

Evidence-Based Wound Care

Home Care Perspective



Canadian Home Care
Association
canadienne de soins
et services à domicile

The National Voice of Home Care

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About the Canadian Home Care Association

The Canadian Home Care Association (CHCA) is a not-for-profit membership association dedicated to ensuring the availability of accessible, responsive home care and community supports to enable people to stay in their homes with safety, dignity and quality of life. Members of the Association include organizations and individuals from publicly funded home care programs, not-for-profit and proprietary service agencies, consumers, researchers, educators and others with an interest in home care. Through the support of the Association members who share a commitment to excellence, knowledge transfer and continuous improvement, CHCA serves as the national voice of home care and the access point for information and knowledge for home care across Canada.

For more information, visit our website at www.cdnhomecare.ca

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Executive Summary

Wound care is a priority area within the health system in Canada as it is a high volume service that is neither efficient nor cost-effective. It is generally accepted that the fundamental reason is the lack of integrated evidence-based inter-disciplinary care. As the number of individuals receiving home care continues to increase, the appropriate management of wounds in the home setting is becoming critically important, not only because of the magnitude but because of the clinical need. Early discharge from hospital is driving the increase in surgical wounds in home care, and chronic wounds are associated with aging and chronic disease. Management of wounds in those compromised by co-morbid conditions is not only difficult for individuals, but is costly to the financially strapped health system. The need to implement cost effective wound care practices has become increasingly important.

The numbers emphasize the imperative. An estimated “one-third of all home and community care clients have wound care needs” (Baich, Wilson, and Cummings 2010, 53-64) and 50 per cent of care delivered by home care programs in Canada involves the management of wounds (McIsaac 2007, 299-309). More than 80 per cent of ongoing management of chronic wounds (e.g. leg wounds, ulcers), occurs in the community (Graham et al. 2003, 896-902).

Evidence indicates that wound care services delivered without a best practice approach are expensive, deliver poor client outcomes and often waste valuable human and fiscal resources. “The gap between research evidence and clinical practice is one of the most persistent problems in the provision of quality health care” (Davies et al. 2008). Research has demonstrated that significant savings can be realized through the implementation of evidence-based wound care protocols. However, implementing and

sustaining an evidence-based wound care program is a complex process that presents considerable challenges for all stakeholders. It has been fifty years since the first research-based recommendation for moist wound healing was published (Dale 2011, 429-440), and yet dry gauze dressings are still a common treatment choice for managing wounds.

This paper highlights some of the evidence, challenges and opportunities to enhance wound care management within home care. Initiatives undertaken by home care programs across the country are addressed and key success factors identified.

“The gap between research evidence and clinical practice is one of the most persistent problems in the provision of quality health care” (Davies et al. 2008).

Technology is a constant that underpins the delivery of effective wound management at home. It includes remote monitoring facilitating access to experts; electronic exchange of clinical information, including pictures of the wound; adjunctive therapy; and, tracking systems. Computerized tracking systems serve as outcome measurement data management tools and, with algorithms based on clinical practice guidelines, provide an immediately accessible resource for best practice treatment options based on the clinical data. Raw data is transformed into relevant knowledge for clinicians so they can see the extent to which they are following guidelines, and be reminded of recommended treatment options that will ultimately improve care and cost outcomes.

There are opportunities to enhance policy and practice in home care in order to promote greater consistency and a higher standard of care for home care clients with wounds. Programs across the country are working to advance best practice, reduce cost and improve clinical outcomes and quality of life for home care clients. The Canadian Home Care Association (CHCA) applauds these efforts and, based on the input from a number of stakeholders across the country, proposes recommendations for governments, administrators, clinicians, educators and quality councils.

These actions are vital to the achievement of an integrated system of wound care that provides accessible and responsive services that enable people to stay safely in their home with dignity, independence and quality of life. The Canadian Home Care Association calls on all health system partners to consciously and conscientiously disseminate information regarding accomplishments in effective wound management.

Recommendations

- **ACCELERATE THE ADOPTION OF TECHNOLOGY** to improve access to best practice guidelines, to support point of care access to expertise (e.g. through remote monitoring or digital imaging) and to support data collection.
- **IMPROVE ACCESS TO PRODUCTS, DEVICES AND ADJUNCTIVE THERAPIES** across health care sectors and client geography such that issues related to setting of care (such as cost, provider knowledge) are not a barrier to recommended treatment.
- **MANDATE CONTINUING EDUCATION IN WOUND MANAGEMENT AND PREVENTION** for all clinicians involved in caring for patients with wounds at home, and improve the resources available to the general public on effective management and prevention of wounds.
- **SUPPORT INTER-PROFESSIONAL COLLABORATION ACROSS DISCIPLINES AND ORGANIZATIONS** so that professional capacity is optimized and the right care is delivered at the right time by the right provider.
- **PROVIDE MEASUREMENT AND ANALYTIC SUPPORT** to care teams so performance outcomes can be readily available and used to continuously improve practice by building on lessons learned.



Wound Management in the Home Setting

Home Care is “an array of services for people of all ages, provided in the home and community settings, that encompasses health promotion and teaching, curative intervention, end-of-life care, rehabilitation, support and maintenance, social adaptation and integration, and support for the family caregiver.”

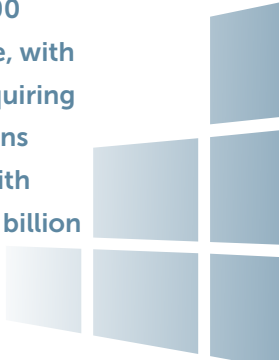
Home care allows Canadians of all ages to manage their health care needs outside the hospital: in their home or community settings. Surrounded by family and friends, they continue to be an integral member of their local community.

