

Underutilization of Physiotherapists and Biophysical Agents in Wound Care

BY **Abstract**

Deirdre O'Sullivan-Drombolis
BSc PT MCiSc
(Wound Healing)

Lyndsay Orr,
BSc PT MCiSc
(Wound Healing)

An interdisciplinary team model has been shown to improve outcomes in many patient populations, including patients with chronic wounds. Best practice guidelines worldwide encourage the coordination of all disciplines to maximize outcomes in people with chronic wounds, with the physiotherapist being a key member of this team. Physiotherapists benefit the team with their advanced knowledge of biomechanics and anatomy to assist with positioning, mobility, function, seating and equipment issues. Physiotherapists also have the skills to perform full wound assessments using outcome measures to monitor healing. Arguably, the most underutilized skill of the physiotherapist is the use of biophysical agents as

adjunctive therapies in chronic wound care. Over the past 50 years, many research studies have been conducted using physical modalities such as electrical stimulation, ultrasound and ultraviolet light in individuals with chronic pressure, venous or diabetic foot ulcers, indicating improved patient outcomes with these treatments. Despite this, physiotherapists report that minimal to none of their practice includes wound care. There must be an increase in the translation of knowledge to physiotherapists to promote optimal healing in these patients, as is supported by evidence-based practice. This paper proposes solutions to increase the use of physiotherapists and biophysical agents in wound care.

Introduction

Best practice in wound care recommends treatment by an interdisciplinary team that is able to offer a wide range of skills, knowledge and expertise.¹ As part of this team, physiotherapists can offer proficiency in many areas of wound care, including patient and wound evaluation, pressure mapping and other evaluations of pressure-relieving surfaces, compression therapy and additional forms of edema management, biophysical agents and exercise programs that result in the restoration of function and mobility.² Physiotherapists are unique in their training in being able to offer a wealth of knowledge and skill in biomechanics, exercise prescription and applying biophysical agents directly to the wound bed. Some physiotherapists have received additional training and are competent in specialized skills such as the evaluation of wound-healing outcomes, dressing selection and application, debridement, orthotics, total contact casting and offloading, and manual lymph drainage.

There is variability between evidence-based practice and clinical practice in many areas in the treatment of wounds. In a retrospective study, Fife and colleagues

found that of 264 patients with diabetic foot ulcers in 16 states, only 6% received total contact casting, even though this is the gold standard in treatment.³ In the same study, it was determined that of 2,139 patients with venous foot ulcers, only 17% received adequate compression therapy, even though it has some of the strongest evidence of any treatment in wound care.

Gaps have also been found to exist between the scientific evidence and its application in clinical practice in other areas of physiotherapy that have been extensively researched.

Although the literature is showing us quite clearly what is best practice, this is not translating into clinical practice in many areas of healthcare. In the present study we investigated this further, focusing specifically on the role of the physiotherapist in wound care teams.

Methods

The literature was reviewed to investigate the involvement of physiotherapists in the treatment of patients with wounds. To more explicitly explore the use of biophysical agents, 7 best practice guidelines for the treatment of wounds were reviewed for their recom-

Deirdre O'Sullivan-Drombolis
is a Physiotherapist with Riverside Health Care Facilities, Fort Frances, Ontario.

Lyndsay Orr
is a Physiotherapist with Cambridge Memorial Hospital, Cambridge, Ontario.

mentations in the application of modalities for adjunctive wound healing.⁴⁻¹⁷ Another search was conducted to establish what physiotherapists do clinically to treat patients with wounds.

Findings

Physiotherapists receive expert training in anatomy, physiology and biomechanics. This knowledge can be used to augment an interdisciplinary team to help patients with many different types of wounds, including pressure, venous and diabetic foot ulcers. All physiotherapists have skills that are shown by the evidence to help speed the wound healing.

