

ENHANCED EPIDEMIOLOGIC SUMMARY

Invasive Group A Streptococcal (iGAS) Disease in Ontario: October 1, 2022 to September 30, 2023

Published: October 12, 2023

Introduction

- This report provides an epidemiologic summary of iGAS activity in Ontario from October 1, 2022 to September 30, 2023, compared to seasonal iGAS activity between October 1, 2014 and September 30, 2019 in Ontario, which covers the five seasons prior to the COVID-19 pandemic.

An iGAS season is defined as the period spanning from October 1 to September 30.

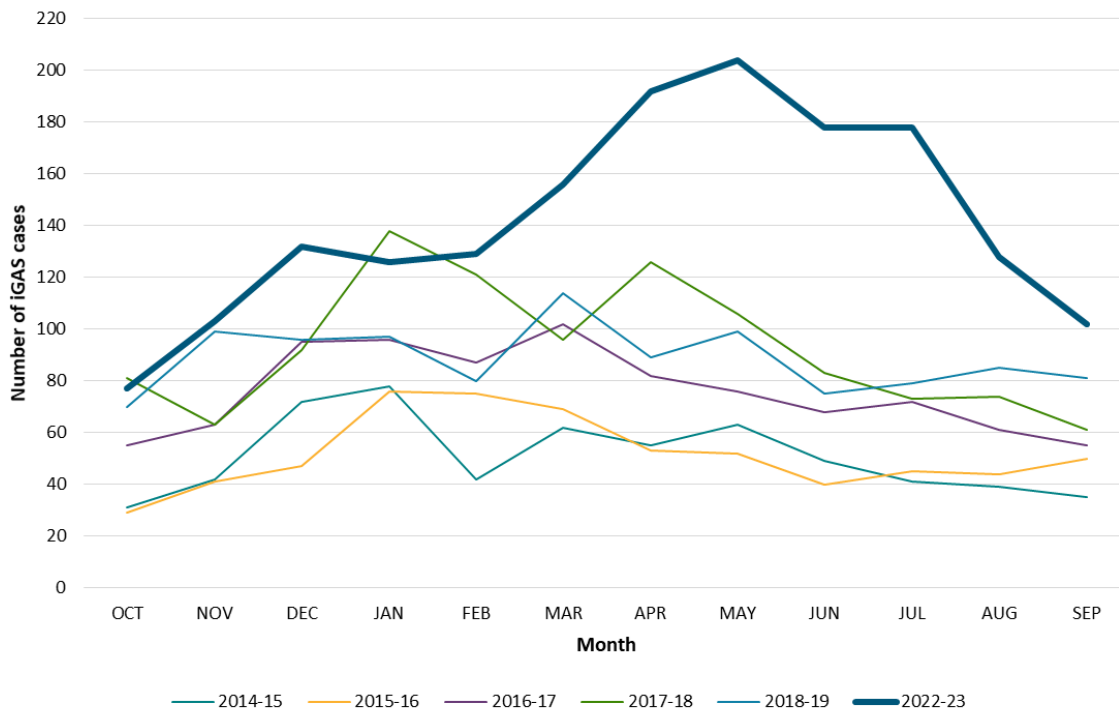
Key Messages

- A total of 1,705 confirmed iGAS cases were reported in Ontario between October 1, 2022 and September 30, 2023, corresponding to an overall incidence rate of 11.1 cases per 100,000 population for the 2022-23 season.
- For the 2022-23 season, an increasing trend in iGAS cases overall was observed from January to May 2023 before cases counts declined, although the total number of iGAS cases reported from June to September 2023 was still higher than the monthly case counts reported for those months in each of the five prior pre-pandemic seasons ([Figure 1](#)).
- Overall, the monthly number of iGAS cases reported in the 2022-23 season from October 2022 to September 2023 exceeded the number of cases for the same months in each of the five pre-pandemic seasons, with the exception of October 2017 and January 2018 ([Figure 1](#)). For those under 18 years of age, the monthly number of iGAS cases reported for the 2022-23 season also exceeded the number of cases for the same month in each of the five pre-pandemic seasons, with the exception of February 2017, January 2018 and February 2018 ([Figure 2](#)).
- For the month of September 2023, Northwestern Health Unit (8.6 cases per 100,000), Brant County Health Unit (3.8 cases per 100,000), and Timiskaming Health Unit (2.9 cases per 100,000) reported the highest rates of confirmed iGAS cases ([Figure 3](#)). All three of these public health units (PHUs) reported higher rates in September compared to their average monthly rate for the 2022-23 season ([Figure 4](#)). For the 2022-23 season, the health units with the highest rates were mainly in northern Ontario ([Figure 4](#)).