Of the 1.5 million Canadians receiving home care, the majority are aged 65 and over (Canadian Home Care Association 2008) and, it is generally accepted that with the aging population, the need for home care services in Canada can be expected to increase in the coming years. Canadians want to remain at home for as long as possible and, if given a choice, would prefer early discharge from hospital followed by provision of home care (Pollara 2005). Governments have recognized the cost effectiveness and intrinsic value of providing care in a home setting and, over the past five years, have shifted their policy focus from provision of care in acute care to provision of care “closer to home”. As a result of this shift, early discharge from hospitals and emergency room avoidance are two key metrics that governments and health care providers are targeting to improve. The effective management of wounds in the home setting has profound impact on both these objectives.

People receiving home care services are often in need of care because of issues related to aging and/or chronic diseases, or medical conditions (e.g. paraplegia, diabetes, vascular disease). These conditions put them at high risk for developing wounds (Sussman 2005) and at greater

risk for delayed wound healing (Sayler 1988). Wound management is one of the most common interventions for individuals receiving home care services and the duration of service for those with wounds is lengthy and costly. More importantly, the impact of living with a wound compromises client quality of life and contributes to increased mortality and morbidity.

A review of the literature on chronic wounds in Canada found the prevalence of pressure ulcers to be 15.1 per cent and the average costs of healing \$27,500 (Woodbury and Houghton 2004). Leg ulcers are estimated to affect 60,000 Canadians (Campbell et al. 2006), while diabetic foot ulcers are estimated to affect 15 per cent of patients with diabetes (approximately 210,000 Canadians) at some point in their life, with 14–24 per cent of these patients requiring amputation. The financial implications are significant as costs associated with amputations are approximately \$1.5 billion (Campbell et al. 2006).



Prevalence of Wounds in Home Care

In Canada, there is currently no reliable means of determining wound prevalence: either total numbers or by clinical subset. A 2004 survey of available Canadian data found that pressure ulcer prevalence rates across all health care sectors averaged 25-27 per cent (Woodbury and Houghton 2005).

CASE STUDY

Showcasing Recommendations:

- Continuing education and clinical protocol
- Adoption of technology
- Outcomes measurement and analytic support

North Simcoe Muskoka, Ontario (Health Outcomes Worldwide)

In 2009, the North Simcoe Muskoka Community Care Access Centre (NSMCCAC) determined that their region had a high utilization of dry dressings for surgical wounds, and a daily wound care nursing visit rate of 30 per cent, which was high when measured against a national standard rate of 15-20 per cent. Through a partnership with Health Outcomes Worldwide that included access to the how2trak® outcome measurement system, data related to wound management was made available to decision makers to drive practice improvements that would increase capacity and client quality of life.

Pressure Ulcer prevalence, Stage II and greater, was also deemed to be a significant patient safety issue in community practice, as evidenced by the Ontario Health Quality Council public reporting of CCAC practice in this area. By putting processes in place to promote and allow ready access to the interdisciplinary team, NSM CCAC was able to steadily reduce the length of stay on community service for a client living with a Stage II or greater pressure ulcer.

The medical supply utilization for wound management in community health care continues to grow and burden the finite budgets linked to this service provision. Having access to timely, reliable data gave the NSM CCAC the means to determine whether the high use of antimicrobials was linked to budget surges and the specific wound types that may have driven this misuse/over-use of the antimicrobial dressing. By standardizing wound management protocols to evidence-based practice and providing the teams with trending and tracking tools and information, the NSM CCAC was able to achieve significant improvements.

The outcomes included:

- Daily nursing surgical wound care visits are down to 4 per cent yielding a savings of \$60.00 per client visit, in addition to significant costs saved through reduced dressing materials used.
- Client healing rates increased, providing evidence of the opportunity to improve the management of surgical wound clients.
- Length of time on service for a client living with a Stage III pressure ulcer has decreased by 71 days, on average.
- Improved dialogue between members of the care team.
- Staff resource savings have been transferred to respond to the number of personal support line clients waiting, resulting in a 65 per cent reduction – from 850 to 300.
- Overall cost savings of \$800,000.

It is estimated that one-third (Baich, Wilson, and Cummings 2010) to one-half of all home care clients (McIsaac 2007) have wound care needs. Over the past decade, a number of research initiatives have shown that the prevalence and complexity of wounds are increasing in the community. For example, in Ontario, the Region of Peel home care program experienced a significant increase in home care clients with open wounds (an increase of 125 per cent) from 1997 to 2006. Twenty-five to thirty per cent of these clients had chronic wounds that remained open for longer than six months, with some receiving daily home care without specific ulcer etiologies or diagnoses identified (Sibbald 2007).

Pressure ulcers (lesions of ischemic etiology, secondary to an increase in external pressure, and usually located over a bony prominence) are the most common wound category and occur most often in the elderly population - 71 per cent of the pressure ulcers occur in patients 70 years or older (Peres 1993). Pressure ulcers are painful, increase mortality and are a major cause of decreased quality of life (Langemo 2005; Shukla et al. 2008). Pressure ulcers can aggravate and interfere with the management of other health problems increasing suffering, morbidity and cost in the home care sector.

Data collected on more than 34,000 Canadian home care clients indicates that open surgical wounds and pressure ulcers (Stage I, Stage II, Stage III, Stage IV, suspected deep tissue injury, unstageable) are the most common wound types in home care in Canada (McIsaac 2010). Most surgical wounds are closed primarily, but some are allowed to heal by secondary intention, necessitating repeated packing and dressing of the raw wound surfaces. Many surgeons are unaware of the evidence and discipline of wound care and still use traditional soaked gauze for dressing and packing open surgical wounds and cavities (Dinah and Adhikari 2006).

The Cost of Wound Care

The cost of home care for individuals with leg ulcers (venous stasis ulcers), in Canada, is estimated to be more than \$100 million per year (Graham et al. 2003). Leg ulcers are known to be associated with age and the prevalence increases to about 10 to 30 per thousand in those older than 85 years (Callam et al. 1985; Nelzen, Bergqvist, and Lindhagen 1991). As the population ages, the number of patients requiring leg ulcer care will increase dramatically.

For each patient, the burden of illness caused by leg ulcers is significant. Leg ulcers typically weep, smell, and reduce mobility, and can be incapacitating as well as socially isolating. Leg ulcers are chronic, often take years to heal, and frequently recur. Two thirds of those with leg ulcers have at least one recurrence, and 45 per cent of patients have had leg ulcers for more than 10 years (Callam et al. 1985).

