



Maternal Diabetes in Canada: 2004/05-2014/15

Presented by: Dr. Chantal Nelson
Canadian Perinatal Surveillance System



Outline

- Introduction
- Methods
- Results
- Discussion

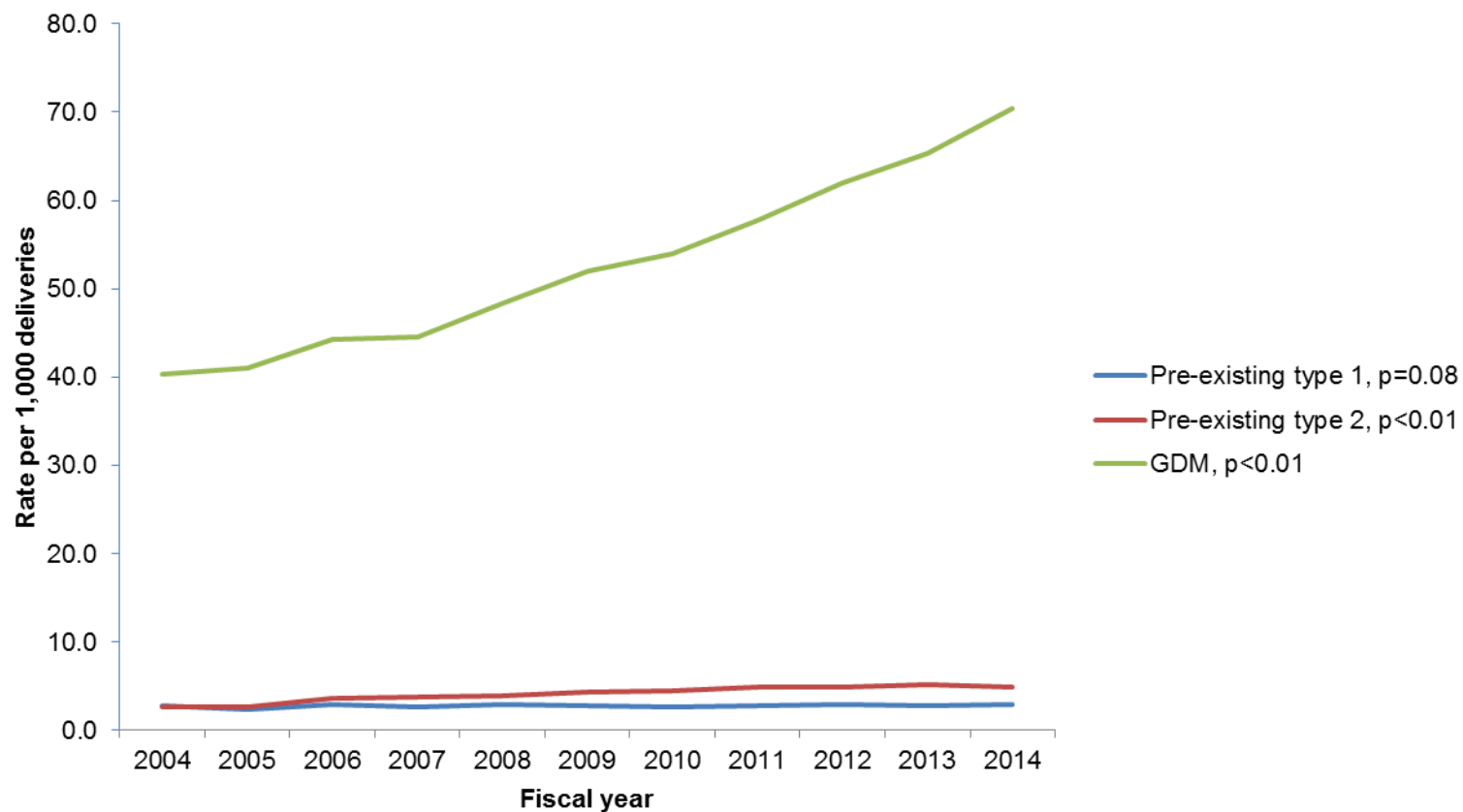
Introduction

- Both type 1 and type 2 diabetes in pregnancy is known to be associated with an increased risk of complications during pregnancy such as perinatal mortality and congenital anomalies. ¹⁻³
- Gestational diabetes mellitus (GDM) is known to have adverse effects on fetal and infant outcomes, such as: elevated risks of late intrauterine fetal death, macrosomia, birth trauma, hyperbilirubinemia, hypoglycaemia, and respiratory distress syndrome to name a few. ⁴⁻⁵
- Research has shown that women with a history of GDM have an increased risk of developing type 2 diabetes or impaired glucose tolerance in the years following pregnancy.
- Recent estimates show that the prevalence of maternal diabetes, in particular pre-existing type 2 diabetes and GDM, is increasing in several countries including the United Kingdom, the United States and Finland.⁶