- The highest reported incidence rate was observed in those 65 years of age and older (20.4 cases per 100,000 population), followed by those under 1 year of age (13.4 cases per 100,000) and those between the ages of one through four (11.4 cases per 100,000) (Table 1). Compared to the same monthly time frame for the previous five pre-pandemic seasons, the incidence rate was higher across all age groups in the 2022-23 season.
- The proportion of iGAS cases requiring hospitalization in the 2022-23 season to date was similar to the average proportion requiring hospitalization in the five pre-pandemic seasons (Table 2).
- As of September 30, 2023, 6.5% (12/184) iGAS cases under 18 years of years of age have a fatal outcome reported; this is higher than the proportion of iGAS cases within the same age group that reported a fatal outcome in the five iGAS pre-pandemic seasons (4.6% of cases under 18 years of age). The proportion of cases aged 18-64 and ≥65 years with a fatal outcome in the 2022-23 season were also higher than the proportion of cases with a fatal outcome reported in the five iGAS pre-pandemic seasons (Table 2).
- Among iGAS cases that were typed in the 2022-23 season to date, *emm* types were available for 67.0% of cases above 18 years of age, and 72.3% of cases under 18 years of age (Table 3). The most common *emm* type reported was emm1 followed by emm12 and emm49.

Trends

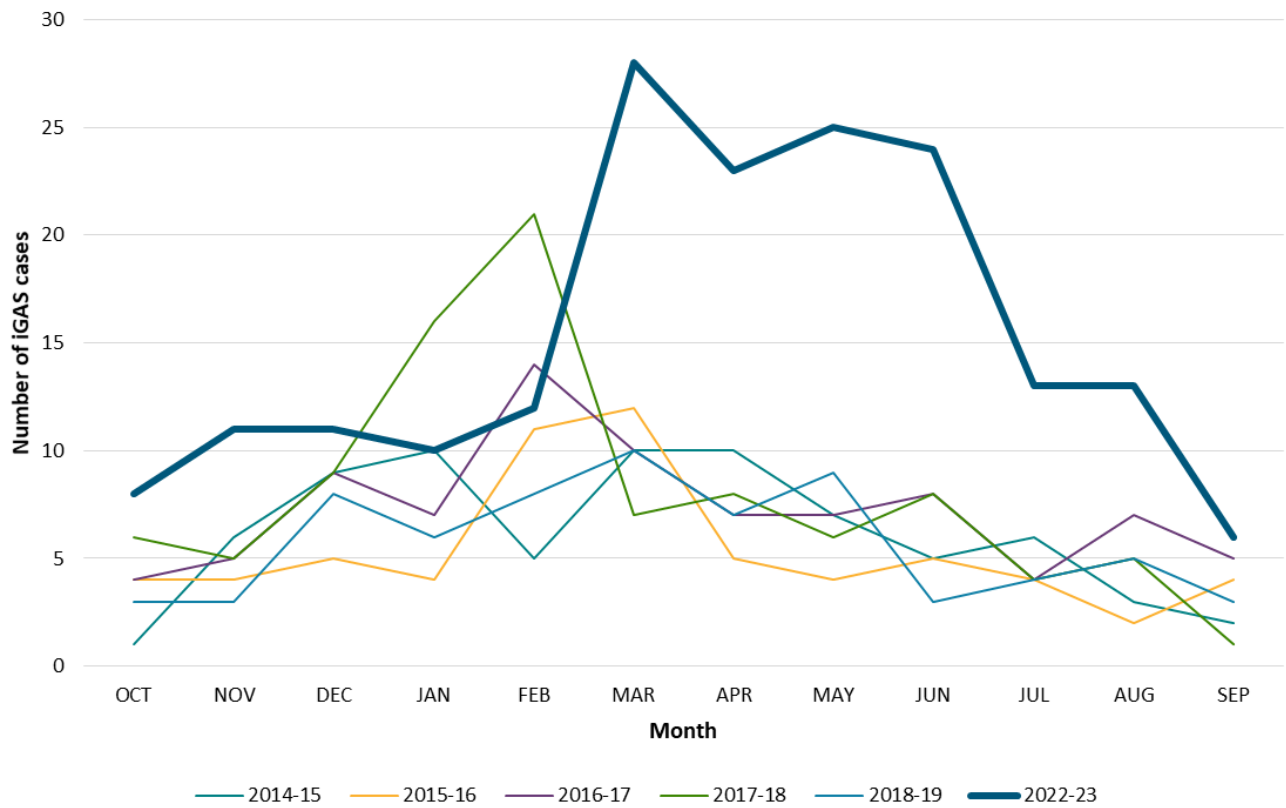
Figure 1. Confirmed iGAS case counts by month across all ages: current season (October 1, 2022 – September 30, 2023)* compared to five pre-pandemic seasons (October 1, 2014 – September 30, 2019)



Data source: Ontario. Ministry of Health. Integrated Public Health Information System (iPHIS) [database]. Toronto, ON: King’s Printer for Ontario [extracted 2023 October 10].