An evidence-based approach to leg and foot ulcer care produces both financial and quality of life benefits. An evaluation of costs and the cost effectiveness of best practices for leg and foot ulcer care showed 66 per cent savings over a standard care approach and a 33 per cent to 57 per cent reduction in infections and lower extremity amputations, increased healing, and a greater capacity for improved quality of life (Shannon 2007).

In Ontario, the potential for savings through the adoption of best practice for the estimated 15,000 leg ulcer clients and 90,000 diabetic foot ulcer clients is \$338 million. As well, it was estimated that \$24 million would be saved from reduced hospitalizations, due to fewer infections and amputations (Shannon 2007).

Person-centred Wound Management

While the focus of this report is the effective management of wounds, the essential role of the person cannot be ignored. Providing care at home uniquely alters the relationship between clinician and care recipient as the care provider is a guest in the person's home. The setting serves as a reminder that quality care acknowledges, understands, and respects client ability, status, and decision making within their context.

Increasingly, individuals expect to be active participants in their care; to have access to information and to be able to make informed decisions regarding their care. Home care clients want, and expect, the system to enable them to remain independent; feeling empowered and safe and having confidence in their ability to self-manage their needs with support when and how they determine. To that end, individuals expect to be knowledgeable about their health conditions and needs and actively involved in care planning. They expect that the health care system will be accessible and that the providers will work together to provide them with comprehensive, seamless and coordinated care, which will ultimately achieve improved clinical outcomes.

CASE STUDY

Showcasing Recommendations:

- **Outcomes measurement and analytic support**

Prince Edward Island (Health Outcomes Worldwide)

In 2010, a provincial home care agency determined that their approach to wound care was not aligned with evidence-informed wound care practice. In order to effect changes in their practice environment, they needed to identify gaps in practice, target key areas for change and track progress as a result of changes in the practice environment over time. The home care agency hired an ET to work with the home care team and partnered with Health Outcomes Worldwide to track key wound care indicators using the how2trak® outcome measurement system. Although this initiative is still in its early stages, impressive results are already being realized:

- The use of antimicrobial agents decreased from 13 per cent in 2010 to 9 per cent in 2011.
- Daily dressing changes decreased dramatically, from 14 per cent to zero in a six month period.
- Dressing change frequencies of 3/week and 2/week increased in 2011, which is evidence of excellent clinical practice. In 2010, the human resource cost associated with wound management was \$756 per client. In 2011, the cost was \$478 per client. This represents a cost saving of \$278 per client.



Evidence-Based Wound Management

Wound care research continues to identify new techniques, more efficient dressings and advanced technologies. The goals of chronic wound management are to address patient concerns, correct intrinsic and extrinsic factors where possible and optimize the healing environment (Clark 1996).

Wound healing is a complex process and can be mastered, for the most part (not all chronic wounds have the ability to heal), by thorough wound assessment, moist wound healing and the ability to allow the wound to dictate the interventions required. The first research-based recommendation for moist wound healing was published almost fifty years ago, in 1962 (Dale 2011).

It is well documented that evidence-based protocols improve care and cost outcomes. Evidence-based health care is the conscientious use of current best evidence in making decisions about the care of individual patients or the delivery of health services. Current best evidence is up-to-date information from relevant, valid research about the effects of different forms of health care, the potential for harm from exposure to particular agents, the accuracy of diagnostic tests, and the predictive power of prognostic factors (Cochrane 1989). Evidence based practice incorporates the application of the evidence to the individual client's unique set of needs, values and circumstances (Strauss et al. 2005).

With the rapid advances in wound care, the Canadian Association of Wound Care (CAWC) determined that the Appraisal of Guidelines for Research & Evaluation (AGREE) Instrument was best suited to help clinicians develop or evaluate best practice guidelines, while allowing for flexibility at the local, regional and national levels (Burrows et al.). The AGREE instrument was chosen because of its generic methodology that, "... assesses whether developers have minimized the biases in creating guidelines and addressed the requirements for

effective implementation" (Burrows et al.). The AGREE Instrument consists of 23 key items organized in six domains:

1. Scope and Purpose
2. Stakeholder Involvement
3. Rigour of Development
4. Clarity and Presentation
5. Applicability
6. Editorial Independence

Notwithstanding the AGREE Instrument and the emergence of evidence-based guidelines, such as the CAWC Wound Care Best Practice Recommendations for Pressure Ulcers (Keast et al. 2006), the variation in practice both across home care programs in Canada and within home care jurisdictions can be significant. Indeed, dry gauze, a technique that originated in the 1800s and in some cases an appropriate treatment to this day, is used approximately 50 per cent of the time (Fonder 2008) (McIsaac 2007) despite evidence that other treatment modalities would be more clinically effective and cost efficient and would improve the individual's quality of life.

The fragmentation of services between acute care, primary care and home care can make it difficult to achieve agreement on protocols and consistency of practice. However, when care protocols, pathways or algorithms have been established, improved outcomes can be achieved. Clinicians need to collect information in order to assess the impact on the care of their patients. By evaluating the facts, corrective action can be taken if required or new and improved processes championed.

The evidence suggests that the absence of a clearly articulated standardized and systemic approach to wound care in the home care sector promotes inconsistency, diminishes the likelihood of sustainability and increases care costs.



Home Care Challenges and Opportunities

Clinical Expertise & Knowledge

Chronic wound care is a challenge for home care professionals and family physicians who direct treatment that is carried out by staff in the community. Home care nurses typically have a generalized body of knowledge and have been erroneously assumed to have expertise in wound management. In a recent study, 58 per cent of family physicians indicated that they believed they could rely on the community nurses to have current information on how to effectively treat leg ulcers (Graham et al. 2003), however, in some instances wound management expertise in home care is limited. In the same study 89 per cent of family physicians indicated a desire for more information on treatment protocols (Graham et al. 2003), perhaps acknowledging the responsibility and authority to prescribe treatments and be cognizant of the current evidence.

