



The Impact Of The Zivot Limb Preservation Centre

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Abstract: Indigenous populations in Canada, including First Nations, Métis and Inuit peoples often have limited access to health care, increasing the prevalence of many chronic conditions, including diabetes mellitus. Diabetic foot ulcers are a common problem. This presentation outlines the impact of the Zivot Limb Preservation Centre in Alberta (Canada), its use of the 'Toe and flow' model of care and its role in decreased major amputation rates.

Key words: *diabetic foot ulcer, Indigenous populations, prevention, detection, 'toe and flow', amputation rates.*

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Canada's Indigenous people amount to 6.5% of the total population, including the Métis, First Nations and Inuit people.¹ Due to geographical, language, and historical factors, Indigenous people may have limited access to health care, thus increasing the prevalence of many chronic conditions such as diabetes mellitus.² Diabetes affects 26% of Albertans, with rates in Indigenous groups up to 3.5 times higher.^{3,4} Diabetic foot ulcerations (DFU) affect 15-25% of people during their lifetime, with proportionally higher rates in Indigenous communities.⁴ DFUs

contribute to impaired mobility and quality of life, with patients having similar mortality rates to all cancers.⁵



**Zivot Limb
Preservation
Centre**

Figure 1: Canada's Only Clinic Based on the 'Toe and Flow' Model



Figure 2: Ischemic Toes Secondary to Frostbite Prior to Amputation

The Zivot Limb Preservation Centre (ZLPC), localized in Calgary, Alberta, is home to Canada's only clinic based on the 'toe and flow' model, where a podiatric surgeon and vascular surgeon work synergistically.⁶ In addition, ZLPC has a multi disciplinary approach to limb salvage involving various specialties including infectious disease, plastic surgery, orthopedics, endocrinology, nursing, orthotists, etc.

Since the inception of ZLPC and the 'toe and flow' model, the Calgary area has seen a 45% reduction in major amputation rates (below and above knee amputations) compared to the standard of care.⁷ Additionally, the reduced rates of major amputations and limb threatening conditions in Calgary can be attributed to the Peter Lougheed Hospital Minor Surgery Clinic (MSC), where many foot lower extremity ulcerations are treated on an expedited basis under local anesthesia. This obviates the complications of general anesthesia in a comorbid patient population, as well as the need to keep patients fasting prior to surgery.

Both ZLPC and MSC have significantly improved patient quality of life and lowered morbidity and mortality, as illustrated in the following case. Consent was obtained from the patient prior to publication.

A 46-year-old Indigenous male from the Dene community was found disheveled and confused in his unkept home during a wellness check. He was admitted to the intensive care unit for extensive

frostbite. His wife had passed away a week previous and his car had been impounded, resulting in him having to walk long distances during a cold Canadian winter. On exam, he had ischemic toes. Unfortunately, he was not a candidate for iloprost (vasodilator) due to the unknown timing of his cold injury and the fact that his digits had already begun to mummify on initial exam. Amputation was recommended, though the patient declined. Many Indigenous communities believe that the body must remain whole and leave the world in the way they came into it.⁸

The patient opted for traditional herbal creams for many weeks with minimal improvement of his symptoms, at which point he was agreeable to a staged transmetatarsal amputation. To assist in this decision and his postoperative care, Indigenous liaisons were consulted during his hospital stay, which helped facilitate traditional smudging ceremonies. This involves burning of sacred medicines such as sage and sweetgrass.⁹ Given his mobility

Figure 3: Amputation Stumps Three Months Post Operatively



restrictions with his bilateral foot amputations, accommodations were made for the patient to have the smudging ceremony performed in his room during his recovery. This necessitated turning off fire alarms, disconnecting oxygen supplies and posting signs to allow for privacy. He continues to receive wound care to his left foot which is slowly improving, though he is now ambulatory in prescription footwear.

Delivering culturally sensitive, competent, and responsive care is a priority at the Zivot Limb Preservation Centre in Alberta. Open mindedness along with incorporating patient beliefs and attitudes in a care plan lay the foundation for shared decision making. They pave the way for long-term success, especially when treating chronic conditions. Staying curious, asking when uncertain, and recognizing that different approaches to medicine can be tried in parallel are helpful strategies when addressing the needs of the diversity of our patients, including the Indigenous people we have the privilege of learning from and caring for. ■

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