*Data for the most recent reporting month should be interpreted with caution due to reporting and/or data entry lags.

Figure 2. Confirmed iGAS case counts by month in children 0-17 years of age: current season (October 1, 2022 – September 30, 2023)* compared to five pre-pandemic seasons (October 1, 2014 – September 30, 2019)



Data source: Ontario. Ministry of Health. Integrated Public Health Information System (iPHIS) [database]. Toronto, ON: King’s Printer for Ontario [extracted 2023 October 10].

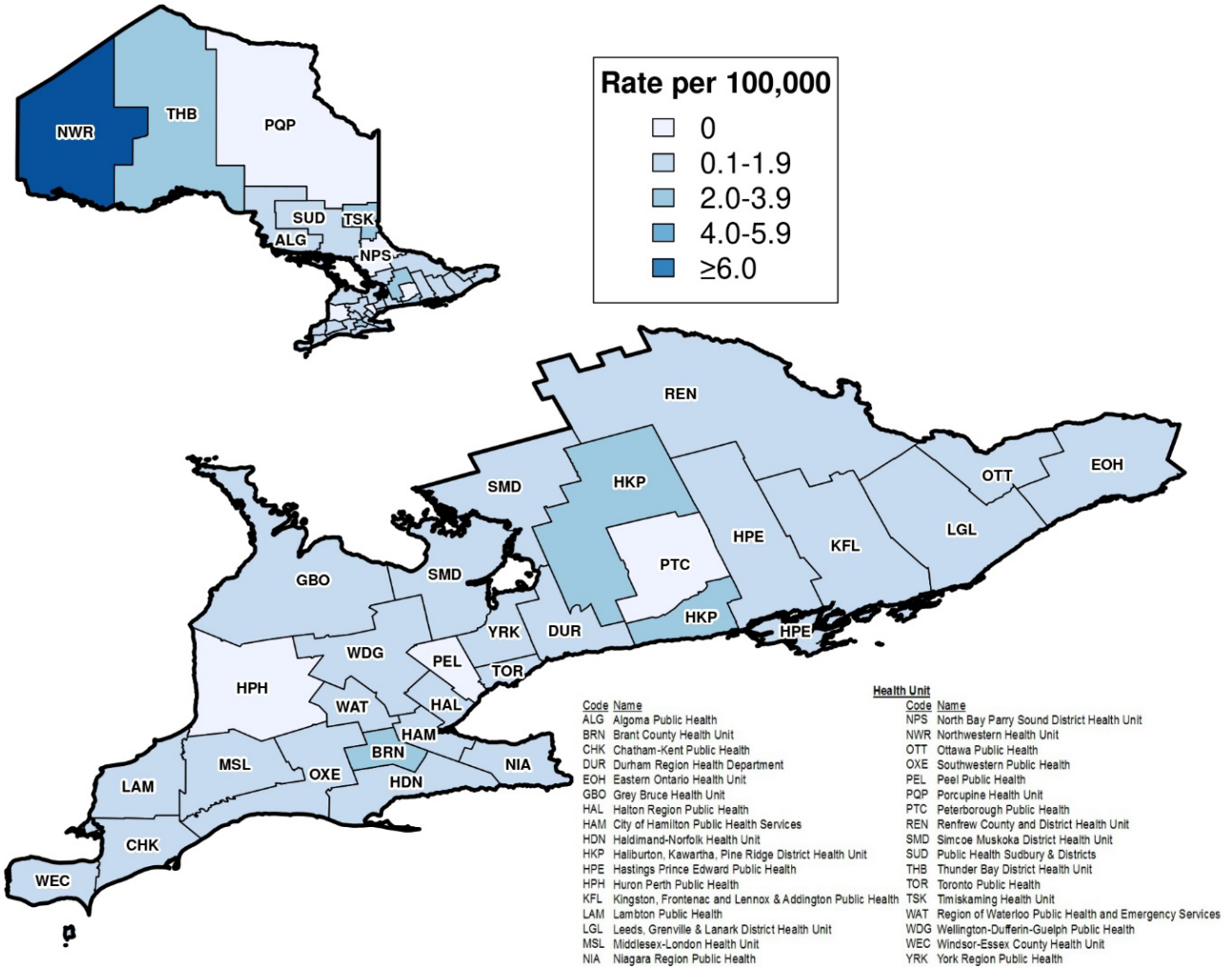
*Data for the most recent reporting month should be interpreted with caution due to reporting and/or data entry lags.

