The E-Stim Collaboration Project:

A National Pressure Ulcer Implementation Program

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Electrical Stimulation therapy (E-Stim) is an advanced wound therapy that involves applying low levels of electrical current to the wound and surrounding tissues. Numerous clinical trials led by researchers around the world have tested the effects of E-Stim on healing and found E-Stim can increase the rate of wound healing and promote closure of several types of wounds. In particular, Houghton and colleagues showed in a pragmatic controlled clinical trial that E-Stim applied by community care providers to people with spinal cord injuries (SCI) and pressure ulcers produced significantly better outcomes compared to those continuing standard wound care programs.[1] Expected outcomes after E-Stim included 51% wound surface area reduction and complete wound closure in 103 + 92 days in 69% of enrolled patients.[1] Consult these references for a comprehensive review of clinical research about E-Stim used to treat various types of chronic wounds.[2,3]

Not surprisingly, many best practice guidelines recommend E-Stim as an advanced therapy that should be provided to patients with slow-to-heal wounds.[4–6] According to the recently updated Registered Nurses' Association of Ontario (RNAO) Best Practice Guidelines regarding pressure injuries, clinicians should "Provide electrical stimulation (when available) as an adjunct to best practice wound care in order to speed healing and promote closure of stalled but healable Stage 2, 3, and 4 pressure injuries".[7] The recommendation was assigned a strength of evidence of Level 1a, the highest level, and was the only recommendation regarding advanced therapies assigned that level. Despite this evidence

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and numerous best practice guidelines regarding E-Stim, it is seldom used in clinical practice, and patients seeking this advanced therapy are unable to access it.

The E-Stim Collaboration Project

In March 2015 a large group of researchers, clinicians and health-care organizations (see Figure 1) came together to work collaboratively on a three-year research project funded by the Rick Hansen Institute (Grant No. G2015-34). This multifaceted project was designed to implement processes and practice changes that would promote timely access to E-Stim and associated best practices that are known to improve healing outcomes. It was decided to focus on providing E-Stim to community-dwelling individuals living with SCI who have developed pressure ulcers, since pressure ulcers are known to occur far too frequently in and have devastating effects for these people.[8] We chose to develop and field-test practice changes in the South West Local Health Integration Network (SW-LHIN), in London, Ontario, with a view to subsequently disseminate lessons learned to other organizations across Canada that are interested in implementing an E-Stim National Implementation Program.

Together this group used a unique "knowledge-to-action" clinical research design that allowed us to tap into the lived experience of people with pressure ulcers.[9,10] By using established knowledge mobilization principles, we could also appreciate the challenging roles that health-care providers fulfill when delivering wound-care services to a growing number of people in our community. Integral to this research was

a multi-step system (Plan-Do-Study-Act [PDSA] cycle) in which feedback from end users was used to modify processes and practices that encourage the uptake of E-Stim and embed this advanced therapy into everyday wound-care practice.[11]

Implementation

Initial stages of implementation involved engaging key stakeholders in the region with broad representation across all health sectors: different health-care providers, including both unregulated and regulated professionals, people with lived experience, equipment vendors and health-care administrators. With the help of a facilitation team, we completed a local environmental scan to determine several barriers and facilitators to E-Stim implementation.[12] Not surprisingly, interventions that would facilitate E-Stim implementation included programs that would increase E-Stim awareness and knowledge to build caregivers' competency with this treatment, provide resources that would make E-Stim equipment and supplies readily available and create clear processes to select appropriate patients, and order and set up E-Stim treatments in the community. Out of these preliminary discussions we also developed a model of care that involved an interprofessional specialized SCI and wound-care team, located at the local regional rehabilitation centre, called the Pressure Injury Consultation Service (PICS).[12] An adaptation team created a process map that outlined specific steps and connections needed to provide E-Stim in a patient's home within the SW-LHIN home and community care system (formerly known as SW-CCAC).[13]

Establishing Clear Lines of Communication

Through these pre-implementation activities, it became apparent that clear lines of communication had to be established to facilitate ongoing discussions among 1) patients, family members and their care providers, 2) clinicians at the rehabilitation centre and those working in primary care and the community and 3) the numerous community-based clinicians and providers involved with delivering pressure ulcer care in a patient's home.

After reviewing existing communication systems available in this region, a secure, customized electronic platform called CHAYA was developed that provided a place for care providers and patients to communicate using voice or text formats. This web-based system also allowed the patients and members of their care team to track E-Stim use and other clinical outcomes, and to access assessment forms and other useful resources for the patients and providers seeking more information regarding SCI rehabilitation, pressure injury assessment and management, and E-Stim therapy.