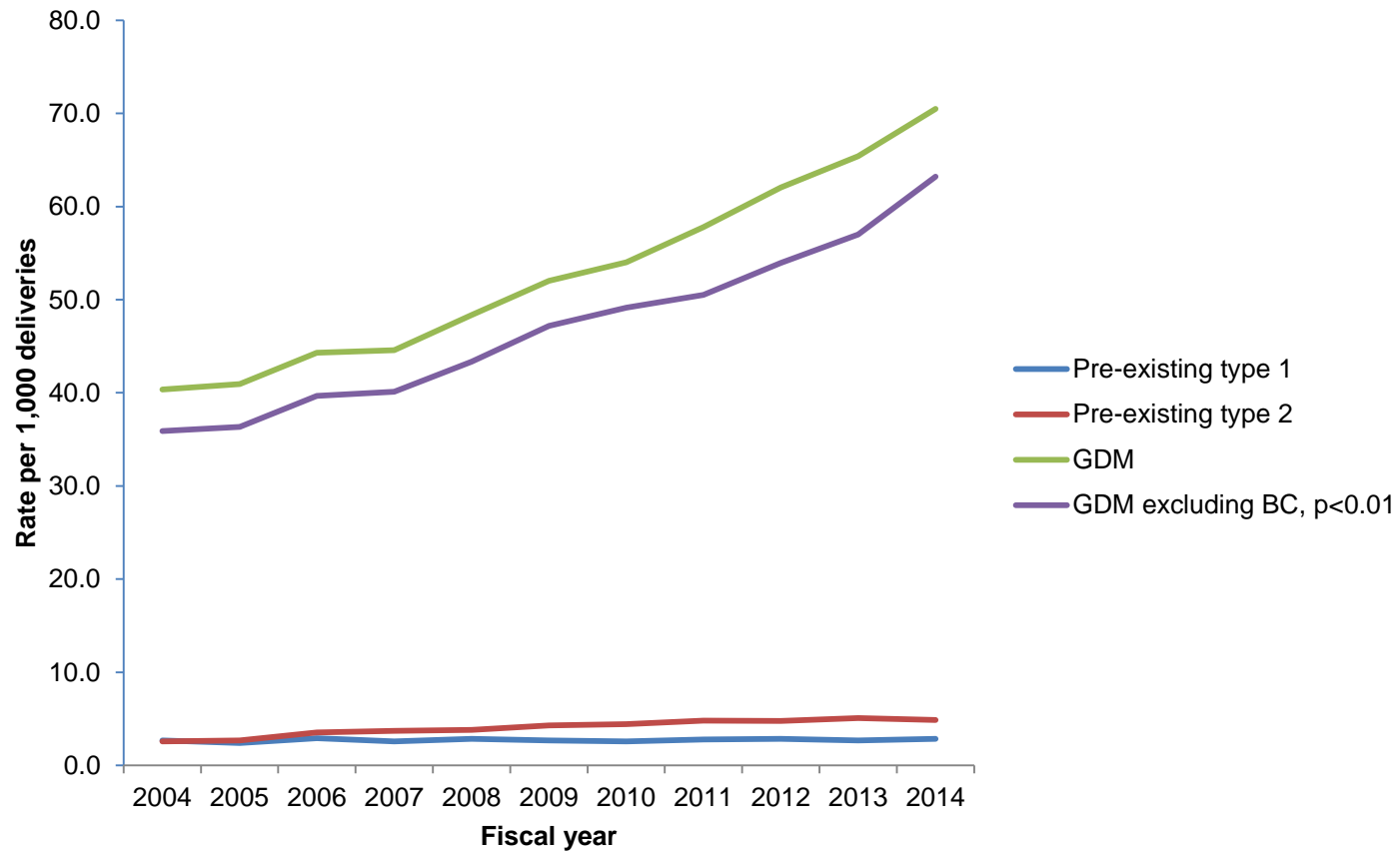
Methods

- **Data sources:** Canadian Institute for Health Information Discharge Abstract Database (CIHI-DAD)
 - Does not include data for Quebec
- **Years of data analysed-** 2004/05 – 2014/15
- **Classification systems:** International Statistical Classification of Diseases and Related Health Problems, Tenth Revision. Canadian (ICD-10 CA)
- **Definitions**
- O24.000-.009/E10:Pre-existing diabetes mellitus, insulin-dependent
- O24.100-.109/E11: Pre-existing diabetes mellitus, non-insulin dependent
- O24.400-.409- Diabetes mellitus arising in pregnancy
 - After 2006, the ICD-10CA codes for diabetes changed to O24.5-O24.9 respectively
- Rates were age standardized for provincial comparisons

