Gestational Diabetes Mellitus (GDM)

SECTION 1: HEADER

Indicator Type : Core Indicator

Description

- **Proportion of women* with gestational diabetes**: The number of women with gestational diabetes expressed as a percentage of the total number of women who had a live birth or stillbirth, in a given place and time.

**The term "women" is used throughout this document to stay consistent with the data source. People with various gender identities can get pregnant and have children and are included in the data.*

Related OPHS Topics

Healthy Pregnancies

Preconception Health

Method of Calculation

Proportion of women with gestational diabetes, by total number of women who had a live birth or stillbirth*

$$\frac{\text{Total number of women with gestational diabetes}}{\text{Total number of women who had a live birth or stillbirth}} \times 100$$

**Crude rate may be presented as an alternative to reporting the proportion of women with gestational diabetes*

Recommended Subset Analysis Categories

Age Groups

- 0-14, 15-24, 25-44, 45-64, 65+
- 15-49 (reproductive age group)

Sex

- Female

Geography

- Assigned health unit at time of live/stillbirth

SECTION 3: DATA SOURCES

Data Source(s) Table

Numerator & Denominator
BORN Information System (BIS)
Original Source: Better Outcomes Registry & Network (BORN) Ontario
Distributed By: Better Outcomes Registry & Network (BORN) Ontario
Suggested Citation: (see Data Citation Notes) Public Health Unit Analytic Reporting Tool (Cube), BORN Information System (BIS), BORN Ontario. Information accessed on [Month DD, YYYY] Name of Table* (Standard Report), BORN Information System (BIS), BORN Ontario. Information accessed on [Month DD, YYYY] **Example:** Distribution of gestational diabetes, by insulin-dependence, public health unit and province (PHU-Pregnancy), BORN Information System (BIS), BORN Ontario. Information accessed on [September 15, 2023]

BIS Data Elements

Name and Description	Categories[1]	Encounter	BORN ID
Diabetes and Pregnancy Select diabetic status and type for this pregnancy, as documented on the medical record or patient history.	➢ None ➢ Gestational diabetes \ Insulin ➢ Gestational diabetes \ No Insulin ➢ Gestational diabetes \ Insulin Status Unknown ➢	➢ Antenatal General ➢ Labour ➢ Birth Mother	D0013
Maternal Age Group	➢ <20 ➢ 20-24 ➢ 25-29 ➢ 30-34 ➢ 35-39 ➢ 40-44 ➢ ≥45 ➢ Missing data	N/A	N/A
Newborn DOB Calendar	➢ 2013 - Present ➢ Note: can also filter by year, quarter, or month if required	N/A	N/A

[1] Additional categories are available under the BORN ID D0013, the standard reports are restricted to these categories. For pre-existing diabetes, there is a separate variable in the PHU cube under maternal health history.

Analysis Checklist

General

- BORN data are available to PHUs by custom request and through the BORN Ontario reporting environment as Public Health Standard Reports and the Public Health Unit Analytic Reporting Tool (cube). All users are required to sign a data sharing agreement and adhere to strict privacy and security measures.
- Refer to the *Using BORN Ontario Data for Public Health Surveillance – User Guide* and the BORN Information System (BIS) resource for more information about the data, and the BORN Data Dictionary for a list and description of data elements captured in the BIS.
- Data from the Legacy Datasets (birth data prior to April 1, 2012) is available from BORN upon request. However, not all data elements available in BORN are available in the legacy datasets.
- Although the BIS was launched in April 2012, data may not be complete for some elements and geographical areas in that first year. It is recommended that analysis begin for calendar year 2013.
- The BORN licensing agreement with health units does not require suppression of small cells; however, BORN recommends the suppression of cells five or less, although zero counts may be presented. This practice decreases the risk of re-identifying individuals. In general, caution should be used when reporting data at a level that could identify individuals (e.g., reporting at the dissemination area by maternal age).
    - Aggregation (combining years, age groups, geographic levels, categories or pick-list items) should be considered for small counts.
- Data in the Standard Reports represents all data that has been entered, submitted, and acknowledged into the BIS as of the date of extraction. Data in the PHU Analytics cube is based on submitted data only. As such, the numbers are subject to change as organizations continue to submit, acknowledge and fix errors in their data. Data is typically considered complete around 15 months after birth[1].
- The date of extraction must be included in the data source citation. The date of extraction is not automatically recorded when the user exports BIS data; the user must add it.
- For any analysis of the BIS, ensure that all or a majority of hospitals and midwifery practice groups in your area have acknowledged their data.
    - Every PHU standard report starts with a month-end data acknowledgement summary that can be used to verify the proportion of hospitals/midwife practice groups that have acknowledged their data in your area.
    - Please note: midwife-attended hospital births must have acknowledgement from both the hospital AND the midwifery practice group in order for the month to show as acknowledged in the PHU acknowledgement report. Unacknowledged data does not necessarily mean that the data is missing, it has just not been signed off by the submitting organization.

