**Objective**

To determine the effectiveness of a foot self-management intervention that utilized commercially available infrared thermometers for patients with diabetes who were at risk for diabetic foot ulcers (DFUs).

**Practice Points**

1. There are over 70,000 people diagnosed with diabetes in Newfoundland and Labrador (NL) and this number is continuing to increase (NLCHI, 2017).

2. Patients with diabetes are at risk for DFUs, which results in negative physical, psychological, and social impacts for patients and increased costs for the health care system.

3. For NL in 2018 the prevalence estimates were 760–1,260 cases for DFUs and 160 for amputations (Diabetes Canada, 2018).

4. It is important to develop strategies to support foot health and prevent DFUs. Education and a commercially available infrared thermometer (CAIT) are promising strategies.

5. The CAIT can help identify plantar inflammation by detecting a >4° F temperature difference between the two feet. Once the individual has identified the inflammation they can take action, such as resting, to relieve pressure until the temperature normalizes and the inflammation is reduced, thus preventing skin breakdown, which could lead to formation of a DFU.

**Methods (PI: Dr. K. Stevens)**

1. A sequential mixed methods research study with three phases was conducted from 2016–2019 in areas served by Eastern Health.

2. In Phase 1, qualitative interviews were completed with 11 patients, 9 health care providers, and 4 support persons to explore foot self-management. What was learned in Phase 1 informed the development of the intervention.

3. In Phase 2, a six-month randomized controlled trial (RCT) pilot was conducted that tested the intervention (thermometer and education group, n=34, and an education-only group, n=26).

4. In Phase 3, interviews were conducted with RCT participants to gain an understanding of the Phase 2 findings (n=9). At the end of the study, data from all three phases were integrated.

5. Two patient representatives were part of the research team and provided feedback on the data collection and analysis throughout the study.

**Results**

- Phase 1: Findings showed that patients experienced personal challenges, encountered system barriers, and utilized resources to support foot self-management. Patients were unsure of what to do if they had a foot wound. Therefore, the contact number for self-referral to community health was provided to participants in the intervention.

- Phase 2: There was no difference between the two groups for DFUs but the study had low power to assess this outcome.

  - **Improved foot assessment.** The thermometer and education group (n=34) had significantly more days with any assessment completed than the education-only group (n=26) (151/180 vs. 120/180, p =0.02).

  - **Use of the thermometer.** 96.8% of participants said they would continue to use the thermometer. However, 37.9% said this would be sometimes or rarely. Reasons given to continue to use the CAIT were: to identify inflammation and any issues; to have a baseline assessment; to keep track; and because it was part of their routine.
Phase 3: Phase 2 findings were further assessed.

- **Improved foot assessment.** Participants would often record the temperature reading but not their foot assessment. However, participants were also completing a visual assessment when they took their temperature and one participant described the two assessments as going “hand in hand”.

- **Improved action based on the foot assessment.** A temperature check with a <4°F difference led patients to conclude that their feet were fine to do what they planned. However, temperature readings with a >4°F difference prompted action such as completing a further assessment, resting, and seeing their health care provider.

- **Use of the thermometer.** Participants indicated that the CAIT made them more aware of their feet, offered reassurance about foot health status, and made them feel more involved in their assessment.

**Conclusions**

1. Integration of the data from Phases 2 and 3 showed that the CAIT engaged participants in foot assessment, prompted action to address foot concerns, and offered reassurance about foot health.

2. A CAIT is an available tool that could support foot self-management for people with diabetes and the use of a CAIT may offer several benefits such as promoting and providing structure for a foot assessment and direction for action.