

Pathophysiology & Screening

Diabetes Care Coaching



OKAKI



Before We Begin ...



- Our goal is to create a safe space where all participants are comfortable to learn, share, ask questions
 - Everyone brings knowledge and expertise
 - I am always learning too
 - We won't record discussions, but will share monthly education videos
- The coaching sessions will focus on practical pieces of working in diabetes. For details, it is always best to reference the Diabetes Canada Clinical Practice Guidelines (guidelines.diabetes.ca)

What We Plan to Cover Today



- Explaining pathophysiology of diabetes
 - Understanding digestion
 - Insulin resistance
 - Building on this for the “why” of making health changes
- Symptoms of hyperglycemia, guidelines for screening
- Type 1 labwork

Diabetes Mellitus



Hyperglycemia as a result of:

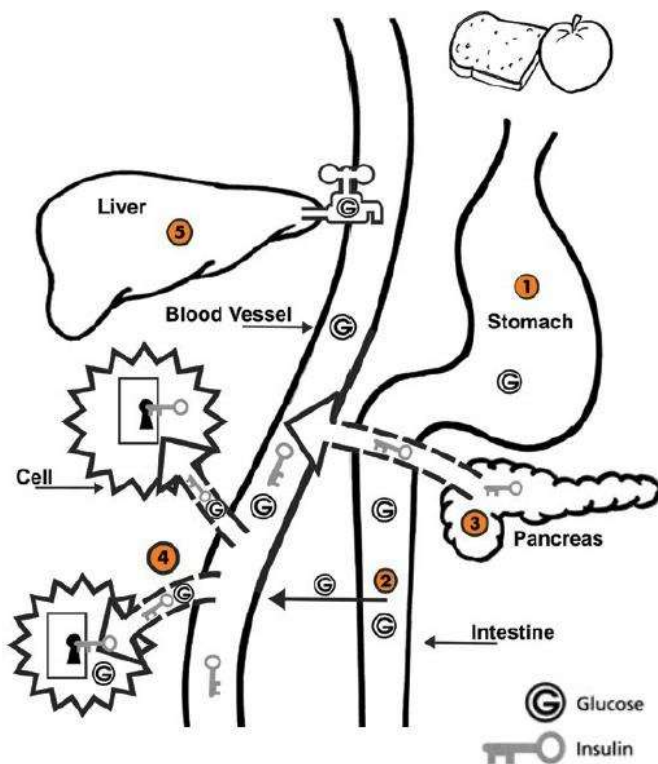
- Inadequate insulin production and/or secretion
- Inadequate insulin usage
- Combination of both

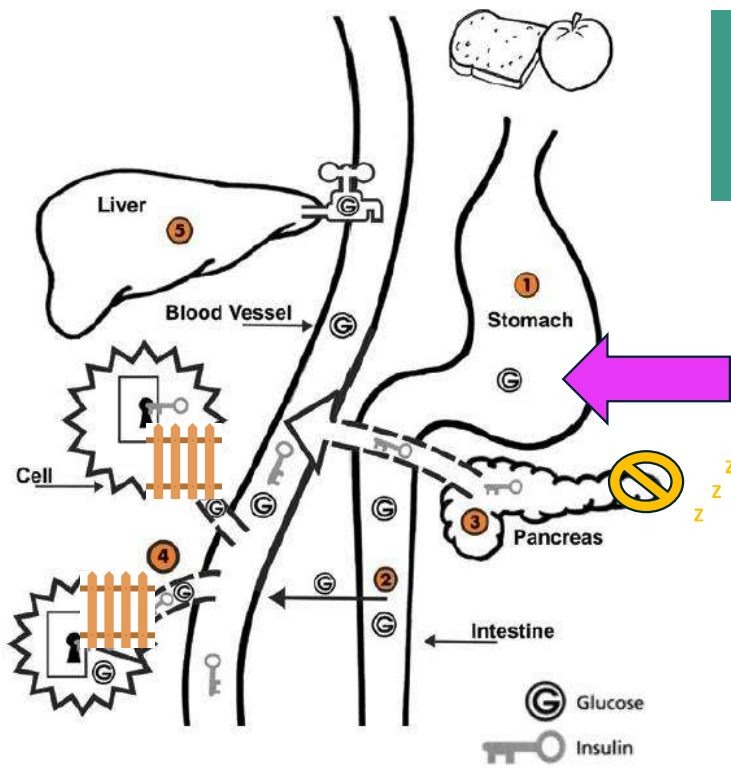
Types

- Type 1
 - LADA
 - Gestational Diabetes
- Type 2
 - MODY
 - Secondary Diabetes
- Prediabetes

