Best Foot Forward

Upskilling Human Resources for High-Risk Foot Care

A knowledge sharing report

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FSC is a forward-thinking centre for research and collaboration dedicated to preparing Canadians for employment success. We believe Canadians should feel confident about the skills they have to succeed in a changing workforce. As a pan-Canadian community, we are collaborating to rigorously identify, test, measure, and share innovative approaches to assessing and developing the skills Canadians need to thrive in the days and years ahead. The Future Skills Centre was founded by a consortium whose members are Toronto Metropolitan University, Blueprint ADE, and The Conference Board of Canada

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Diabetes Action Canada

Best Foot Forward

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Opening Message

We have great pleasure in sharing this report with our community partners, healthcare workers, our funder of the project (Future Skills Centre), the participants who received the Best Foot Forward training and all other interested parties.

The high rate of lower limb amputations (primarily linked to diabetes-related complications) in Canada is of great concern, and alongside other serious complications of the feet, disproportionately affect the most marginalized within society, such as Indigenous and racialized Canadians. Amputations come at a huge physical and emotional cost to people who undergo these procedures, as well as their families, and they also entail a significant financial cost to the healthcare system. Our hope that this knowledge sharing assists in highlighting the crucial need to focus on feet in order to prevent complications that can have vastly negative consequences for people's functioning, quality of life and wellbeing.

This project involved three overarching initiatives. First, the Value-Based Health Care study focusing on the diabetic foot care and limb preservation pathways, which explored patient experiences, examples of footcare pathways in Ontario hospitals, a moderated forum to identify critical areas for improvement in how the care pathway is structured with representatives from several levels of Ontario's healthcare system, and a scoping review on how diabetic healthcare programs and services are aligned with values-based health care principles.

Second, curriculum development and delivery for unregulated healthcare workers conducting foot screening, and an accompanying scoping review on upskilling programs for unregulated care providers working with systematically marginalized populations. Third was a partnership with the Indigenous Diabetes Health Circle to support the expansion of their existing programming and to consult and collaborate on developing advanced curriculum.

As Principal Investigators, we would like to thank the team of scientists and foot care professionals who put so much work and passion into the successful implementation of the Best Foot Forward project. We sincerely appreciate the time that all the participants have put into our training in order to improve their own knowledge and skills, and express our gratitude to the Indigenous Diabetes Health Circle for their hard work and impact in Northern communities. A huge thank you is also due for all our community partners who have taught us so much and helped us to improve this training.

Finally, we would like to acknowledge the Future Skills Centre, whose funding has allowed us to reach some of the most vulnerable people in our society and do this important work.

Let us all keep our eyes on feet to save limbs and improve lives.

Nicole Woods PhD

Research Institute Director
The Institute for Education Research at UHN

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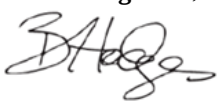


Chief Medical Officer and Executive
UHN/Michener

Upksilling/Reskilling Canada's Healthcare Workers

On March 15th, 2021, we (The Institute for Education Research and the Michener Institute of Education at UHN), signed an agreement with the Future Skills Centre (FSC) for the project grant **Upskilling/Reskilling Canada's Healthcare Workers**. Our project aimed to integrate footcare across health care enterprises in Canada focusing on ***four priority areas***:

- **Priority 1 -** Support workers: Support Canadian healthcare workers in upskilling/reskilling to meet the growing need for diabetes foot and wound care required to prevent lower limb amputations.
- **Priority 2 -** Support employers: Understand trends and engage employers in the design and development of a 'future proof' foot care pathway that will close skills gap challenges and enable interprofessional care.
- **Priority 3 -** Build capacity: Build the capacity, ability and toolset of service providers to better collaborate with each other so that we can optimize investments in programs and supports.
- **Priority 4 -** Advance inclusion: Ensure everyone (no matter background, geography or circumstances) has access to healthcare education

These priority areas served as focal points for the multi-arm project as we assessed:

- Existing programs
- Investigated patient experiences and the values they seek in quality foot assessment and care for diabetes
- Made care pathway recommendations
- Developed knowledge through a scoping review and realist review
- Collaborated with community partners/organizations and community workers to integrate and facilitate opportunities for education and dialogue on diabetes foot and wound care
- Provided resources to the Indigenous Diabetes Health Circle, IDHC, to expand their program and program offerings.

We hope that the sum of these activities reduces the occurrence of foot ulcers and prevents lower limb amputations through innovative interventions that promote change within and alongside the healthcare system.

As part of the FSC project, The Value-Based Health Care (VBHC) study was conducted on the Diabetic Foot Care and Limb Preservation (DFCLP) Pathways. The study included multiple components such as: a Patient Partner Forum, Clinical Site Forum, Implementation Study, Policy Study (scoping review) and VBHC analysis, where the value was defined by the patients.

Patients described the emotional toll of their uncertainty and of being able to access proper and timely care. They also expressed a desire for greater cultural competency from providers, as well as access to better information on foot care and screening. Patients also described a large delay in receiving timely care, even in examples where a crisis was occurring regarding the feet.

The bottom line is that there are not enough trained footcare specialists, like Chiropodists, in Canada, to meet the growing problem of lower limb amputations and foot complications. The Best Foot Forward project was designed and implemented as a task-shifting strategy to address this issue.

Task-shifting can be defined as delegating tasks to non-specialist workers who are trained to carry out narrow, specific tasks that are outside of their usual scope of practice. This approach was used to train health professionals and unregulated healthcare workers to assess people for the risk of foot complications, and patients were connected to care if needed. Task-shifting can also increase patients' access to healthcare, and improve quality of care (Mercer et al, 2019).

It was intended that this project remain as close to practice as possible, building community partnerships to ensure its sustainability through an iterative process where the project team remained open to learning. Our task-shifting initiative valued existing staff knowledge and empowered the sharing of resources and curriculum-building skills in a framework flexible enough to be shaped collaboratively with community partners.

Taking on an evidence-based approach in designing a robust curriculum, the project consisted of six-foot care modules that focused on foot care, the vascular system, sensation, footwear, common foot concerns and a practical foot screening tool. To date, The Best Foot Forward curriculum was subsequently taught to 114 individuals across three provinces/territories (Ontario, North West Territories and Newfoundland & Labrador). It has also been taught at UHN and at seven other partner organizations.

We were fortunate to partner with IDHC, an esteemed organization leading in diabetic foot care for Indigenous communities, to provide resources for expanded programming. A pilot of IDHC's existing Foot Care Level 1 in an Indigenous community outside of the province of Ontario, in addition to a knowledge mobilization event with IDHC's staff and Traditional Practitioners to share traditional teachings and knowledge, were completed.

What followed was a reflection on Indigenous learning approaches and a collaboration on the development and piloting of a Level 2 Foot Care curriculum to expand on our existing Foot Care Level 1 curriculum. The IDHC also held two community Foot Care events, with 80 participants.

Using the metaphor of *feet*, recounting the *steps* that we took during this journey, this report describes *how* the priority areas identified for the grant were addressed into the different components of the project.

Alongside this, the report describes the development of a co-adapted diabetes foot and wound care curriculum, illustrating how it can be successfully implemented across various healthcare settings and community sectors. It reveals *'footprints'* that were created and/or left behind from this journey, such as knowledge/learnings gained with interested stakeholders at UHN and with partner organizations.

The intended audience for this report are the funder of the project (Future Skills Centre), UHN leadership, our grant partners, IDHC, our community partners, hospital administrators (executive level), health policy makers, the Ministry of Health, and the patient partners and participants who shared their experiences or received the foot care training.

The successful completion of this undertaking could not have been accomplished without the guidance and support of the working groups and other supporting stakeholders. Their contributions are sincerely appreciated and gratefully acknowledged.

We would like to express our gratitude to the following contributors for all their support:

CorHealth Ontario
ECHO Ontario
Wounds Canada
The University Health Network
Diabetes Action Canada
Indigenous Diabetes Health Circle
The Michener Institute for Education at UHN
Our UHN Patient Partners on our Advisory Committee

Our First Steps…

From the beginning, our plan for the grant was to have an impact on foot health care delivery and diabetic foot assessment. We envisioned working with patient partners across Canada to identify issues they had encountered relating to their foot care and foot screening, and what they value most for their care. We also sought their recommendations on how to improve footcare pathways in Ontario hospitals.

We organised a realist review to identify how to develop education interventions and opportunities through upskilling community workers to address disparities related to the accessibility of foot care to under-served Canadians living with diabetes. In addition to this, the realist review also sought to determine how to prevent and reduce the occurrence of foot ulcers that lead to amputation and increased mortality risk. Lastly, we reviewed different ways to collaborate with IDHC to support the new curriculum development.

Value-Based Health Care (VBHC) Study of the Diabetic Foot Care and Limb Preservation (DFCLP) Pathways

As part of the FSC study, Program for Health System and Technology Evaluation (PHSTE), Toronto General Hospital Research Institute, in collaboration with Diabetes Action Canada (DAC) and Conference Board on Canada (CBoC) conducted the VBHC study focusing on the DFCLP Pathways.

The study has multiple components including a Patient Partner Forum, Clinical Site Forum with the Implementation Study, Policy Study (scoping review) and a VBHC analysis where the value was defined by the patients.

Two patient partner forums were conducted, initially in October, 2022 and again in June, 2023. We engaged over 15 persons from diverse racial and cultural backgrounds across Canada. These individuals were living with diabetes and were part of the DAC Patient Partner Circles, and we were able to gain their perspective about the issues they have encountered related to their foot care and awareness about diabetic foot screening (DFS).

They shared their experiences related to the following questions:

1. How often do you do a health screening for diabetes, including DFS?
2. How do you know about the recommended screening frequency? Have you received information/education on when to screen for what complication?
3. What is your experience with footcare?
4. What do you value most when thinking about an integrated rather than siloed care pathway?
5. What outcomes do you want to see?

The persons living with diabetes shared that they felt people were not being screened for DFU in a systematic way across the country, and that information and education regarding the need for

screening for DFU was not being communicated to newly diagnosed patients. They further expressed frustration at encountering a lack of skills and properly trained providers who know how to assess and deal with foot complications.

An overarching theme that emerged in both Patient Partner Forums was that accessing care was complex, challenging, and inconsistent for patients depending on their location, their socioeconomic status, the make-up of their primary health care team, and their cultural and backgrounds. Better cultural competency training would improve patient experiences and mitigate feelings of exclusion expressed by marginalized and racialized patients.

Adding to this, participants expressed the emotional burden and fear of amputation and losing a limb. They discussed not only the stigma that comes with being a patient with diabetes, but the emotional toll the uncertainty of being able to access proper and timely care can cause.

Patients are faced with incurring a range of costs for accessing care, treatment, and orthotic supports depending on whether or not they have insurance coverage. Bearing in mind that access and affordability of footcare varies by province, this inconsistency results in an inequitable care pathway for patients who cannot afford treatment not covered by provincial health care.

A consistent theme throughout the findings included the lack of access to a healthcare provider and to information on assessment of the feet. It's not uncommon for the conversation about feet to be hidden, and in some ways, silenced out of the health provider and patient interaction unless there is an imminent issue or crisis. Even in examples where a crisis regarding the feet was occurring, there was a large delay in receiving timely care.

From the forums input, it is apparent that a more systematic and coordinated approach is needed to effectively screen for DFUs, that the focus of the educational material should be revised to discuss prevention and treatment of DFUs, rather than amputation, and further maintenance training of healthcare practitioners could be considered to enhance skills and comfort with DFS.

In March 2023, the CBoC, together with the PHSTE and DAC, hosted a virtual Clinical Site Forum where representatives from three hospital-based (University Health Network, Unity Health and Ottawa General Hospital) Ontario foot care clinics discussed their unique care pathways and implementation specificities (Implementation Study). Each group described implementation processes including patient referral, components of care, clinical staff roles, skills and data collection, and how their sites were funded and resourced.

