less than 4 weeks. CONCLUSION: An inelastic compression system can lead to improved edema reduction and faster wound healing time, which results in a cost saving in adult clients. Faster healing time and edema reduction would also increase a client's quality of life and reduce the cost burden on the healthcare system. The benefits of this therapy need to be confirmed in further research involving controlled clinical trials with larger numbers of subjects.

#### #40. Evaluation of a New 3D Polymer Foam Dressing – A Barrier-free Foam

Rose Raizman BN ET MSc, Rouge Valley Health System, Toronto, Ontario

BACKGROUND: Foam dressings are designed to absorb exudates. Although silicone technology has been proven to prevent skin stripping and promote pain-free removal, a recent study suggested that the silicone adhesive layer on the foam appears to be hydrophobic. This encouraged us to evaluate whether absorption capacity of the foam increases if there is no barrier silicone layer on it. Such foam was recently launched and it has the benefits of the silicone adhesive border combined with high absorption of a 3D polymer foam. OBJECTIVE: To compare the effectiveness of a new foam dressing with silicone adhesive border against other foam dressings currently available on the market. MATERIALS AND METHOD: A prospective case series was conducted on both inpatient and outpatient populations with different wound etiologies during a 6-week period. 12 patients were recruited and treated with available foam dressing per hospital or community formulary for at least two weeks prior to application of new foam. The performance of the dressings was evaluated based on changes in wound size, edges and peri-wound skin condition, ease of use and comfort from a clinician and patient perspective, and frequency of dressing changes. OUTCOMES: The most profound outcome was resolution of peri-wound maceration at the next dressing change for 100% of the population: 100% of the people reported equal or greater comfort. In 60% of cases, dressing changes were decreased from Q2 to Q3 or Q4 days after 1 week of treatment. To conclude, the new foam is comparable, if not superior, to existing foams.

#### #41. Le plâtre de contact total pour l'ulcère du pied diabétique

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Étude de cas sur l'utilisation en clinique de plaies complexes d'un plâtre de contact total en trousse complète pour l'ulcère du pied diabétique. Le plâtre de contact total (PCT) est reconnu comme l'étalon or pour la libération de la mise en charge des ulcères de la face plantaire du pied diabétique (1), pourtant, moins de 2 % des spécialistes l'utilisent (2). But de l'étude : Démontrer que l'application d'un PCT en trousse complète peut être faite de façon sécuritaire et avec confiance par le personnel infirmier d'une clinique de plaies complexes achalandée et que l'utilisation de ce PCT est sécuritaire et rentable. Méthodologie : Le PCT a été appliqué sur un des membres inférieurs de deux sujets avec un ulcère de la face plantaire antérieure de stade Wagner 2. Ces patients avaient des ulcères de longue date traités par décharge amovible du pied. Le suivi de la plaie ainsi que la satisfaction du personnel infirmier de la clinique de plaies complexes ont été documentés. Une étude pharmacoeconomique a également été réalisée. Résultats : Le personnel infirmier de la clinique de plaies complexes a été en mesure d'installer six PCT pour ces deux patients jusqu'à guérison complète des ulcères. Le patient 1 a obtenu en 24 jours, au coût de 970 \$, la guérison d'un ulcère qui perdurait depuis 835 jours, et ce malgré l'utilisation de pansements standard et la libération de la mise en charge complète (MEC) par décharge amovible dont le coût totalisait 9228 \$. Le patient

2 a été guéri en 16 jours avec PCT (727 \$) d'un ulcère traité auparavant par des pansements standard et libération de MEC pendant 180 jours (3173 \$). Le personnel infirmier a été satisfait de la facilité d'application du PCT. Il n'y a eu aucune complication liée à l'application du PCT. Conclusions : L'application du PCT en trousse complète est efficace, rentable et sécuritaire. Sa facilité d'utilisation par le personnel infirmier d'une clinique de plaies complexes achalandée a été démontrée.

