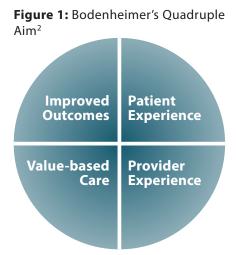
An Approach that Needs Patients and Their Families as Partners

By Virginie Blanchette, BSc MSc DPM PhD and David G Armstrong, DPM MD PhD

rofessional collaboration for prevention, education and care results in a synergy with patients, organizations and the environment, positively influencing Bodenheimer's Quadruple Aim (Figure 1).^{1,2} Bodenheimer's is a framework that supports person-centred care and has the essential characteristics of a high-quality health-care system. The Quadruple Aim is an extension of the Institute for Healthcare Improvement's Triple Aim Framework. 1 As a result, it facilitates the provision of high-quality care to complex wound cases, such as those associated with tissue

loss due to diabetes and peripheral arterial disease,3 because patients, their families and care partners become partners within the team.⁴ It is an important component of limb preservation and patient-centred care.⁵ Professional collaboration that results in a team approach is widely accepted in the clinical community, but it can be difficult to implement in practice.6 The following highlights the fundamental concepts, such as the key elements and various definitions of the team approach, as well as the specific characteristics of the most recent published successes in limb preservation.



Key elements of professional collaboration

To begin, team members must have fundamental skills in understanding collaboration

Table 1: Basic skills for professional collaboration (Adapted from Interprofessional Health Collaborative Framework²)

Role clarification

 Practitioners within the team understand their role and the roles of those in the team and use this knowledge appropriately to establish and achieve individual/patient/family/care partner and community* goals.

Team functioning

 Practitioners understand the principles of team dynamics and group/ team processes to enable effective interprofessional collaboration.

Interprofessional communication

• Practitioners from different professions communicate with each other in a collaborative, responsive and responsible manner.

Individual/patient/family/care partner/community-centred care

Practitioners seek out, integrate and value the input and the engagement of the individual/patient/family/care partner and community in designing and implementing care/services.

Interprofessional conflict resolution

 Practitioners actively engage self and others, including the individual/ patient/family/care partner in positively and constructively addressing disagreements as they arise.

Collaborative leadership

• Practitioners understand and can apply leadership principles that support a collaborative practice model.

*An example of a community goal is: to be treated within the remote, Indigenous community as much as possible. For an Indian or Chinese community, it may be to be able to implement Ayurveda or traditional medicine as a part of the interprofessional collaboration.

in order to demonstrate knowledge, ability and behaviours for teamwork on the limb preservation team. As a result, a specific framework for interprofessional wound care teams is necessary.

Fundamental skills support team organization and communication, which in turn can improve patient engagement and empowerment in self-management.³⁻⁵ In addition, for an optimal team approach, several other factors must be considered, such as the level of collaboration (such as information, consultation, collaboration, partnership), conflict resolution,

member participation, the roles of each member and cohesion (see Table 1).7,8 Indeed, studies have shown that the higher the level of team cohesion, the better the effects on health outcomes and patient satisfaction.^{6,9} Setting specific measurable and achievable goals with measurable outcomes, a system of clinical and administrative organization, division of care based on individual expertise, training for all members and effective communication strategies are all key elements that enable cohesion in the health team. 8,10-12

Definition of Team Approach

Another distinction regarding team approach is the terminology and meaning of each concept used to describe teamwork: multidisciplinary, interdisciplinary and transdisciplinary (see Figure 2). Even though this terminology is frequently used interchangeably, each term has its own definition. Unfortunately, these concepts and associated terminology continue to perplex practitioners as well as those who publish on the subject. 10,13 As a result, assessing the impact of the teams, particularly in limb preservation, is difficult.14

Each term denotes a distinct approach to team member integration and depth, as well as patient and public interactions and integration in relation to management and decision-making.¹⁰⁻¹²

A multidisciplinary team positions health disciplines in a complementary but not integrative way. As a result, the disciplinary perspectives are not changed within the team but rather contrasted with one another. The team works in parallel or sequentially from their specific disciplinary base to solve a common problem for the patient (for example, limb preservation or wound healing), which is a central preoccupation for all team members as well as families and care partners. Team members establish general, common goals and make their own decisions, and they may

Utility of sensor-based technology

Utility of a sensor-based technology to assist in the <u>prevention of pressure ulcers</u>: A clinical comparison

Rose Raizman, Minette MacNeil , Laurie Rappl Int Wound J. 2018 Dec;15(6):1033-1044.

