

Knowledge into Action: Preliminary Results of an Assessment of Clinicians' Intention to Use *Inlow's 60-second Diabetic Foot Screen*

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Abstract: In 2022, Wounds Canada updated *Inlow's 60-second Diabetic Foot Screen tool* to increase its functionality and, ultimately, its ease of use in clinical practice. The new version was launched at a workshop held at the Diabetes Canada national conference in Calgary, Alberta in November 2022. As a part of continuing professional development (CPD) the workshop focused on the understanding of the importance and role of diabetic foot screening in the diabetes care setting, developing skills and knowledge about when and how to screen for diabetic foot disease and understanding how to implement the diabetic foot care pathway through use of the tool. CPD encompasses the multiple educational and developmental activities that health-care and social service professionals undertake to maintain and enhance their knowledge, skills, performance and relationships in the provision of health care and social services. Thus, as part of the processes we assessed the impact of CPD activities on participants' intentions to use *Inlow's 60-second Diabetic Foot Screen* after the workshop. These preliminary results illustrate the potential of using the CPD-REACTION tool, a theoretically validated questionnaire, in CPD activities for *Inlow's 60-second Diabetic Foot Screen*. This can improve its implementation, its scaling and ultimately its impact on clinical practice across all care settings and on population health.

Key words: *diabetic foot, risk assessment, behaviour, health-care personnel, patient care team.*

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Context

It is the clinician's responsibility to conduct holistic diabetes related assessments, including assessment of the lower limb and foot. The importance of conducting a diabetic foot screen for risk factors and risk stratification is well established in the literature.¹ Early identification of patients at risk for diabetic foot ulcers should, therefore, be a priority as the burden of diabetic foot complications on the individual's quality of life, family, community and the costs to the health-care system are significant.² As well,

the advantages of foot screening outweigh any disadvantages.

Inlow's 60-Second Diabetic Foot Screen is relatively simple, accessible and should be widely used throughout clinical practice.³ Yet, in Canada, only approximately 50% of persons with diabetes receive appropriate foot screening, and this estimate may be higher than documented.⁴ When we compare this finding to the United Kingdom (UK), with a similar health-care system, we recognize that their diabetic foot screening level is about 80% of the population.⁵ In addition, the

UK and Australia have established foot screening as an integral part of their national diabetic foot strategies.^{6,7}

The Canadian Agency for Drugs and Technologies in Health (CADTH, 2016) published a report regarding the recommendations from nine evidence-based guidelines focused on foot screening and risk stratification.⁸ This was important work as it supports the role of preventative screening to detect risk of foot ulceration and related complications. CADTH was aligned with another nine evidence-based guidelines to recommend the implementation of screening programs for diabetic foot ulcers, including risk stratification, patient education, pathways to specialized care and follow-up within the system.

However, Canada still has a discrete national strategy with only one component related to foot health: *Diabetes, Healthy Feet and You* – a Wounds Canada education program.^{9,10} The recent announcement of an investment in research for the development of a national diabetes framework points to a promising future in terms of action against diabetes and its complication in Canada.¹¹ Foot screening programs need to be established across all health-care sectors. This is necessary to positively impact the lives of persons with diabetes and those at risk of foot ulcers and lower extremity amputations in Canada.

The Workshop: Illuminating the Path to Amputation Prevention for The Diabetes Healthcare Team - Screening and Beyond

In 2022, Wounds Canada updated *Inlow's 60-second Diabetic Foot Screen* to increase its functionality and ease of use in clinical practice.¹² The new version was launched at a workshop held at the Diabetes Canada 2022 national conference. The focus of the workshop was to empower stakeholders, mainly clinicians, to utilize and embed *Inlow's 60-second Diabetic Foot Screen* in conjunction with the *Foot Health Pathway* in their clinical practice.¹³

We know that continuing professional development encompasses multiple educational

and developmental activities undertaken by health-care and social service professionals. CPD is purposeful as it seeks to maintain and enhance the knowledge, skills and performance behaviours of health-care professionals. Competency acquisition is a complex concept. To understand if workshop participants would use the new information they learned, we sought to measure their intention (intentionality) to use *Inlow's 60-second Diabetic Foot Screen* after the workshop. We also aimed to engage participants in reflective practice regarding their behavioural intentions to use this foot screening tool.

Process

The authors conducted a 75-minute workshop at the Diabetes Canada national conference in Calgary, Canada (November, 2022). The learning objectives were to:

1. Understand the importance and role of diabetic foot screening in the diabetes care setting
2. Develop skills and knowledge about when and how to screen for diabetic foot disease (See *Diabetic Foot Disease Defined*, below)
3. Understand how to implement a diabetic foot care pathway.