#### #42. In Vitro and Healthy Human Studies Assess Foam Adhesive Dressing Breathability and Fluid-handling Properties

David Holm PhD, 3M Health Care, St Paul, Minnesota

PURPOSE: To assess breathability and fluid handling properties of several marketed foam adhesive wound dressings under simulated high moisture conditions using in-vitro and in-vivo test models. METHODOLOGY: Two in-vitro models assessed breathability: 1) Moisture vapor transmission rates (MVTR) in contact with liquid according to EN 13726-2:2002; and 2) continuous infusion of test fluid under the dressing at a rate of 0.75 mL/hr (24 hours per day) for 7 days (126 mL total). The in-vivo model assessed wear time with 12-24 healthy human subjects in 6 separate studies. Dressings A-G were worn on the back and manually injected with 1.0 mL of artificial wound fluid every hour during waking hours (12 x per day) over 7 days (up to 87 mL total) or until the dressing failed (delamination, fall off, leakage, lift to pad) and were compared using a Cox regression model. RESULTS: Dressing A had a liquid contact MVTR of 12,800 +/- 370 g/m<sup>2</sup>/24 hour. By comparison, the other marketed dressings MVTR values ranged from 800 +/- 400 to 11,400 +/- 700 g/m<sup>2</sup>/24 hours. For the continuous fluid infusion model, Dressing A evaporated approximately 85% of the test fluid over the 7-day period. By comparison, the evaporation amount for the other marketed dressings ranged from approximately 21% to 85%. For the in-vivo model, the median fluid volume administered until dressing failure was significantly higher for Dressing A (>87 mL) compared to the other marketed dressings (13-44.5 mL). CONCLUSION: Dressing A has high breathability and fluid handling capacity under simulated high moisture conditions when tested using both in-vitro and in-vivo methods in comparison to other marketed foam adhesive dressings.

#### #43. Case Series: Use of a Foam Adhesive Dressing on Chronic Wounds

Marie Brown-Etris RN CWOCN, Etris Associates, Philadelphia, Pennsylvania

INTRODUCTION: Foam wound dressings are designed to manage wound fluid while maintaining a moist wound environment. This multi-centre study focused on patients with a variety of wounds being treated with an adhesive foam dressing that is designed handle low to high exuding wounds. MATERIALS AND METHODS: The wounds selected were low to high exuding, partial and full thickness dermal wounds that were currently being treated with a foam dressing and were expected to use the study foam dressing for four weeks. Weekly dressing changes were recommended if possible, but more frequent changes were not restricted. Up to 40 patients are expected to be enrolled when the study is complete. RESULTS: At the interim analysis, there were ten women and ten men who had completed the study from three different facilities (home care, long-term care and a wound clinic). Ages ranged from 19 to 91 years. Eleven wounds were pressure ulcers, 4 were venous ulcers, 4 were surgical and 1 was traumatic. Twelve (60%) wounds had moderate to high exudate levels, and seven (35%) had mild exudate levels. There were 93 dressing changes occurring after 1 to 9 days of wear (27% had 2 or 3 days of wear and 57% had at least 5 days of wear) with 54% of the time, the clinician who removed the dressings stated the dressing could have remained on longer. Ninety-two percent of dressing changes were due to routine procedures, 4% were due to soiled dressing or leakage and 3% had

missing reasons for dressing change. For all 20 patients, the clinicians stated that the study dressing had met their wear time expectations. **IMPLICATIONS FOR PRACTICE:** Meeting dressing wear time expectations may have a role in management of overall treatment costs.

#### **#44. Comparing the Ability of Various Dressings to Reduce Protease Activity**

*Breda Cullen PhD, Systagenix, Gargrave, North Yorkshire, United Kingdom*

This study compared collagen/oxidised regenerated cellulose (ORC)/silver to other dressings to evaluate their capability to reduce inflammatory proteases, *in vitro*. **INTRODUCTION:** Chronic wounds generate an excessive amount of inflammatory proteases causing it to be detained in an inflammatory cycle. These high levels of inflammatory proteases have a detrimental impact on the wound healing process; consequently many different treatment options are used to try and rebalance the wound environment. **METHOD:** Biopsies of each dressing were incubated at 37C in a protease solution. The activity of the protease solution was then measured using fluorometric assays. Each dressing was tested for the ability to reduce neutrophil-derived elastase and matrix metallo proteases (MMP) activity. **RESULTS:** The ability to reduce the level of inflammatory proteases was found to differ between the dressings tested. The results show that collagen/ORC/silver was more effective at reducing the level of neutrophil-derived elastase and MMP activity over collagen only dressings, dressings impregnated with NOSF and other silver containing dressings. **CONCLUSION:** This study demonstrates the effectiveness of different dressings to reduce protease activity using an *in vitro* model. Collagen/ORC/silver has the ability to reduce protease activity more effectively than any of the other dressings that were tested. This unique combination of collagen/ORC/silver provides benefits that cannot be achieved by either collagen or silver alone. Collagen/ORC/silver is effective at reducing inflammatory protease activity, suggesting that this therapy is able to help rebalance the environment of the chronic wound to promote healing.