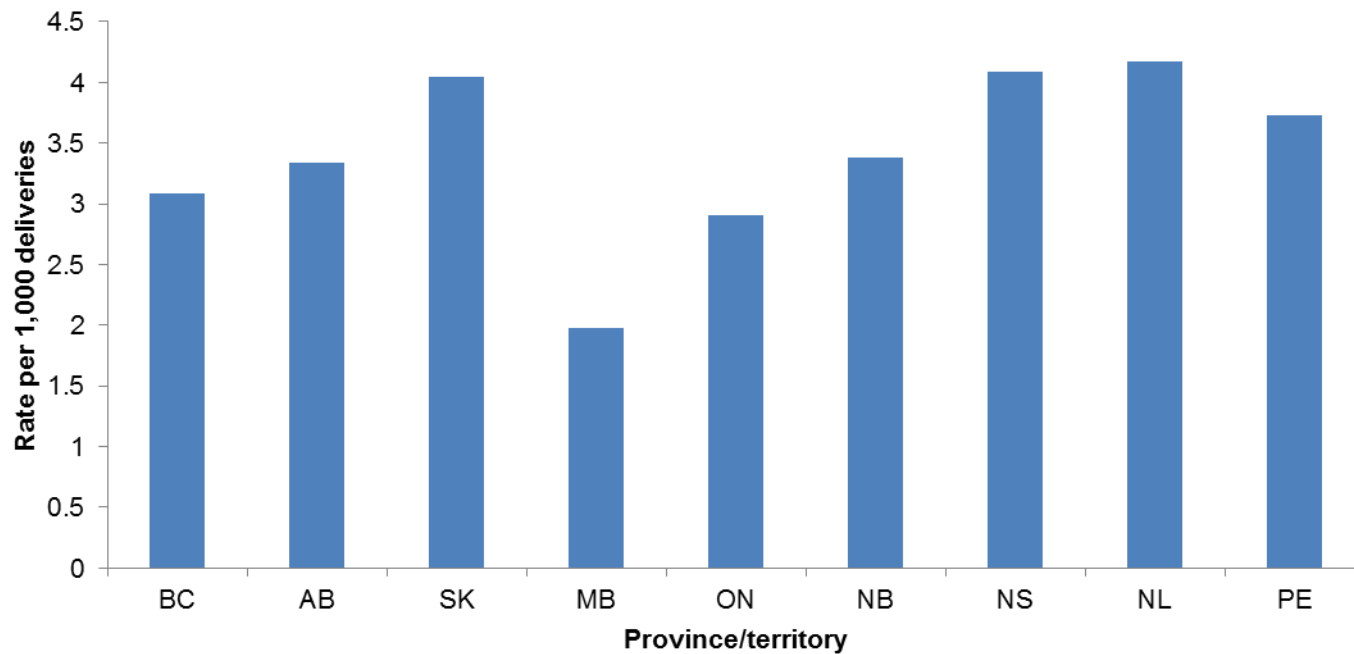
Maternal diabetes 2004-2014



Maternal diabetes 2004-2014 excluding British Columbia



Pre-existing type 1 diabetes in pregnancy by province/territory 2014



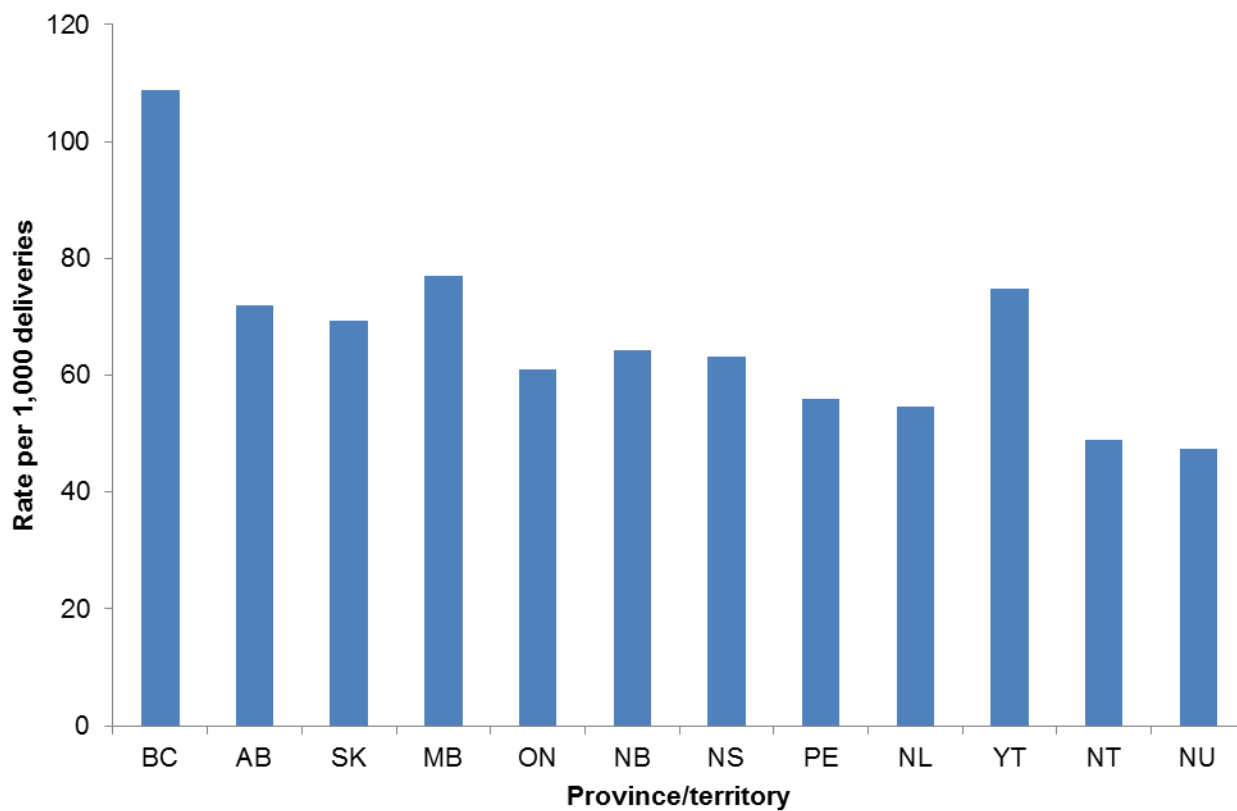
Age standardized to 2014 Canadian obstetric population