Implementation of the care pathways was different across the sites. Where some sites had a strong community/primary care engagement as a main referral path, another site was focused on the in-hospital setting as a main referral path. Each site tried to integrate all other potentially necessary specialists on an as needed basis.

Each site responded to COVID-19 pandemic with the pathway modifications to better accommodate the needs of the patients, while providing a pandemic-safe environment. For example, change during pandemic included having patients send emails with images of wounds for monitoring, even though in-person visits continued for the most challenging cases.

All sites provided care to a diverse urban population, with systematically marginalized patients, including people experiencing homelessness, and no change to patient population was observed during the pandemic.

Representatives from several levels of Ontario's healthcare system participated in a moderated forum to identify critical areas for improvement in how the care pathway is structured. We also heard about the need for greater awareness of footcare related to diabetes, and how other jurisdictions outside Ontario are making inroads with better models for care (Alberta).

The key objectives for the scoping review for policy study were:

1. To identify and describe the existing diabetes foot care and limb preservation programs and services in Canada and internationally
2. To assess the alignment of these programs and services with value-based healthcare principles
3. To identify relevant policies related to the clinical context of care, governance, and funding of diabetes foot care and limb preservation programs and services.

***Research Question*:**

How are healthcare programs and services, including multidisciplinary care pathways, provided to individuals living with diabetes for the screening, prevention, and treatment of diabetic foot, including wound care, limb preservation, and amputation aligned with value-based healthcare principles and health-related outcomes valued by patients?

The challenge that was faced with the literature search to address the second objective was that the term "value-based healthcare" is not explicitly described in the literature, and not all principles may be covered by an individual program. As a result, a literature search strategy was developed for each (see table below) of the following six VBHC principles to find relevant programs demonstrating any one of the principles.

Objective 3 is addressed through an examination of the settings and other commentary for the programs identified as satisfying the top 2 objectives, especially in a Canadian setting.

Value-based healthcare core principles

1. Care must be structured around the medical conditions of the patient.	Care delivery is organized around patients' medical conditions. In primary care, it is structured around population segments with differing primary care needs – such as healthy adults, patients with chronic illnesses, and lower income elderly. Value is derived through the full cycle of care and is driven by provider experience, scale, and learning at the medical condition level.
2. Outcomes and costs must be measured for every patient.	Outcomes and costs are measured for every patient and the resulting information is widely available to support value-based learning and competition.
3. Healthcare costs must align to the value of care, rewarding better outcomes and more efficient processes.	Focus is on enhancing value for patients – not just lowering costs – such that reimbursement models reward better outcomes and efficiency of care.
4. Efficient and proper care practices must be effectively integrated with the care delivery system.	Regional delivery of care is organized around matching patients with the correct provider, treatment, and setting. System integration in service of higher-quality care is less costly over the long term.
5. Care must account for a regional and national system, and standards of care must apply across geographies.	National mechanisms (e.g., centres of excellence) are established to support adherence to VBHC standards of care across geographies and access to appropriate care for exceedingly complex patients. Approaches to system transformation are scalable and measured outcomes are relevant to and implemented at regional and national levels, not only locally.
6. Technologies must be innovative and designed to accommodate an effective VBHC system.	An information technology system designed to support the major elements of the VBHC initiative is in place to enable data sharing, tracking of results, and rewarding innovations that increase value to patients and the health system.

Sources: Porter and Teisberg, *Redefining Health Care*; The Conference Board of Canada.

Education Intervention

Our education intervention focused in on co-developing a curriculum on diabetes foot and wound care with underserved populations. It included the needs of individuals living with diabetes in these communities, who are at an increased risk of developing foot ulcers and lower limb amputation.

Our funding was awarded during the COVID-19 pandemic, and we encountered several related barriers. In addition to the culminating impacts of the burden of the pandemic on healthcare providers were the unaddressed social determinants of health within communities, as well as the subsequent lack of trust that many individuals had of healthcare systems during this period. These factors are discussed in further detail in the 'lessons learned' section of this report.

Regulated health care providers were not available for collaboration about foot care, however, during the pandemic our colleagues at Collaborative Advocacy & Partnered Education (CAPE) at The University Health Network (UHN) conducted work on upskilling Personal Support Workers (PSWs) on dialogical facilitation for vaccine education and science—we were able to draw from this.

The research showed that building relationships with clients is a significant part of the process of facilitating trust, because it can provide opportunities for dialogue with individuals regarding their health (Petten, 2023). As CAPE Learning curriculum development includes an emphasis on community collaboration and building relationships of trust and communication with individuals/health workers, these findings inspired and influenced the curriculum project.

We shifted our focus to unregulated health workers and used this model to foster opportunities for dialogue and education on foot health and foot screening. Co-adapting the curriculum to meet the needs of our partner organizations also became an important element of relationship development with staff and with organisation leadership. These developments led to insights about the need for, and effect of, our program on learners.

Offering training to a workforce such as PSWs has the additional advantage of increasing skills and knowledge for frontline healthcare workers, who, themselves, often belong to underserved groups. This training also honours the connections and commitment of organizations and roles such as community case workers and PSWs. The individuals who comprise these groups are dedicated providers with valuable skills that can be expanded to task-shift as needed, foot screening with training and expanding their knowledge and impact of their care.

From this perspective, we developed the ethical underpinnings for the curriculum arm of the grant and beyond, to prioritise:

- Collaboration and relationship building
- Willingness to learn and change
- Equity principles and a commitment to examining and addressing power structures
- Valuing multiple kinds and forms of knowledge
- Developing and co-adapting curricula in partnerships with community members, that reflects and is responsive to their needs

- Inviting partners to contribute to the final report in their own words

Why this work is important

- Approximately 11.7 million Canadians live with diabetes or prediabetes, and this number is expected to exceed 14 million by 2026 (Diabetes Canada 2022; Patel et al. 2022; Elfein et al. 2022)
- Every day, approximately 549 new cases of diabetes, 20 deaths attributable to diabetes-related complications, and 14 lower extremity amputations are reported in Canada (Elfein et al. 2022)
- Individuals living with diabetes experience a higher risk of developing foot ulcers, which in most cases serves as a precursor for the development of more serious foot health complications, such as limb amputation (Botros et al. 2017; Evans et al. 2022).

Limb amputation from diabetes is very closely linked with social determinants of health (SDoH), as individuals most vulnerable to limb loss include those who are the most structurally disadvantaged, such as racialized people, Indigenous people, people with insecure housing or who are unhoused (Walker et al 2022; Maple-Brown 2020; Evans 2022; Diabetes Canada 2022). This is most often due to systemic and structural discrimination that affects health outcomes (House of Commons Canada 2019). Systemic discrimination refers to the involvement of systems, while structural discrimination refers to the structures that are the "scaffolding of the system" (Braveman et al 2022:172).

As a result, SDoH contribute to increased medical concerns because people from underserved populations have greater difficulty accessing health care. Compounding this problem is the shortage of foot care experts such as chiropodists/podiatrists,[8] who are experts in examining feet and providing preventive care and early management of foot health complications.

Chiropody is not currently a service covered by OHIP, which severely limits access to professional foot screening and ongoing care, especially for structurally disadvantaged groups. To understand how education interventions for unregulated care providers could be effective, we undertook a realist review.

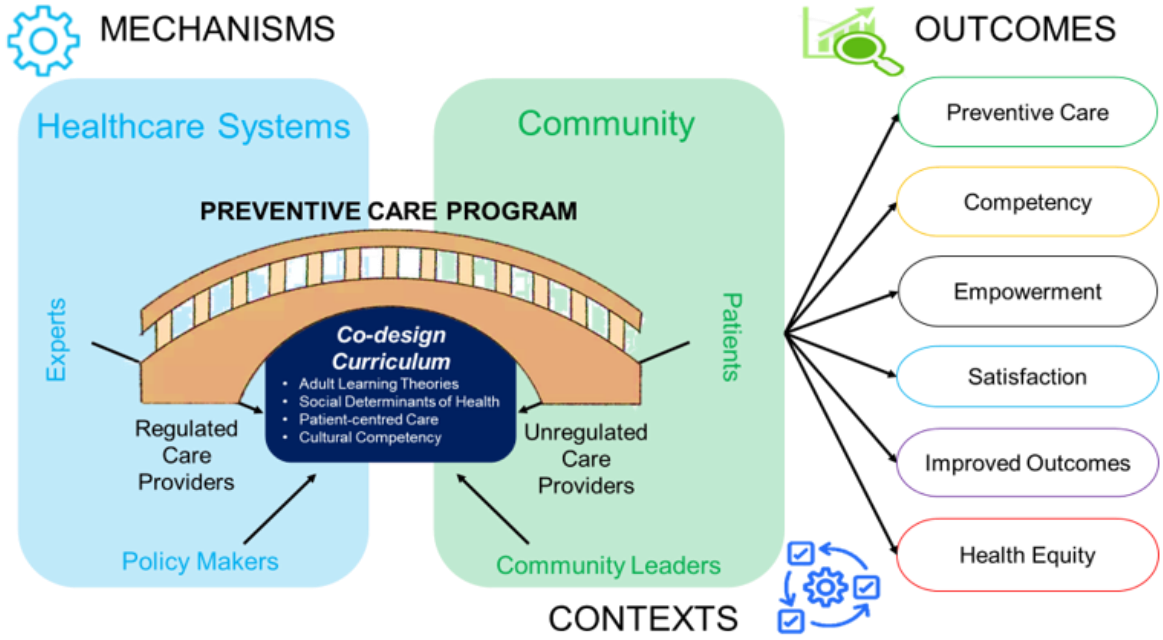
Realist Review

Our multifaceted project incorporated a realist review to understand,"How, Why, and In What Contexts Upskilling Programs for Unregulated Care Providers to Provide Foot Screening for Systematically Marginalized Populations Work" (Hassan et al 2023).

We adopted a theory-driven realist approach, both to review the literature and to understand the mechanisms used to develop educational interventions for Unregulated Care Providers (UCPs). We observed in what context these mechanisms were used, and what kind of outcomes could be expected.

As expected, we found few articles that focused on upskilling programs or educational interventions for UCPs to provide diabetic foot screening, and even fewer studies focusing on systematically marginalised groups.

Based on the literature, we developed a program theory that captured how, why and in what context these upskilling programs work. Through his theory, we showed that preventive foot care programs acted as a bridge that connected patients and communities with the healthcare system.



A Program Theory shows our understanding of the mechanisms utilised to develop educational interventions for UCPs, along with the contexts through which these mechanisms were used, and what kind of outcomes can be expected.

Understanding the role of foot screening was a prominent context for the program's development. Evidence suggests that annual foot screening, which assesses risk and guides planning for appropriate foot care, is just one step in a series of preventive care services required to reduce the incidence and recurrence of diabetes-related foot problems.

The reasons behind disparities in DFUs and foot screening among systematically marginalised groups were another context for developing the upskilling program. Articles linked these disparities to a lack of access to preventive care and lower rates of utilisation, despite the high rates of DFUs and amputations. Therefore, UCPs were trained to deliver accessible preventive care

through sites close to underserved communities, for example, community centres, community clinics, faith organizations, shelters, or even through home visits (Alzubaidi et al., 2017; Balagopal et al., 2012).

UCPs were also trained to perform other roles that go beyond foot screening and risk assessment including patient educators, health promoters, and patient advocates. Considering the complexity of preventive foot care, multidisciplinary educational interventions were considered the best setting to achieve better outcomes (Blanchard et al., 1999; Brown et al., 2021; Castillo et al. 2010; Hsu et al., 2007; Ismail, 2019; Joseph et al., 2010).