#### **#45. Biochemical Differences in Healing and Non-healing Diabetic Foot Ulcers**

*Breda Cullen PhD, Systagenix, Gargrave, North Yorkshire, United Kingdom*

The aim of this clinical trial was to establish whether there are any differences in the protease levels between healing and non-healing diabetic foot ulcers. Patients were randomised to receive either collagen/oxidised regenerated cellulose (ORC)/silver (24 patients) or control treatment (15 patients). Wounds were classed as healing if there was at least 50% reduction in wound area from baseline to Week 4; all other wounds were classed as non-healing. Elastase activity, matrix metallo protease-1 (MMP-1) and matrix metallo protease-9 (MMP-9) levels were measured in wound fluid samples which were taken at baseline and after 4 weeks of treatment. There was a significantly higher proportion of healing wounds in the collagen/ORC/silver group compared to the control group ( $P=0.035$ ). The summation of the proteases MMP-1, MMP-9 and elastase provided the most significant difference between the healing and non-healing groups. The sum of elastase activity + MMP-1 + MMP-9 was significantly higher in non-healing wounds compared to the healing wounds at both baseline and at week 4. This level of distinction between the two groups was not seen between any individual proteases. These results suggest that a combination of proteases may provide a more accurate predictor of wound healing than looking at any individual protease. This study has confirmed that high levels of inflammatory proteases are associated with non-healing wounds. Previous studies have shown that collagen/ORC/silver is able to reduce protease activity; this may explain why there is a higher proportion, of healing wounds in the collagen/ORC/silver group compared to the control group.

#### **#46. A Randomized Controlled Trial to Study Collagen/ORC/Silver Treatment of Diabetic Foot Ulcers**

*Finn Gottrup MD DMSci, Copenhagen Wound Healing Center, Denmark, Copenhagen*

The aim of this randomised controlled trial was to compare the clinical outcomes of collagen/oxidised regenerated cellulose (ORC)/silver with control therapy in the treatment of diabetic foot ulcers. 24 patients were randomised to collagen/ORC/silver and 15 to control (standard treatment protocol). Patients received the allocated treatment for up to 14 weeks and wound area was measured weekly. The groups were compared using 3 main criteria; number of wounds to show at least 50% reduction in wound area by Week 4 (known prognostic indicator of wound healing), number of wounds to heal within the study and adverse events that were related to the wound. The healing data show that in the collagen/ORC/silver group significantly more patients reached at least 50% reduction in wound area by Week 4 compared to the control group (79% vs. 43%,  $p=0.035$ ). In the collagen/ORC/silver group 52% of wounds healed in the 14 week study period compared to 31% in the control group. In the control group 31% of patients had to withdraw from the study due to wound infection. In contrast to this, there were no withdrawals due to wound infection in the collagen/ORC/silver group; this difference was significant ( $P=0.012$ ). In conclusion, treatment of diabetic foot ulcers with collagen/ORC/silver led to increased rates of healing and decreased incidence of wound infection. Collagen/ORC/silver has a combined mode of action and this study has shown that the multi-factorial approach to wound healing leads to improved clinical outcomes by reducing the risk of infection and promoting wound healing.