Chronic wounds are most effectively treated by first addressing the primary etiology of the ulcer. Range of motion and strengthening exercises improve the function of the calf muscle pump, which will aid in clearing venous congestion, help with glycemic control, address foot deformities, help control tone and improve strength for transfers. Modalities such as pneumatic compression and electrical stimulation, massage and compression wrapping decrease edema. Offloading can accommodate foot deformities. Positioning and transfer work will decrease pressure and shearing. Fitting patients with appropriate gait aids can enable them to mobilize. Pain has a negative effect on healing. There are many tools at a physiotherapist’s disposal to treat pain, including transcutaneous electrical nerve stimulation and acupuncture. Patient education is key in gaining adherence to treatment plans (Table 1).¹⁸⁻²¹

Perhaps the strongest evidence for the involvement of a physiotherapist in the treatment of patients with wounds is with using biophysical agents to actively treat wounds and stimulate the closure of chronic non-healing wounds. This practice is recommended by several prominent best practice guidelines in the area of wound care. The general consensus of the best practice recommendations outlined in Table 2⁵⁻¹⁷ is that electrical stimulation has the highest level of evidence in aiding wound closure in all wound types, especially diabetic foot and pressure ulcers. Ultrasound has strong evidence to support its use with venous leg ulcers. Ultraviolet light therapy and pulsed electromagnetic frequency have also been shown to benefit wound healing.

What is actually happening clinically?

The literature review revealed 3 studies: 2 published papers and 1 unpublished set of data that surveyed therapists in the US and Canada regarding their participation and treatment preferences in wound care (Table 3).

In the US, physiotherapists undergo mandatory courses in wound care as a part of their professional

training, and there is a wound special interest group as a part of their national organization (the American Physical Therapy Association). In Canada, in contrast, few physiotherapy programs have wound care training, and the Canadian Physiotherapy Association does not list wounds as a condition therapists treat.

Guihan and colleagues gave a cross-sectional survey to occupational and physiotherapists who specialize in treating patients with spinal cord injuries within the Department of Veteran Affairs in the US and who were in attendance at the 2009 Therapy Leadership Council in Spinal Cord Injury Conference.²² In this survey, it was found that of the 24 physiotherapists who indicated they were doing direct wound care, only 50% reported treating patients with electrical stimulation, wound measurement and topical agent application. These therapists also undertook a wide variety of pressure ulcer management practices to treat patients with ulcers, such as passive range of motion, increasing mobility, pressure relief and safe transfers.

In a survey of 170 physiotherapists from Minnesota and North Dakota conducted by Meier and Dockter,²³ 65 therapists stated that they performed some type of wound care. Of these, 74% reported that <5% of their daily practice involved wound care. There was a significant relationship between the hours of continued education completed and the evaluation or treatment techniques used. Electrical stimulation was “never” used by 62% of therapists with <5 years’ experience compared with 20% of those with 10 years’ experience. This may indicate that the more education and experience a therapist receives, the more likely he or she is to use appropriate evaluation and treatment techniques such as electrical stimulation.

The barriers noted to implementing evidence-based practice are multi-faceted; thus, solutions to the problem also need to be multi-faceted.

TABLE 1

Physiotherapy interventions that do not require local wound care

Venous leg ulcers	Diabetic foot ulcers	Pressure ulcers
<ul style="list-style-type: none">■ Range of motion exercises to encourage the functioning of the calf muscle pump■ Increase mobility■ Use of gait aids■ Edema reduction■ Pain relief■ Patient education	<ul style="list-style-type: none">■ Conditioning to aid in blood glucose control■ Range of motion and strengthening exercises specific to addressing foot deformities■ Offloading■ Increase mobility■ Use of gait aids■ Pain relief■ Patient education	<ul style="list-style-type: none">■ Range of motion exercises■ Strengthening exercises■ Positioning■ Pain relief■ Safe transfers■ Increase mobility■ Use of gait aids■ Patient education

