# Folic Acid Supplementation

*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 these data.*

1: HEADER

## Indicator Type

| | |
|---|---|
| ☑ Core Indicator: | An indicator that can be calculated by ALL Ontario Public Health Units. |
| ☐ Model Indicator | An indicator that currently can not be calculated by every Ontario PHU. This may be because the indicator requires:<br>➢ a data source that is not universally available (e.g. RRFSS);<br>➢ primary data collection by the PHU (e.g. BFI indicators); or<br>➢ advanced analytic techniques (e.g. GIS analysis).<br>*Ideally, as capacity improves, Model indicators will become Core over time.* |

## Description

- The number of women taking folic acid supplementation prior to pregnancy as a percentage of women who gave birth.
- The number of women taking folic acid supplementation prior to and during pregnancy as a percentage of women who gave birth.
- The number of women taking folic acid supplementation during pregnancy only as a percentage of women who gave birth.
- The number of women not taking folic acid supplementation prior to or during pregnancy as a percentage of women who gave birth.

## Related OPHS Topics

**Ontario Public Health Standards: Requirements for Programs, Services, and Accountability**
The role of boards of health is to support and protect the physical and mental health and well-being, resiliency and social connectedness of the health unit population, with a focus on promoting the protective factors and addressing the risk factors associated with health outcomes. The 2018 Ontario Public Health Standards (OPHS) define the responsibilities of boards of health in an integrated health system and are informed by the core public health functions, which include assessment and surveillance, health promotion and policy development, health protection, disease prevention and emergency management. Boards of health are responsible for programs and services in all core

function areas, demonstrating accountability to the ministry, and monitoring and measuring the effectiveness, impact and success of their programs and services. The OPHS consist of four Foundational Standards and nine Program Standards with 95 requirements.

**OPHS Program Standard(s) related to this indicator**

Healthy Growth and Development | Population Health Assessment

Available at: https://files.ontario.ca/moh-ontario-public-health-standards-en-2021.pdf

SECTION 2: METHOD OF CALCULATION

## Method of Calculation

### Percentage of women taking a folic acid supplement prior to pregnancy

$$\frac{\text{Number of women who gave birth (live or still) who reported taking a folic acid supplement prior to pregnancy}}{\text{Total number of women who gave birth (live or still)}} \times 100$$

### Percentage of women taking a folic acid supplement prior to and during pregnancy

$$\frac{\text{Number of women who gave birth (live or still) who reported taking a folic acid supplement prior to and during pregnancy}}{\text{Total number of women who gave birth (live or still)}} \times 100$$

### Percentage of women taking a folic acid supplement during pregnancy only

$$\frac{\text{Number of women who gave birth (live or still) who reported taking a folic acid supplement during pregnancy only}}{\text{Total number of women who gave birth (live or still)}} \times 100$$

### Percentage of women not taking a folic acid supplement prior to or during pregnancy

$$\frac{\text{Number of women who gave birth (live or still) who reported not taking a folic acid supplement prior to or during pregnancy}}{\text{Total number of women who gave birth (live or still)}} \times 100$$

## Recommended Subset Analysis Categories

**Geography (residence at time of live/stillbirth:**

- Ontario
- Public Health Unit
- Municipality (based on aggregated dissemination area)
- Smaller areas of geography (based on aggregated dissemination areas)

**Age of mother:** (it may be necessary to aggregate data based on age groups to produce stable rates)

- 15-24
- 25-34
- 35+

**Parity**

- 0
- 1 or more

**Temporal**

- Year
- Quarter or Month (as needed by Public Health Unit)

SECTION 3: DATA SOURCES

## Data Source(s) Table

| Numerator & Denominator |
| --- |
| Better Outcomes Registry & Network<br>BORN Information System |
| **Original Source:**<br>Better Outcomes Registry & Network (BORN) Ontario |
| **Distributed by:**<br>Better Outcomes Registry & Network (BORN) Ontario |

**Suggested Citation** (see Data Citation Notes)

When using Public Health Unit Analytic Reporting Tool (Cube):

Better Outcomes Registry Network (BORN) Ontario. BORN Information System [month, year - month, year], Extracted: [month, year].