#### **#47. Effect of Collagen/ORC/Silver Wound Size and Protease Activity**

*Breda Cullen PhD, Systagenix, Gargrave, North Yorkshire, United Kingdom*

**AIM:** To determine the effect of collagen/oxidised regenerated cellulose (ORC)/silver therapy on wound healing and protease activity. During the 14 weeks treatment, the wound was measured weekly and wound fluid samples were taken for analysis of matrix metalloprotease-9 (MMP-9) and elastase activity. **RESULTS:** A female presented with an ulcer of 4 years duration. Baseline wound area was 1.3cm<sup>2</sup>. After 14 weeks treatment the wound size decreased to 0.3cm<sup>2</sup>. This was coupled with a 99% decrease in MMP-9 and elastase activity. A male presented with an ulcer of 7 months duration. Baseline wound area was 2.5cm<sup>2</sup>. By Week 12, MMP-9 and elastase activity had decreased by 98% and 51%, respectively. The wound healed by Week 13. A male presented with an ulcer of 3 years duration, wound area 1.4cm<sup>2</sup>. After 1 week of treatment there was a reduction in MMP-9 and elastase activity (96% and 100% respectively). This reduction in protease activity was sustained for 14 weeks, at which time the wound had decreased in size and was too small to measure. A male presented with an ulcer of 4 months duration. After 2 weeks of treatment, there was an 84% decrease in MMP-9 activity and a 33% reduction in elastase activity. The wound healed by Week 4. **CONCLUSION:** wounds treated with collagen/ORC/silver show a reduction in inflammatory protease activity which is coupled with a decrease in wound area. This study demonstrates that collagen/ORC/silver therapy positively impacts proteolytic imbalances associated with the chronic wound environment and promotes wound healing.

#### **#48. A Clinical Study Examining the Effect of Collagen/ORC/Silver**

*Breda Cullen PhD, Systagenix, Gargrave, North Yorkshire, United Kingdom*

Wounds subjected to repeated trauma, infection, hypoxia or malnutrition are at risk of chronic inflammation and the expression of abnormally high levels of proteases. This can result in the breakdown of components of the ECM and ultimately lead to impaired wound

healing. In this study, we investigate the effect of collagen/ORC/silver therapy on chronic venous leg ulcers. In order to determine the effect of the therapy, levels of proteases were examined in wound fluid prior to, and during, treatment. This was compared to clinical outcomes. Wounds which achieved a greater than 50% reduction in wound area by week 4, as determined by the Margolis Index, were designated a treatment responder. Our results indicate that by week 4, more wounds had responded to collagen/ORC/silver than standard therapy alone. This trend was predictive of total healing, which was significantly improved in the collagen/ORC/silver group by week 12, as was the rate of wound closure. Reduced levels of proteases were also apparent in wounds which responded to therapy. This clinical evidence validates our previous *in vitro* and *ex vivo* studies, showing that collagen/ORC/silver can rebalance the wound environment, by reducing proteolytic activity thereby facilitating healing in chronic ulcers. Moreover, it also suggests that therapies which are designed to deal with the underlying biochemistry, may be beneficial as first line treatments of chronic wounds.

#### #49. Evaluation of a Nonadhering Silicone Wound Contact Layer

Sally Stephens BSc, Systagenix, Gargrave, North Yorkshire, United Kingdom

AIM: Primary wound contact layers are designed to provide low trauma removal for use in combination with secondary therapies such as under compression, beneath absorbent secondary dressings and with negative pressure therapy. It is therefore essential that a primary wound contact layer is non-adherent whilst allowing the free passage of fluid into a secondary dressing. The aim of this study was to assess a new non-adhering silicone wound contact layer under simulated wound conditions. METHOD: The performance of a new non-adhering silicone wound contact layer was evaluated using *in vitro* and *in vivo* methods to assess the following: Adherence to the wound bed and the peri-wound skin; reduction of adherence of the secondary dressing to the wound; assessment of trauma to the wound when compared to commercially available wound contact layer dressings; the ability of fluid to pass unimpeded to the secondary dressing; and the ability to remain in place unassisted during application and under simulated use. RESULTS & CONCLUSIONS: The new non-adhering silicone wound contact layer demonstrated low adherent characteristics in both *in vitro* and *in vivo*. The soft silicone ensured the dressing adhered to the peri-wound skin unassisted for easy application and remained in place under high and low exudative conditions whilst allowing for atraumatic removal. Furthermore, the pore size and the open area of the dressing were shown to be optimal to ensure free passage of fluid into the secondary dressing and also prevent adherence of the secondary dressing.

