

Preventing Amputation in Cases of Diabetes Distress: A Case Study

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Case Presentation: Ms. L.K.

Ms. L.K. is a 43-year-old female who has been living with type 1 diabetes for 30 years. Her routine care has been with her primary care provider, focused on ensuring general well-being and routine monitoring for disease progression. But are self-management and her usual approaches to care adequate? The patient had been referred to a diabetes centre to address diabetes care, education needs and a refinement of her treatment plan.

Ms. L.K. tends to keep her blood glucose high because she lives alone, to reduce the chance of hypoglycemia. She does not currently adjust her insulin levels and does not practise routine preventative foot care. She does not smoke and states that she feels “healthy.” Ms. L.K. has confirmed background retinopathy, and reports changes in leg/foot sensation as well as a small callus.

The patient presents with a BMI of 28.* Her most recent A1c was 7.9%. She reports wearing slip-on flat shoes, as they are easiest on her feet for the job roles she performs. A diabetic foot screening revealed unkempt toenails, neuropathy and loss of protective sensation (LOPS), as well as a deformity in the left hallux and a large callus on the left plantar surface (first digit). Based on a conversation with her diabetes educator, it was determined that the patient’s understanding of good preventative foot care practices requires a refresh. According to [Inlow’s 60-Second Diabetic Foot Screen](#), Ms. L.K. is at high risk of requiring a lower leg amputation. She falls into Category 2 due to the presence of LOPS, deformity and evidence of pressure.

Ms. L.K. reports feeling some distress and being overwhelmed with care issues, as well as the emergence of some diabetes complications. At times she is burdened and is trying her best to improve her situation and minimize her stress and worry regarding her condition. She has verbalized her fear of amputation. She also faces financial difficulties, including possible food insecurity and a lack of health/medical insurance, and feels anxious at the thought of her declining overall health.

*A BMI of 30 kg/m or higher is considered obese for adults aged 18 and over. A BMI between 25 and 30 kg/m is considered overweight.⁴ [Click here](#) to access the Health Canada BMI calculator online.



Risk Assessment

Patients living with diabetes face a high risk of amputation; these patients are 15 to 40 times more likely to require lower-leg amputation than the general population,¹ and the five-year mortality rate following amputation is 50%.² In addition, individuals with type 1 diabetes are approximately 15 years younger than those with type 2 diabetes at the time of lower-extremity amputation. The rate of lower-extremity amputation in those with diabetes aged 29 to 59 is 50 times higher than that of the non-diabetic population.³ Therefore, it is essential that clinicians first consider care plans that focus on comprehensive foot assessments and preventing amputations.

As part of the patient's examination a foot screen was conducted (see box below). Foot screening is essential to the identification of risk. "Loss of sensation to the 10g Semmes-Weinstein monofilament at the plantar surface of the foot is a significant and independent predictor of a future foot ulcer and lower-extremity amputation."⁵

Inlow's 60-Second Diabetic Foot Screen tool aids clinicians in identifying at-risk feet. The basic 12 elements of the tool require only a 10 g monofilament, as well as good clinical knowledge and assessment skills.⁶

Barriers to Care

Since 85% of diabetes-related amputations are caused at least in part by non-healing wounds, clinicians need to address the issues underlying the wound's non-heal-

ing status. Wound healing may stall for multiple reasons, including neuropathy and the resulting repeated trauma to the wound, infection, vascular factors and poor nutrition. Barriers to care, whether they are patient factors, system factors or wound factors are many, and in Ms. L.K.'s case include:

- Social determinants of health
- Limited access to care, for example high parking cost to attend a diabetes clinic⁶ or geographical distance from appropriate clinics
- Language/communication difficulties
- Poor health literacy levels
- Poor public and professional awareness of optimal care

Barriers to care in other cases might include:

- Jurisdictional confusion, that is, a lack of understanding of which health-care professional or program is responsible for providing patient, family and community education or resources
- Lack of cultural competency among health-care providers, such as poor knowledge of cross-cultural beliefs and traditions and health-care knowledge⁸

Potential Paths

Depending on the barriers faced by the patient living with a diabetic ulcer, there are two paths that can be followed:

Path 1: If a patient lacks the knowledge and supports to understand the severity of their condition, they will be unable to advocate for their care and might become lost in a fragmented health-care system. In these cases,

it is common for the patient's condition to escalate until their wound becomes infected and amputation is necessary.

Path 2: If a patient enters the health-care system with the knowledge and support of their primary care physician, they and their care provider can better advocate for their health and better engage in preventative and self-care measures, leading to improved patient outcomes.

What can clinicians and systems do?: Effective Steps to Treatment

The first step in the effective treatment of diabetic foot conditions is assessing the patient and determining their level of risk for amputation.

Patient Needs

All patients with diabetes need to receive:

- Affordable, consistent and timely access to the medications, devices, self-care education and care necessary for achieving optimal diabetes control to help prevent serious complications such as amputation
- Access to publicly funded services and devices to prevent and treat foot ulcers and avoid amputation, including:
 - preventative foot care (routine foot assessments)
 - foot care education
 - footwear education
 - for the moderate- to high-risk foot:
 - professionally fitted footwear and devices
 - timely referrals to multidisciplinary teams

Using Inlow's 60-Second Diabetic Foot Screen, clinicians can quickly determine the needs of the patient and the type of treatment required. Goals of care should be identified.⁶ Based on the findings of this assessment and the goals of care, the clinician should address and manage identified factors by creating a care plan with the patient that is personalized, cost-effective and continuously evaluated.

