The Consequences of Poorly Controlled Diabetes in a Young First Nations Man

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The consequences of poorly controlled diabetes, including blindness and renal failure, are exemplified in a young man from an isolated Northwestern Ontario community. The nurse in charge reported during the summer of 2008 that 25% of community members have diabetes. There are many social and medical reasons for a patient’s failure to control his or her blood glucose. The claim that financial barriers prevent First Nations people from eating a diet that is high in fruits and vegetables, complex carbohydrates and protein and low in fat and sugar is addressed in the present study. It is well known that morbidity can result from poorly controlled diabetes; Derek’s story sadly illustrates its devastating toll.

Derek is 27 this year but as Dr. Michael Kirlew mentioned, chronic poor diabetes control has aged his blood vessels to the equivalent of 47 years. Dr. Kirlew is a family physician, one of several who has provided care for Derek since he was diagnosed with type II diabetes mellitus at the age of 13. His sister, who also has diabetes as do Derek’s mother and all his maternal aunts, has taken care of him for the last 3 years. Derek worked in renovations in his community until diabetic complications rendered him incapable. Clinic notes over the past 3 years detail the toll that high blood glucose has taken on Derek’s body. Despite consistent medical advice and support, Derek has failed to accept the invitation to become involved in the management of his disease. At such a young age, his condition is now nearly palliative.

The backbone of type II diabetes management is well-controlled blood glucose; maintaining hemoglobin glycosylation below 7% is protective against microvascular complications. It is not surprising that it was difficult to convince a rebellious 17 year old of the potential consequences of his disease. As a teenager, Derek felt fine and in the absence of consistent family support, Derek did not attend most of his diabetes education classes. Free of charge, he was given the opportunity to attend education camps and counseling but he did not take advantage. Five years later, at the age of 22, Derek’s doctor dictated a letter to Derek’s boarding school principal. His doctor urged the principal to assist Derek with his blood glucose control as its high levels were likely impairing his ability to study. The proportion of HbA1c that is glycosylated reflects what a patient’s average blood glucose has been over the proceeding 3 months. Figure 1 illustrates that the glycosylation of Derek’s HbA1c between 2006 and 2008 was consistently elevated.
Figure 1. Derek’s HbA1c measurements taken over 2 years demonstrate that his blood sugar was consistently toxically elevated.

Pharmacotherapy of Derek’s disease floundered. At 23 years, he was supposed to be taking Glyburide, Metformin and insulin to control his blood sugar. However, Derek was forgetting to take his Glyburide and he chose to stop taking his Metformin when an increase in dose began to cause him gastrointestinal upset. Shortly after, he developed diabetic foot ulcers due to neuropathy that rendered his feet less sensitive. Yet, his feet were found to have good pulses, colour and sensation and fortunately, his ulcers were not infected. It was assumed that his ulcers were due to wearing work boots.

At 24 years, Derek began to appreciate the gravity of his disease and was willing to take insulin. However, 11 years of poorly controlled diabetes had already damaged his kidneys and urinalysis indicated that there was protein in his urine. He reported at that time that he did not drink any alcohol nor take any illegal drugs.

Around 25 years, Derek discontinued taking his insulin and Glyburide and made it known he did not care to check his blood sugar at home. This coincided with the onset of infected foot ulcers for which treatment in Sioux Lookout, a community 400km to the south, had to be sought. Diabetes is a
vascular disease and necessitates cardiovascular protective pharmacotherapy. Despite blood pressures as high as 165/102, we cannot be certain this 25 year old was taking his Ramipril regularly.

Almost 13 years of nearly subclinical, consistently high blood glucose levels began to show evidence of destruction during Derek’s 26th year. At an appointment in which his morning blood glucose was found to be 15 mmol/L and post lunch, 16-18, he stated that he had blurred vision and bilateral decrease in sensation below the knees. Despite these symptoms, he failed to attend an appointment with an ophthalmologist in the city of Winnipeg because he did not qualify for an escort. Given that escorts are an important part of care for patients in isolated communities, the government pays for the cost of transportation for a friend or family member to travel to one of the regional centres to enable the patient to access required care. Derek was frustrated that he did not qualify for such a companion and for that reason, he missed his appointment.