#### #50. Evaluating the Design Characteristics of Hydropolymer Foam Dressings

Breda Cullen PhD, Systagenix, Gargrave, North Yorkshire, United Kingdom

INTRODUCTION: Wounds often vary in terms of area, cavity size, exudate levels and amount of blood present, and no one dressing is suitable for all wound types. To achieve optimal moist wound healing and help avoid peri-wound maceration, a family of hydropolymer dressings has been developed to treat differing wound types. AIM: To evaluate the performance characteristics of different types of dressings within the hydropolymer dressing family. METHODS: Dressings used for wounds of varying exudate levels were tested for total fluid handling using standard methodologies. Other features – such as wear time, strike through and fluid retention – were examined using *in vitro* model systems. Adherence was assessed using an *in vitro* fibrin clot model, for dressings indicated for use on low exuding or bleeding wounds. Tensile strength was used as an outcome measure for cavity wound dressings where one-piece removal is important.

RESULTS: The dressings within the hydropolymer family have been optimised to deal with the unique properties of different wound types, including high to low exudate levels and awkward wound sites. In addition, we have cutable dressings and non-adherent options that can be used on bleeding wounds and packing dressings which have the tensile strength and absorbency necessary for use in cavity wounds. Dressings available within the hydropolymer family are usable under compression. CONCLUSIONS: This study demonstrates that instead of providing one dressing format across a number of wounds, we offer a family of dressings which have been optimised to deal with the unique properties of different wound types.

#### #51. The Relationship Between the Amount of Electrical Stimulation Therapy and Wound Size Reduction: A Systematic Review

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OBJECTIVES: To determine if a relationship exists between the amount of electrical stimulation therapy (EST) and the rate of wound size reduction. DATA SOURCES: Electronic databases and bibliography searches were used to find related research studies. STUDY SELECTION: Articles were included according to predetermined inclusion/exclusion criteria and selected based on consensus by at least two independent reviewers. Included studies involved adult human subjects with chronic wounds treated with EST. Excluded studies: abstracts, review articles, non-English, not available, not possible to determine total EST treatment time or to calculate percentage area reduction (PAR) at 4 weeks. DATA EXTRACTION: Mean  $\pm$  standard deviations (SD) of the total treatment time and PAR at 4 weeks were calculated. DATA SYNTHESIS: Of 167 articles, 12 with 143 subjects met inclusion criteria. Five studies involved pressure ulcers only, 3 venous leg ulcers and 4 ischemic ulcers. Mean  $\pm$  SD for PAR at 4 weeks for pressure ulcers was 42%  $\pm$  18%, 35%  $\pm$  13% for venous, 18%  $\pm$  33% for ischemic ulcers, and 34%  $\pm$  20% for all chronic wounds. With a mean EST treatment time of 5.5 hours (hrs) per week a PAR of 35%  $\pm$  22% is observed at 4 weeks in chronic wounds. According to our exclusion criterion, there is a lack of data regarding diabetic ulcers. CONCLUSION: The average PAR in chronic wounds treated with EST at 4 weeks was 34%. Pressure ulcers demonstrated a faster healing rate than venous and ischemic ulcers.

#### #52. Exercise as a Treatment for Venous Leg Ulceration: An Update

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Venous leg ulcers (VLU) are the most severe outcome of chronic venous insufficiency (CVI). Though the exact pathogenesis is unknown, sustained ambulatory venous pressure is an integral component of the pathway from venous stasis to ulceration. This review seeks to investigate the literature that has been published linking venous ulceration and exercise as a treatment of both stasis and ulceration as well as how to encourage exercise in this patient population. Attributing venous hypertension to one or two causative factors can lead to ineffective treatment of patients with ulceration. Failure of the calf muscle pump can be correlated to decreased ankle range of motion, decreased muscle strength, neuropathy, decreased activity, altered gait and balance. Physiotherapy has been shown to be effective in treating these impairments and could potentially be very beneficial in aiding in the treatment of VLU. The concept of self-management was an important theme in patient adherence to exercise programs. Clear-cut information about the chronicity of VLU, individualized and structured treatment programs, and knowledge of and strategies to work with patients with the wide range of perceptions of physical activity improved patient adherence. Physiotherapists have expertise in these areas. There has been little research done to show direct healing of VLU resulting from exercise programs. Future studies

need to incorporate all aspects of the calf muscle pump in order to fully investigate the usefulness of physiotherapy in treating VLU.

