Incidence trends of type 2 diabetes, medication-induced diabetes, and monogenic diabetes in Canadian children – A comparison study one decade later

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REPORTING INFORMATION
(To be completed by the CPSP)

Report number:	
Month of reporting:	
Province:	
Today's date:	

Please complete the following sections for the case identified above.
Strict confidentiality of information will be assured.

CASE DEFINITION FOR NON-TYPE 1 DIABETES MELLITUS

Please report any new or revised* diagnosis of non-type 1 diabetes (NT1DM) in a patient less than 18 years of age with clinical features that are **not** consistent with classic type 1 diabetes (defined as a child with symptomatic acute hyperglycemia).

* A revised diagnosis occurs when a child previously diagnosed with type 1 diabetes mellitus receives a "revised" diagnosis of non-type 1 diabetes based on clinical progression and/or results of investigations.

Diabetes is defined based on the Canadian Diabetes Association Guidelines:

- Fasting plasma glucose (FPG) ≥ 7.0 mmol/L† or
- Random plasma glucose ≥ 11.1 mmol/L† or
- Two-hour plasma glucose ≥ 11.1 mmol/L† after a standard oral glucose tolerance test

† Requires a second, confirmatory test if child is asymptomatic

Clinical features suggestive of non-type 1 diabetes mellitus are listed below:

a) Obesity (body mass index >95th percentile for age and gender)
b) Family history of type 2 diabetes in a first- or second-degree relative(s)
c) Belonging to a high-risk ethnic group (e.g., Aboriginal, Black, Latin American, South-Asian)
d) A history of exposure to diabetes *in utero* (diagnosed before or during pregnancy)
e) Acanthosis nigricans
f) Polycystic ovarian syndrome
g) Diabetes in a person with a syndrome often associated with type 2 diabetes (Prader-Willi syndrome)
h) Diabetes in a non-obese patient with at least one first-degree relative with diabetes
i) Diabetes diagnosed in a neonate/infant less than 6 months of age
j) Minimal or no insulin requirement with a normal or near normal A1c level (4–6%) one year after diagnosis
k) A diagnosis of diabetes while on medical therapy with a known diabetogenic medication (e.g., glucocorticoids, L-asparaginase, cyclosporine, tacrolimus, atypical antipsychotic, anticonvulsant)

Exclusion criteria

Do not report patients with cystic fibrosis-related diabetes, pregnant teenagers with gestational diabetes, and patients in critical care settings requiring **short-term** insulin therapy for stress hyperglycemia.

Date first seen: ____ /____ /_____
DD MM YYYY

SECTION 1 – DEMOGRAPHIC INFORMATION

1.1 Date of birth: ____ /____ /_____
DD MM YYYY

1.2 Sex: Male____ Female____

1.3 Place of residence (province or territory):_____

1.4 Population groups (check all that apply):

☐ Arab	☐ Black	☐ Chinese	☐ Filipino
☐ Japanese	☐ Korean	☐ Latin American	☐ White
☐ First Nations	☐ Inuit	☐ Métis	☐ Unknown
☐ Southeast Asian (e.g., Vietnamese, Cambodian, Laotian)	☐ South Asian (e.g., East Indian, Pakistani, Sri Lankan)	☐ West Asian (e.g., Iranian, Afghan)	☐ Other, specify: _____

SECTION 2 – FAMILY HISTORY OF TYPE 2 DIABETES **Yes No Unknown**

2.1 Mother with gestational diabetes diagnosed during pregnancy with this child ____ ____ ____
2.2 Mother with pre-existing type 1 diabetes before pregnancy ____ ____ ____
2.3 Mother with pre-existing type 2 diabetes before pregnancy ____ ____ ____
2.4 Father with type 2 diabetes ____ ____ ____
2.5 Second-degree family member with type 2 diabetes ____ ____ ____

SECTION 3 – BIRTH HISTORY

3.1 Birth Weight: _____(lb) **OR** _____(kg) **OR** _____(g)
3.2 Hypoglycemia at birth: Yes____ No____ Unknown____
3.3 Gestational age (weeks):_____

SECTION 4 – DIAGNOSIS OF DIABETES SUB-TYPE **Date of diagnosis: (DD/MM/YYYY)**

4.1 Specify diabetes subtype (if known) and date of diagnosis:

____Diagnosis unknown or unconfirmed
____Type 2 diabetes mellitus (evidence of insulin resistance) ____ /____ /_____
____Monogenic diabetes (confirmed/suspected gene mutation) ____ /____ /_____
____Neonatal diabetes (in the first 6 months of life) ____ /____ /_____
____Diagnosis secondary to medical treatment ____ /____ /_____
Please specify: ____Glucocorticoids ____Tacrolimus
____L-asparaginase ____Atypical antipsychotic
____Cyclosporine ____Other, specify: _____

4.2 Is this a revised diagnosis of type 1diabetes? Yes____ No____ Unknown____
If yes, please provide reason(s) for prompting the revised diagnosis (check all that apply):
____Low or lack of insulin requirement
____Excellent glycemic control on minimal insulin
____Non-obese child with a parent with non-type 1 diabetes
____Other, specify: _____