Individuals with chronic wounds typically have co-morbid conditions that contribute to the development of and impact the healing of these wounds. It is therefore important that all health care team members have the knowledge and skills to contribute to both the prevention and management of wounds. The team must be supported by wound care experts and, increasingly, there is a need for clinicians and those with expertise to work together across the health sectors in order to facilitate the consistent application of best practice.

Effective education of clients and families is also a vital element of successful wound management. More than 80 per cent of ongoing management of wounds occurs in the community, primarily through individual self-care (Graham et al. 2003). Home care services clinicians have an important role in teaching individuals to care for themselves with the assistance of family, friends and community.

Referral Process

In a survey conducted by the Calgary Home Care Program (Slauenwhite 2012), home care programs indicated that clients referred to home care for management of wounds are not typically triaged in a systematic way and there are no criteria for identifying those with urgent needs. Respondents stated that referrals are prioritized on nursing judgement and instructions from the physician, and there is no information to indicate whether this is most effective.

The presence of intravenous therapy was flagged as an indicator influencing priority setting, but it is likely the need for management of the IV therapy and not the wound that increases the priority ranking. The survey also showed that clients are typically assigned the most available nurse in a specific geographic region. The nurse may or may not be experienced in wound care and while s/he will ensure access to adequate professional knowledge to deliver care, may not recognize potential issues or alternative solutions as readily as would an expert.


In British Columbia and Alberta, the referral process for home care nurses was streamlined by the use of technology. Vancouver Coastal Health (BC), Fraser Health (BC), Interior Health (BC), Northern Health (BC) and Alberta Health Services (Edmonton, AB, formerly known as Capital Health) implemented Picalere™ in their respective home care setting. This enabled nurses visiting home care patients to complete full assessments on patients with the support of digital pictures and send instant referrals to the wound care clinician. The wound specialists gained remote access to the necessary information in order to create a specialized care plan for the patients. This referral process allowed wound specialists to prioritize patient home visits and reduce the delay of care.

Education

In the Calgary survey, staff across the country expressed an interest in skin and wound care education. Too often, home care staff are faced with a situation beyond their expertise and have limited access to advice or a mentor, education, or training to help them build their repertoire of clinical responses.

Additionally, clients and families need clear, easy to understand information and instructions that are consistent among the health care team in order to contribute effectively to their wellbeing. Structured content with written and visual cues, demonstrations and access to help are key strategies for helping individuals to manage their care.

Electronic wound management systems have contributed to improvement of knowledge of wound care practices in home care. Enterostomal Therapists have expressed a high degree of satisfaction with the information and knowledge created through the use of standardized electronic documentation. Nurses felt that the technology was an easy medium for communication which allowed them to learn from the feedback and recommendations of the wound specialists.



“Our electronic wound management system (Pixalere) is also a great teaching tool, when staff have questions regarding their client’s care we open the chart and discuss the issues. This tool has been a great addition to our practise.”

*Annette Labrosse,
RN BSN IIWCC Wound Clinician
Home Care, Fraser Health Authority BC*

Product & Treatment Protocol

The rapid development of wound care treatments and products makes it difficult to know which approach to use. Some estimates suggest that there are over 4,000 wound care products on the market, none of which were available 15 years ago. The consequence is an ad hoc array of products within programs and jurisdictions, the reasons for which are not always clear. As a result, products may not be consistently available across the health system necessitating substitutions of product when care is transitioned. This can heighten client anxiety and frustrate staff, particularly if they do not understand the drivers and processes for having new products and treatment modalities approved for use within their jurisdiction or sector.

It is often perceived that products can end up on the formulary because of a provider testimony and without any formal analysis of their clinical efficacy and cost effectiveness. And conversely, suppliers of new treatments and products sometimes face enormous barriers (including clinical inertia, contracts with incumbent providers, administrative requirements) to implementation and access, resulting in clients too often paying the price through delayed healing.

Adjunctive therapies such as oxygen (e.g. Topical Pressurized Oxygen Therapy), ultraviolet therapy, hydrotherapy, ultrasound, negative pressure therapy, hyperbaric oxygen and electro-stimulation are valuable options to stimulating wound healing (Hess, Howard, and Attinger). The therapies are each designed to address aspects of the healing process, but are not yet established through controlled studies to be part of the evidence guiding practice. When the algorithm of care is not working and the clinician believes that the wound is healable, the use of an adjuvant therapy can provide the desired outcomes. This may require special dispensation from an authority such as the health ministry or regional funder.

CASE STUDY

Showcasing Recommendations:

- **Outcomes measurement and analytic support**
- **Adoption of technology**
- **Inter-professional collaboration and best practices**

Interior Health Authority, British Columbia (Pixalere, 2005)

Interior Health in British Columbia was faced with several challenges related to wound management:

- Lengthy wait times (approximately 6 weeks) associated with community care visits by the specialist.
- Human and capital resource utilization related to extensive travelling.
- Continuity of information during the episode of care, resulting in inconsistencies applying the most effective method of treatment.

To address these challenges Interior Health launched a pilot project of the Pixalere wound management system in May 2004 in three communities within the Thompson Cariboo Shuswap (TCS) Health Service Area: Kamloops (half of the group), 100 Mile House and Revelstoke. A final evaluation was completed in February 2005 with the purpose of:

- Determining if the pilot project met its objectives.
- Assessing if it is advisable to expand this application throughout Interior Health.
- Providing recommendations for future direction considering the lessons learned through the project.


Evaluation methods included stakeholder surveys of the community nurses and clients; informal interviews with the wound ostomy specialist for TCS and the project sponsor; information from meetings during the pilot project; and information from the literature.

The evaluation showed the following key strengths of the Pixalere project:

- Clients acceptance of this approach to wound care service delivery.
- A high degree of staff satisfaction using Pixalere as a tool to improve the quality of wound management in the community.
- Efficient use of resources, allowing for increased access to the wound care specialist and supporting best practices of the use of products.

The evaluation confirmed that the objectives of the Pixalere pilot were achieved and that there are substantial benefits to clients and staff of Interior Health to continue using, and to expand the use of the Pixalere program.