TABLE 2

Best practice guidelines and recommendations for the use of biophysical agents

Guideline	Diabetic foot ulcer	Venous leg ulcer	Pressure ulcer
CAWC	Consider the use of adjunctive therapies: SOE: 1a–IV	Consider appropriate adjunctive therapies: SOE: A	E-stim: SOE: A US: SOE: B UVC: SOE: B PEMF: SOE: B Laser: SOE: C
RNAO	E-stim: LOE: Ia	US: LOE: A E-stim: LOE: B	E-stim: LOE: Ib UVC: LOE: IIa
Wound Healing Society	E-stim may be of benefit in aiding healing: level I	E-stim may be useful in reducing the size: level I Laser, phototherapy and US have not been shown statistically to improve healing: level I	E-stim may be useful in the treatment of ulcers that have not healed with conventional therapy: level I
ICSI	–	–	Consider the use of direct-contact E-stim in the management of recalcitrant category/stage II ulcers, as well as category/stage III and IV ulcers: SOE: A Of all the adjunct modality studies done on pressure ulcers, E-stim carries the highest level of evidence, followed by NPWT, then all others
AHCPR	–	–	E-stim: Strength A UVC: Strength C Laser: Strength C US: Strength C
EPUAP/NPUAP	–	–	E-Stim: SOE: A PEMF: SOE: C UVC: SOE: C US: SOE: C Infrared therapy: insufficient evidence Laser therapy: insufficient evidence
CSCM	–	–	E-stim: scientific evidence I/II; grade of recommendation: A; strength of panel opinion: strong UVC, laser therapy, US: insufficient supporting evidence to justify their recommendation

AHCPR = Agency for Health Care Policy and Research; CAWC = Canadian Association of Wound Care; CSCM = Consortium for Spinal Cord Medicine; EPUAP = European Pressure Ulcer Advisory Panel; E-stim = electrical stimulation; ICSI = Institute for Clinical Systems Improvement; LOE = level of evidence; NPUAP = National Pressure Ulcer Advisory Panel; NPWT = negative pressure wound therapy; PEMF = pulsed electromagnetic frequency; RNAO = Registered Nurses' Association of Ontario; SOE = strength of evidence; US = ultrasound; UVC = ultraviolet light therapy

Wound care in Canada

The role of physiotherapy in wound care in Canada is much less developed, compared with the US and other countries. The Practice Guideline Advisory Task Force of the Physiotherapy Association of British Columbia identified the prevention, assessment and management of skin and wound issues as 1 of 3 foci for 2009/2010. A survey was undertaken by Alison Hoens, British Columbia Physical Therapy

Knowledge Broker, to establish current practice patterns and the needs and preferred strategies for supporting practice in this field. The information obtained from this survey is meant to be used to inform a knowledge translation plan to enhance physiotherapy prevention, assessment and treatment of skin and wound issues in British Columbia.²⁴

An invitation to participate in the survey was sent
continued on page 12

**IT DOESN'T TAKE A GENIE TO GRANT YOU
COMFORT, PERFORMANCE AND AFFORDABILITY**



INTRODUCING

ADAPTIC TOUCH™

(that's our new silicone dressing, not the genie)

This is no ordinary primary silicone wound contact layer, but don't just take our word for it. We'd love to show you **ADAPTIC TOUCH™** in person, minus the genie. Please contact your local Systagenix representative on i-want-a-rep@systagenix.com or call Customer Care at **1-877-216-0187**

TABLE 3

Therapists who reported using biophysical agents

Study (reference)	Electrical stimulation (%)	Ultraviolet light therapy (%)	Laser (%)	Ultrasound therapy (%)	Hydrotherapy (%)
Guihan and colleagues ²²	>50	N/A	N/A	N/A	N/A
Meier and colleagues ²³	65.2	N/A	N/A	60.6	97
University of British Columbia ²⁴	3.6	1.8	9.3	4.8	12

to all members of the Physiotherapy Association of British Columbia via a link to Survey Monkey, and 243 physiotherapists responded over a 1-month period in 2009: 27.1% of respondents routinely conducted wound risk assessments, while 9.7% of therapists performed detailed wound assessments. With respect to the treatment of wounds using electrophysical agents, the 4 most commonly utilized modalities were hydrotherapy (12%), low-level laser therapy (9.3%), ultrasound (4.8%) and electrical stimulation (3.6%). This utilization pattern is a reversal of the

evidence for effectiveness found in the literature. While the results of this informal survey must be interpreted with caution (the study was not piloted or distributed to a random sample), it does provide an indication that the participation of physiotherapists in the area of skin and wound care needs to be encouraged.