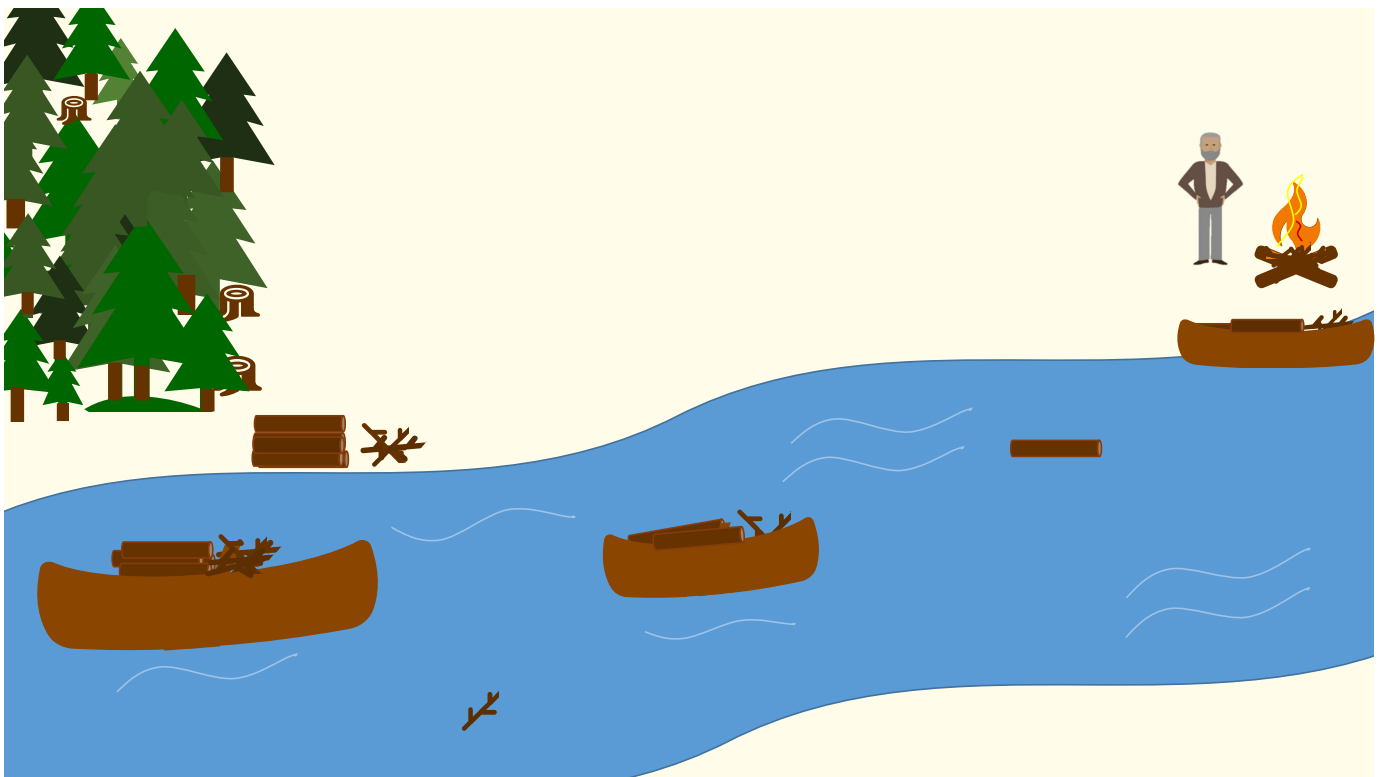
Diabetes => high sugar in the blood

Explaining the Pathophysiology of Diabetes

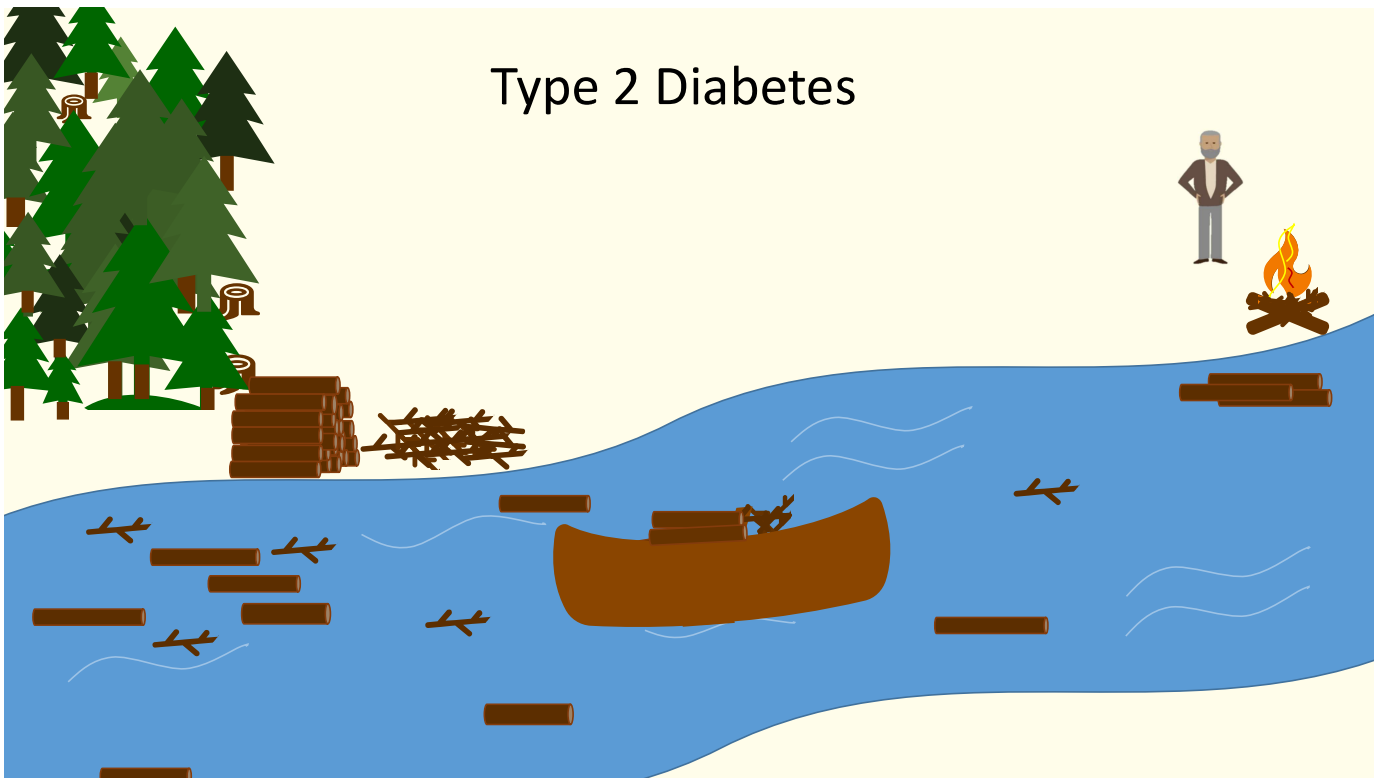




From
<https://pubsaskdev.blob.core.windows.net/pubsask-prod/108559/Type2-D%252B2021-WEB.pdf>



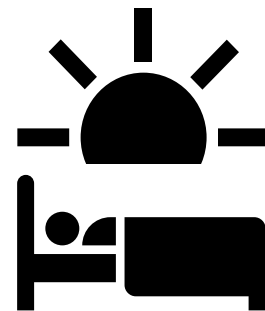
Type 2 Diabetes



Counterregulatory Hormones



- Hormones that work “against” insulin
- Cause blood glucose to rise
 - Glucagon
 - Release of glucose from liver/muscle
 - Epinephrine
 - Causes release of glucose from liver
 - “fight or flight”
 - Growth Hormone
 - Produced in puberty, pregnancy
 - Catecholamines
 - Ex. Cortisol



Contribute to “Dawn Phenomenon”

