Supervisor Information

Name: Lorraine Lipscombe
Email: Lorraine.lipscombe@wchospital.ca

Degree(s): MD, MSc
SGS Department: IHPME, full member

Academic Rank: Associate Professor
Field of Research: diabetes prevention and care

Research Institution Affiliation (if applicable): Women’s College Research
Institute; Institute for Clinical Evaluative Sciences

Allocation of student contact time: 1-2 hours/week
(number of hours per week YOU are available to the student for any concerns or to review progress)
**Project Information** (for posting on GDipHR website)

**Title:** Risk of type 2 diabetes after gestational diabetes mellitus: impact of ethnicity

**Description (max 500 words):**

**Background:** Gestational diabetes mellitus (GDM), defined as abnormal glucose intolerance first diagnosed in pregnancy, affects close to 6% of pregnancies. While glucose intolerance usually resolves after delivery, up to 40% of all women with GDM progress to type 2 diabetes mellitus (T2DM) with the highest occurrence in the first 5 years. However, the magnitude of T2DM risk varies extensively based on other risk factors, including higher prenatal glucose levels, age and body-mass-index (BMI); insulin use, family history of T2DM, and non-Caucasian ethnicity. Although previous research has demonstrated these associations in women with GDM, few studies have reported both their independent and combined contributions to the risk of subsequent T2DM. The role of ethnicity is of particular interest, as risk is higher at a lower age and BMI for ethnic minorities than for Caucasians suggesting that risk may be less modifiable for these women. No studies have examined how ethnicity interacts with other risk factors to affect subsequent development of T2DM in women with GDM. As this may influence decisions regarding appropriate postpartum interventions, there is a need to quantify the impact and role of ethnicity in disease progression in relation to other risk factors especially in our ethnically-diverse Canadian setting.

**Specific Aims:** The specific aims of this study are (1) to quantify the independent associations between ethnicity category and the 5-year risk of T2DM in women with GDM, and (2) to determine the relative impact of other risk factors and risk of T2DM within specific ethnic groups of women with GDM.

**Methods**

**Data Sources:** This project will use Ontario linked healthcare datasets available at the Institute for Clinical Evaluative Sciences (ICES) that include administrative data, demographic records, the Ontario birth registry, laboratory results, and citizen and immigration records.

**Study Design and population:** A retrospective cohort design will be used to evaluate the association between ethnicity, other risk factors and 5-year incidence of T2DM in pregnant women with GDM from 2011 to 2017.

**Variables:** Ethnicity will identified in 2 ways: 1) based on a validated surname algorithm that categorizes persons as South Asian, Chinese, or other ethnicity; and 2) based on country of origin from the citizen and immigration database. The primary outcome of this study will be a diagnosis of T2DM within 5 years after delivery using a validated algorithm. Potential covariates will be based on a literature review of clinical and socio-demographic risk factors for T2DM in women with GDM, and will include maternal BMI and parity, prenatal glucose tolerance, and socio-demographic variables.

**Analysis:** Data will be analyzed using Cox proportional hazards regression to assess the independent effect of ethnicity on T2DM and the modifying effect of other risk factors on risk.

**Significance:** The nature and intensity of T2DM risk-reducing interventions may differ depending on the combination of modifiable and non-modifiable risk factors contributing to risk of T2DM. This research will provide data to inform ethnicity-specific personal risk profiles, and facilitate clinical-decision making in T2DM prevention for women with GDM.

If human subjects are involved, have the appropriate Research Ethics Board approvals been obtained?

☐ YES  ☐ NO  ☐ Application Submitted x N/A
Do you expect this work will be published within the 20 months?
X YES  ☐ NO  ☐ Uncertain
**Student’s roles and responsibilities** (please be as specific as possible):

The student’s responsibilities will include:

- Liaison with research team and committee for consultation, meetings.
- Literature review to identify existing research on ethnicity and T2DM and risk factors for T2DM in women with prior GDM.
- Preparation of a detailed research proposal.
- Preparation of an ICES dataset creation plan, including cohort creation and variable definitions.
- Collaborate with an ICES programmer analyst to create an analytic plan, review and tabulate research results, and create figures.
- Present research proposal and results to the research committee and Medical Student Research Day.
- Prepare a final research report and a manuscript for publication.

*Please indicate who will serve as the student’s direct report for daily oversight (PI, PhD student, technician, etc...):*

1. Dr. Stephanie Read, postdoctoral fellow
2. Dr. Lorraine Lipscombe, primary supervisor