Pre-existing type 2 diabetes in pregnancy by province/territory 2014



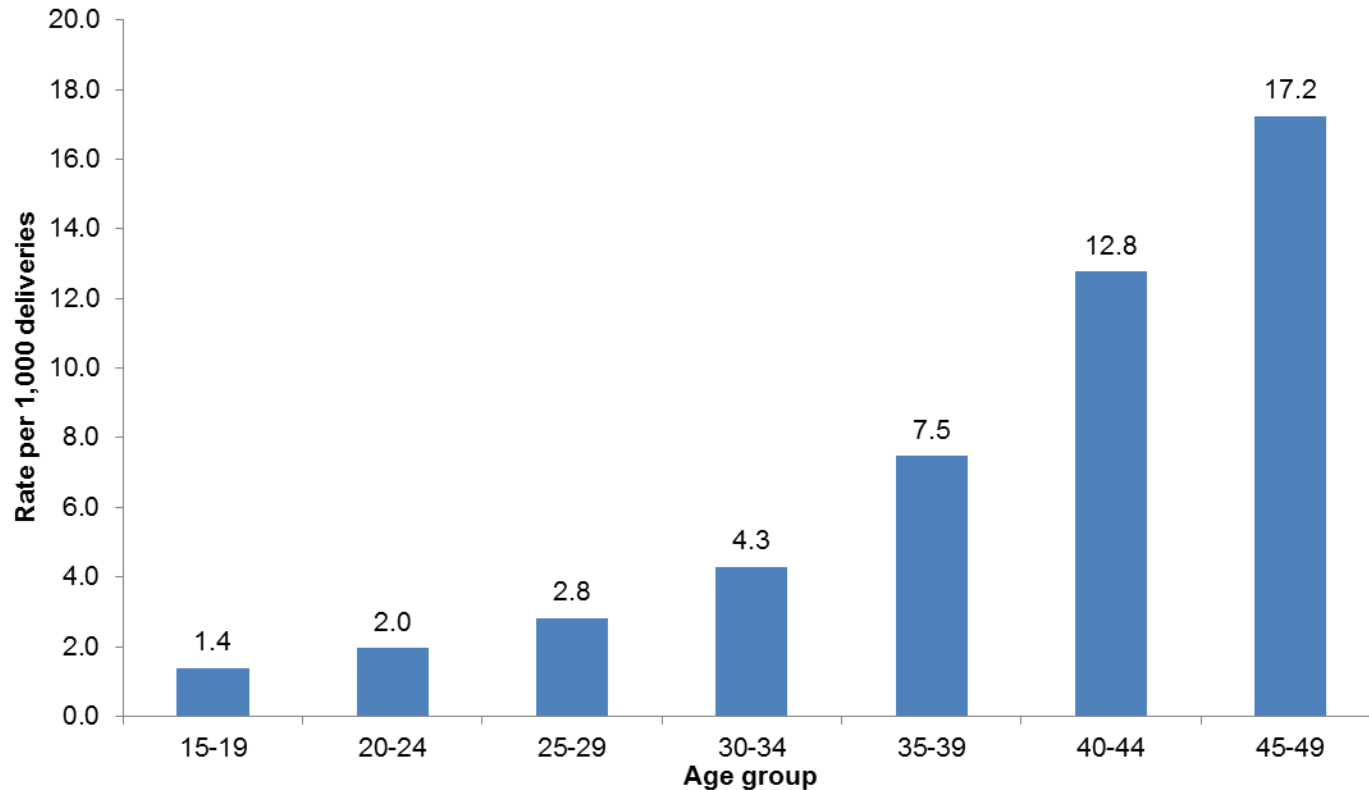
Age standardized to 2014 Canadian obstetric population