DOI: 10.1111/iwj.12974. Epub 2018 Aug 30

Aim: Detection of subcutaneous tissue damage before it is visible can trigger early intervention and decrease hospital-acquired pressure ulcer (HAPU) rates. The objective of this two-phase study was to evaluate the clinical utility of the Sub-Epidermal Moisture (SEM) Scanner (Bruin Biometrics (BBI), LLC), a hand-held device that assesses increases in interstitial fluid or sub-epidermal moisture, indicating early tissue damage.

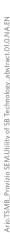
Phase 1: Patients were provided standard-of-care risk assessment and interventions and were scanned with the SEMScanner, but the resulting SEM scores were not used to determine interventions. This gave a baseline pressure ulcer incidence rate.

Phase 2: This phase is the same as Phase 1, except the resulting SEM scores were used in conjunction with risk assessment scores to determine appropriate interventions and care planning.

Results: In Phase 1, 12 of the 89 subjects or 13.5% developed visible pressure ulcers — 4 Stage I's, 6 Stage II's, 1 Stage III, and 1 deep tissue injury. In Phase 2, 2 of the 195 subjects or 1.0% developed visible pressure ulcers — 1 Stage I and 1 Stage II. Patients in Phase 2 were more incontinent, less mobile, and had longer lengths of stay than those in Phase 1. Use of the Scanner resulted in a 93% decrease in HAPU. No deep injuries developed in Phase 2.

Source: U.S. National Library of Medicine





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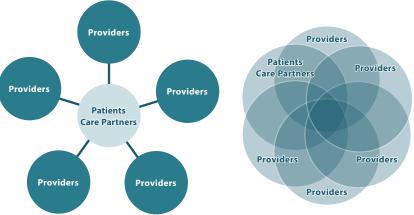
Okonkwo H, Bryant R, Milne J et al. A blinded clinical study using subepidermal moisture biocapacitance measurement device for early detection of pressure

injuries. Wound Repair & Reg 2020;1-11.

Bates-Jensen BM, McCreath HE, Pongquan V. Sub-epidermal moisture is associated with early pressure ulcer damage in nursing home residents with dark skin tones; pilot findings. J Wound Ostomy Continence Nurs. 2009;36(3):277-284.

Burns M (2020). Reducing Pressure Injury/Ulcer through the introduction of Technology. Accepted and presented at EWMA Virtual Conference 2020.

Figure 2: Differences in team approaches to care



Interdisciplinary Transdisciplinary

meet to discuss progress and care continuation as needed. The team may or may not be in the same physical location.

Multidisciplinary

An **interdisciplinary** team is a collaboration of at least two or more health-care disciplines, resulting in a new level of discourse and knowledge integration related to limb preservation or wound care. These interdisciplinary efforts have the potential to create new limb preservation disciplines, as was the case with toe and flow model (podiatrists and vascular surgeons) (see Figure 3).15 All team members collaborate—but always from a discipline-specific perspective—to solve common health issues that affect the patient (and their families/care partners). The team defines the goals, and the patient and their families are included as members because the team is providing patient-based prevention and care. At least one member within the team needs to co-ordinate patients' contributions to the plan as their goals, preferences and values have the same weight as those from the care providers. It is therefore a partnership between health professionals and the patient (and families and care partners) in a participatory, collaborative and co-ordinated approach to shared decision-making on health issues.

A **transdisciplinary** team approaches the patient holistically, providing subordinate disciplines with a comprehensive understanding of the system and its dynamics, including community, organization, scientists and policy makers. Teams, for example, use a common conceptual framework to solve a common problem, such as a national limb preservation strategy, by combining discipline-specific theories, concepts and approaches. Transdisciplinary teams share not only goals and decision-making, but also skills. Because of the integration and depth of interactions among team members, including all stakeholders at the micro (clinical), meso (organization) and macro (policy) levels, this is the most advanced level of team approach to care and prevention.^{2,3} This approach is expected to result in better outcomes and higher quality of care.