To develop the programs, researchers usually engaged patients and community partners in all phases of implementation. This process enabled the program developers to consider the context of the targeted patients and the resources of the community as the target setting for practice.

The training focused on developing competency-based education interventions based on principles drawn from adult learning theories and were mainly structured into three components: knowledge acquisition, skills development, and experiential learning. Cultural competency was also an important element aimed to increase UCPs' awareness of and sensitivity to cultural differences, and appreciation of different social determinants of health, cultural values, beliefs, and behaviours (Monteiro-Soares et al., 2020).

To ensure the quality standards of services, training programs included assessments for UCPs' knowledge and skills to verify their competencies (Abbas, 2015; Balagopal et al. 2012; Brown et al., 2021, Lucoveis et al., 2021). They also included evaluations for foot screening, and patients' satisfaction.

Based on the literature, upskilling UCPs has the potential to provide both accessible and acceptable preventive foot care if developed within a preventive care program that provides foot screening, risk stratification, patient and healthcare providers education, and referral pathways to connect patients to the healthcare system. We have to realise, however, that upskilling UCPs is not an alternative to the regulated healthcare system. The healthcare system, in turn, needs to deliver appropriate treatments for high-risk patients in a timely fashion to complete the circle of care. Therefore, adjustments within the healthcare system are still needed to achieve reductions in limb amputations and health equity.

Using Upskilling Education on Diabetes Foot and Wound Care

In Canada, a need exists to increase the number and diversity of people trained in screening and assessing diabetic foot problems to improve timely access to care. Recognizing this need, a diverse team from The Michener Institute for Education at UHN and UHN developed a flexible educational intervention to provide skills in foot assessment to a broad range of people in traditional and non-traditional roles in the hospitals and the community. This curriculum is adaptable and has been collaboratively co-created with Indigenous and community groups to best meet their needs.

Modeled on the successes of the Indigenous Diabetes Health Circle Holistic Foot Care Program, (Baird et al., 2022) which offers training services to Indigenous communities across Ontario, as well as the low-cost, low-barrier Michener Chiropody Clinic, and based on the Inlow's 60-Second Foot Screening tool by Wounds Canada (Blanchard et al., 2022), we developed a foot and wound risk assessment curriculum. With a view to overcoming cost barriers, the curriculum was similarly established for community health workers to overcome the insufficient number of licenced Chiropodists to do foot screenings for people in Canada.

This education intervention has provided training for employees, learners, and staff at partner organizations and at UHN, upskilling them to provide foot screening to the populations most at risk of limb loss. Foot screening can prevent limb loss, improve quality of life and mortality, and result in a reduction in costs for the health system (CorHealth 2021). In addition to the potential health benefits, this co-adapted education process highlighted competency gaps and reskilling opportunities at the worker and organization level that were specific to the needs of the populations served. Health education and promotion (central to this project) is vital in order to assist people in attaining optimal quality of life and wellbeing (Eriksson and Lindström (2008).

The final aspect of the project involved developing a curriculum based on teaching a validated diabetic foot screening tool for community and healthcare workers to be able to screen and identify people with at-risk feet and connect them to the appropriate level of care.

Throughout the project, there was a commitment to reach out to organizations serving systematically disadvantaged groups, and provide upskilling to people working in a wide variety of roles across the healthcare and community service landscape.

Over the course of the grant, 114 people, at seven organizations across three Canadian provinces/territories completed the Best Foot Forward Training. Roles of participants included: PSWs, Overdose Prevention Support Worker, Community Health Worker, Nurse, Physiotherapist, and many more. These healthcare workers gained new skills in screening for and identifying at-risk feet of people with diabetes.

We provide an overview of participants in this project in the 'goals and intention with outreach section' of this report.

Members of the BFF training team with specialist footcare nurses in St John's, Newfoundland

Specialist footcare nurses in St John's, Newfoundland, practicing the Inlow's 60-second Diabetic Foot Screen

Employers were supported to develop connections to care networks in their local environment and community for effective connections to care. The education intervention supported community workers in building knowledge and confidence in engaging with clients on topics related to foot screening and foot healthcare, therefore illustrating the value of capacity building.

In partnering with community organizations, as well as running hospital-based training, we were able to reach a breadth of healthcare workers across the workforce, bringing a free opportunity to people who are rarely offered training. Through the intervention, we demonstrated that the method used was a viable upskilling and outreach model.

What's more is that if enough time was given to deliver, build relationships and co-adapt curriculum, we would have achieved a greater reach across more types of community organizations, and an ability to longitudinally assess the impact of the training on identification of at-risk feet and connections to care.

Partnership with the Indigenous Diabetes Action Circle

This project involved funding for expanded program offerings and a collaboration with the IDHC to develop a new curriculum on diabetes foot care. IDHC is an Indigenous community organization that is an exemplar in delivering holistic diabetes education and screening to Indigenous communities across Ontario.

In our initial grant application, the IDHC was named as being able to provide a letter of support, yet at the IDHC there was no knowledge of permission from their executive for this letter. Fortunately, through foot care networks and professional organizations, members of our grant team and members of the IDHC foot care program were aware of each others' work, and early on, the idea of collaborating on the development of a Level 2 to build on their Level 1 curriculum became a goal for the project.

Despite our early planning choices and institutional bureaucratic obstacles, which impacted the quality and efficacy of our partnership, the events and outreach of the IDHC community programming had impacts that went beyond foot care learning. This capacity building within the IDHC and through their programming will have far-reaching impact on Indigenous Communities and at UHN, as the members of the grant team move on to other projects and bring their learnings into future engagements with Indigenous organizations.

Financial Support

We initially presented an offer with a budget based on curriculum development costs that were more appropriate for an institutional in-house project. Our team quickly learned that our preconceived idea and budget were inappropriate, and were enacting institutional and colonial limitations that insulted our hoped-for partners.

It took time to develop a balanced relationship, and it similarly took time for UHN to develop agreement language suitable for a community partner and for an Indigenous organization. However, through continued dialogue, listening, learning, and an open invitation to the IDHC to relay the support and programming plans they had envisioned, together with the budget required to develop and deliver those programs in and for Northern and rural communities, we were able to arrive at terms of an agreement.

Delays due to our initial approach and due to the internal processes of a large institution, not to mention a hard end to the grant, with no possibility of extension, resulted in extraordinarily tight timelines, untimely finance transfers and pressure on the capacity of the IDHC to complete planned activities to our imposed deadline.

Nonetheless, despite the numerous obstacles and missteps, the IDHC delivered their planned programming, which included extending their geographic reach, and were positioned to successfully deliver more programming across Ontario if they had had more time.

The IDHC provides a complete description of their activities, results, and experience of our collaboration below.

Collaboration

The goal of our collaboration was to use our team's clinical and curriculum design expertise to develop further curriculum for the IDHC and extend the skills of their Level 1 Program graduates.

While we collaborated with their organisation's Foot Care Coordinator and Client Services Nurse who were content and program delivery experts, chiropodist subject matter experts, curriculum development experts, and program evaluators from UHN simultaneously worked to develop an expanded curriculum. The curriculum comprised of foot assessment skills and knowledge that centered the patient experience and was responsive to the care referral options of local communities.

Indigenous Diabetes Health Circle Partner Perspective

Programming

The Indigenous Diabetes Health Circle (IDHC) is an Indigenous-led non-profit organization with a mandate to build community capacity to prevent diabetes and diabetes complications among Indigenous peoples in Ontario. IDHC first piloted their Foot Care Program in 2006, and it became a core-funded program in 2007. With over 25 years of experience providing advocacy, education, and community programming, the IDHC is well equipped to provide training and education to Indigenous communities.

To support the Michener/UHN Future Skills Centre (FSC) initiative, the IDHC set out to achieve three primary goals: 1) to pilot IDHC's existing Foot Care Level 1 in an Indigenous community outside of the province of Ontario, 2) to collaborate on the development and piloting of a Level 2 Foot Care curriculum to expand on our existing Foot Care Level 1 curriculum, and 3) to hold a knowledge mobilization event with IDHC's staff and Traditional Practitioners to share traditional teachings and knowledge, reflect on Indigenous learning approaches, and reflect on our experiences in upskilling through Level 1 and Level 2. The IDHC was able to fulfill these partnership goals, as well as two community Foot Care events, within a very short time frame (5 months, April 2023-September 2023).

Partnership on the FSC initiative supported IDHC to provide 6 events over a short time period, including a train-the-trainer, two trainings, two foot care education and screening events, and a knowledge dissemination event. We were able to train 21 frontline workers who were supported to practice their skills at community education and screening events immediately following the training. Across these two events, 80 community members participated, 30 people received foot screenings, and 30 foot concerns were identified. Additionally, 746 IDHC resources and toolkits were distributed.

Partnership Deliverables

Event	# Trainees/ Participants	# People Screened # Foot Concerns Identified	# Evaluations
Foot Care Level 1 (Out of Province)	11		11
Community Foot Care Event	50	17/11	-
Foot Care Level 2 (Train the Trainer)	5		-
Foot Care Level 2	10		10
Community Foot Care Event	30	13/19*	-
Knowledge Dissemination Event	24		-
Total	130	30/30	21

**more than one concern identified for some participants*

Partnership Development & Working Together

Many lessons were learned throughout this project about the curriculum development and delivery process, and, importantly, about the importance of relationships, transparency, and trust in partnerships between Indigenous partners and mainstream research organizations.

A number of challenges were evident from the beginning of the initiative, including the timing of the Indigenous Diabetes Health Circle being formally invited to participate. The IDHC initially met with a team from UHN regarding the FSC grant in July 2022, and a formal agreement was signed in March 2023. It is our understanding that the FSC grant proposal was developed and submitted in 2020, listing the IDHC as a potential partner and that the successful FSC funding agreement with Michener began in March 2021. The IDHC team was not aware of the inclusion of IDHC on the funding proposal until negotiations commenced with UHN/Michener over a year later, in July 2022. As a direct result of IDHC's lack of inclusion at the proposal stage, the IDHC faced significant capacity challenges to take on this project. Ultimately, timelines were very tight (5 months) and deliverables significant (6 events in addition to consultation on curriculum development).

The TCPS-2 Chapter 9 (2022), principles of ethical research involving Indigenous communities clearly indicates that Indigenous partners should be involved in all stages of the research process from conceptualization through analysis and data mobilization. IDHC's inclusion on the grant proposal leveraged IDHC as an Indigenous partner to secure funding to benefit the larger project without considering our needs or capacity, without adequate development of relationship and trust, and without insight into the funds or timelines IDHC would require to carry out the deliverables we were asked to take on. Joining the project at a late date, coupled with the complexities of formalizing a partnership between an Indigenous-led not-for-profit organization (IDHC) and a major hospital network (UHN) contributed to a number of challenges over the life of the grant.

The lack of consultation and relationship building early on in the project set the tone for the remainder of the initiative, and contributed to challenges along the way. UHN/Michener project leadership was at arm's length during partnership negotiations, and considerable effort was required on IDHC's part to gain a meeting with the Principal Investigator. Indeed, this meeting did not happen until after the agreement was signed and the project underway. Our main contact, the project manager, put in considerable effort throughout the process and was instrumental IDHC's willingness to continue on with the project. The project manager was the relationship. She was empathetic, willing to listen to IDHC's needs, and demonstrated an awareness of the power

imbalances that exist in these projects. The project manager was constantly having to apologize on behalf of Michener/UHN, which was very awkward. If the Project manager had not been so committed to the relationship, the partnership would have failed. Better-established organizational protocols around relationship building with Indigenous partners may have smoothed the way and allowed UHN staff to feel better supported.