GDM by province/territory 2014

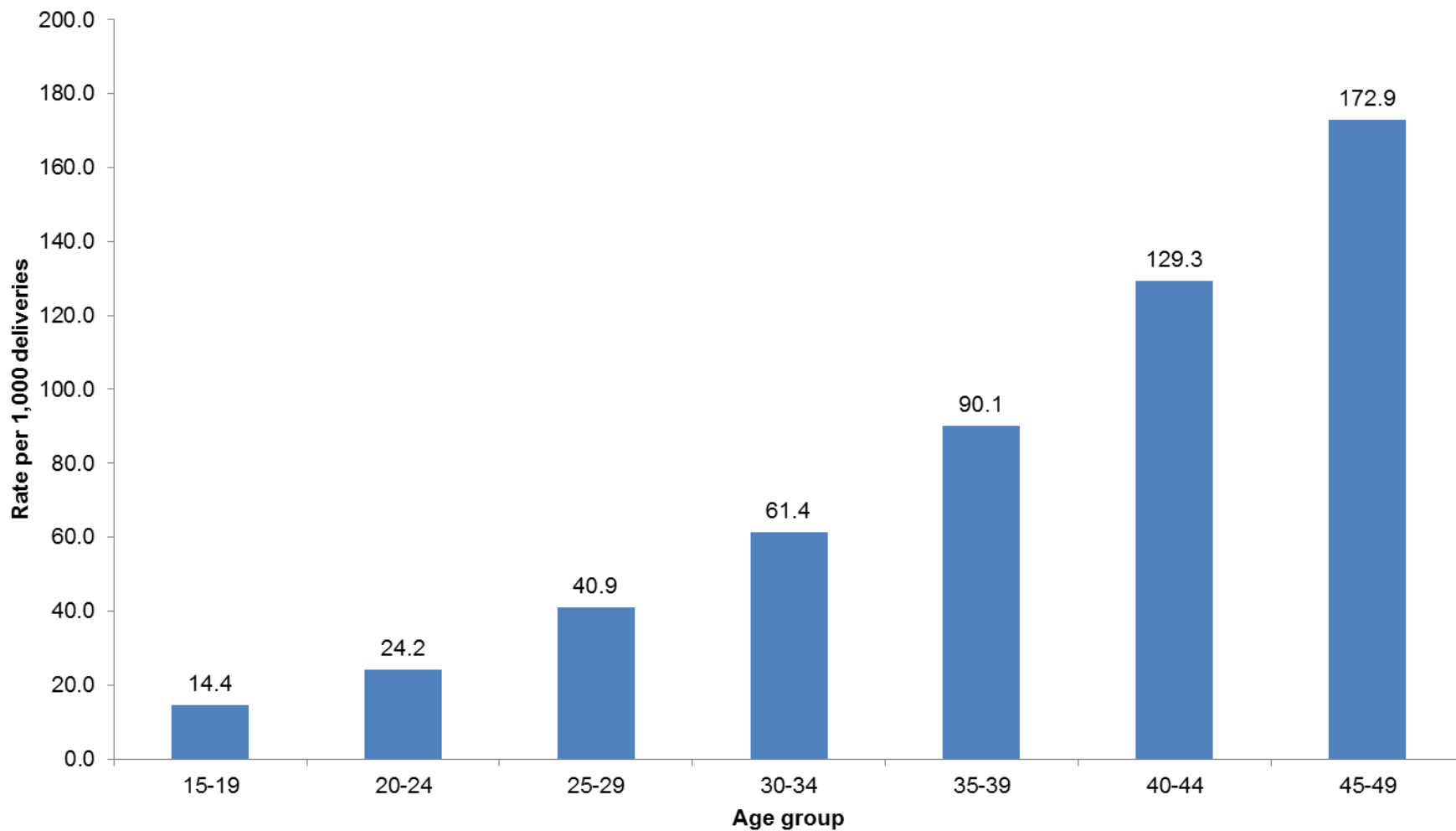


Age standardized to 2014 Canadian obstetric population

Pre-existing type 2 diabetes in pregnancy by age group 2004-2014



GDM by age group 2004-2014



Discussion

- Overall, between 2004-2011 all provinces/territories showed increased rates of GDM and type 2 diabetes
- BC have adopted different screening criteria in 2011
 - Relative change in GDM since adopting new criteria: 22% increase
 - Rates are higher than rest of Canada
 - Implications for surveillance
- Maternal weight
 - Obesity growing at a faster rate than overweight
 - Likely attributing to increase in type 2 diabetes and GDM
- Maternal age
 - Increasing trend of older mothers (>35 years)
- Other
 - Epigenetic ?

Discussion

- Limitations include:
 - No access to behavioural/risk information including maternal BMI (i.e. pre-pregnancy or gestational weight gain)
 - Coding issues
 - Quebec not represented in national estimates
- We can expect the increase in trends in both GDM and type 2 to continue.
- Continued national surveillance of diabetes in pregnancy is needed to better inform and guide prevention efforts.

Questions?

Thank you!

Contact information

- Canadian Perinatal Surveillance System: CPSS@hc-sc.gc.ca