Hyperglycemia Symptoms & Screening for Type 2 Diabetes

Hyperglycemia: Signs & Symptoms



WEIGHT CHANGE



FREQUENT URINATION



THIRST



FATIGUE



BLURRED VISION



INFECTIONS



DIFFICULTY HEALING



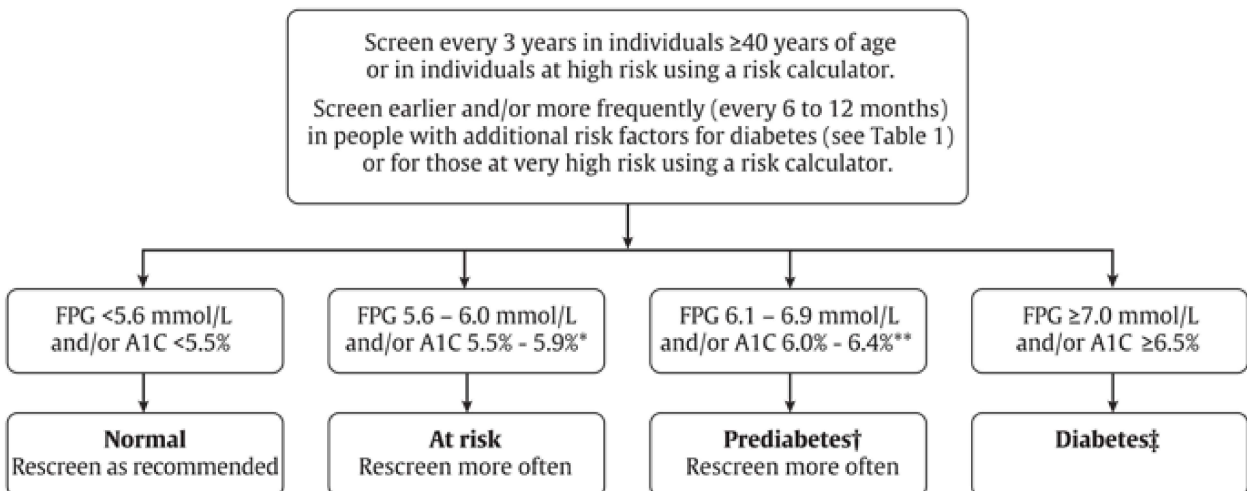
TINGLING/NUMBNESS
IN HANDS OR FEET

Screening



- Type 1 Diabetes – no screening recommended
- Type 2 Diabetes – screening recommendations depend on age & risk factors

Screening





We are often told that being Indigenous is a risk factor for diabetes...

Culture, connection, community – these are protective factors.

Risk Factors for Type 2



- Age ≥ 40 years
- First-degree relative with type 2 diabetes
- Member of high-risk population
- History of prediabetes or GDM
- History of delivery of LGA infant
- Presence of end-stage organ damage associated with diabetes
- Presence of vascular risk factors
- Presence of associated diseases
- Use of drugs associated with diabetes

See Chapter 4 of the guidelines for a table of risk factors

Screening for T2D in Pediatrics



- A1C and a FPG or random plasma glucose
- Every 2 years if:
 - 8 years or older, before puberty with 3 or more risk factors
 - Post pubertal and 2 or more risk factors

Risk Factors:

1. Obesity
2. Member of a high-risk ethnic group
3. First-degree relative with T2D or mom with GDM
4. Signs or symptoms of insulin resistance

Acanthosis Nigricans



- Darkening of skin on back of neck or armpits
- Sign of insulin resistance



Screening

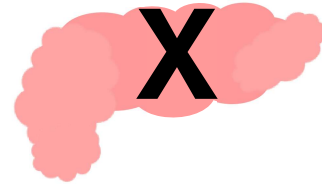
- Anyone want to share how you are screening in community?



Type 1 Diabetes

Type 1 Diabetes

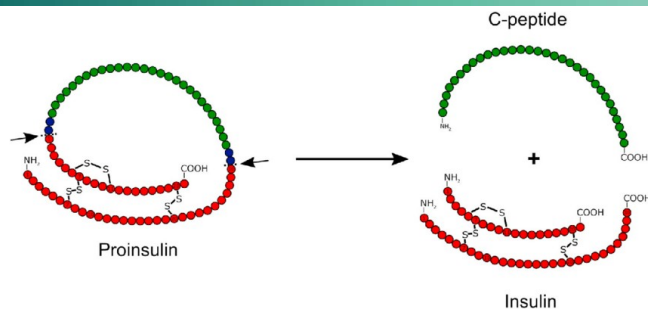
- Autoimmune condition
- Destruction of beta cells in the pancreas
- Inadequate insulin leads to hyperglycemia
- Requires external insulin



- Primarily diagnosed in people < 25 years of age, however can be diagnosed at any stage of life

Labwork

- C-Peptide
 - Marker of insulin production
 - Normal or high = T2D
 - Low or undetectable = T1D



- Anti-GAD (Anti-Glutamic Acid Decarboxylase)
 - Marker of auto-immunity
 - High = T1D

Who should have the testing done?



- Younger age of diagnosis (though not always the case)
- Personal or family history of auto-immune disease
- Medications don't seem to be managing BG
- Weight?

Case Study Example



- 26 year old female
- Diagnosed with A1C of 12.1, asymptomatic. Had gestational diabetes 3 years ago.
- Made some changes to eating and activity. Takes metformin consistently. A1C now at 6.1.
- Personal history of hypothyroidism and family history of auto-immune diseases in her mom's family
- BMI = 30
- Lab work done: Anti-GAD high, C-peptide normal

Wrapping Up...



- Questions?
- Next Session: November 21st
Health Behaviour Change Coaching