[Except from "An Evaluation of the Tele-Wound (Pixalere) Telehealth Initiative Final Report, A Picture Speaks Louder than Words, Prepared By: Margarita Loyola, March, 2005"]



A client facing amputation as the result of a wound that had persisted for six years was provided a new treatment; Topical Pressurized Oxygen Therapy (TPOT) was introduced and the wound was successfully healed. (Alexander 2011)

Access to Care

Variation in home care programs, funding formulas and coverage across provinces and territories continues to exist in Canada. As a result, some jurisdictions provide their clients with greater access to service and supplies. Rural and remote settings of care delivery present challenges in all regions across Canada. The availability of staff can be compromised and supplies are not always readily available. Clients are provided with substitutes or must wait for special orders to be shipped. Additionally, as previously discussed, patients with limited means may not purchase the recommended treatments. Moreover, even when home care programs have a mechanism for providing supplies on compassionate grounds, the approval process can be onerous and time consuming.

The Right Supplies

The lack of availability of the right equipment for treating the cause can be a significant barrier. This equipment includes offloading devices/shoes for the treatment of diabetic foot ulcers, compression stockings for prevention of venous leg ulcer recurrence, and support surfaces for pressure ulcer prevention and management. Proper assessment of support services can address a contributing cause of pressure ulcers.

Quality Improvement

Quality improvement involves the continuous perfection of work processes to achieve better outcomes of client care. While clinical judgement and experience are necessary, the

importance of evidence to informing improvement work cannot be overstated. Ensuring the most effective protocols, committing to practice according to the best evidence, and having a means for tracking and analyzing comparative data is critical to successful wound management. The results are significant cost savings to the health system, better collaboration amongst clinicians and, most importantly, improved clinical outcomes and quality of life for clients. In other words, value is realized.

An example by the CAWC dramatically shows a cost savings of \$9,000 and wound healing within three weeks as a result of 'best practice' care. The patient had been told that because he was diabetic, his wounds would likely never heal and had already received eight months of daily treatment (Teague and Mahony).

Outcomes research aims to provide information to all stakeholders (clients, providers, funders and policy makers) to allow more rational, evidence-based decision-making (Zimmerman and Daley 1997). By measuring outcomes, stakeholders can help assure successful implementation of evidence-based wound care programs. Outcome measurement facilitates organizational evolution through objective analysis. The process allows agencies to track the improvement in health and economic outcomes and provides a solid foundation on which to build a sustainable best practice – in this case, an approach to wound care. Moreover, the objective measurement of indicators can empower teams to steer the improvement process on their own terms and in ways that best serve the needs of their clients and their organizations.

Determining prevalence is a critical activity as it provides a baseline of wound management practice against a broad population. A valid and reliable baseline lays the foundation for program enhancements, and assists both front line staff and decision makers to track progress and

achieve wound management program goals using an objective and transparent process. This same baseline data can also be measured against key benchmarks both within specific health sectors and across the continuum. This promotes dialogue and offers direction regarding system improvements and safe transitions for patients with respect to wound management. Although prevalence data alone may be sufficient information for generating broad comparisons over time, it is most meaningful when combined with day to day data collection that allows for small, but consistent course correction as improvements are implemented.

Prevalence data is an essential aspect of the change management cycle. It provides the motivation for making practice improvement by objectively creating a new awareness and level of discomfort regarding the care and cost outcomes associated with current practice. Prevalence results provide an important picture of a particular practice setting; they set the stage for change by offering evidence to support the 'what' and 'how' of change while providing a context for why change is imperative for improving patient and system outcomes.

CASE STUDY

Showcasing Recommendations:

- **Continuing education and clinical protocol**
- **Access to products, devices and adjunctive therapies**
- **Outcomes measurement and analytic support**

Niagara, Ontario (Hurd, Zuiliani, and Posnett 2008)

In March 2005, the Niagara community health care provider implemented a reorganization of wound management practices designed to ensure that available resources, particularly nurse time, were being used in the most efficient way. An evaluation of the impact of the reorganization has shown improvements in clinical practice and better patient outcomes.

- Use of traditional wound care products reduced from 75 per cent in 2005 to 20 per cent in 2007, in line with best practice recommendations.
- Frequency of daily dressing changes reduced from 48 per cent in 2005 to 15 per cent in 2007.
- In a comparison of patients treated in 2005 and 2006, average time to healing was 51.5 weeks in 2005 compared with 20.9 weeks in 2006.
- Total treatment cost was lower in 2006 by \$10,700 (75 per cent) per patient. Overall, improvements in wound management practice led to a net saving of \$3.8 million in the Niagara wound care budget.

The focus on outcomes has led home care providers to recognize the need for standardized charting to document wound type, location, measurement, wound management practices, and treatment choices. The benefits of standardization have been proven, enabling teams to review their aggregate data to assess the efficacy of the improvement efforts. Templates also serve as a convenient reminder to agreed upon procedures for performing wound care assessments.

For home care programs, trying to track and manage clinical best practice across multiple providers, clinics and individual homes is a real challenge. Standardized forms help to increase consistency however analysis is tedious as someone has to review charts and manually compile data in order to demonstrate results on a client population over time. While programs can gather an indication of performance through a small sampling of charts to assess practice, it is not a sustainable way in which to operate. A common need is for a reliable and customizable client information system that can track and accurately report on wound care clinical practices, as well as the type and cost of materials used in wound care delivery. The need for an effective electronic tracking system has become evident in most clinical settings.

Working with timely, stratified data makes it easier for clinicians to test new approaches on a small group of patients before implementing broad system wide change. The ability to measure outcomes rather than merely monitoring data elements facilitates improvements in care, allows for reallocation of limited financial and human resources and provides an opportunity to health care providers to plan strategically for the future.

There are many factors that inform the effective delivery of a wound care program in home care:

- the implementation of a interdisciplinary evidence-based approach to wound care practice,
- ongoing education for all stakeholders,
- a clearly articulated process for knowledge transfer,
- a focus on management accountability, measurement and outcomes, and
- increased communication and collaboration.