Common

Goals

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Recent Stories of Success in Limb Preservation

The current literature reports on mainly multidisciplinary limb preservation efforts, and there is a high heterogeneity within and across all the reported data from those studies. ¹⁶ This is an important topic, and there is abundant literature on the concept of a team approach to limb preservation with some specific features for success outlined.

A systematic review in 2014⁵ studied multidisciplinary teams in foot clinics. It reported that care delivery led to a reduced rate of amputations for patients with high risk of amputation due to the organization and improvement of the services offered.⁷

A systematic review from 20176 that focused on the results of teams for active diabetic foot ulcers demonstrated a reduction of the death rate, length of hospital stay, amputation severity and cost of care as well as improvement in quality of life and wound healing for this population. Keys to this success included the complementarity of all the related professions, especially relating to consultation with podiatrists, wound-specialist nurses and orthotists with the hospital-based team, and to early intervention and follow-up.8

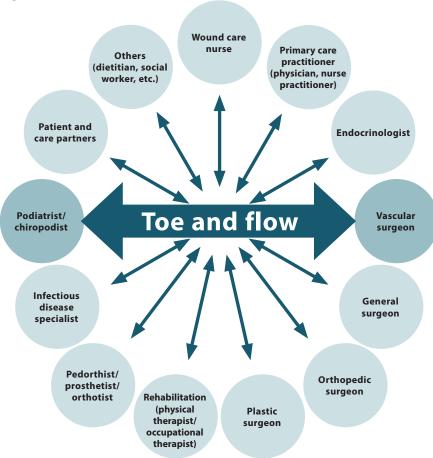
Recently, three systematic reviews^{4,7,16} were published regarding a team approach to amputation. All the studies demonstrated that this approach reduces major amputation (below knee and above knee) rates.4,7,16 The success of the team in one of the studies¹⁶ was due to the combination of surgical and medical disciplines and to having a "captain" of the team integrated with nuclear and ancillary team members. Clear referral pathways and algorithms to support timely, comprehensive care relating to glycemic control, local wound management, vascular disease management and infection management were also highlighted as key success components.9 One of the other studies focused particularly on the team, including podiatrists, and demonstrated a reduction of 55% of major amputation and 31% of minor amputations.¹⁶ Podiatrists were mainly "gatekeepers," with vascular surgery and/or endocrinology within the team included in the review. The third review⁷ found a similar major amputations rate reduction (36–56%) to those of the second study but also highlighted that at least four team members worked together within the limb preservation teams.

A systematic review from 20218 related to the impact of access to and the quality of diabetic foot care delivery in preventing amputations demonstrated the same results as the studies cited above but also highlighted the impact of the use of teams on prevention. The success of the team was due to many components, including:

- Enhanced health-care access by reducing distance to foot clinics and increasing the number of clinics
- Enhanced co-ordination (information and feedback)
- Enhanced level of knowledge and skills within the team
- Guideline implementation
- Improved chiropody/podiatry care access and increased numbers of those within the team
- Enhanced diabetic foot care service structure related to foot screening, foot care, education, footwear and clinical pathways
- High-quality care trajectories between community care and rapid access for emergencies¹² Other studies that were not integrated in the previous sys-

integrated in the previous systematic reviews showed similar results. In one, a team that focused on ischemic and diabetic wounds after vascularization or hospitalization demonstrated that the teamwork increased the performance of the vascular service in relation to limb preservation interventions (debridement and endovascular bypass) and reduced major amputation rates. Their success was apparently based on a reduction in variability of follow-up between vascular surgeons, primary care and home nursing, a strong core team and co-ordinated care management, the implementation of wound-specific medical records and a weekly case discussion within the team.¹² Another study of a team with a focus on chronic limb-threatening ischemia demonstrated that patients treated within the team increased the length of time they lived without major amputation. Specific features of their success in their ambulatory vascular limb salvage service clinic were also based on the implementation of dedicated referral pathways and treatment protocols where all referrals can be made by any health-care professional, an open access policy where clinical suspicion of chronic limb-threatening ischemia was the only referral criterion, the implementation of the Wounds, Ischemia and foot Infection (WIfI) classification for the risk of amputation and revascularization benefits¹³ and to weekly "complex peripheral" team meetings.¹⁴ Limb preservation for all non-vascular etiologies (including trauma and infection) has demonstrated a reduction