Table 1. Confirmed iGAS cases and rate (per 100,000 population) by age group in Ontario: current season (October 1, 2022 – September 30, 2023) compared to the average for the five pre-pandemic seasons (October 1, 2014 – September 30, 2019)

Age group (years)	Total number of cases reported between October 1, 2022 – September 30, 2023	Rate per 100,000 population between October 1, 2022 – September 30, 2023	Average number of cases reported between October 1, 2014 – September 30, 2019	Average rate per 100,000 population between October 1, 2014 – September 30, 2019
< 1	20	13.4	12.8	9.1
1 – 4	68	11.4	25.0	4.3
5 – 9	66	8.6	23.6	3.1
10 – 13	20	3.1	9.0	1.5
14 – 17	10	1.5	7.6	1.2
18 – 64	934	9.6	518.6	5.7
≥ 65	585	20.4	267.0	11.4
Unknown	2	N/A	0.4	N/A
Total	1,705	11.1	864.0	6.1

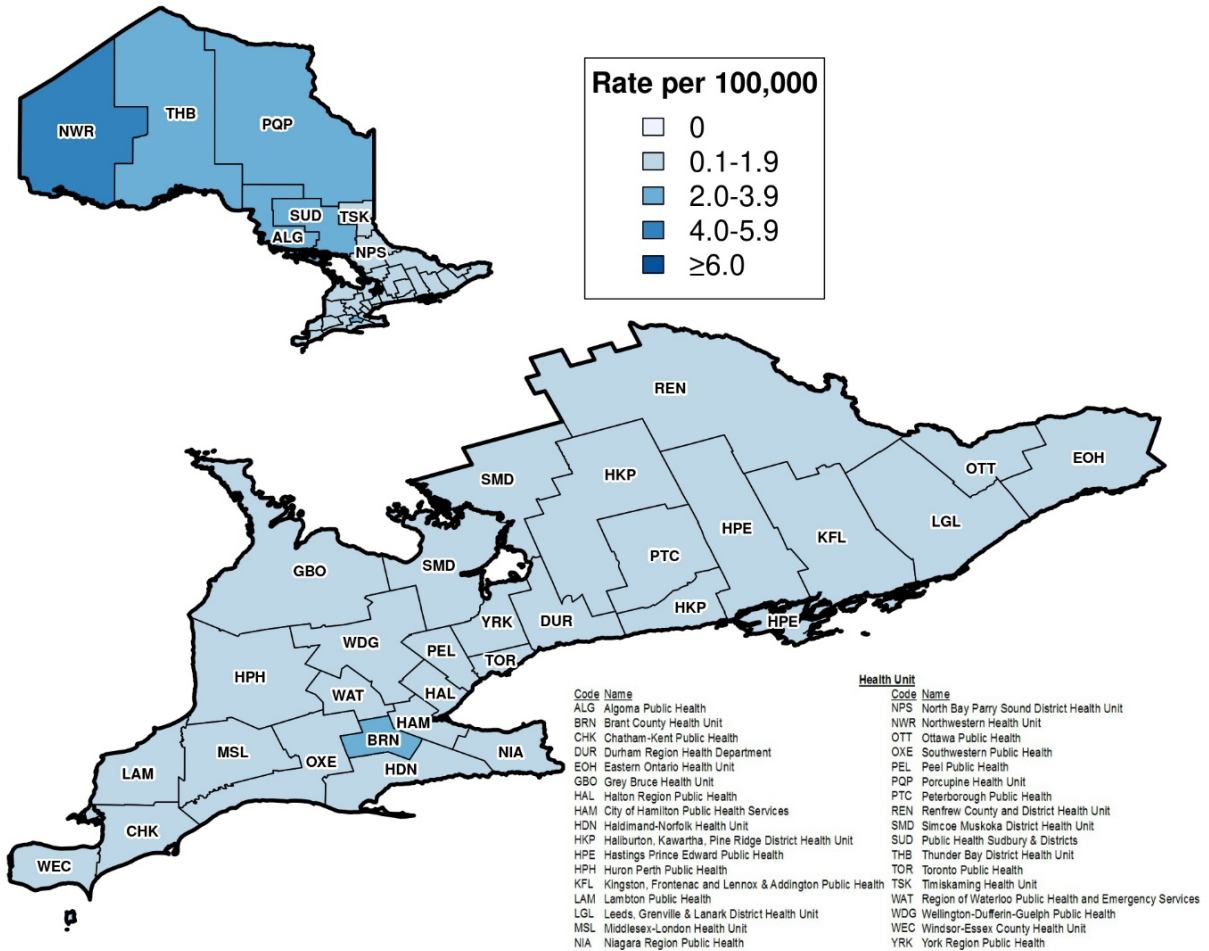
Data source: Ontario. Ministry of Health. Integrated Public Health Information System (iPHIS) [database]. Toronto, ON: King's Printer for Ontario [extracted 2023 October 10].