However, outcome measurement is an integral factor for sustainability because it offers meaningful evidence to inform and clarify all other key aspects of a wound care program. Decision-makers and care providers must demonstrate responsibility and accountability with respect to the finite human and financial resources. From the front line clinician to the administrator and policy maker, all decision-making ability is limited when it is not informed by specific, timely and evidence-correlated data. Clinicians and decision-makers alike must use data that reflects the reality of current practice rather than past practice. This can be achieved through the use of valid and reliable tools for both population prevalence activities and metrics collection pertaining to day to day practice.

“Pixalere allows us to offer faster consultations between Home Care nurses, wound ostomy nurses, and physicians. Wound specialists using this technology have reduced their travel time by 50 percent and are now assessing three times the number of clients.”

*Dr. Gordon Searles
Capital Health dermatologist and clinical
associate professor with the University of
Alberta Department of Medicine.*

CASE STUDY

Showcasing Recommendations:

- Continuing education and clinical expertise
- Adoption of technology
- Inter-professional collaboration and best practices

New Brunswick (Logan et al. 2010)

The Extra-Mural Program (EMP) in Zone 2, Horizon Health Network, undertook a study, funded by the Lawson Institute, in order to promote best practice by establishing a mechanism for home care nurses to consult with nurse experts when working with patients who have wounds (Logan et al. 2010) complicated by diabetes. Eighty-five patients were enrolled with 39 in the control group and 45 receiving the intervention. Standardized assessments and recommendation forms were developed based on best practice from a number of organizations (including the Canadian Association of Wound Care, the Registered Nurses Association of Ontario and the Canadian Diabetes Association) and loaded onto handheld electronic devices. The assessments contained prompts (i.e. reminders to consult an occupational therapist or registered dietitian) and allowed for judgement as to steps to be followed and a narrative option.

The information was transmitted to the nurse consultants who provided the home care nurses with recommendations and rationale – which allowed for ongoing education. Through this collaborative approach, the team was able to achieve improvements:

- Wound closure on discharge increased 30 per cent (statistically significant).
- Hospitalization decreased 5 per cent.
- A1C values improved.
- Slightly higher scores were noted for the intervention group in terms of social life and physical symptoms.
- Increased adherence to established protocols – through a pre and post questionnaire, nurses reported that the support was useful, that it improved their patient assessments and that it served as an effective way of ensuring established protocols are followed.
- Nurses became more proficient in the use of handheld device technology.



Wound Care Initiatives in Home Care

Poor client outcomes and rapidly rising care costs have made wound care a priority area of focus for quality improvement within home care across the country. Many home care organizations have identified and initiated work to achieve improved clinical, cost and client outcomes in wound care. In addition to information from the literature, the CHCA is grateful to the Calgary home care program and its survey respondents for sharing information about their wound management practices, which was collected over the summer of 2011.

Establishing Formularies

Many home care programs are establishing protocols for wound care products and approved product lists with criteria for use. Interdisciplinary teams with representatives from acute care, long-term care and home care have been established in many areas of the country to assess the evidence and determine the wound care supplies that will be on the home care formulary.

In British Columbia, there is a provincial group examining the potential for province-wide product lists in order to leverage purchasing power and achieve higher standardization.

In Edmonton, Alberta, work is underway to address the challenge of access to products by those who can be discharged to self-care. The cost of supplies and equipment can be prohibitive for many clients and result in the substitution of inadequate products. This concern transcends many home care programs that have limits on the amount of supplies that they purchase for clients.

In Ontario the Community Care Access Centres (CCAC)¹ are working with their health system partners to create consistent wound care product formularies.

¹Community Care Access Centres (CCAC) are organizations in Ontario responsible for home care services.

However, there are still circumstances where products supplied on discharge from hospital are not available in the community. (Laughlin and Robertson-Laxton 2011)

Standardizing Care

In British Columbia, a provincial group is working to establish 24 guidelines for wound management. This was primarily initiated as a result of the change to the BC Health Professions Act several years ago, whereby wound management became part of the nursing domain of practice. The provincial group works with regional committees of clinicians who contribute the local perspective and support implementation within their regions. The regional groups also provide direction for the health authority in implementing practice changes, guiding education, and determining products.

Most of the regions in British Columbia are using PixaLere™, data collection software that facilitates benchmarking and quality improvement within programs and across the province. The PixaLere™ system was built with the feedback of over 6,000 healthcare professionals to create a standardized process and best practice approach to standardized wound care documentation based on the BC wound management guidelines and protocols. This collaborative approach, involving home care nurses and wound specialists was a critical success factor in the development of the electronic wound management system.

“There are always new treatments but we need to have a process for determining and agreeing upon the best practice for individuals and our patient population as a whole.”

Family Physician

Nova Scotia has used the Evidenced-Based Wound Management Protocol (McIsaac et al. 2000) since 2000. The protocol was developed with input from nurses, physicians, dieticians, occupational therapists, physiotherapists, and a wound management specialist. The protocol includes information on the wound healing process, types of wounds, nine principles of wound management and guidelines for product selection and frequency of dressing change.

Wound Care Clinics

Ambulatory clinics providing wound care services have been proven to be 'an effective, acceptable and more efficient alternative to home visits', particularly for clients who might otherwise visit the emergency department or physician's office (VanDeVelde-Coke 2005). Clinics allow for the leveraging of human resource capacity in the community, easier standardization and adoption of best practice approaches, and the development of expertise.

In Winnipeg, Manitoba, one of the clinics has become the wound care centre of excellence. In addition to providing wound care, it is involved with product trials, training of nurses for Ankle Brachial Pressure Index (ABPI)/toe pressures, mentoring and/or preceptoring nurses and physicians in advanced wound care. The clinic also provides consultation to providers of rural clients.