Figure 3: Toe and flow



Modified from Rogers and colleagues²²

of 76% of amputations because all specialties (orthopedic and plastic surgeons, rehabilitation staff, podiatrists and wound care led by vascular surgeons) were meeting quarterly and all specialties were consulted before the amputation.¹⁵

In Canada, there have been recent successes in using a team approach in limb preservation. For example, the first toe and flow model was implemented in Calgary, with a resulting reported reduction in amputation over the years.¹⁷ In addition, another multidisciplinary team was implemented in Ontario, and the authors highlighted

the importance of having all specialties in the same location, the benefits of having a person with experience in charge (or co-ordinator) to co-design the structure and the process of the program, and how essential it is to ensure the sustainability of funding.¹⁸ In Quebec, interdisciplinary wound clinics with a strong focus on limb preservation have been developed and demonstrate positive outcomes. Those teams have focused on the importance of partnership with a vulnerable population, 19 in-place infrastructure academic collaboration,²⁰ and community wound care.²¹

Transdisciplinary Teams

Transdisciplinary limb preservation teams do exist. A recent study has reported the effect of the team approach to virtual diabetic service to improve access to care and education for diabetic foot disease.²³ The authors found that this approach led to increased patient engagement, decreased major amputation rates, reduced hospitalization rates and fewer unnecessary hospital visits. This was based on:

- Co-design of the service by users and through consultation on "what the community wants"
- Better support for primary care
- Improved access and timely referral to podiatrists
- Improved access to healthy lifestyle supports
- The understanding of "what matters to me" at the system level
- Enhanced diabetes care at home

Conclusion

A collaborative approach to limb preservation is universally beneficial. There are trends that characterize the success of these teams, and future research and advocacy should focus on how we can implement teambased limb preservation as a national strategy. However, the successes reported thus far have also revealed a lack of integration of patients and caregivers as partners within the team. We can maximize the potential of a

team approach in limb preservation in Canada and elsewhere by working together and using our best interprofessional collaboration skills. Patients, their families and care partners are partners within the team and are well positioned to take charge of their own health if and only if they have a space to do so.

References

- 1. Berwick DM, Nolan TW, Whittington J. The Triple Aim: Care, health, and cost. Health Aff. 2008;27(3):759-769.
- 2. D'Amour D, Ferrada-Videla M, San Martin Rodriguez L, Beaulieu M-D. The conceptual basis for interprofessional collaboration: Core concepts and theoretical frameworks. J Interprof Care. 2005;19(sup1):116-31.
- 3. Watt A, Beacham A, Palmer-Mann L, Williams A, White J, Brown R, et al. Service user and community clinician design of a partially virtual diabetic service improves access to care and education and reduces amputation incidence. BMJ Open Diabetes Res Care. 2021;9(1).
- 4. Pascucci D, Sassano M, Nurchis MC, Cicconi M, Acampora A, Park D, et al. Impact of interprofessional collaboration on chronic disease management: Findings from a systematic review of clinical trial and meta-analysis. Health Policy. 2021;125(2):191-202.
- 5. Kangas S, Rintala T-M, Jaatinen P. An integrative systematic review of interprofessional education on diabetes. J Interprof Care. 2018;32(6):706-18.
- 6. Szafran O, Kennett SL, Bell NR, Torti JM. Interprofessional collaboration in diabetes care: Perceptions of family physicians practicing in or not in a primary health care team. BMC Fam Prac. 2019;20(1).
- 7. Quinlivan E, Jones S, Causby R, Brown D. Reduction of amputation rates in multidisciplinary foot clinics - A systematic review. J Aus Wound Manag. 2014;22(3):155.