When UHN/Michener first sent IDHC the original budget proposal, we were offered a mere 1% of the total grant budget with which to achieve the requested deliverables. The amount presented was not only an impossibility, but was also insulting and devalued IDHC's work, knowledge, and potential to contribute to the project. A further slight was the misspelling of our name on the initial proposal. Ultimately, IDHC advocated for and received a sum, representing 10% of the grant dollars. Engaging with UHN's bureaucratic processes placed a strain on IDHC's capacity, and at several junctures impeded the progress of the partnership. The timing of funding deposits was critical to IDHC's ability to carry out the project, as we cannot utilize our budget to fund projects that have been otherwise funded. We did not receive our initial deposit from UHN on time, which put additional pressure on the project and caused delays. This was not just an inconvenience, but a breach of the legal agreement that UHN entered into with IDHC.

UHN is a massive organization with bureaucratic processes that can be difficult to negotiate. UHN should be prepared to provide support to organizations they are working in partnership with to support easier engagement with UHN's policies and procedures. UHN should also recognize that partner organizations have their own procedures, timelines, and capacity. Although UHN did not always come through with deadlines (e.g. funding deposits), there was little margin for error if IDHC was unable to meet a deadline. For example, requests for financial reporting came without prior warning, with very rapid turnaround times, and with an expectation that IDHC staff was knowledgeable of UHN's forms and reporting structures. These tight timelines were a strain on IDHC staff resources. Although IDHC was a willing partner on this project, it must be noted that in small not-for-profit organizations, staff capacity is often stretched even before special projects are taken on, and more so when large budgets are accompanied by large deliverables and tight timelines that must be managed alongside regular workloads.

Some of the challenges with the partnership were related to larger systems and world events, including the Covid-19 pandemic and rules set by the granting agency, Future Skills Centre. Hard deadlines for grant wrap up, set by the funding program, led to a request for a budget roll up prior to the end of project activities. The IDHC was asked to submit our final budget report the week prior to our knowledge mobilization event. While this would undoubtedly help UHN to meet their reporting obligations and timelines, it is simply not practical or possible for partner organizations to submit final budget numbers while programming is still occurring. If funding agencies value the inclusion of Indigenous communities and organizations in partnerships, they need to consider their own role in supporting such communities and organizations to engage in the full process. Funding agencies should consider building in longer lead times between funding announcements and proposal submission deadlines to allow for proper relationship development. Support for training around cultural safety and ethical protocols for working with Indigenous people would also be beneficial. IDHC was well-positioned to take on this project, and to navigate the processes involved with the grant, due to the particular skill-set of our staff, our experience partnering on similar projects, and our capacity to advocate for our organisation. Other communities or organizations, especially those new to the research environment, may have been alienated by the process and discouraged from future participation.

The 4Rs – Respecting Indigenous knowledge, Responsible relationships, Reciprocity, and Relevance (Kirkness and Barnhardt 1991) – have been identified as a framework for supporting

Indigenous students, and also provide a solid starting point for engagement in partnerships with Indigenous organizations. Reciprocity and relevance are salient points when reflecting on the curriculum co-design process that was part of this project [KPM1] . The IDHC came into this partnership with a fully developed Foot Care Level 1 training curriculum, and was seeking support and subject matter expertise in developing a Foot Care Level 2 training that expanded on the foundation we already had in Level 1. IDHC's Foot Care Coordinator and Client Services Nurse were able to meet regularly with two subject matter experts [KPM2] and an instructional designer from Michener to adapt a Level 2 curriculum. These meetings ultimately resulted in 8 new training modules focused on topics including: Inlow's Assessments, Skin, Common Foot Concerns, Wounds, the Wound Care Team, Infection Control and Prevention, Footwear, and Documentation. To complement these modules, IDHC independently consulted with Indigenous knowledge holders to develop additional content reflecting cultural approaches to wellness and foot health.

The IDHC values the opportunity to share knowledge with our various partners, and we appreciate the work that was done by the team at Michener to support new curriculum development. Overall, the curriculum that was developed was well-received by our learners. All learners indicated "agree" or "strongly agree" when asked to describe the value of the course materials and training experience. However, our trainers were looking for a final product that taught a higher skill level, including first aid and nail care. Michener was reluctant to provide content on these topics. From the IDHC trainer's perspective, the content in the new Level 2 curriculum does not build enough on the Foot Care Level 1, and in some areas (e.g. common foot concerns) the Level 1 curriculum offers a greater depth of information. Although support has been offered to adjust the Level 1 curriculum to align with the new Level 2, IDHC trainers feel that they do not wish to diminish what they see as strengths in the Level 1 curriculum.

Following on the themes of reciprocity and relevance, we felt that there could have been more interest and engagement from UHN/Michener in developing curriculum pieces that better reflected the unique histories, culture, and experiences of Indigenous peoples. IDHC comes to the table with a strong understanding of Indigenous health and culture, and the instructional designers could have shown more openness and interest in incorporating content that better reflected these realities. In future projects, it would be ideal to sit together at the beginning of the instructional process to discuss topics such as: Indigenous epistemologies and pedagogy, cultural safety, imagery, representation, branding, etc. We received some push back when we broached these topics with the instructional designers indicating that any cultural pieces were meant to come from the IDHC; there was also some resistance when we asked for the slides to be branded with IDHC's logo and imagery related to Indigenous culture. In future, it would be beneficial if instructional design teams were open to thinking holistically about the relationship between Indigenous cultural and healing practice and the clinical piece. A willingness for partners to challenge themselves to critically examine how clinical foot care practices, biomedical health information, and western educational practices might be modified to suit Indigenous learners and clients, and how Indigenous knowledge might be used to complement and strengthen this content could lead to true innovation.

Out of Province Pilot – Foot Care Level 1

IDHC is a provincially-funded not-for-profit organisation that provides service within the province of Ontario. The partnership with UHN/Michener included a request and opportunity for the IDHC to pilot a foot care training beyond Ontario's borders. By mobilizing existing relationships, the IDHC partnered with a remote community in Newfoundland and Labrador to provide Foot Care Level 1 training and a community Foot Care Event in May 2023. IDHC's team trained 11 trainees,

primarily community support workers and some older adults. The training was very well received, with most learners expressing a “good” to “great” amount of learning and a “medium” to “high” increase in knowledge.

Lessons from our experiences on the east coast reflect the remoteness of the community. For instance, the logistics of serving healthy meals to support a training and community event were complicated by community capacity, costs, and the accessibility of fresh produce. Catering for the training and event required a 900km round-trip by the local caterer as well as by volunteers to secure fresh, healthy food that supported IDHC’s nutrition policy. The time and cost commitments involved in supplying healthy meals during the training and subsequent community event were significant for community, and required us to ask a lot of them. Ultimately, positive teaching and learning opportunities arose out of these challenges including contributing to the community economy by fairly compensating the caterer as well as older adult volunteers to cook for the events, opportunities to provide nutrition teaching in community beyond the Foot Care training, and knowledge sharing beyond the main group of trainees as 7 community volunteer cooks listened in to the training while preparing meals.

Offering IDHC’s Foot Care Level 1 training to a community outside of IDHC’s regular programming area led us to consider additional supports might be needed to reinforce the skills that were taught during the training. Due to the nature of the grant, we had to plan for the reality that these out of province trainees might not have the same opportunities for support beyond the life of the grant as IDHC’s typical trainees. One way that we addressed this was to host a community diabetes and foot care awareness and screening event immediately after the training. This event allowed IDHC staff to provide diabetes education to the broader community, and to host a foot care clinic where trainees, with the support of the IDHC team and a local foot care practitioner, were able to practise foot screenings and develop confidence in identifying foot concerns and referring clients for care. This was the first time the IDHC had coupled a community event with a Foot Care training, and we were pleased with the results. The event allowed us to share knowledge with a greater cross-section of the community, about 50 participants and to screen 17 community member’s feet and identify 11 foot concerns that were referred out for treatment.

Hosting a community event in conjunction with the Foot Care Level 1 training allowed the IDHC to learn a lot about the local health care context, illuminating challenges and opportunities for supporting foot health. Because communities in this region are very small, there is a lack of services at the local level, and people must travel hundreds of kilometres to access foot care. Additionally, service referral is different in Newfoundland and Labrador than in Ontario, which impacted IDHC’s ability to provide advice about accessible and affordable follow-up care. Completing an environmental scan to identify services and their accessibility is a must when engaging with communities in new regions. Our team was able to foster connections between community and care providers, but could not overcome care access challenges related to travel and cost.

Level 2 Curriculum Development and Training Pilot

Subject matter experts and an instructional designer from UHN worked with subject matter experts at the IDHC to develop a Foot Care Level 2 curriculum to build on IDHC’s existing Level 1 curriculum. An eight-module curriculum was designed by Michener/UHN with a further two modules developed by IDHC, reflecting Indigenous cultural content. A train-the-trainer session

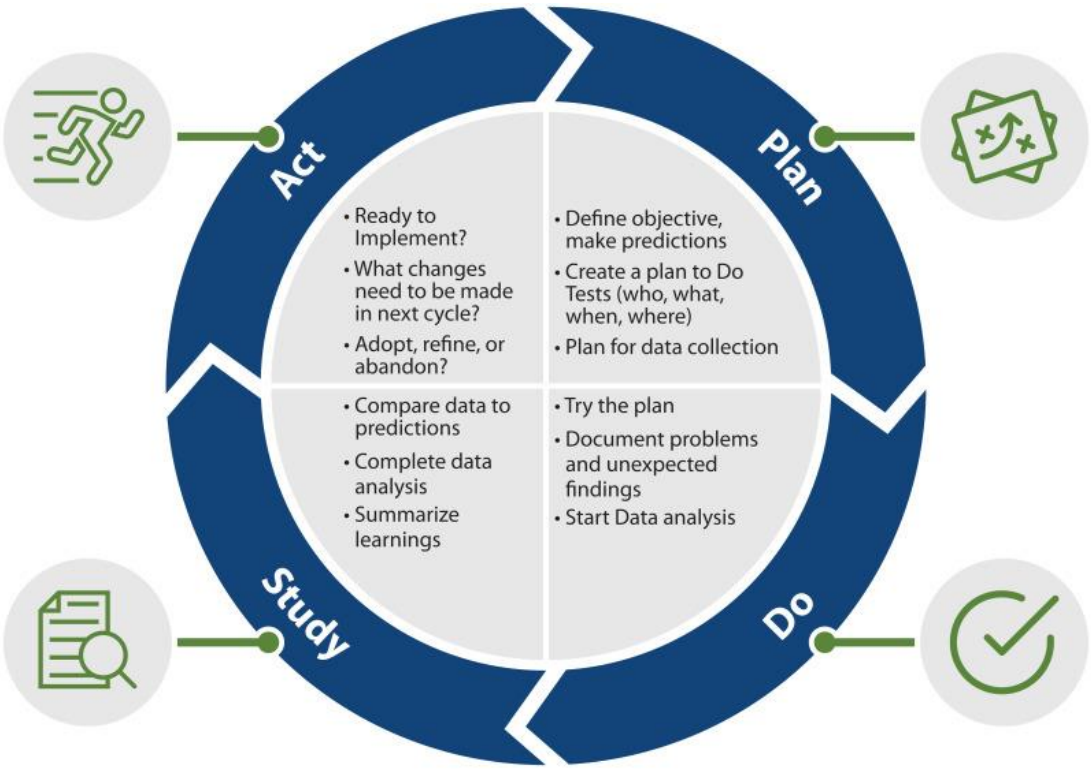
was facilitated by Michener/UHN in July 2023 to support the IDHC to facilitate the Level 2 curriculum.