About a month after missing the ophthalmology appointment, Derek presented with a fixed dilated pupil due to a dense vitreous hemorrhage of his right eye; this caused neovascular glaucoma, which rendered that eye blind. Shortly thereafter, he developed bilateral diabetic peripheral neuropathy and diffuse eczema on his lower legs, presumably from venous stasis. In the fall of that year, he began to experience tunnel vision in his left eye and further tests indicated proteinuria.

I had the opportunity to meet Derek in his home clinic this past summer. At 27 years of age, he presented with leg pain that was not responding to Tylenol Number 3. He had a large ulcer on the dorsum of his right foot, for which his doctor was concerned about underlying osteomyelitis. He had a deep vein saddle thrombosis, which arched from his right femoral vein to his left and he was in kidney failure. He was blind and he could no longer walk.

To facilitate dialysis, Derek will move to Thunder Bay in the near future. He is aware of the irreversible toll that high blood glucose has taken on his body and he is trying to prepare himself for the consequences.

Many social and medical factors have contributed to Derek’s rapid and debilitating course with diabetes. Genetic predisposition has unarguably contributed to Derek’s condition as have many social predisposing factors. It is argued that the high food costs in northern communities may be one such social determinant of health. How does the cost of food in Derek’s isolated community compare to that in the nearest regional centre?

The financial burden of eating well in Derek’s community was documented by the present author during August of 2008 at one of the two local grocers, the Northern store. It was found that it costs a person about 2 times as much to stock his or her fridge and pantry as someone living in Sioux Lookout. Figure 2 shows that by food group, most everything is double the price, be it processed foods like fries and pizza.
pops or fresh vegetables, whole grain breads and milk.

Figure 2. The number of times groceries are more expensive in Derek’s community in comparison to Sioux Lookout by food group.

This food price comparison is a look at August food availability only and in other months, supply may be less due to less food being available in the off seasons or more due to it being less expensive to bring in food by ice road during the winter. It was found that many fresh and healthy foods were available for sale in town; physical availability does not seem to be the cause of poor diet. If expense were the main barrier to eating a healthy and balanced diet then price subsidization would be the answer to preventing diabetes morbidity. It is likely naïve, however, to deem that this would resolve the problem. Skeptical of this solution, I ponder the following questions, “Is it not reasonable to assume that the lower cost of living enjoyed by First Nations people on reserves should off-set the high cost of food? Are people making poor choices in terms of how to prioritize their financial resources rendering their diets inadequate while fulfilling other desires?”

The reality of the price disparity between the north and south cannot be
dismissed but I suspect it does not entirely explain the high burden of diabetes and its comorbidities. Interventions which have set out to educate First Nations people on how and why one must eat a balanced diet and get adequate exercise have shown promise at reducing the burden of obesity and diabetes. Perhaps these ingredients for health are met with apathy stemming from complex social issues including normalization of obesity, boredom, poverty, rebellion, and as Rock, M. writes about, distress and societal suffering.

Investigation into the following questions may shed further light on what impairs some persons with diabetes from maintaining low blood glucose: “What foods do you usually buy at the grocery store? What percentage of your money do you spend on groceries each week? How many dependents do you care for and how old are they? What is the body mass index (BMI) of your dependents? Do you think that healthy foods at the store are too expensive? Do you know the elements of a balanced diet?” Ho et al. asked similar questions and concluded that “Increasing knowledge and outcome expectations about healthier food preparation and selection could help reduce fat and sugar intake as well as increase fiber intake.”

The present discussion leaves many questions in terms of the social determinants, which led to Derek’s condition. However, the case does give striking support to the research on the debilitating consequences of poorly controlled diabetes, particularly in genetically susceptible individuals. Whether or not the cost of groceries in Derek’s community prohibited him from following dietetic counsel is not known. However, it is reasonable to conclude that First Nations people in isolated communities in Northwestern Ontario must allocate more money for groceries than those in the south.

References


Inspiration The young man whose identity has been protected by the name Derek.

Location: Meno Ya Win Health Centre, Sioux Look and Derek’s community nursing station (the name of which is being withheld to protect Derek’s identity).

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