Expanding Clinical Expertise

A Canadian-based study showed that nurses with increased education in wound care improved the outcomes for home care clients with leg ulcers. The researchers found that the median cost of treating patients with leg ulcers, using an established protocol, decreased from of \$1,923 to \$406 when compared with the traditional approach of individual orders from family physicians (Harrison et al. 2005). The average number of visits to client homes decreased from 3 to 2.1 per week and the average total number of visits needed for healing dropped from 37 to 25 (Harrison et al. 2005).

Research has shown significant improvements in healing when a wound specialist is involved in care – directly, or in a consultative capacity. In addition to improved clinical outcomes, reduced number of visits, faster healing rates, fewer hospital readmissions, fewer emergency room visits, and improved patient care were realized (Baich, Wilson, and Cummings 2010) (Harris and Shannon 2008).

Enterostomal Therapy (ET) nurses have expertise in wound, ostomy, and continence care, and are recognized by the Canadian Nurses Association as a specialty practice. ET nurses are baccalaureate-prepared and have completed a postgraduate program from a recognized ET nurse education provider (Baich, Wilson, and Cummings 2010).

Technology Applications

Involvement of a registered nurse (RN), with advanced wound knowledge and skills or involvement of an Enterostomal Therapy nurse for point-of-care support in person, by phone, or through tele-monitoring has been adopted by many home care programs. The experts support home care clinicians to deliver skilled care to patients with complex wounds.

Capital Health Region of Alberta demonstrated the effectiveness of technology to optimize the ET expertise (Semotiuk 2005), using a web-based software program to extend the services of two Enterostomal Therapy (ET) nurses working in home care.

Programs in British Columbia are using digital cameras and the Picalere™ software program (Picalere Healthcare Inc, British Columbia) to enable home care nurses to conduct standardized assessments and send digital pictures

of the wound to the wound specialist for consultation. The results showed high levels of satisfaction by the providers and the patients and, consequently the expertise to support individuals was better leveraged.

These findings mirror a number of studies demonstrating the effectiveness of technology to support care, such as a two year study in the United States that found telemonitoring of clients for wound management to be a credible modality to manage pressure ulcers at lower cost and possibly better health outcomes (Rees and Bashshur 2007). Furthermore a study in the US has demonstrated that virtual visits (using videoconferencing technology) between a skilled home healthcare nurse and chronically ill patients at home can improve patient outcome at lower cost than traditional skilled face-to-face home healthcare visits (Finkelstein, Speedie, and Potthoff 2006).

Team-Based Approach

An interdisciplinary team approach has proven to be the most effective means of providing treatment for individuals with wounds. The nature of the team involved in home care varies depending on the client needs and the flexibility afforded to home care programs. Team members available to support clients can include the following practitioners, who collectively offer a broad skill base from which to draw, particularly for complex and 'hard to heal' wounds. The members of the clinical team include:

- Registered dieticians to address nutritional requirements essential to promote wound healing
- Clinical nurse specialists/enterostomal therapists/wound care specialist to assist with the development of an evidence-based care plan
- Infection control practitioners when there is a risk of infection transmission
- Occupational therapists to assist with adaptive equipment, positioning

- Physiotherapists to recommend strategies to relieve or redistribute pressure for those confined to bed or wheelchair, or for the ambulatory individual with an insensate foot
- Physician/specialists to support the treating physician, especially with complications
- Dermatologists when concern for skin-related conditions or malignancies may be complicating wound healing
- Physiatrist when external modalities e.g. orthotics, pressure off-loading, footwear, etc would benefit wound healing
- Pharmacist as a resource for anti-infectives and pain management, for example
- Respiratory technologist where oxygen therapy is indicated for holistic care

Additionally, it can be useful to involve the equipment and medical supplies providers who not only have product expertise but typically have quality improvement expertise, research and a wide range of contacts that can be leveraged.

“Individuals with venous disease and with venous leg ulcers who are inadequately treated for years may develop secondary lymphedema to chronic venous disease. Non-cancer lymphedema is not readily recognized and the prevalence is not known. Preventative measures and good education would prevent secondary lymphedema entirely.” (Sibbald 2010)

CASE STUDY

Showcasing Recommendations:

- Access to products, devices and adjunctive therapies
- Continuing education and clinical protocol
- Outcomes measurement and analytic support

Winnipeg, Manitoba

In 2006, a home care agency located in Winnipeg determined that there was a need to increase capacity with respect to wound management, in order to better serve clients and allow for the reallocation of funds to other important initiatives. There were a number of key areas of concern that they wanted to target through outcome measurement and the implementation of an evidence-based approach to care. These targeted areas of examination included: dry dressings as a primary dressing material in wound management, daily dressing changes, pressure ulcer prevalence (Stage I through to Suspected Deep Tissue Injury), venous ulcers and the related use of compressions as a gold standard of care, diabetic foot ulcers and the related use of foot off-loading as a gold standard of care. Between 2006 and 2008, Health Outcomes Worldwide completed a series of chart audit exercises to measure their progress with respect to achieving better care and cost outcomes.

The outcomes included:

- The use of dry dressings decreased steadily and they are no longer the most prevalent type of primary dressing or secondary dressing material used.
- Daily dressing changes have decreased substantially over the past few years with 1x/week being the most current and prevalent dressing change frequency.
- Pressure ulcer prevalence has decreased for some stages of pressure ulcers. Health Outcomes Worldwide recommended that practice reviews, highlighting the importance of risk identification and associated interventions, pressure off-loading and the role of the inter-professional team, be implemented.
- There has been an increase in the use of compression, the gold standard of care, to treat venous ulcers in the patient population.
- For diabetic foot ulcers, the dressing change frequency decreased and offloading was increasingly utilized.
- A 26 per cent reduction in the estimated cost of wound management was realized, based on the number of daily and twice daily dressing changes in 2008 as compared to 2006.

In Ontario, the Integrated Client Care Project (ICCP) for wound care is a multi-year initiative to develop a model of care in the home care sector that is organized around clinical conditions/client care groupings and that builds partnerships/alignments with other sectors. Wound care management, specifically venous leg and diabetic foot ulcers, was the first priority undertaken by the project. The key elements of the initiative include specialized case management, coordinated assessments across the team, integrated clinical service delivery, clinical best practice, system navigation, outcomes based reimbursement, and accountability for the clinical interventions resting with the lead service provider.