IDHC was able to train 10 individuals in the new Level 2 curriculum during a 4-day training event in northeastern Ontario. Trainees who had previously participated in IDHC's Foot Care Level 1 training were invited to participate in the pilot of the Level 2 curriculum. The curriculum was well-received by the trainees, though many indicated that they wished to have more hands-on practice and activities in the training. Similar to our out of province training, we opted to host a community event immediately following the training. The community event allowed trainees to be supported by IDHC trainers to put their new skills into practice. Thirty community members attended the Timmins event, 13 received foot screenings, and 19 foot concerns were identified. Hosting community events in conjunction with IDHC's Foot Care trainings has emerged as a major learning for us during this project. These events reinforce the skills that trainees have been taught in a real-world setting, which builds their confidence and increases the likelihood that they will put these skills into practice. It is a cost-effective approach to building community connections, that allows us to bring training, community education, and access to clinical services together in one place.

Project Footsteps

Methodology

This project followed the Plan-Do-Study-Act (PDSA) model, which is a particularly useful approach for implementing projects that allow organizations to address community social determinants of health (Magnan, 2021).



According to the PDSA model, the study progressed as follows:

Development of a core curriculum backbone, development of a co-design/adaptation process for adapting curriculum with partners, development of partner agreements. Completion of Realist Review.

Delivery of The Best Foot Forward training to UHN staff and learners and partner organizations in Ontario, North West Territories and Newfoundland.

Evaluation of the training co-design process, program effectiveness and program impact via focus groups, interviews and surveys.

Provide a model of education and referral based on prioritized skills and health human resources gaps for foot and wound care.

Goals and Intentions with Outreach

As a central aim of this project was to collaborate with community agencies that work with people from underserved populations, discussions were held within the project team about outreach decisions. For this reason, both locally and geographically disparate outreach was conducted.

The goals of the project included increasing awareness of the complications of diabetes in the wider community. The project also sought to increment the number of people who could contribute to providing foot screening for people in under-served populations with systemic difficulties in accessing health care. Contact was made with multiple organizations that shared the mandate to promote access to care, and who employed staff that provided direct patient and client contact.

More than 50 organizations were approached through telephone calls and emails. Approaching organizations to make an in-person request to speak with management was also done where feasible, as walk-ins were expected to be easier for organisations that expected to be busy juggling multiple tasks. Quick face-to-face contacts would likely be easier to manage, rather than answering calls and emails.

Training was also offered in-house to students and staff of all disciplines at UHN. To reach UHN staff and students from as many disciplines as possible, posters were distributed in the hospital. Presentations were given to leadership groups that communicated to members of their practice discipline, eg. social work, physiotherapy.

A major partner of this project was the IDHC, and other organizations we reached out to included:

- An Indigenous community centre
- Neighbourhood groups
- Supportive housing/community organizations
- Community centres and organizations providing support for underhoused people
- Re-settlement and newcomer service centres
- Foot Care nurse specialists
- Mental health associations
- A seniors association and a retirement home
- A food bank
- Women’s shelters
- A two-spirit, lesbian, gay, bisexual, transgender and/or gender expansive, queer and/or, questioning (2SLGBTQ+) community organisation
- A 2SLGBTQ+ healthcare education and advocacy organisation
- An employment resource centre
- A community organisation providing free tutoring for adults learning to read
- Community organizations and health centres serving Mennonite and Amish peoples
- Social services
- Community Health Centres

- A medical group
- A group of foot-care nurse specialists
- A territorial health office
- Companies providing healthcare related trainings, eg. first aid skills

Training completed

The types of organizations that completed Best Foot Forward trainings included a hospital network, a medical group, a territorial health and social services department, a group of footcare nurse specialists, neighbourhood community centres, and two organizations that were multi-service agencies supporting people struggling with poverty, being homeless, or underhoused.

A BFF trainer using a Doppler device to assess the pedal pulse of a participant's foot during a training session at Toronto General Hospital

Members of the BFF training team conducting training with Overdose Prevention Support Workers and Harm Reduction Coordinators at Parkdale Queen West, Toronto

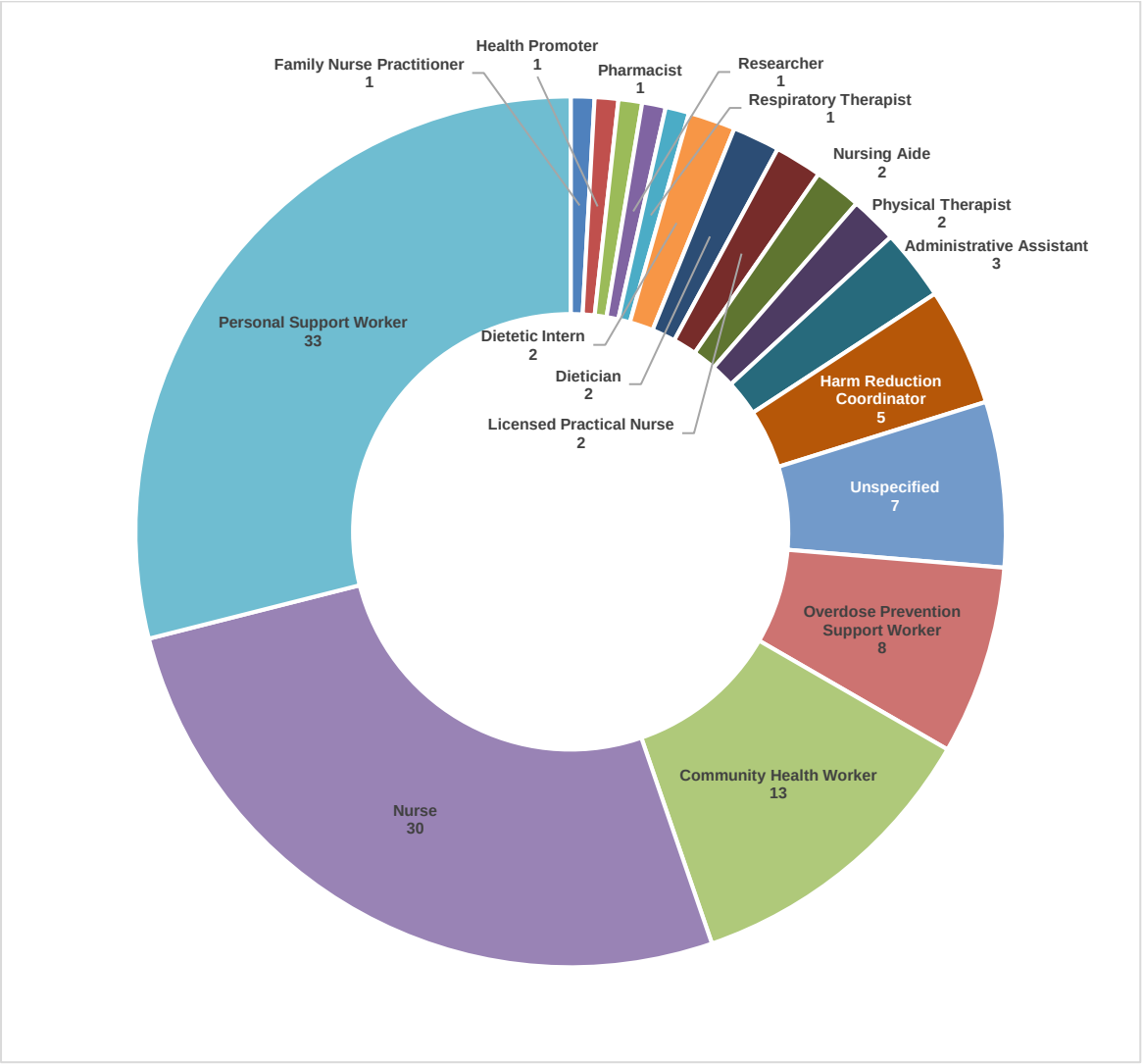
Members of the BFF training team conducting training with specialist footcare nurses in St John's, Newfoundland

Participants Trained

The below table and graphs represent the number of participants and their occupations trained over the course of the project training period (4 April - 26 September 2023).

Occupation	**Number**
Administrative Assistant	3
Community Health Worker	13
Dietetic Intern	2
Dietician	2
Family Nurse Practitioner	1
Harm Reduction Coordinator	5
Health Promoter	1
Licensed Practical Nurse	2
Nurse	30
Nursing Aide	2
Overdose Prevention Support Worker	8
Pharmacist	1
Physical Therapist	2
Personal Support Worker	33
Researcher	1
Respiratory Therapist	1
Unspecified	7
Total	**114**

Participation by Occupation



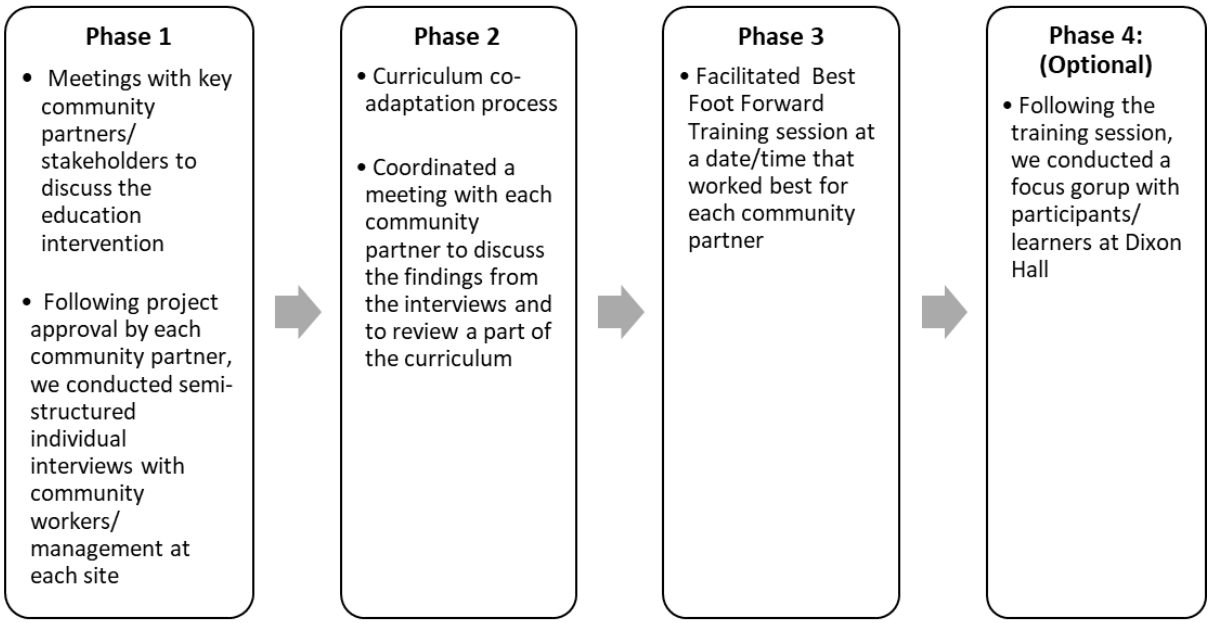
Pie chart: number of participants by occupation

Community Education Pilot

As part of this education intervention, we also conducted a community-based education pilot project in collaboration with two community partners in downtown Toronto: Dixon Hall and Street Haven. Dixon Hall is a large community organisation that serves more than 10,000 people each year in Toronto (Dixon Hall, 2022a). On offer are social services and programs to aid community members with their financial, educational, vocational, social, and health needs. Street Haven is a community organisation that supports women at risk of homelessness or women that are experiencing homelessness with housing and/or emergency shelter, medical services, refugee resettlement, education and employment training (Street Haven, 2023).

Informed by task shifting, this project aimed to address the gap in diabetic foot health services in Canada. This objective was tackled by facilitating opportunities for training and education in diabetes related foot and wound care for community workers who were not traditionally trained in the area, as outlined in the research overview below.

Research Overview–UHN Designed Curriculum



Focus Group: Dixon Hall

A focus group was conducted in the Summer of 2023 with participants from Dixon Hall approximately one month after they had received the in-person Best Foot Forward training. The group was brought together to discuss their experiences with upskilling education for diabetes related foot ulcer and wound care as part of phase 4 of the community education pilot.