Evidence-based practice implementation

Based on the articles identified in the current review, there seems to be a gap between what the literature is stating is evidence-based practice and what is actually being performed in the clinic, home or hospital environment. Jette and colleagues noted that therapists believe that evidence in practice is necessary, that the literature is helpful to their practices and that better patient care results when evidence is used.²⁵ To take this a step further, some experts stress that professionals have a moral responsibility to practise in ways that are underpinned by the best research available.²⁶ That being so, why does there seem to be such a lack of translation of the best evidence into everyday practice? Several studies have investigated barriers to the implementation of research findings into the clinical world of therapists.^{27–35}

Barriers to evidence-based practice implementation include:

- amount of time required for retrieving, interpreting and applying research;
- skill to search literature;
- size and complexity of the research base;
- publication bias;
- perceived applicability of research findings;
- poor access to literature;
- support of administration;
- ineffective education; and
- lack of cooperation from physicians.

The barriers noted to implementing evidence-based practice are multi-faceted; thus, solutions to the problem also need to be multi-faceted (Figure 1). These include:

- interactive education sessions on utilizing research and wound care skills tailored for physiotherapists

FIGURE 1

Knowledge translation framework guiding physiotherapist wound care practice²⁹

(through live as well as online sessions);

- reminders in relevant physiotherapy and wound care publications about the skills physiotherapists can bring to wound care;
- standardizing what is taught in universities with respect to wound care;
- promoting wound care to licensing bodies and professional associations;
- social marketing to physicians, nursing, allied health and healthcare consumers;
- identifying wound care opinion leaders to act as mentors;
- establishing a wound care interest group for physiotherapists and affiliating this group with other allied health professionals and nursing staff;
- establishing a website to summarize and appraise relevant wound care research;
- establishing best practice guidelines specific to physiotherapy treatment of wounds; and
- including clinicians in research to ensure the clinical applicability of the literature.

Conclusions

It is important to harness the expertise that physiotherapists have in anatomy, physiology and biomechanics, as these areas are integral in removing the cause of many patients' wounds. A physiotherapist does not necessarily need to have a special interest in wound care in order to be a valuable asset to a wound care team, as most therapists have skills that can benefit wound healing. In addition, there are physiotherapists who, with special training and delegation in wound care, have a subset of particular skills. These include patient and wound evaluation, dressing selection and application, debridement and local use of biophysical agents.

As in many other areas in healthcare, there seems to be a disconnect between what should be done and what is actually being practised by physiotherapists in wound care. The barriers to this translation of knowledge are many and are a recurring theme in all areas of healthcare. Although wound care teams should actively seek out physiotherapists as an integral part of the team, it is physiotherapists who are responsible for educating others regarding their capabilities in wound care and actively marketing their services.²³ Physiotherapists with specialized wound care training need to act as resources for all physiotherapists and set in motion some of the aforementioned solutions to overcome the lack of best practice in wound care. The *Regulated Health Professionals Act* will be implemented in September 2011 to give physiotherapists in Ontario the authority to practice wound care with special training. Given this change, this is an ideal time

for physiotherapists to promote themselves as key members of the wound care team.

Interdisciplinary care enables clinicians to provide holistic, evidence-based care, as team members' skills, experience and knowledge are pooled together to produce the best outcomes. These include greater resource efficiency and improved standards of care through a reduction in duplication and gaps in service provision.³⁶ We all need to advocate working together as a team to promote the best outcomes for our patients. ☺