- 8. Buggy A, Moore Z. The impact of the multidisciplinary team in the management of individuals with diabetic foot ulcers: A systematic review. J Wound Care. 2017;26(6):324-
- 9. Musuuza J, Sutherland BL, Kurter S, Balasubramanian P, Bartels CM, Brennan MB. A systematic review of multidisciplinary teams to reduce major amputations for patients with diabetic foot ulcers. J Vasc Surg. 2020;71(4).
- 10. Albright RH, Manohar NB, Murillo JF, Kengne LA, Delgado-Hurtado JJ, Diamond ML, et al. Effectiveness of multidisciplinary care teams in reducing major amputation rate in adults with diabetes: A systematic review & meta-analysis. Diabetes Res Clin Pract. 2020;161:107996.
- 11. Monteiro-Soares M, Vale-Lima J, Martiniano J, Pinheiro-Torres S, Dias V, Boyko EJ. A systematic review with meta-analysis of the impact of access and quality of diabetic foot care delivery in preventing lower extremity amputation. J Diabetes Complicat. 2021;35(4):107837.
- 12. Flores AM, Mell MW, Dalman RL, Chandra V. Benefit of multidisciplinary wound care center on the volume and outcomes of a vascular surgery practice. J Vasc Surg. 2019;70(5):1612-
- 13. Mills JL, Conte MS, Armstrong DG, Pomposelli FB, Schanzer A, Sidawy AN, et al. The Society for Vascular Surgery Lower Extremity threatened limb classification system: Risk stratification based on wound, ischemia, and foot infection (WIFI). J Vasc Sur. 2014;59(1).
- 14. Nickinson AT, Dimitrova J, Houghton JS, Rate L, Dubkova S, Lines H. Does the introduction of a vascular limb salvage service improve one year amputation outcomes for patients with chronic limb-threatening ischaemia? Eur J Vasc Endovascu Surg. 2021;61(4):612-619.
- 15. Hemingway J, Hoffman R, Starnes B, Quiroga E, Tran N, Singh N. The impact of a limb preservation service on the incidence of major amputations for all indications at a level I trauma center. Ann Vasc Surg. 2021;70:43-50.

- 16. Blanchette V, Brousseau-Foley M, Cloutier L. Effect of contact with podiatry in a team approach context on diabetic foot ulcer and lower extremity amputation: Systematic review and meta-analysis. J Foot Ankle Res. 2020:13(1).
- 17. Basiri R, Haverstock BD, Petrasek PF, Manji K. Reduction in diabetesrelated major amputation rates after implementation of a multidisciplinary model: An evaluation in Alberta, Canada. J Am Podiat Med Assoc. 2019;111(4).
- 18. Roberts DJ, Murphy C, Strauss SA, Brandys T, Corrales-Medina V, Zhang J, et al. Structure, processes, and initial outcomes of The Ottawa Hospital Multi-Specialist Limb-Preservation Clinic and Programme: A uniquein-Canada quality improvement initiative. Int Wound J. 2021;19(2):326-
- 19. Fournier C, Singbo N, Morissette N, Thibeault M-M. Response to "outcomes of diabetic foot ulcers in a tertiary referral interdisciplinary clinic: A retrospective Canadian study." Can J Diabetes. 2021:45(7):579.
- 20. Blanchette V, Hains S, Cloutier L. Establishing a multidisciplinary partnership integrating podiatric care into the Quebec public healthcare system to improve diabetic foot outcomes: A retrospective cohort. The Foot. 2019;38:54-60.
- 21. Patry J, Tourigny A, Mercier MP, Dionne CE. Outcomes and prognosis of diabetic foot ulcers treated by an interdisciplinary team in Canada. Int Wound J. 2020;18(2):134-46.
- 22. Rogers LC, Andros G, Caporusso J, Harkless LB, Mills JL, Armstrong DG. Toe and flow: Essential components and structure of the amputation prevention team. J Vasc Surg. 2010;52(3).
- 23. Watt A, Beacham A, Palmer-Mann L, Williams A, White J, Brown R, et al. Service user and community clinician design of a partially virtual diabetic service improves access to care and education and reduces amputation incidence. BMJ Open Diabetes Res Care. 2021;9(1).



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References:

- 1. Gabriel A, Camardo M, O'Rorke E, Gold R, Kim PJ. Effects of Negative-Pressure Wound Therapy With Instillation versus Standard of Care in Multiple Wound Types: Systematic Literature Review and Meta-Analysis. *Plast Reconstr Surg.* 2021 Jan 1;147(1S-1):68S-76S. doi: 10.1097/PRS.000000000007614. PMID: 33347065.
- 2. Camardo, Mark. "Veraflo Meta-Analysis Standardized and Non-Standardized Means.", 3M Internal Report, San Antonio, Texas, 2020

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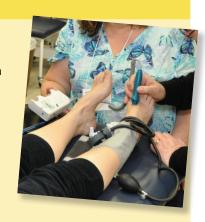
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