The majority of the focus group participants consisted of PSWs (three PSWs and one respite care worker), and included one program manager. The participants worked in supportive housing with Senior Services at Dixon Hall, providing personal care, assistance with daily living (ADL), and house-keeping to support seniors residing at Old York Tower, PAL Place, and OWN Co-op in Toronto (Dixon Hall, 2022b). The supportive housing program at Dixon Hall provides support and care to over 90 seniors that reside alone in their personal residence, many of whom live on a fixed income.

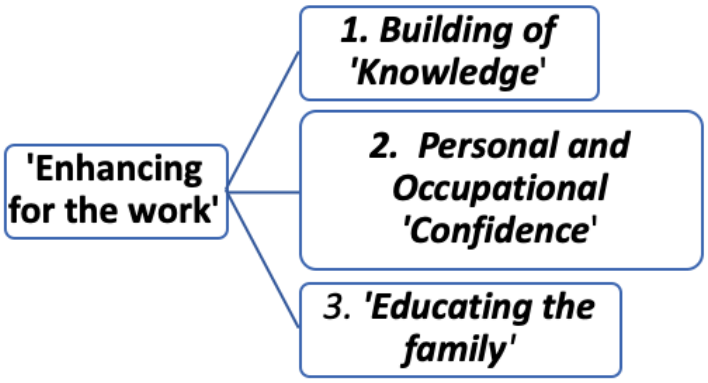
Themes

All participants agreed that the upskilling education they had received as part of the education intervention was 'enhancing for the work' that they do as PSWs in providing care to clients and their families.

The theme, 'enhancing for the work', includes three sub-themes, which describe how the upskilling education provided 'enhanced' the participants personal and professional skills as PSWs, through the building of knowledge, personal and occupational confidence, and by strengthening their capacity to educate families on foot health and care.

The following section includes selected participant quotes from the focus group that illustrate each of these sub-themes.

Figure 1: Themes from the Focus Group



1. Building of 'Knowledge'

> "For me the importance is the communication with clients because it [is] difficult to convince them to check their feet. Again, we discussed before confidentiality or maybe they don't want because they don't want us to see, right. So, we learn how we approach, how we are going to" **– Participant 1,** PSW

2. Personal and Occupational 'Confidence'

> "More confidence. It's with this training, we have, it's more confident [sic] how you communicate with the clients, how are you going to the, to do it because like before we just

like wash it and we don't even look at it. I just like you know [laughs]. Now we are aware because our, our return from you guys" – **Participant 2**, PSW

3. *'Educating the family'*

"But family are our, the main caregivers as well right. They are the main caregiver often or the family or the friends right. So, that, that's, you know the more, the better to pay attention to people's feet and health" – **Participant 3**, Respite Care Worker.

Evaluation of the Foot Care Curricula

After completing the six modules of the foot care curriculum, and as an evaluation of their knowledge of foot screening, participants were asked to complete a knowledge assessment, which consisted of 10 scenarios describing clients with varying degrees of foot conditions.

Unlike typical assessment *of* knowledge, the test is designed as an assessment *for* knowledge. This meant that instead of asking participants about what they had learned, we explored how they would use the knowledge acquired from the curriculum to determine the risk level of various foot conditions. In the process of completing the assessment, the participants also learned how to apply the enhanced knowledge.

The assessment contained ten case scenarios that varied in length between one to three sentences. In the first five scenarios, each case focused on one foot condition which was in direct relation with one of the four modules (Vascular System, Sensation, Footwear, Common Foot Concern). Whereas, in the last five scenarios, the cases became more complex with conditions that aligned with more than one of the four modules mentioned above. This was meant to explore whether learners were able to integrate the information across multiple modules. After reading the case scenario, participants were asked to determine the risk (low, medium, high) associated with the foot conditions described in the question, with the use of the Inlow's foot screening tool.

Overall, participants scored an average of 69.8% on the assessment when results from all training sites are aggregated and pilot data was included. After removing outliers and pilot data, the average was at 73.1%. This percentage represented the level at which participants could accurately determine the risk level of a foot condition. It should be noted here that participants were better at accurately determining risk level for complex foot conditions. This may have been due to a learning effect where the participants got more used to the type of questions, but may also have been due to the fact that complex cases are usually at medium to high risk levels. As participants tended to select higher risk levels, we therefore saw higher accuracy for the high risk cases and higher error rate for low risk cases.

Through analysis of individual sites, we also found that participants with prior knowledge from their professional backgrounds scored higher than the rest of the groups, which would be expected as they may have previously received training on foot care and screening. However, it was also interesting to note that a few of these participants provided feedback on the discomfort associated with risk determination since it was out of their scope of practice. The piece on scope of practice in relation to foot screening may warrant further qualitative exploration.

Assessment questions

Questions for the assessment of student learning and retention were requested by the IDHC. These were developed through a team process for the IDHC Level 1 and 2 curriculum. The questions were created as two multiple choice questions for each module.

Due to COVID-19, meaningful action on our grant was delayed for a year. All initial team members were either responding to the pandemic in their work areas or reassigned to pandemic community vaccination and support efforts.

Clinicians on the team worked in high-stress, high-demand environments, keeping clinical spaces open, and supporting patients to get essential care. The result was a shorter period of time to hire post-docs, develop action plans, develop relationships, make partnerships, get Institutional Approval, get agreements in place, get funding moving, and give the curriculum co-design process the necessary time.

Unfortunately, a grant extension was not possible due to the sunsetting of the funding body. We collectively felt that the longitudinal impact of our curriculum and the work of IDHC would have been more visible if we had more time to roll it out.

Footprints: Lessons learned, Outcomes, & Recommendations

We learned many lessons along this journey to integrate foot care across health and community organizations in Canada. These learnings, or, *'footprints'* as articulated by the project team, are described below:

Starting with key learning(s)....

1. **Flexibility is key.** We experienced many unexpected delays during the course of this project, including administrative delays (it took a long period of time to process legal documents such as project agreements with community partners) and the impact of the COVID-19 pandemic on community partners and agencies.
   Use of project timeline software would have been helpful in this case, so that everyone on the team would have been aware of what was going on in the project (to support ongoing communication).
   We acknowledge the importance of creating plans in collaboration *with* community partners that are 'flexible' and 'adaptable' to support community needs throughout all phases of the project (project goals should align with *real-life practices* and *experiences*).

2. **Community interest in foot health and education.** Many community partners and staff (especially UCPs) reflected on the way(s) that the knowledge they gained from the training could be integrated within existing structures/supports for clients at their organization. For example, the Northwest Territories implemented purchasing our recommended foot screening kits and using the Best Foot Forward modules as the basis for their "Train the Trainer" education for the Northwest Territories Health Authority. In Newfoundland, the Advanced Foot Care Nurses Association will also follow with a "Train the Trainer" approach using the BFF curriculum to have feet screened for people living with diabetes.

3. **Dialogue on foot health and education.** Dialogue on foot health and education with community partners is an important part of community foot health education and outreach. In many ways, this project served as a vehicle for these integral conversations with partners on foot health and foot care (i.e. barriers and enablers to foot care).
   The co-adaptation process for the education curriculum also supported these discussions and included practical, real-life experiences as described by partners. We were fortunate to hear some of the stories from staff that had applied the knowledge from the training to initiate the referral process for clients (i.e. see community education; focus group findings).

Outcomes and lessons learned during outreach:

1. This project was interrupted by the COVID-19 pandemic. This led to a shortened timeline to engage in community outreach and relationship-building, and to organise and facilitate trainings. Given additional time, stronger relationships with community agencies could have been established and more organizations would have had time to complete the partnership agreement and hold trainings.

Other impacts of the pandemic were that in returning to in-person activities, many community agency staff and healthcare personnel were already stressed by staffing shortages and on-going illnesses. As summer approached, well-needed vacations for staff at all levels caused difficulties with completing partnership agreements.

Finding time for staff to attend trainings was a challenge for some, as pulling staff away from their daily work would be difficult; staff are very busy attending to immediate client needs, because community organizations are serving vulnerable populations in their primary capacity, and organizations were also catching up on regular trainings that had been postponed during the pandemic.

2. Although all interested organizations were not able to participate in the training, outreach efforts provided a chance to raise awareness of how important it is for someone with diabetic foot concerns to access healthcare for their feet and to be assessed. Speaking with a broad range of community service workers and healthcare providers also provided insights into barriers to accessing care.

3. For the research team, lessons learned included the need to plan plenty of time for *relationship building*. This should be a priority early on in the project phase. Community projects require long-term investment to support community needs, foster relationships, and to carry out sustainable and ethical practices.

   Through outreach and dialogue with partners, we were able to gain an understanding of their' various needs (i.e. cultural, geographic, and health needs) and their experiences with foot care. A more targeted outreach approach would be beneficial for similar projects, to help build *closer* connections with partners in each province/territory to ensure project reach across the country.

4. The primary role of many community organizations is to serve vulnerable populations. Although most organizations saw the benefit of our Best Foot Forward Curriculum and displayed their interest, many lacked capacity to train staff over the summer and/or adhere to the shortened timeline.

Recommendations for curriculum development and delivery

1. **Accessibility of modules**.We originally thought the six short 20-minute modules would solely be completed online by participants. It was found that many people preferred and responded much better than expected to in-person facilitations.

   Internet accessibility and access to computers were an issue for some regions. It is important to consider needs related to accessibility to computers/technology and inquire with partners about accommodation needed prior to the co-adaptation/design process of the curriculum.

2. **Evaluation methods.** Other measures on the impact of the curriculum could also be included in the project development phase. Measures such as the number of patients

linked to care, analysis of the experiences of participants trained, and following-up with recipients of foot care screening to see if complications like amputations have actually averted would be useful.

3. **Alternative screening tool options are possible**. Other similar projects could also integrate other screening tools such as the Ipswich tool. It could quite easily be incorporated into the project and curriculum design as an alternative.

Recommendations from the Indigenous Diabetes Health Circle

Hosting community events in conjunction with the IDHC's Foot Care training emerged as a major learning for us during this project. These events reinforced the skills that trainees had been taught in a real-world setting. In turn this could build their confidence and increase the likelihood of the skills being put into practice.

While better established organisational protocols around relationship building with Indigenous partners may have smoothed the way and allowed UHN staff to feel better supported, the events turned out to be a cost effective approach to building community connections. They allowed us to bring training, community education, and access to clinical services together in one place. (*Similarly, the Best Foot Forward Program training in St. John's NL was followed by a community foot screening, which reinforced newly learned skills and built confidence for the newly trained screeners*).

Our suggestion to funding agencies would be to consider building longer lead times in between funding announcements and proposal submission deadlines to allow for proper relationship development. Support for training around cultural safety and ethical protocols for working with Indigenous people would also be beneficial.

Lessons Learned from working with an Indigenous community partner

The grant team learned important lessons about appropriate approaches to collaboration with an Indigenous organisation.

1. Working with Indigenous organisations must start well before the grant is submitted
2. Hierarchy and respect matter, and initial conversations should take place between research leader and organisation leader
3. All potential limitations should be identified up-front

A large hospital's organisational processes and ability for timely responsiveness, and the personal, personnel, and financial impact that slow response time impact a small organization and it is important to acknowledge and integrate this into planning.

Missteps in the process of creating the project with our Indigenous partner organization, the IDHC, taught a lot about collaboration and about the on-going colonial influence on this project and our partnership. At times this project encountered difficulties, and reflection was necessary. There was a dissonance between the functioning of institutional structures and processes and goals to build relationships with communities. The discomfort about processes prompted further attention to power structures and inclusiveness in decision-making.