References

1. Sibbald RG, Williamson D, Orsted HL, et al. Preparing the wound bed – debridement, bacterial balance, and moisture balance. *Ostomy Wound Manage.* 2000;46:14-35.
2. Kloth LC. The role of physical therapy in wound management – Part 1. *J Am Coll Cert Wound Specialists.* 2009;1:4-5.
3. Fife CE, Carter MJ, Walker D. Why is it so hard to do the right thing in wound care? *Wound Repair Regen.* 2010;18:154-158.
4. Menon A, Komer-Bitensky N, Kastner M, et al. Strategies for rehabilitation professionals to move evidence-based knowledge into practice: a systemic review. *J Rehabil Med.* 2009;41:1024-1032.
5. Ovington LG. Dressings and adjunctive therapies: AHCPR guidelines revisited. *Ostomy Wound Manage.* 1999;45(Suppl 1A): 94S-106S.
6. Consortium for Spinal Cord Medicine. Pressure ulcer prevention and treatment following spinal cord injury: A clinical practice guideline for health-care professionals. *J Spinal Cord Med.* 2001;24 (Suppl 2):S40-S101.
7. Keast DH, Parslow N, Houghton PE, et al. Best practice recommendations for the prevention and treatment of pressure ulcers: update 2006. *Wound Care Canada.* 2006;4:31-43.
8. Kunimoto B, Cooling M, Gulliver W, et al. Best practice recommendations for the prevention and treatment of venous leg ulcers: update 2006. *Wound Care Canada.* 2006;4:45-57.
9. Orsted HL, Searles G, Trowell H, et al. Best practice recommendations for the prevention, diagnosis and treatment of diabetic foot ulcers: update 2006. *Wound Care Canada.* 2006;4:57-71.
10. Robson MC, Cooper DM, Aslam R, et al. Guidelines for the treatment of venous ulcers. *Wound Repair Regen.* 2006;14:649-662.
11. Steed DL, Attinger C, Colaizzi T, et al. Guidelines for the treatment of diabetic ulcers. *Wound Repair Regen.* 2006;14:680-692.
12. Whitney J, Phillips L, Aslam R, et al. Guidelines for the treatment of pressure ulcers. *Wound Repair Regen.* 2006;14:663-679.
13. Institute for Clinical Systems Improvement. Pressure ulcer treatment. In: *Health Care Protocol*, 2nd ed. Bloomington, MN: Institute for Clinical Systems Improvement; 2010:34-37.
14. European Pressure Ulcer Advisory Panel and National Pressure Ulcer Advisory Panel. *Treatment of Pressure Ulcers: Quick Reference Guide.* Washington, DC: National Pressure Ulcer Advisory Panel; 2009.
15. Registered Nurses Association of Ontario. *Assessment and Management of Venous Leg Ulcers.* Toronto, ON; 2004.
16. Registered Nurses Association of Ontario. *Assessment and Management of Foot Ulcers for People with Diabetes.* Toronto, ON; 2005.
17. Registered Nurses Association of Ontario. *Assessment and Management of Stage I to IV Pressure Ulcers.* Toronto, ON; 2007.
18. Orstead HL, Radke L, Gorst R. The impact of musculoskeletal changes on the dynamics of the calf muscle pump. *Ostomy Wound Manage.* 2001;47:18-24.
19. Mueller MJ, Diamond JE, Delitto A, et al. Insensitivity, limited joint mobility, and plantar ulcers in patients with diabetes mellitus. *Phys Ther.* 1989;69:453-462.