When using Standard Reports:

Not applicable as this variable is not available in the standard reports.

## Data Elements in the BORN Information System (BIS) Public Health Data Cube

| Dimension | Name and Description | Categories | Encounter | BORN ID |
|---|---|---|---|---|
| Pregnancy > Exposures | **Folic Acid Usage**<br>Use of folic acid prior to and during pregnancy | • None<br>• Pre-conception only<br>• During pregnancy only<br>• Preconception and during pregnancy<br>• Missing data | Antenatal General (AG), Labour & Birth Mother (LBM) | **D0020** |
| Newborn DOB | **Newborn DOB Calendar** | • 2013 – present<br>• Note: can also filter by year, quarter or month, if required | N/A | N/A |
| Pregnancy > Maternal Characteristics | **Maternal Age Group** | • <20<br>• 20-24<br>• 25-29<br>• 30-34<br>• 35-39<br>• 40-44<br>• ≥45<br>• Missing Data | N/A | N/A |
| Pregnancy > Pregnancy History | **Parity**<br>Indicates the number of deliveries (including live births and stillbirths) where pregnancies reached viable gestational age (minimum 20 weeks). When completed postnatally, parity includes current birth for HBHC | • 0<br>• 1<br>• 2<br>• 3<br>• 4<br>• ≥5<br>• Missing Data | Antenatal General, Healthy Babies Healthy Children, Labour & Birth Mother | **NEW1101** |
| Newborn > Location | **Dissemination Area** | [By specific Dissemination Area for sub-PHU geographic area analysis, such as by municipality or smaller | N/A | N/A |

| | | | | |
|---|---|---|---|---|
| | | geographic areas] | | |

## CCHS

The Canadian Community Health Survey: In the CCHS 2.1 (2003) cycle, a Maternal experiences - Breastfeeding (MEX) Module was introduced and included in each subsequent annual cycle for women aged 15-55 years. MEX_040, MEX_045, MEX_050, and MEX_055 ask women who have given birth in the last 5 years if they take folic acid before and during the first three months of pregnancy. Folic acid supplementation data from multiple years of CCHS cross-sectional surveys can be combined to get a better understanding of trends over time. However, it is recommended to use BORN data for reporting on folic acid supplementation, as BORN captures all mothers and babies born in Ontario, while the CCHS uses a more restricted sampling frame.

SECTION 4: NOTATIONS

# 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 Analytical 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. The BORN Data Dictionary contains a list and description of data elements captured in the BIS
- For key information used by the Reproductive Health Sub-Group (RHSG) in their revision of the reproductive health core indicators and accompanying resources, refer to the Reproductive Health Core Indicators Document Report.
- 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 analyses begin from the 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 when dealing with small cell 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.

- 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 most) hospitals and midwifery practice groups in your area have acknowledged their data. BORN aims to have all organizations acknowledge their data within 3 months of the fiscal year-end.
    - 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 missing data are ≥30%.

### Using the Public Health Standard Reports:

- This variable is not available from the Public Health Standard Reports.

### Using the Public Health Cube:

- Select Dimension of interest: "Folic Acid Usage" (found under Dimensions > Pregnancy > Exposures)
- Select Measure: "# of Pregnancies – Women Who Gave Birth" (found under Measures > Pregnancy)
- Specify Filters by right clicking on each of the following dimensions and selecting the following categories:
    - Newborn DOB Calendar (found under Dimensions > Newborn DOB > Newborn DOB Calendar) = Deselect 2012 and others as appropriate for your analysis
    - Maternal Age Group (found under Dimension > Pregnancy > Maternal Characteristics) = <20, 20-24, 25-29, 30-34, 35-39, 40-44, ≥45
- Calculate percentages within the Cube or export to Excel
- To calculate the *percentage of women taking a folic acid supplement prior to pregnancy,* add together *Pre-conception only* and *Preconception and during pregnancy.*