When developing a plan of care, clinicians should consider the following factors:

- Co-morbidities and existing health factors (e.g., infection)
- Risk factors for potential skin breakdown
- Causes of actual skin breakdown (e.g., trauma, footwear)
- Patient needs (physical, emotional, spiritual, social, financial)
- Skin and wound status (if present)
- Environmental and system challenges

Once a care plan is created, it must be re-evaluated at regular intervals to determine if the goals of care are being met. Clinicians should determine if the plan is meeting the goals through discussion with the patient and reassessment of the patient, wound, system and environment using validated assessment tools, and adjust the plan of care with the patient as required.

It is important for health professionals to engage patients in preventative measures, including proper foot care, footwear and self-management. The patient's risk status should be communicated in a gentle, consistent and com-

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^{**}as demonstrated *in vitro*

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Suggested Next Steps for Health Regions/Authorities

- Prevent and manage foot complications by providing a well-defined referral pathway, and coordination of care and communication among health-care professionals who support individuals with diabetes as part of a collaborative multidisciplinary team.
- Publish, on an annual basis, reliable data on diabetes-related foot care, using internationally recognized metrics, to assist ongoing quality improvement efforts.



passionate manner. Clinicians should support patients by sharing the knowledge, tools and other resources needed to prevent foot complications. This includes ensuring patients understand and feel confident in their ability to manage blood glucose levels, perform daily foot exams and carry out regular foot and nail care and hygiene. Practitioners should encourage their patients to seek help with

urgent foot problems and link them to community supports. They should discuss the importance of preventative footwear and having footwear professionally fitted with their patients.

By helping patients see their role as active team members in their care and by providing them with the knowledge, tools and supports they need, clinicians can empower patients to make changes that can prevent unnecessary amputations.

Ms. L.K.'s Care

In Ms. L.K.'s case, clinicians must take a consistent, compassionate and optimistic approach to her treatment. Fear of amputation can overwhelm her and work against her best interests and chances of recovery. As a result, it is critical for health-care providers to focus their efforts on prevention and self-management support, as it will help Ms. L.K. to see her own active role in healing and recovery.

Over time, as Ms. L.K. and her clinicians establish their trusting relationship, a treatment plan should be established that focuses on small, gradual changes. Some of these changes might include:

- Routine, regular insulin timing and doses. Consistency in timing and doses makes adjustments easier and the results more predictable.
- Self-monitoring, recording and adjustment of blood glucose (with phone support as needed), and eventual self-adjustment with tools to support her decision making (for an example, see the Self-Monitoring Blood Glucose tool from [Diabetes Canada](#))
- Establishing regular meals/breaks for consistency in CHO (carbohydrate) amounts.
- Establishing realistic glycemic targets including A1c and pre- and post-meal BG values, as needed.
- Connecting her to financial resources such as provincially funded insurance plans for individuals with low-income, community assistance programs, or local supports to assist with budgeting, access to healthy foods and so on.

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RECOGNIZING HS

DO YOU RECOGNIZE PATIENTS WITH HIDRADENITIS SUPPURATIVA (HS)?



DR. NEIL SHEAR

Head of Dermatology, Sunnybrook Hospital

"People with HS come to the emergency room in severe pain and discomfort requiring assistance with the draining of the boils during a flare-up. It's not unusual for patients to go home undiagnosed."



DR. RALPH GEORGE

Associate Professor, University of Toronto,
Division of General Surgery



DR. VU KIET TRAN

ER physician at University Health Network

"HS is a chronic, painful, inflammatory skin disease that affects 1-4% of the general adult population. It is characterized by boils usually occurring where certain sweat glands are located, such as under the breasts, buttocks, and inner thighs."

"There is currently no cure for HS. Early diagnosis and proper management is important for a patient's quality of life. The first step for those with HS is to speak to their dermatologist to get an accurate diagnosis."

To learn more about HS from these specialists, go to www.RecognizingHS.com/WCC

WHEN YOU SEE THESE LESIONS, DO YOU SUSPECT HS? DO YOU ASK ABOUT RECURRENCE?



Photo compliments of Dr. Afsaneh Alavi.



Photo compliments of Dr. Marc Bourcier.

ASSESSING PATIENTS WITH RECURRENT BOILS

Most HS cases can be recognized with high reliability by the presence of 3 main features:¹⁻³

1. **Typical lesions:** nodules, sinus tracts, abscesses, scarring
2. **Typical anatomical location:** axilla, groin, genitals, under the breasts, others (perianal, neck, abdomen, buttocks)
3. **Relapses and chronicity:** ≥ 2 times per 6 months

Questions to ask your patients with suspected HS:²

1. Have you had outbreaks of boils during the last 6 months?
2. Where were the boils and how many did you have?

To confirm an HS diagnosis,
please refer your patient to a dermatologist.

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