20. Roaldsen KS, Rollman O, Torebjörk E, et al. Functional ability in female leg ulcer patients – a challenge for physiotherapy. *Physiother Res Int*. 2006;11:191-203.
21. Davies J, Bull R, Farrelly I, et al. Improving the calf pump using home-based exercises for patients with chronic venous disease. *Wounds UK*. 2008;4:48-58.
22. Guihan M, Hastings J, Garber SL. Therapists' roles in pressure ulcer management in persons with spinal cord injury. *J Spinal Cord Med*. 2009;32:560-567.
23. Meier KM, Dockter M. A survey of current physical therapy practices in wound care. *Ostomy Wound Manage*. 2002;48:36-42.
24. Hoens A. *Physiotherapy – Prevention, Assessment & Treatment of Skin & Wound Care Issues: Survey Results and Analysis*. Vancouver, BC: University of British Columbia; 2010. Available at: http://www.physicaltherapy.med.ubc.ca/_shared/assets/PTS_W_Survey_Results14816.pdf. Accessed May 3, 2011.
25. Jette DU, Bacon K, Batty C, et al. Evidence-based practice: beliefs, attitudes, knowledge, and behaviors of physical therapists. *Phys Ther*. 2003;83:786-805.
26. Hancock HC, Easen PR. Evidence-based practice – an incomplete model of the relationship between theory and professional work. *J Eval Clin Pract*. 2004;10:187-196.
27. Craik J, Rappolt S. Theory of research utilization enhancement: a model for occupational therapy. *Can J Occup Ther*. 2003;70:266-275.
28. Metcalfe C, Lewin R, Wisner S, et al. Barriers to implementing the evidence base in four NHS therapies. *Physiotherapy*. 2001;87:433-441.
29. Hoens A. Translating research into practice. Available at: www.physicaltherapy.med.ubc.ca. Accessed April 5, 2011.
30. Rappolt S, Tassone M. How rehabilitation therapists gather, evaluate, and implement new knowledge. *J Contin Educ Health Prof*. 2002;22:170-180.
31. Stevenson K, Lewis M, Hay E. Do physiotherapists' attitudes towards evidence-based practice change as a result of an evidence-based educational programme? *J Eval Clin Pract*. 2004;10:207-217.
32. Cusick A, McCluskey A. Becoming an evidence-based practitioner through professional development. *Aust Occup Ther J*. 2000;47:159-170.
33. Dysart AM, Tomlin GS. Factors related to evidence-based practice among US occupational therapy clinicians. *Am J Occup Ther*. 2002;56:275-284.
34. Maher CG, Sherrington C, Elkins M. Challenges for evidence-based physical therapy: accessing and interpreting high-quality evidence on therapy. *Phys Ther*. 2004;84:644-654.
35. Iles R, Davidson M. Evidence-based practice: a survey of physiotherapists' current practice. *Physiother Res Int*. 2006;11:93-103.
36. Xyrichis A, Lowton K. What fosters or prevents interprofessional teamworking in primary and community care? A literature review. *Int J Nurs Stud*. 2008;45:140-153.

Canadian Association of Wound Care 17th Annual Wound Care Conference

November 3 to 6, 2011
Ottawa, Ontario

Conference theme: Surgical Wounds, Burns and Infections

Sessions that participants can look forward to include:

International consensus on skin tears

Challenges in wound care research

Best practice: Open surgical wounds

Diagnostic challenges: Inflammation vs. infection

Complex wounds in the emergency room

and much, much more!

For further information, visit www.cawc.net. For registration enquiries, contact Celine Bryenton (celine@cawc.net; 416-485-2292, ext. 223).

Biatain® Silicone

New
silicone
dressing



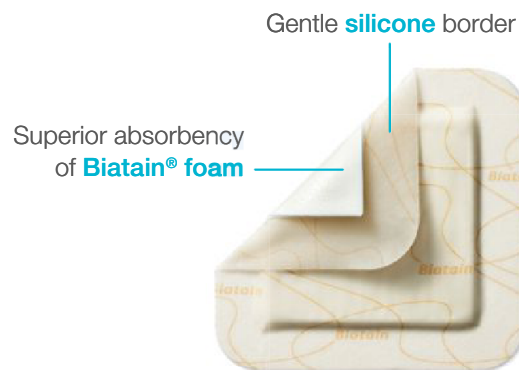
Introducing Biatain® Silicone

A unique design that combines the best of foam with the best of silicone, delivering three unique benefits:

- **silicone adhesive** – only where you need it
- **non-touch opening** – for easier and safer application
- **ultra soft and flexible** – for a better fit to wound and body

Try Biatain Silicone and experience these benefits for yourself.

To request samples email us at biatainsilicone@coloplast.com



Ostomy Care
Urology & Continence Care
Wound & Skin Care

Coloplast develops products and services that make life easier for people with very personal and private medical conditions. Working closely with the people who use our products, we create solutions that are sensitive to their special needs. We call this intimate healthcare. Our business includes ostomy care, urology and continence care and wound and skin care. We operate globally and employ more than 7,000 people.

The Coloplast logo and Biatain are registered trademarks of Coloplast A/S.
© 2010-07. All rights reserved Coloplast Canada, Mississauga, Canada.



Coloplast Canada
3300 Ridgeway Drive Unit 12
Mississauga, ON L5L 5Z9
1-877-820-7008

www.coloplast.ca