## Indicator Comments

### General Comments

- This is a self-reported indicator that only attempts to assess folic acid supplementation at preconception and during pregnancy. This indicator does not attempt to determine an accurate measure of adequate intake. It is not known whether supplementation was at the recommended level; as well, those reporting no supplementation may have had adequate folate intake through a healthful diet.

### Data Source Comments

- Since its launch, BORN captures use of folic acid during preconception only, during pregnancy only, and during both preconception and pregnancy.

- As a self-reported, retrospective indicator, folic acid supplementation rates are subject to recall bias.
- It is important to understand the degree, as well as the distribution (i.e., random vs. systematic) of missing data for Folic Acid Supplementation from BORN for your health unit prior to reporting on it. Factors affecting missing data rates may include, but are not limited to, issues such as 1) the designation of the data element within the BIS (i.e., mandatory, conditional, optional); 2) hospital resources to input these data into the BIS ; 3) certain questions on sensitive subjects may elicit stronger social desirability response bias or non-response.
    - The total missing for folic acid usage prior to and during pregnancy for Ontario was 4.4% in 2023.(9) By Public Health Unit, the total missing ranged from 1.6% to 10.6%, with a mean of 4% and median of 3.3%, in 2021.[1]
    - 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 mother's residence. This is important for custom data requests, as requesters can specify if data should be analyzed by the infant's residence or the mother's.
    - Outside of a custom data request, Ontario comparator data and data for other PHUs for selected indicators can be accessed through Public Health Ontario's Maternal Health Snapshot.
- In respect for the Ownership, Control, Access, and Possession (OCAP®) principles released by the First Nations Information Governance Centre, BORN Ontario has removed all records from the BORN data cube which have postal codes associated with First Nations reserves.
- BORN uses the Single Link Indicator from Statistics Canada's Postal Code Conversion File to assign postal codes to dissemination areas and PHUs. This forces a 1:1 match between postal code and dissemination area, whereas in reality, a postal code can encompass multiple dissemination areas. This can result in the inaccurate assignment of geography at the dissemination area and PHU level, particularly in rural areas where postal codes tend to cross several dissemination areas.

SECTION 5: REFERENCES

## Cited References

[1] Ontario Agency for Health Protection and Promotion (Public Health Ontario). Snapshots: maternal health snapshot: folic acid use prior to and during pregnancy >> overall per cent >> 2023 [Internet]. Toronto, ON: King's Printer for Ontario; c2025 [modified 2025 Sep 29; cited 2026 Sep 15]. Available from: https://www.publichealthontario.ca/en/Data-and-Analysis/Reproductive-and-Child-Health/Maternal-Health

**Changes Made**

| Date | Type of Review | Changes Made By | Changes Made |
|---|---|---|---|
| April 2004 | | | Indicator completed on the website. |
| March 2012 | Formal review | Reproductive Health Sub-Group | ● Added BORN as a "Data Source" and made CCHS, RRFSS "Alternate Data Sources".<br>● Added specific indicators that reflect information available in BORN.<br>● Updated method of calculation to reflect the specific indicators.<br>● Updated "Indicator Comments" and references. |
| April 2019 | Formal review | Reproductive Health Sub-Group | ● Full update of indicator document including:<br>○ Changed the data source to BORN Information System and indicator definitions and analyses accordingly.<br>○ Updated indicator comments, cited references. |
| November 2026 | Formal review | Reproductive Health Sub-Group | Full review and updates to all sections. Addition of two indicators *during pregnancy only* and *not taking folic acid.* |

**Acknowledgements**

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| Lead Authors | APHEO Reproductive Health Core Indicators Working Group |