The workshop included a theoretical content presentation, five interactive questions using *Mentimeter* software (Sweden) and two clinical case studies with demonstrations on foot models and correct use of a monofilament.¹⁴ Handouts and post-workshop readings were provided. The last ten minutes were reserved for question and answers. This period of questions was extended by

Diabetic Foot Disease Defined

The term diabetic foot disease was used to encompass different conditions such as diabetic foot ulcer, neuropathy, Charcot neuroarthropathy and peripheral arterial disease; conditions likely to occur in people with diabetes.

Source: *The International Working Group on Diabetic Foot (IWGDF, 2020)*.¹⁵

20 minutes after the workshop to support learners' engagement. At the conclusion of the workshop, participants were invited to complete an online QR code-accessed questionnaire on a voluntary basis.

How Do We Measure Intention?

CPD activities are an opportunity for clinicians to translate knowledge into practice. Thus, intent

to use *Inlow's 60-second Diabetic Foot Screen* tool is an indicator measuring the clinician's intent to conduct a foot screen and risk stratification. We measured participants' intention using the CDP-REACTION questionnaire.¹⁶ This is a short, theory-based questionnaire that could be used as a tool to assess the impact of CPD activities on clinical practice.¹⁷ The questionnaire incorporates three categories of variables that can predict the

behaviour of health-care professionals, such as those involved in diabetic foot screening.¹⁶ Those variables include:

1. Intention to adopt or not adopt *Inlow's 60-second Diabetic Foot Screen*
2. Beliefs about their abilities
3. Past behaviours and habits.

The CDP-REACTION questionnaire, contains 12 questions, and was adapted to match *Inlow's 60-second Diabetic Foot Screen* as a targeted behaviour. The questionnaire was developed online using the *Qualdric* platform (*Qualdric* XM, United States). Results are presented in Table 2. We also included questions related to baseline participant characteristics, such as the province of practice, gender, main profession, years of experience and self-reported experience screening at-risk individuals with diabetes. The time required to complete the questionnaire was estimated to be five minutes.

We used the questionnaire as an extension of the face-to-face workshop and to engage participants in reflective practice specifically focused on three variables. We invited participants to direct their thinking toward *Inlow's 60-second Diabetic Foot Screen* through the questionnaire.

Finally, after verification with the ethics review board of the Université du Québec à Trois-Rivières, it was determined that ethics approval was not required to collect anonymous data with the questionnaire. Participants

Table 1: Baseline Characteristics

Characteristics (n= 16)	n (% approximately)
Place of practice	
Alberta	4 (25)
British Columbia	1 (6)
Prince Edward Island	0 (0)
Manitoba	5 (31)
New Brunswick	1 (6)
Nova Scotia	0 (0)
Ontario	4 (25)
Québec	0 (0)
Saskatchewan	0 (0)
Newfoundland and Labrador	0 (0)
Northwest Territories	1 (6)
Nunavut	0 (0)
Yukon	0 (0)
Gender	
Woman / Men	13 (81) / 3 (19)
Mean age in years (SD), [min-max]	48 (13), [23-66]
Main profession	
Nursing	13 (81)
Medicine	2 (13)
Other [†]	1 (6)
Time in practice (in years)	
Less than 2	2 (13)
2-5	1 (6)
6-10	2 (13)
11-15	3 (19)
16 and more	8 (50)
At-risk patients with diabetes / week (self-reported estimates)	
Mean patients (SD), [min-max]	21 (21), [1-50]

[†]Not specified, the person wrote "Diabetes Educator".

SD: Standard Deviation; [min-max]: [minimum-maximum]

were asked to provide consent at the beginning of the questionnaire.

Measuring Intention: Preliminary Results

Approximately 45-50 participants attended the workshop. Sixteen participants completed the questionnaire. Baseline characteristics are presented in Table 1. Participants intention, social influences, beliefs about capabilities, moral norms and beliefs about the consequences of use of the *Inlow's 60-second Diabetic Foot Screen* are presented (see Table 2). Finally, five interactive workshop polling question results are presented in Figure 1.

Most respondents were women, primarily highly experienced nurses who see approximately 21 at-risk patients per week. Intention to use *Inlow's 60-second Diabetic Foot Screen* tool was relatively high among respondents (5.97/7). Most of the variables assessed were also rated high (above 6/7), namely social influence, belief in capabilities and belief about consequences. Only social influence was rated below 5 out of 7. With regard to the interactive polling questions, it is interesting to note that almost half of the respondents were not familiar with, or did not use, the screening tool. However, almost 50% were using a foot health pathway integrating stratification. Almost all participants plan to use the Wounds Canada *Foot Health Pathway* to guide their practice.¹³