SECTION 5 – SIGNS AND SYMPTOMS AT <u>FIRST</u> PRESENTATION OF DIABETES

Date measured: (DD/MM/YYYY)

5.1 Height: _____(cm) OR _____(inches) ____ /____ /_____
5.2 Weight: _____(lbs) OR _____(kg) ____ /____ /_____
5.3 Systolic blood pressure: _____(mmHG) ____ /____ /_____
5.4 Diastolic blood pressure:_____(mmHG) ____ /____ /_____
5.5 Asymptomatic: Yes____ No____ Unknown____
5.6 Classic symptoms (check all that apply): ____Polyuria ____Polydipsia ____Weight loss ____Fatigue

Yes No Unknown

5.7 Diabetic ketoacidosis (pH <7.35; serum bicarbonate <15 mEq/L) ____ ____ _____
5.8 Hyperglycemic hyperosmolar state (serum bicarbonate >15 mEq/L ____ ____ _____

AND serum glucose >33 mmol/L)

5.9 Combined diabetic ketoacidosis and hyperglycemic hyperosmolar state ____ ____ _____

5.10 Acanthosis nigricans ____ ____ _____

5.11 Skin/genital infection ____ ____ _____

5.12 Other, specify: _____

SECTION 6 – INITIAL INVESTIGATIONS (these may have been done at presentation of diabetes or at an initial follow-up visit after the patient was medically stabilized)

6. 1 The list of investigations is an inclusive list and all investigations may not apply or may not have been completed. Please fill in the results of investigations that are available for your patient:

Investigations	Results (with units)
Random blood sugar	
Fasting blood sugar	
Oral glucose tolerance test (fasting)	
Oral glucose tolerance test (fasting/2 hour)	
Ketonuria	
pH	
Bicarbonate	
Insulin	
C-peptide	
A1c (indicate normal range)	
Pancreatic antibodies ○ Glutamic acid decarboxylase 65 (GAD65) ○ Islet cell antibody (ICA) ○ Insulin antibody ○ IA2A (ICA512) ○ ZnT8	
Genetic testing for monogenic diabetes (please specify mutation)	
Low-density lipoprotein (LDL)	
High-density lipoprotein (HDL)	
Total cholesterol	
Triglycerides	
First morning urine albumin to creatinine ratio	
Random urine albumin to creatinine ratio	
ALT	

SECTION 7 – METABOLIC CO-MORBIDITIES <u>AT PRESENTATION</u> (these may be diagnosed at presentation of diabetes or at an initial follow-up visit after the patient was medically stabilized)

		Yes	No	Unknown
7.1	Polycystic ovarian syndrome:	____	____	_____
	If yes, which symptoms/signs (check all that apply):			
	____Oligomenorrhea/anovulation			
	____Clinical or biochemical hyperandrogenism			
	____Polycystic ovaries on ultrasound			
7.2	Dyslipidemia	____	____	_____
7.3	Hypertension	____	____	_____
7.4	Non-alcoholic fatty liver disease (ALT >90 or fatty liver on ultrasound)	____	____	_____
7.5	Micro/macroalbuminuria	____	____	_____
7.6	Other (e.g., pancreatitis), specify:_____			

SECTION 8 – MANAGEMENT <u>AT PRESENTATION</u> (i.e., within 30 days of diagnosis or revision of diagnosis)

		Yes	No	Unknown
8.1	Insulin only	____	____	_____
8.2	Metformin only	____	____	_____
8.3	Insulin and metformin	____	____	_____
8.4	Diet/lifestyle modification only	____	____	_____
8.5	Sulfonylurea only	____	____	_____
8.6	Other (e.g., DPP4, TZD), specify:_____			

SECTION 9 – HEALTH PROVIDERS

9.1 This form was completed by a:
____Paediatrician ____Paediatric endocrinologist ____Other, specify:_____

9.2 If you are not a paediatrician or paediatric endocrinologist have you initiated a referral to a paediatric or adult endocrinologist? Yes____ No____

SECTION 10 - IMPROVING ACCESS TO SPECIALIZED TESTING

A separate study is currently being conducted that provides the opportunity for health care providers to access additional laboratory tests that might aid in the diagnosis of diabetes sub-type (pancreatic auto-antibodies). **<u>The blood for this study can only be done at a children's hospital lab.</u>** This process is separate from the CPSP.

10.1 Please indicate if you are interested in obtaining pancreatic autoantibody levels to help establish the diagnosis of diabetes sub-type **<u>AND your patient is able to have the blood drawn at a children's hospital lab.</u>** By checking 'Yes' you are providing permission for the CPSP to release your contact information (including email) to the research team so that they can provide you with further information. **Yes**____ **No**____

___ **I agree to be contacted by the CPSP for further information.**

___ **I do not wish to be contacted by the CPSP for further information.**

SECTION 11 – REPORTING PHYSICIAN

First name_____ Surname_____

Address_____

City_____ Province/Territory_____ Postal code_____

Telephone number_____ Fax number_____

E-mail_____ Date completed_____

Thank you for completing this form.