### **#53. Preventing Pressure Ulcers in Long-Term Care: Cost-Effectiveness Analysis**

*Ba' Pham MSc, Toronto Health Economics and Technology Assessment Collaborative, Toronto, Ontario*

**BACKGROUND:** Pressure ulcers are common in many care settings, with adverse health outcomes and high treatment costs. We evaluated the cost-effectiveness of evidence-based strategies to improve current prevention practice in long-term care (LTC) facilities. **METHODS:** We used a validated Markov model to compare current prevention practice with four quality improvement strategies: 1) pressure-redistribution mattresses for all residents, 2) oral nutritional supplements for high-risk residents with recent weight loss, 3) skin emollients for high-risk residents with dry skin, and 4) foam cleansing for high-risk residents requiring incontinence care. Primary outcomes included lifetime risk of stage 2-4 pressure ulcers, quality adjusted life years (QALYs) and lifetime costs, calculated according to a single healthcare payer's perspective and expressed in 2009 Canadian dollars (CND\$1=US\$0.84). **RESULTS:** Strategies cost on average \$11.66 per resident per week. They reduced lifetime risk; the associated number-needed-to-treat was 45 (strategy-1), 63 (strategy-4), 158 (strategy-3), and 333 (strategy-2). Strategy-1 and -4 minimally improved QALYs and reduced the mean lifetime cost by \$115 and \$179 per resident, respectively. The cost per QALY gained was approximately \$78,000 for strategy-3 and \$7.8 million for strategy-2. If decision makers are willing to pay up to \$50,000 for one QALY gained, the probability that improving prevention is cost-effective is 94% (strategy-4), 82% (strategy-1), 43% (strategy-3), and 1% (strategy-2). **CONCLUSIONS:** The clinical and economic evidence supports pressure-redistribution mattresses for all LTC residents. Improving prevention with perineal foam cleansers and dry skin emollients appears to be cost effective, but firm conclusions are limited by the available clinical evidence.

### **#54. Intraoperative Prevention of Pressure Ulcers in Surgical Patients**

*Ba' Pham MSc, Toronto Health Economics and Technology Assessment Collaborative, Toronto, Ontario*

**BACKGROUND:** Patients who undergo prolonged surgical procedures are at risk of developing pressure ulcers. Recent systematic reviews suggest that pressure redistribution overlays on operating tables significantly decrease the associated risk. Little is known about the cost effectiveness of using these overlays in a prevention program for surgical patients. **METHODS:** Using a Markov cohort model, we evaluated the cost effectiveness of an intraoperative prevention strategy with operating table overlays made of dry, viscoelastic polymer from the perspective of a healthcare payer over a 1-year period. We simulated patients undergoing scheduled surgical procedures lasting

≥90 min in the supine or lithotomy position. **RESULTS:** Compared with the current practice of using standard mattresses on operating tables, the intraoperative prevention strategy decreased the estimated intraoperative incidence of pressure ulcers by 0.51%, corresponding to a number-needed-to-treat of 196 patients. The average cost of using the operating table overlay was \$1.66 per patient. Compared with current practice, this intraoperative prevention strategy would increase slightly the quality-adjusted life days of patients and by decreasing the incidence of pressure ulcers, this strategy would decrease both hospital and home care costs for treating fewer pressure ulcers originated intraoperatively. The cost savings was \$46 per patient, which ranged from \$13 to \$116 by different surgical populations. Intraoperative prevention was 99% likely to be more cost effective than the current practice. **CONCLUSION:** In patients who undergo scheduled surgical procedures lasting ≥90 min, this intraoperative prevention strategy could improve patients' health and save hospital costs. The clinical and economic evidence support the implementation of this prevention strategy in settings where it has yet to become current practice.

### **#55. Early Prevention of Pressure Ulcers among Elderly Patients Admitted Through Emergency Departments**

*Ba' Pham MSc, Toronto Health Economics and Technology Assessment Collaborative, Toronto, Ontario*