This model refines the respective roles of the case manager and nurse provider: the former will focus on monitoring outcomes rather than approving visits, allowing more autonomy for the provider to innovate in the pursuit of clinical best practice and optimal outcomes for the client. It also moves the payment away from 'nursing visits' to payment for defined and agreed outcomes which have identified milestones along the way. At a provincial level the ICCP has contributed to broader provincial standards work, including the development of standardized wound coding and pathways to be adopted for use province-wide.

The Home Care Wound Care Best Practice Team (WCBPT), initiated by the Winnipeg Regional Health Authority in 2001, is co-chaired by the Clinical Nurse Specialist (CNS) who is an advanced practice wound nurse (ET) and Nurse Educator. The CNS can write wound care orders and refer directly to vascular labs, vascular surgeons, plastic surgeons, dermatologists and ID specialists. By applying their knowledge, the CNS is able to assist the health care team in

the selection of appropriate dressing materials. The Home Care WCBPT meets monthly and the Home Care CNS liaises with the other health care sectors through regional wound care meetings that occur four times per year.

Access to Data Collection

The metrics that are typically measured for clients receiving home care for the management of a wound relate to the volume of clients on service: admissions, discharges, length of stay, number of home visits, which may be, in some cases, differentiated by wound etiology. With increased standardization and the use of electronic data collection, home care teams are expanding their data analysis to examining rates of healing according to standard terminology, infection, use of products and supplies, and costs.

In Canada, many valid and important data collection initiatives have been implemented including the HOBIC² assessment and the RAI-HC³ among others. The data collected by these tools is used to inform a myriad of program directions aimed at improving care for patients. However, a 'one size fits all' approach to data collection may not be the best solution for setting strategic program goals pertaining to changing wound care practice and supporting program sustainability. Effective wound management requires a deeper reference to evidence-based practice behavioural expectations. These expectations should be embedded within initiatives intended to change practice and must be aligned with care practices that will improve outcomes for patients. The collection indicator must accurately reflect practice expectations specific to wound care and clearly indicate ongoing alignment with those same expectations.

²HOBIC is the acronym for Health Outcomes for Better Information and Care, an initiative of the Ontario Ministry of Health and Long-Term Care (MOHLTC). The objective of HOBIC is to introduce a short set of standardized measures of patient status into nurses' admission and discharge assessments. HOBIC Measures have been developed for acute care, long-term care complex continuing care and home care. They include assessment of functional status/activities of daily living, symptom status, safety outcomes, therapeutic self-care.

³RAI-HC is the acronym for Resident Assessment Instrument – Home Care (RAI-HC) which is a standardized, multi-dimensional assessment system for determining client needs. The system includes quality indicators, client assessment protocols, outcome measurement scales and a case mix system.

CASE STUDY

Showcasing Recommendations:

- **Inter-professional collaboration and best practices**
- **Continuing education and clinical expertise**
- **Outcomes measurement and analytic support**

Erie St. Clair, Ontario (Unsworth et al.)

In 2008, the Erie St. Clair Community Care Access Centre (CCAC) recognized that 40 per cent–50 per cent of its services were to care for clients with wounds. The CCAC undertook to improve client outcomes by standardizing wound management treatment protocols, as they had determined that few clients were receiving moist wound healing, very few were receiving compression therapy and client outcomes were not maximized. The Nova Scotia Model for Best Practice in Community Wound Care (McIsaac et al. 2000), and the Healing with Excellence Program (ConvaTec Canada) were adopted. The programs are complementary, fostering an interdisciplinary approach to care, standardized critical client and wound assessments, standardized interventions based on the client and wound assessment, and education of stakeholders including knowledge transfer, physician integration, and an ongoing process of outcome measurement. Outcome Measurement Exercise was led by Health Outcomes Worldwide and ultimately how2trak® a computerized tracking system was adopted.

The outcomes included:

- An increase in the number of physicians following best practice recommendations. In Chatham-Kent (a community within the Erie St Clair CCAC's service jurisdiction), between 2002 and 2007, the percentage of orders not matching wound care requirements (based on best practice guidelines) decreased from 88 per cent to 31 per cent.
- A substantial impact on the level of nursing satisfaction - the majority of nurses surveyed found noteworthy improvements in their confidence, wound care knowledge and efficiency. In many cases, this was reported to be associated with increased ability to see more patients, accommodate more referrals and more efficient use of their valuable time.
- A financial impact of \$80,000 per month in savings realized.

Conclusion and Recommendations

Despite the advances in wound care products, protocols and technologies, a system of effective wound care in the community has not been widely adopted.

The reduction in postsurgical stays in hospitals, coupled with the increasing number of wound treatment options, emphasizes the immediate need for home care programs to establish and implement evidence-based practice guidelines as part of a cost and care effective wound management strategy. The need is urgent.

In order to achieve effective wound management in the home setting, realize costs savings and increase the quality of life for home care clients, the Canadian Home Care Association offers a number of recommendations:

Recommendations

- **ACCELERATE THE ADOPTION OF TECHNOLOGY** to improve access to best practice guidelines, to support point of care access to expertise (e.g. through remote monitoring or digital imaging) and to support data collection.
- **IMPROVE ACCESS TO PRODUCTS, DEVICES AND ADJUNCTIVE THERAPIES** across health care sectors and client geography such that issues related to setting of care (such as cost, provider knowledge) are not a barrier to recommended treatment.
- **MANDATE CONTINUING EDUCATION IN WOUND MANAGEMENT AND PREVENTION** for all clinicians involved in caring for patients with wounds at home, and improve the resources available to the general public on effective management and prevention of wounds.
- **SUPPORT INTER-PROFESSIONAL COLLABORATION ACROSS DISCIPLINES AND ORGANIZATIONS** so that professional capacity is optimized and the right care is delivered at the right time by the right provider.
- **PROVIDE MEASUREMENT AND ANALYTIC SUPPORT** to care teams so performance outcomes can be readily available and used to continuously improve practice by building on lessons learned.

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