Discussion

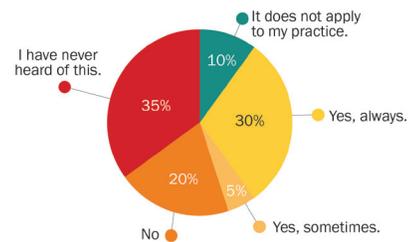
Preliminary results support the potential use of the CPD-REACTION questionnaire in limb preservation CPD activities. This is an innovative aspect of our workshop that can be replicated elsewhere in training activities. To our knowledge, this is the first research initiative that measured the intention of clinicians regarding diabetic foot screening and the risk stratification behaviour of health-care professionals.¹⁷ CPD-REACTION scores were high after our workshop, especially regarding the intention to use *Inlow's 60-second Diabetic Foot Screen*. While there is no definitive threshold for a clinically significant intention score in the literature, a score ≥ 4 can be considered

Figure 1: Results from interactive polling questions†

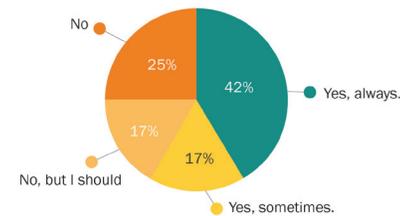
How to act against amputation?



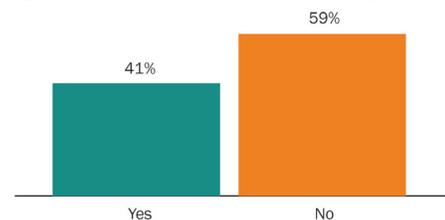
Do you use a risk stratification method for diabetic foot complications in your practice?



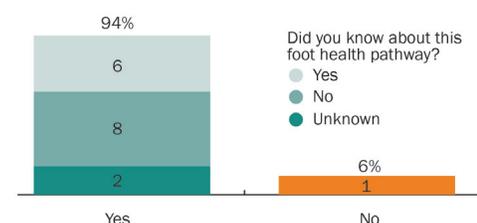
Do you use a clinical pathway or define care trajectory in your practice to manage diabetic foot complications?



Did you know about this foot health pathway?



Do you plan to use it in your clinical practice?



†Sample size varying between 12 and 20 respondents.

Table 2: Preliminary results from the survey (n=16)

Construct Scale	Questions	Response's choices	Score per question mean (SD)	Score per construct
Intention	I intend to use the <i>Inlow's 60-second Diabetic Foot Screen</i> in my practice.	Likert Scale with 7 choices between strongly disagree (1) and agree (7)	5.81 (2.01)	5.97
	I plan to use <i>Inlow's 60-second Diabetic Foot Screen</i> in my practice.	Likert Scale with 7 choices between strongly disagree (1) and agree (7)	6.13 (1.58)	
Social Influence	To the best of my knowledge, the percentage of my colleagues who use <i>Inlow's 60-second Diabetic Foot Screen</i> tool in their practice is:	5 choices: 0-20% 21-40% 41-60% 61-80% 81-100%	0-20%: 6 21-40%: 3 41-60%: 0 61-80%:4 81-100%: 3 3.76	5.21
	Now think about a co-worker whom you respect as a professional. In your opinion, does he/she use <i>Inlow's 60-second Diabetic Foot Screen</i> tool?	Likert Scale with 7 choices between never (1) and always (7)	7.75(4.59)	
	Most people who are important to me in my profession use the <i>Inlow's 60-second Diabetic Foot Screen</i> tool in their practice, if applicable.	Likert Scale with 7 choices between strongly disagree (1) and agree (7)	4.13 (1.69)	
Belief about capabilities	I am confident that I could use <i>Inlow's 60-second Diabetic Foot Screen</i> tool in my practice if I wanted to.	Likert Scale with 7 choices between strongly disagree (1) and agree (7)	6.19 (1.55)	6.19
	For me, using <i>Inlow's 60-second Diabetic Foot Screen</i> tool in my practice would be [choose difficulty level].	Likert Scale with 7 choices between extremely difficult (1) and easy (7)	6.19 (1.47)	
	I have the ability to use <i>Inlow's 60-second Diabetic Foot Screen</i> tool in my practice.	Likert Scale with 7 choices between strongly disagree (1) and agree (7)	6.00 (1.41)	
Moral Norm	Using <i>Inlow's 60-second Diabetic Foot Screen</i> tool is the ethical thing to do.	Likert Scale with 7 choices between strongly disagree (1) and agree (7)	6.19 (1.55)	6.34
	It is acceptable to use <i>Inlow's 60-second Diabetic Foot Screen</i> tool in my practice.	Likert Scale with 7 choices between strongly disagree (1) and agree (7)	6.50 (1.46)	
Belief about consequences	Overall, I think that for me the use of <i>Inlow's 60-second Diabetic Foot Screen</i> tool in my practice would be [choose utility level]	Likert Scale with 7 choices between useless (1) and useful (7)	6.81 (0.53)	6.71
	Overall, I think that for me using <i>Inlow's 60-second Diabetic Foot Screen</i> tool in my practice would be: [choose consequence level].	Likert Scale with 7 choices between harmful (1) and beneficial (7)	6.61 (0.23)	

sufficient to assume that a health-care professional has the potential to use *Inlow's 60-second Diabetic Foot Screen*.¹⁸