While we were committed to examining and addressing power structures, we also found ourselves entangled in our institutional processes and power structures. On occasion we had to ask leadership to go around regular procedures–for releasing funds, for example–to move funds to partners to try to meet our agreement deadlines or close thereafter. We found ourselves reproducing colonial violence with our Indigenous partner because of choices we made, for example, closed and limited invitations to complete a task instead of an open and team-based invitation to collaborate and build.

Reflection on the process of collaboration assisted in taking time and making connections with people in communities to understand their needs and the ways that this project could support and reach the people that they serve. We used our commitment to learning and growing in relationship to own our mistakes, to listen, and to invite possibility. We are grateful to the IDHC for their ongoing commitment to the project despite many obstacles.

Another valuable lesson about collaboration is to create regular check-ins regarding the impact of the process on the organisation, and attend to the health of the organisational relationship.

Administrative lessons and recommendations

In our large clinical hospital, templates for agreements were not a good fit for community organizations, and adapting agreements to that group took more time than planned. We also did not have templates for agreements with Indigenous organizations, particularly ones that could describe our OCAP (The First Nations principles of ownership, control, access, and possession) obligations. Institutions should have plain language templates for agreements with community organizations and Indigenous organizations.

Advocacy and change work is required to make the systems of institutions more accessible to the needs of small organizations. Templates of agreements, etc., need to be edited for language and assumptions, for example, agreement templates where the space for the prospective partner's name has **Dr.** _____ . Many leaders of community organizations do not hold PhDs.

Our core team became a community and learning environment so strong that the team is very interested in securing more funding to continue the work started with the FSC funding and partners.

Overall lessons learned:

1. More funding/further investment is needed to support public foot health education and coverage for foot care and appliances and for foot screening as a preventative and cost

reduction measure for people living with diabetes in Canada. Foot screening is just **one step of many** that need to be taken in order to reach the goal of reducing diabetes related foot amputation.

2. There is a significant gap in foot care knowledge for both regulated and unregulated health professionals, which is much larger than we anticipated. All sectors of the community need to work together to address the issue of foot health care and education.
3. A systemic approach to foot health care is required.
4. Adjustments to healthcare systems are needed to effectively reduce amputations to achieve healthy equity for individuals living with diabetes.
5. The silos that we work in need to be broken down for continued success in reducing foot wounds.

We recommend that the Best Foot Forward Curriculum continue to be offered with an in-person skill assessment component. Frontline workers at community organizations, housing organizations, safe consumption sites, personal support services organizations, hospitals, are all in a position to ask a simple and significant question “May I see your feet?”

Conclusion

The Best Foot Forward program is an important response to Canada's growing problem of diabetes-related lower limb amputations and foot complications. The conception and completion of this project was informed by a strong focus on equity and the majority of the participants work with clients and patients from equity-deserving populations.

Foot screening training for frontline workers in community organizations provides upskilling for often overlooked healthcare workers, who, themselves often belong to equity-deserving groups. Screening training also supports community organizations in developing connections to foot and healthcare services, and can lead to early identification of foot problems and connection to care for people using community services—often systematically disadvantaged groups—and ultimately, reduce limb loss from diabetic complications.

By training people who are not specialists in foot care to assess the risk of foot complications and connect people to care, it is hoped that limbs can be saved and quality of life can be maximised.

In total, 114 people in three provinces/territories and from a wide range of occupational backgrounds completed the Best Foot Forward Training, and 21 people in Northern communities completed IDHC trainings. Foot screening training in communities with little or no local health supports can play an essential role in prevention, early identification and appropriate and timely connection to care.

Assessments conducted after the training demonstrated that participants obtained an average score of 73.1% at accurately determining the risk level of a foot condition. The response of participants who took part in the focus group discussion was also overwhelmingly positive.

Participants articulated recommendations on how to improve training/upskilling for personal support workers, such as including clients themselves in the education intervention to better understand their needs and barriers related to foot care; incorporating this training/upskilling education during the orientation of employees; including more case studies with examples of "proactive" approaches that personal support workers could implement in their work to prevent foot health issues in clients.

As well as a shared desire for more upskilling opportunities to build on the knowledge that they have gained from this education intervention, participants also discussed the importance of obtaining more funding to implement this training in practice. They voiced the requirement for additional time so that personal support workers would be encouraged and provided with the resources to complete foot assessments in their day-to-day work.

It is without doubt that the IDHCs welcomed involvement in the project strengthened and extended its impact into many Indigenous communities and provided the IDHC with resources for community connection and development that will have lasting influence.

The Best Foot Forward Curriculum will continue to be available for learners in a self-directed, self-paced format on the CAPE Learning platform, although without the final in-person skills assessment.

Project outputs

Journal papers

Hassan, S., Rac, V. E., Hodges, B. D., Leake, P., Cobbing, S., Gray, C. M., Bartley, N., Etherington, A., Abdulwasi, M., Cheung, H.K., Anderson, M. & Woods, N. N. (2023). Understanding how and why upskilling programmes for unregulated care providers can support health equity in underserved communities: a realist review protocol. *BMJ open*, 13(8), e072570.

Open access Protocol

BMJ Open

Understanding how and why upskilling programmes for unregulated care providers can support health equity in underserved communities: a realist review protocol

Samah Hassan, Valeria E Rac, Brian David Hodges, Patti Leake, Saul Cobbing, Catharine Marie Gray, Nicola Bartley, Andrea Etherington, Munira Abdulwasi, Hei-Ching Kristy Cheung, Melanie Anderson, Nicole N Woods

ABSTRACT

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ In this review, we will use a theory-driven, interpretive approach to synthesise the evidence to provide an explanatory analysis of how, why and in what context upskilling programmes for unregulated care providers to deliver foot screening for systematically marginalised groups may or may not work.
- ⇒ Our realist approach will facilitate understanding of all three components of the 'CMO configuration': contexts, mechanisms and outcomes critical to upskilling programmes.
- ⇒ We will conduct regular meetings with our multidisciplinary team that represents experts in realist reviews, medical education, social medicine and programme evaluations, and community and patient partners to actively engage in developing, refining and finalising the programme theory to ensure the relevance and applicability of the results.
- ⇒ We anticipate that our review may be limited by the number of published articles that mainly focus on upskilling programmes for unregulated care providers for diabetic foot screening for systematically marginalised groups, especially since we will only include English-language articles.

INTRODUCTION

Hassan, S. et al. How, Why, and In What Contexts Upskilling Programs for Unregulated Care Providers to Provide Foot Screening for Systematically Marginalized Populations Work. Submitted for publication in BMJ Open,September 2023.

Conference presentations

European Wound Management Association (EWMA) Conference, 3-5 May 2023 Milan, Italy: Poster presented by Nicola Bartley and Catharine Gray

Best Foot Forward

AIM

METHOD

RESULTS/DISCUSSION

CONCLUSION

The International Symposium on the Diabetic Foot, The Hague, Netherlands; 22-25 May 2023: Poster presented by Nicola Bartley and Catharine Gray

Conference abstract accepted

International Consortium for Health Outcomes Measurement (ICHOM) Conference, Barcelona, Spain; 9-11 October: Authors: Munira Abdulwasi, Nicola Bartley, Kristy Cheung, Saul Cobbing, Andrea Etherington, Catharine Gray, Samah Hassan, Brian Hodges, Patti Leake, Nicole Woods

References

Allin S, Campbell S, Jamieson M, Miller F, Roerig M, Sproule J. Sustainability and Resilience in the Canadian Health Care System. Partnership for Healthcare Sustainability, November 2022.

25. Alzubaidi, H., Mc Namara, K. & Browning, C. Time to question diabetes self-management support for Arabic-speaking migrants: exploring a new model of care. *Diabetic medicine* **34**, 348-355 (2017).

Baird R, Cosh L, Bruser G, Rowe R, Walker J. Indigenous Diabetes Health Circle: Foot Care Program Evaluation. Ontario; 2022

27. Balagopal, P., Kamalamma, N., Patel, T. G. & Misra, R. A community-based participatory diabetes prevention and management intervention in rural India using community health workers. *The Diabetes educator* **38**, 822-834 (2012).

29. Blanchard, M. A., Rose, L. E., Taylor, J., McEntee, M. A. & Latchaw, L. L. Using a focus group to design a diabetes education program for an African American population. *The Diabetes Educator* **25**, 917-924 (1999).

Blanchette V, Kuhnke JL, Botros M, McCallum C, Evans R. Inlow's 60-second Diabetic Foot Screen: Update 2022. Limb Preservation Journal. 2023;4(1): 22-28

Botros M, Kuhnke J, Embil J, Goettl K, Morin C, Parsons L, et al. Best practice recommendations for the prevention and management of diabetic foot ulcers. In: Foundations of Best Practice for Skin and Wound Management. A supplement of Wound Care Canada; 2017. 68 pp. Retrieved from: www.woundscanada.ca/docman/ public/health-care-professional/bpr-workshop/895-wc-bpr-prevention-andmanagement-of-diabetic-foot-ulcers-1573r1e-final/file

Braveman, P. A., Arkin, E., Proctor, D., Kauh, T., & Holm, N. (2022). Systemic And Structural Racism: Definitions, Examples, Health Damages, And Approaches To Dismantling. *Health affairs (Project Hope)*, *41*(2), 171–178. https://doi.org/10.1377/hlthaff.2021.01394; quotes from p. 172

7. Brown, A. *et al.* A realist synthesis of quality improvement curricula in undergraduate and postgraduate medical education: what works, for whom, and in what contexts? *BMJ Quality & Safety* **30**, 337-352 (2021).

Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada, TriCouncil Policy Statement: Ethical Conduct for Research Involving Humans, December 2022

30. Castillo, A. *et al.* Community-based diabetes education for Latinos. *The Diabetes Educator* **36**, 586-594 (2010).

CorHealth Ontario. Webinar: Saving Lower-limbs: Introducing a New Ontario Lower Limb Preservation Strategy for Ontario. Available at: https://www.corhealthontario.ca/WEBINAR_Saving_Lower-LimbsIntroducing_a_new_Ontario_Lower-Limb_Preservation_Strategy-FINAL.pdf>, 2021.

Diabetes in Canada: Backgrounder. Ottawa: Diabetes Canada; 2022.

Dixon Hall. (2022a). *Our Mission, Values & Values*. https://dixonhall.org/our-mission-vision-values/

Dixon Hall (2022b). *Seniors' Services*. https://dixonhall.org/seniors-services/

Elflein, J. Percent of Canadians who reported being diagnosed with diabetes, 2003-2021. Statista. Available at: https://www.statista.com/statistics/434091/share-of-canadians-reporting-beingdiagnosed-with-diabetes/, 2022.

Eriksson, M., & Lindström, B. (2008). A salutogenic interpretation of the Ottawa Charter. *Health promotion international*, *23*(2), 190-199.

Evans, R., Kuhnke, J.L., Blanchette, V., Botros, M., Rosenthal, S., Alleyne, J., & Costa, I. (2022). A foot health pathway for people living with diabetes: Integrating a population health approach. Limb Preservation in Canada, 3(1), 12-24.

Hassan, S. et al. How, Why, and In What Contexts Upskilling Programs for Unregulated Care Providers to Provide Foot Screening for Systematically Marginalized Populations Work. Submitted for publication in BMJ Open,September 2023.

Hassan S, Rac VE, Hodges BD, et alUnderstanding how and why upskilling programmes for unregulated care providers can support health equity in underserved communities: a realist review protocol. BMJ Open 2023;13:e072570. doi: 10.1136/bmjopen-2023-072570

31. Hsu, W. C. et al. Building cultural competency for improved diabetes care. The Journal of family practice **56**, 1-5 (2007).