**BACKGROUND:** Every year, approximately 6.2 million hospital admissions through emergency departments (ED) involve elderly patients who are at risk of developing pressure ulcers. We evaluated the cost-effectiveness of pressure-redistribution foam mattresses on ED stretchers and beds for early prevention of pressure ulcers in elderly admitted ED patients. **METHODS:** Using a Markov model, we evaluated the incremental effectiveness (quality-adjusted life-days) and incremental cost (hospital and home care costs) between early prevention and current practice (with standard hospital mattresses) from a healthcare payer perspective during a 1-year time horizon. **RESULTS:** The projected incidence of ED-acquired pressure ulcers was 1.90% with current practice and 1.48% with early prevention, corresponding to a number needed to treat of 238 patients. The average upgrading cost from standard to pressure-redistribution mattresses was \$0.30 per patient. Compared with current practice, early prevention was more effective, with 0.0015 quality-adjusted life-days gained, and less costly, with a mean cost saving of \$32 per patient. If decision makers are willing to pay \$50,000 per quality-adjusted life-year gained, early prevention was cost-effective even for short ED stay (i.e. 1 hour), low hospital-acquired pressure ulcer risk (1% prevalence), and high unit price of pressure-redistribution mattresses (\$3,775). Taking input uncertainty into account, early prevention was 81% likely to be cost-effective. Expected value-of-information estimates supported additional randomized controlled trials of pressure-redistribution mattresses to eliminate the remaining decision uncertainty. **CONCLUSION:** The economic evidence supports early prevention with pressure-redistribution foam mattresses in the ED. Early prevention is likely to improve health for elderly patients and save hospital costs.

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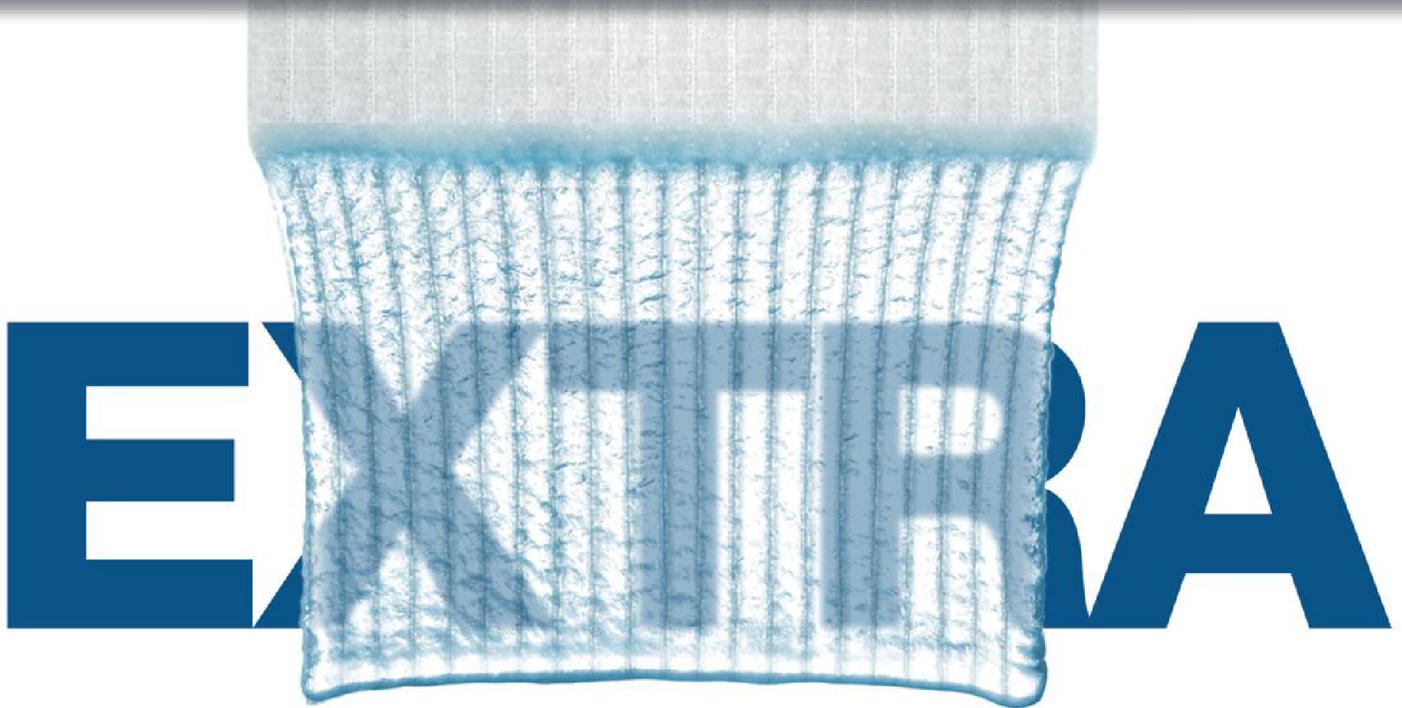
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