The Educational Component

During the implementation phase of the project, the E-Stim Collaboration Team provided information in poster or presentation format to more than 400 people in the SW-LHIN region, including clinicians, administrators and patients. An intensive online E-Stim education program supplemented with a hands-on skills workshop was created and delivered to 87 clinicians who were seeking advanced knowledge, skills and judgement about E-Stim. This education program resulted in the creation of "the E-Stim provider pool" of 22 clinicians working across the SW-LHIN region who can accept referrals for E-Stim and identify appropriate recipients, design customized E-Stim treatments that best suit the patient's situation, modify E-Stim protocols based on provider and patient feedback, and measure healing outcomes.

Assessment and Planning

Through the efforts of many, we provided a comprehensive assessment and integrated pressure ulcer care plan for 30 individuals with pressure ulcers. Seventy-eight per cent of included participants had a spinal cord injury and an average age of 53 years. Most pressure ulcers were quite severe (Stage 4, NPUAP 2007) and had been present for at least two years. Only 53% (n=16) of participants were provided with E-Stim treatments of

Figure 1: The National Implementation Committee. November 12, 2017. Photo by Rob Low.

their pressure ulcers, since our assessment revealed significant practical and/or health-related barriers to healing, including nine cases of osteomyelitis and four people attending ER or requiring hospital admission for serious health issues. These experiences indicated that we needed to identify people for advanced therapies like E-Stim much earlier and soon after the pressure ulcer occurs. Other research groups have conducted extensive retrospective analyses of clients in their service who have and have not received E-Stim, and found wounds present for fewer than six months were much more likely to achieve complete wound closure after E-Stim treatment.[14] Another key finding from this implementation project was a lack of appreciation of the serious complications that can result when pressure ulcers remain open for several months or years. While many health-care providers and patients appreciated the need to contain health-care costs, few realized that early intervention with evidence-based advanced therapies is more cost-effective.[15] A complete analysis of themes and a summary of lessons learned from the local field test of best practice implementation project is currently being prepared for peer-reviewed publication.

A National Scope

During the final phase of the project, the E-Stim collaboration team disseminated the implementation program to other sites across Canada. We were pleased to find 10 additional sites located in five different provinces that had local champions willing to engage in knowledge mobilization activities and promote the uptake of E-Stim into standard wound-care practices. The National Implementation Committee was formed and linked via several virtual meetings and two face-to-face meetings to learn from the SW-LHIN project, share their own experiences and work together to develop strategies to address emerging and anticipated challenges. Several of the 31-member implementation committee had positions as knowledge brokers in their organization and had substantial experience embedding changes in related areas of practice.

At the annual meeting of the group (Figure 1), held in Niagara Falls, Ontario, in November 2017, a strategic planning exercise was undertaken. Key messages from the group included a keen interest to continue to meet as a National Implementation Group and to meet face-to-face at least once per year. Reasons to continue group activities included sharing knowledge and resources, creating a united voice, fuelling motivation and actualization, developing common policies and practice templates, and measuring common outcomes and collating data from multiple sites. All 31 participants wanted access to the online educational program and resources produced out of this project and wanted hands-on skills E-Stim workshops available in their region.

Future Priorities

During the planning meeting, committee members completed an online survey to set the priorities for future work. There was strong consensus to do the following: apply for future funding to support the E-Stim Collaboration Project and related research, continue to meet face-to-face as well as virtually, initiate an advocacy and awareness campaign for E-Stim therapy, develop partnerships with industry that ensure continuous supply of user-friendly E-Stim equipment, expand E-Stim availability beyond pressure ulcers and the SCI population, continue research that promotes sustained practice change using valid knowledge implementation strategies, and foster collaboration with other national organizations working in the field (Nurses Specializing in Wound, Ostomy and Continence Canada [NSWOCC], Wounds Canada, MEDEC).

Conclusion

Formal activities of the research project funded by Rick Hansen Institute concluded in January 2018. Two continuing outputs resulting directly from the E-Stim Collaboration Project include a website (www.estim4wounds.ca) that provides open access to the resources and information about E-Stim generated from the project. In addition, a community of practice was formed that brings together more than 67 providers and consumers who are interested in sharing and discussing topics related to the safe and effective application of E-Stim for wounds.

For more information about E-Stim, to register as an E-Stim provider, request a course on E-Stim near you or join the community of practice or national implementation committee, visit www.estim4wounds.ca.

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