Our findings, although limited by a small sample were consistent with those of other post-CPD activities, except for the score related to beliefs about consequences, where we had a much higher score.¹⁷ This may be due to the fact that *Inlow's 60-second Diabetic Foot Screen* is a tool primarily developed in Canada, and even if foot screening is not a widespread practice, respondents were very experienced regarding diabetic foot disease.⁴ However, only about 35% of respondents were already practicing diabetic foot screening in their clinical settings (see Figure 1). We also knew the participants were not representative of the Canadian population and were not ideally diverse in terms of professionals likely to screen for diabetic foot diseases. In addition, this was not a research project with strong internal validity, and the scores must be interpreted with caution.

We also assessed our results in relation to the *Theory of Planned Behavior*,¹⁹ as it is the foundation of the CPD-REACTION questionnaire. This includes seeking to understand the complexities surrounding desired behaviour changes as being primarily at the individual level. The goal is to convince health-care providers to consider diabetic foot screening as a viable intervention to act against diabetic foot complications, such as foot ulcers and amputations. Thereafter, foot screening and risk stratification could then be more easily implemented within organizations, with sound policy and procedures framing the implementation and measurement of outcomes. Strong policy also supports health-care providers to utilize screening tools.

Finally, *The Theory of Planned Behavior*¹⁹ states that behavioural intentions are guided by attitudes toward the behaviour, subjective peer norms, and perceived behavioural control, with implementation interventions to address each construct.²⁰ The use of this theory has been frequently linked to effectiveness in systematic reviews of behavioural change interventions when translating knowledge into practice.^{21,22} In addition, implementation intention or the

intention to use evidence (diabetic foot screen) has been shown to be effective in promoting healthy behaviours and leading to the implementation of evidence-based interventions.^{23,24}

Conclusion

These preliminary results are of particular interest in increasing the implementation of diabetic foot screening in clinical practice. CPD-REACTION can be used in a larger-scale study to identify barriers and facilitators to health-care professional behavioural change, and this type of data holds promise for implementing foot screening and risk stratification as the national level.

We have achieved our goal of transferring knowledge to participants by asking them to reflect on the different variables included in the questionnaire related to *Inlow's 60-second Diabetic Foot Screen*.

This project also demonstrates a concrete example of how education such as CPD activities can be combined with research focused on implementation science seeking to improve transfer of knowledge to clinical practice. Readers are free to use the CPD-REACTION questionnaire to reflect on their own foot screening practice and to integrate it into their organizations.

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Conflict of interest

Virginie Blanchette is a member of the Wounds Canada Board of Directors. Alice T Wagenaar reports no conflict of interest. Janet L Kuhnke is a nurse researcher with Wounds Canada and Cape Breton University. ■

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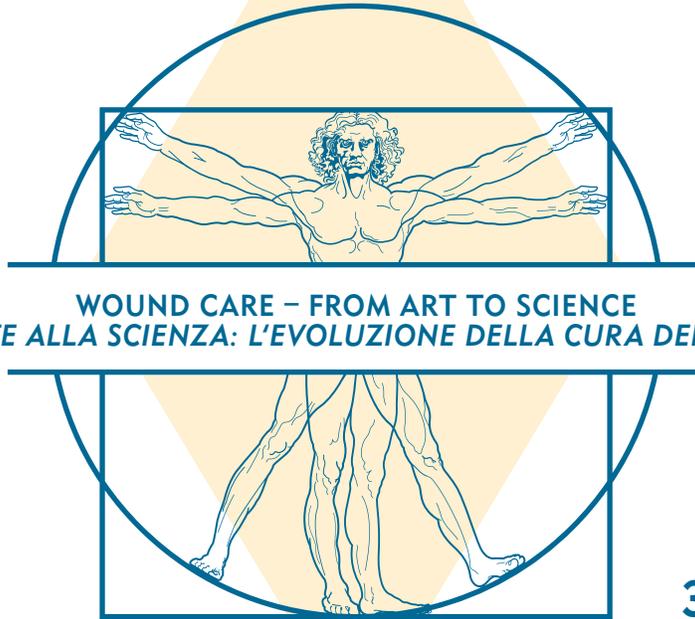
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