- Chantal Nelson: chantal.nelson@phac-aspc.gc.ca
Senior Epidemiologist/Epidemiologiste Principale
Maternal and Infant Health Surveillance
Surveillance and Epidemiology Division
Centre for Chronic Disease Prevention
785 Carling Ave, Ottawa, ON K1A0K9
613.404.7720

References

1. Farrell, T., Neale, L. and Cundy, T. (2002), Congenital anomalies in the offspring of women with Type 1, Type 2 and gestational diabetes. *Diabetic Medicine*, 19: 322–326. doi:10.1046/j.1464-5491.2002.00700.x
2. Evers Inge M, de Valk Harold W, Visser Gerard H A. Risk of complications of pregnancy in women with type 1 diabetes: nationwide prospective study in the Netherlands *BMJ* 2004; 328 :915
3. Feig, D. S., & Palda, V. A. (2002). Type 2 diabetes in pregnancy: A growing concern. *The Lancet*, 359(9318), 1690-2.
4. Xiong, X., Saunders, L.D., Wang, F.L. and Demianczuk, N.N. (2001), Gestational diabetes mellitus: prevalence, risk factors, maternal and infant outcomes. *International Journal of Gynecology & Obstetrics*, 75: 221–228. doi:10.1016/S0020-7292(01)00496-9
5. Casey, Brian M., et al. "Pregnancy outcomes in women with gestational diabetes compared with the general obstetric population." *Obstetrics & Gynecology* 90.6 (1997): 869-873.
6. World Health Organization (2016) Global report on diabetes.