House of Commons Canada. A Diabetes Strategy for Canada: Report of the Standing Committee on Health. B. Casey, Chair. April 2019. Available from https://www.ourcommons.ca/Content/Committee/421/HESA/Reports/RP10365941/hesarp23/hesarp23-e.pdf

32. Ismail, M. H. *Improving Care for Spanish-Speaking People with Diabetes in a Free Clinic Setting*, The University of North Carolina at Chapel Hill, (2019).

33. Joseph, R. M., Sparks, L. & Robinson, J. D. Diabetic foot health education and amputation prevention. *Health Communication* **25**, 607-608 (2010).

Kirkness and Barnhardt 1991 *on The 4Rs – Respecting Indigenous knowledge, Responsible relationships, Reciprocity, and Relevance from IDHC part*

18. Lucoveis, M. d. L. S. et al. Development and validation of a pocket guide for the prevention of diabetic foot ulcers. British Journal of Nursing **30**, S6-S15 (2021).

Magnan, S. (2021). Social determinants of health 201 for health care: Plan, do, study, act. *NAM perspectives, 2021*.

Maple-Brown LJ, Graham S, McKee J, Wicklow B. Walking the path together: incorporating Indigenous knowledge in diabetes research. Lancet Diabetes Endocrinol. 2020;8(7):559-560. doi:10.1016/S2213-8587(20)30188-1

Mercer, T., Chang, A. C., Fischer, L., Gardner, A., Kerubo, I., Tran, D. N., ... & Pastakia, S. (2019). Mitigating the burden of diabetes in sub-saharan Africa through an integrated diagonal health systems approach. *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy*, 2261-2272.

Monteiro-Soares, M. *et al.* Guidelines on the classification of diabetic foot ulcers (IWGDF 2019). *Diabetes/metabolism research and reviews* **36**, e3273 (2020).

Petten, Nick. (2023). PHAC IMF PSW Dialogic Sessions: Third-Party Evaluation Services Report. University Health Network

Patel J, Zamzam A, Syed M, et al. A Scoping Review of Foot Screening in Adults With Diabetes Mellitus Across Canada. Can J Diabetes. 2022;46(5):435-440.e2. Available at: doi:10.1016/j.jcjd.2022.01.004

Street Haven. (2023). *Our mission, vision and strategic plan.* https://www.streethaven.org/about-us.html

The Michener Institute. Strategic Review 2017: Chiropody Program. 2017.

Walker JD, Slater M, Jones CR, et al. Diabetes prevalence, incidence and mortality in First Nations and other people in Ontario, 1995-2014: a population-based study using linked administrative data. CMAJ 2020; 192(6): E128-E35

Wounds Canada, 2017. https://www.woundscanada.ca/docman/public/wound-care-canada-magazine/2017-vol15-no3/1018-wcc-winter-2017-v15n3-final-p-24-29-inlow-foot-screen/file

Indigenous Diabetes Health Circle Holistic Foot Care Program, https://idhc.life/

Diabetes Canada (2020). Diabetes Awareness Month focuses on a collaborative effort to End Diabetes. *Diabetes Canada*. *https://www.diabetes.ca/DiabetesCanadaWebsite/media/Campaigns/Social/NDAM/diabetes-by-the-numbers.jpg*

Tiwari T, Palatta AM. An Adapted Framework for Incorporating the Social Determinants of Health into Predoctoral Dental Curricula. J Dent Educ. 2019;83(2):127-136. doi:10.21815/JDE.019.015

Willows ND, Hanley AJ, Delormier T. A socioecological framework to understand weight-related issues in Aboriginal children in Canada. Appl Physiol Nutr Metab. 2012;37(1):1-13. doi:10.1139/h11-128 10 CorHealth Ontario. Webinar: Saving Lower-limbs: Introducing a New Ontario Lower Limb Preservation Strategy for Ontario. Available at: https://www.corhealthontario.ca/WEBINAR_Saving_Lower-LimbsIntroducing_a_new_Ontario_Lower-Limb_Preservation_Strategy-FINAL.pdf>, 2021. World Health organisation. WHO competency framework for health workers' education and training on antimicrobial resistance. Geneva: World Health organisation; 2018.

Appendices

Appendix A: Foot Care Curricula

Didactic Development

Two subject matter experts (SMEs) (Chiropodists/Foot Specialists) were engaged to capitalise on their knowledge to assist with the development of six online modules and assigned content areas.

Meetings with the manager of the learning design team from The Michener Institute of Education at UHN determined the number of hours to allot to the project based on the needs of the project. A Condensed Critical Pathway was established outlining each step needed to develop the curriculum.

Weekly meetings between the instructional designer and SMEs were used to discuss a variety of subjects such as; the objectives of each module, tailoring content to the needs of the learner, goals of the project and deciding on the Learning Management System (LMS) format.

Content Development

The basis of the content development came from the Collaborative Advocacy and Partnered Education CAPE) work. Underpinning the genesis of the modules were the principles of critical reflection, co-creation and cognitive integration. This paradigm was chosen for The Best Foot Forward curriculum as it aligned with leading educational practices. Since this curriculum was designed to advance learners' health equity perspective while building on their existing skill set and knowledge which can be transferred into other healthcare settings scenarios.

The identification of learning objectives for each module was the first step in the process of the creation. Content was then provided to the learning designer to create inclusive, easy to understand, interesting, and thought provoking modules. Graphics, video vignettes, fun foot facts etc.., all added to the content to capture the interest of the participants. Developing content ideas that align with the strategy and goals for the project's success.

Thorough research and review of available existing content and materials on subject matter was performed. A variety of Canadian and international sources were reviewed by compiling and integrating best evidence-based practice data/information into the modules. (i.e. Wounds Canada, HaltonHealth Care, Public Health, National Health Service (UK), Alberta Health Services, and Michener Library resources).

An environmental scan of foot screening tools in current use was completed. While there are many foot screening tools available the Inlow's tool was used for the following reasons (1,2):

- It is a validated tool endorsed by Wounds Canada
- It is quick and easy to use
- It tests for more than basic sensation
- Inlow's had a natural built-in framework to guide module development

Approval was sought and granted from Wounds Canada for the purpose of the grant to use resources from their website (i.e., The Inlow's 60-Second Diabetic Foot Screening Tool - i.e. Blanchette et al., 2023).

Modules were created in a learning platform that allowed for built in interactivity. We created learning activities, assessment items, case studies and discussion prompts for each module as applicable. For the subject matter experts it was essential that principles of inclusivity and accessibility were interwoven seamlessly right throughout the modules. This was reflected in the words, case studies, and graphics chosen, for example, descriptions of skin changes that are applicable to all skin colours, and images that show diverse skin tones.

Once the curriculum was complete, audience needs were then explored on how to deliver and how they receive the curriculum either online or in-person facilitation.

The modules were designed to leave room for co-adaptation with partner organizations.

Consultation and Reviewers:

The SMEs discussed the project with leading foot care experts in the field. These consultations allowed for review for appropriate depth and breadth of topics covered. Departments consulted at UHN were: The Inclusion, Diversity, Equity, Accessibility and Anti-Racism (IDEAA) and Trauma-Informed Care Teams as well as UHN infection Prevention and Control.

It is also best practice to have curriculum reviewers from many different sectors provide feedback. This was essential for a quality product. Feedback from each peer reviewer, BFF project team members, patient partners, and other SMEs enabled the curriculum to be edited, reviewed, modified and revised. This ensured the clarity, quality and accuracy of the final product.

Once externally reviewed, co-collaboration of the modules took place with the organizations to meet their specific needs. Consultation of the curriculum for the purposes of collaboration was completed with all the partners to reflect the populations the partners served.

Summary of Foundational Modules

The final six foundational online modules, each 20 minutes in length are a collation of fundamental foot knowledge building capacity to use the Inlows's 60 Second Diabetic Foot Screening Tool. Modules were created to follow the framework of the Inlow's scaffolding from the first module to the last. These modules were developed for community partner use, in addition to an in-person skills session that will enable care providers to perform a foot screening using the Inlow's 60-second Diabetic Foot Screen validated tool from Wounds Canada.

Topics covered by each of the modules include the following:

New to Foot Care, Vascular System, Sensation, Footwear - A good fitting shoe, Common Foot Concerns and Inlow's foot screening module.

Audio incorporated later on in the modules -to make modules AODA compliant.

Appendix B: Coadaptation of Curricula: Community Education Pilot

The curriculum co-adaptation process for the community-based education project took place in Phase 2 and 3 of the research project and involved key community stakeholders at community partner organizations.

Phase 2: Interviews

- Individual interviews with key community stakeholders (interview guide includes questions on the curriculum and client needs)

Phase 3: Curriculum co-adaptation meeting with partners

- Themes from the interviews were discussed with community partners relating to client needs and curriculum adaptation
- A section of the curriculum was also reviewed with community stakeholders for their input/ feedback
- No major changes were requested by community partners to the curriculum
- However, additional point(s) for inclusion in training materials were incorporated in the teaching plan (i.e. hand-out, information materials, etc.)

Appendix C: Interview Guide: Individual Interviews

Research Questions:

1. How does a diabetes related foot ulcer and wound assessment/referral education program integrate with the work/practices of community workers?

2. How might diabetes related foot ulcer and wound screening and referral integrate with the work/practices of community workers?

Introduction:

1. How would you describe your typical work day?

2. Who are the clients that you typically support?
    a. Probe: What do you see as their needs in terms of foot care and foot wear?

3. At work have you supported anyone living with diabetes?
    a. Probe: If so, can you describe these experience(s)?

4. What supports/resources are offered by your work for individuals living with diabetes?

Curriculum:

5. What do you think could be important to consider to meet the needs for your clients living with diabetes? What could your organization do?

6. What knowledge/information do you think should be included in the Best Foot Forward Curriculum to meet the needs of your clients specifically?

7. How relevant do you think diabetes related foot ulcer and wound care education is to the work that you do?

Screening feet:

8. How do you feel about feet?

9. How do you imagine screening people's feet could fit into your work activities?

10. How could your organization find space for foot assessments?

11. How can you (or organization) make a safe space for people to be comfortable having a foot assessment?

12. Any questions and/or comments?

Thank you for your participation!

Appendix D: Focus Group Interviews

Research Question:

How do community workers experience upskilling education for diabetes related foot ulcer and wound care?

1. What were your experiences completing the Best Foot Forward Curriculum?
    a. Probe: how do you feel about feet now that you have done the course?
2. What stood out for you in the Best Foot Forward Curriculum?
    a. Probe: Anything that needs to be changed or added?//do you wish anything was different?
    b. Probe: what was the most important thing you learned?
3. How will you use the skills and knowledge you gained from the Best Foot Forward Curriculum? in community practice?
    a. Probe: do you feel confident to screen feet now?
4. Has this training had an impact on you? On the clients?
    a. Probe: have you made a referral out to more foot care for a client?
5. Does your organization need to change anything to make foot screening easy to do for your clients?
6. Any questions and/or comments?

Thank you for your participation!

Appendix E: Best Foot Forward Recruitment Poster for UHN staff

List of Abbreviations

ADL - Assistance with Daily Living
BFF - Best Foot Forward
CAPE - Collaborative Advocacy & Partnered Education
CBoC - Conference Board on Canada
DAC - Diabetes Action Canada
DFCLP - Diabetic Foot Care and Limb Preservation
DFS - Diabetic Foot Screening
DFU - Diabetic foot ulcer
FSC - Future Skills Centre
IDEAA - Inclusion, Diversity, Equity, Accessibility and Anti-Racism
IDHC - Indigenous Diabetes Health Circle
LMS - Learning Management System
OCAP - The First Nations principles of ownership, control, access, and possession
PDSA - Plan-Do-Study-Act
PHSTE - Program for Health System and Technology Evaluation
PSWs - Personal Support Workers
SDoH - Social Determinants of Health
SMEs - Subject Matter Experts
UCPs - Unregulated Care Providers
UHN - University Hospital Network
VBHC - Value-Based Health Care