- Caution should be taken when interpreting data, if the percentage of “missing data” for a particular data element is ≥10%. BORN Ontario recommends not reporting data if the percentage of “missing data” is ≥30%.
- In the Public Health Standard Reports, comparator data is provided for Ontario, and also for Statistics Canada Peer Group if there are more than three PHUs within the group. Both comparators are only available for six months prior to the date of extraction. The Ontario comparator includes all PHUs, while the Peer Group comparator excludes the PHU using the report. PHUs are categorized into Peer Groups as per the 2011 classifications.
- 'Gestational diabetes - Insulin' and 'Gestational diabetes - No insulin' data were not collected prior to April 1, 2012 and will be reported as missing for this time period. Data for these data elements were previously collected as 'Gestational diabetes' in the Niday Perinatal Database. Comparisons across time periods prior to April 1, 2012 (Niday Perinatal Database) and as of April 1, 2012 (BORN Information System) should be interpreted with caution due to changes in data collection for these data elements.

If using the Public Health Standard Reports

- For percentage of women with gestational diabetes expressed as a percentage of the total number of women who had a live birth or stillbirth OR Crude Rate of Gestational Diabetes, by women who gave birth :
    - Select the PHU-Pregnancy report under Clinical Reports
    - Specify the dates/years and PHU of analysis
    - Go to the link for 'Distribution of gestational diabetes, by insulin-dependence, public health unit and province'
    - Calculate the percentage/rate from the standard report or export the table to Excel

If using the Public Health Cube

- For percentage of women with gestational diabetes expressed as a percentage of the total number of women who had a live birth or stillbirth OR Crude Rate of Gestational Diabetes, by women who gave birth
    - Select Dimension of interest “Gestational Diabetes” (found under Dimensions > Pregnancy > Complications > Gestational Diabetes)
        - In the Standard Reports, Gestational Diabetes by insulin-dependence is available as a value, the PHU cube does not provide this level of detail. For pre-existing diabetes, there is a separate variable under dimensions, maternal health history
    - Select Measure: “# of Pregnancies – Women Who Gave Birth” (found under Measures > Pregnancy)
    - Add filters to the tables and specify by right clicking on each of the following dimensions and selecting the following categories
        - Maternal Age Group (found under Dimensions > Pregnancy > Maternal Characteristics) = <20, 20-24, 25-29, 30-34, 35-39, 40-44, ≥45
        - Newborn DOB Calendar (found under Dimensions > Newborn DOB > Newborn DOB Calendar) = Deselect 2012 and others as appropriate for your analysis
    - Calculate percentage/rate within the Cube or export to Excel

Indicator Comments

General Comments

- There are three main types of diabetes, Type 1 diabetes, Type 2 diabetes, and Gestational diabetes. Gestational diabetes mellitus (GDM) is the onset or first recognition of any degree of glucose intolerance during pregnancy. Though GDM typically resolves post-partum, it does increase the risk of both the parent and the child developing Type 2 diabetes. This indicator measures the incidence of GDM in a given place and time, and is expressed as a rate per 1,000 women who had a live birth or stillbirth and a proportion of women with gestational diabetes[2],[3].
- Terms such as maternal glucose intolerance and high blood sugar levels during pregnancy are used in some cases to describe gestational diabetes mellitus.
- Having gestational diabetes may increase the risk of preterm birth, c-section birth, pre-eclampsia/eclampsia, macrosomia, respiratory distress, birth trauma, cardiac malformations, the baby having low blood sugar and developing type two diabetes later in life[4],[5],[6].
- Gestational diabetes develops in about 10% of pregnancies[2]. In 2010/11 the rate of GDM in Canada (except Quebec) was 54.5 (95% CI: 53.6–55.4) per 1,000 deliveries. The overall rates of GDM increased between 2004/05 and 2010/11[3].
- Methodologies for measuring GDM can vary based on the denominator of interest. In some instances, the methodologies measure the number of births/deliveries (including live or stillbirth)[2],[7], while others measure the number of live births only[8]. While both methodologies are relevant and provide a measurement of GDM as it relates to the question at hand, the use of the denominator which includes both live and stillbirths provides a more comprehensive view of the measurement of GDM.
- In the standard reports and cube, geography is assigned based on the infant's residence at the time of birth, not the location of birth. The majority of the time, but not always, the infant's residence is the same as the birthing parent residence. This is important for custom data requests, as requesters can specify if data should be analyzed by the infant's residence or the birthing parent's.

SECTION 5: REFERENCES

Cited References

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SECTION 6: CREDITS

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