Figure 3. Rate of confirmed cases of iGAS reported in September 2023 by public health unit: Ontario



Data source: Ontario. Ministry of Health. Integrated Public Health Information System (iPHIS) [database]. Toronto, ON: King's Printer for Ontario [extracted 2023 October 10].

Figure 4. Monthly rate of confirmed cases of iGAS reported in the current season (October 1, 2022 – September 30, 2023) by public health unit: Ontario*



Data source: Ontario. Ministry of Health. Integrated Public Health Information System (iPHIS) [database]. Toronto, ON: King’s Printer for Ontario [extracted 2023 October 10].

*The monthly rate was determined by dividing the cumulative rate of confirmed iGAS cases for each PHU by the number of months included in the reporting period (i.e., for data captured until September 30, 2023, the cumulative rate was divided by 12 months to determine the monthly rate for each PHU).

Severity

Table 2. Severe outcomes for confirmed iGAS cases by age group and season in Ontario: current season (October 1, 2022 – September 30, 2023) compared to the five pre-pandemic seasons (October 1, 2014 – September 30, 2019)

Age group (years)	Number (%) of cases hospitalized between October 1, 2022 – September 30, 2023	Number (%) of cases hospitalized between October 1, 2014 – September 30, 2019	Number (%) of cases with a fatal outcome between October 1, 2022 – September 30, 2023	Number (%) of cases with a fatal outcome between October 1, 2014 – September 30, 2019
< 1	16/20 (80.0%)	51/64 (79.7%)	1/20 (5.0%)	4/64 (6.3%)
1 – 4	61/68 (89.7%)	98/125 (78.4%)	6/68 (8.8%)	6/125 (4.8%)
5 - 9	55/66 (83.3%)	102/118 (86.4%)	4/66 (6.1%)	4/118 (3.4%)
10 - 13	16/20 (80.0%)	36/45 (80.0%)	1/20 (5.0%)	4/45 (8.9%)
14 - 17	9/10 (90.0%)	33/38 (86.8%)	0/10 (0.0%)	0/38 (0.0%)
18 - 64	713/934 (76.3%)	2011/2593 (77.6%)	87/934 (9.3%)	203/2593 (7.8%)
≥65	470/585 (80.3%)	1067/1335 (79.9%)	107/585 (18.3%)	227/1335 (17.0%)
Unknown	2/2 (100.0%)	0/2 (0.0%)	0/2 (0.0%)	2/2 (100.0%)
Total	1,342/1,705 (78.7%)	3,398/4,320 (78.7%)	206/1,705 (12.1%)	450/4,320 (10.4%)

Data source: Ontario. Ministry of Health. Integrated Public Health Information System (iPHIS) [database]. Toronto, ON: King's Printer for Ontario [extracted 2023 October 10].

Table 3. Number (%) of most commonly reported *emm* types among confirmed iGAS cases in Ontario by age group*: current season (October 1, 2022 – September 30, 2023) compared to the five pre-pandemic seasons (October 1, 2014 – September 30, 2019)

Most commonly reported <i>emm</i> type by rank	Current season: ≥ 18 years of age (October 1, 2022 – September 30, 2023)	Previous five seasons: ≥ 18 years of age (October 1, 2014 – September 30, 2019)	Current season: < 18 years of age (October 1, 2022 – September 30, 2023)	Previous five seasons: < 18 years of age (October 1, 2014 – September 30, 2019)
emm1	164 (16.1%)	395 (15.0%)	54 (40.6%)	85 (33.9%)
emm12	162 (15.9%)	155 (5.9%)	49 (36.8%)	17 (6.8%)
emm49	104 (10.2%)	77 (2.9%)	5 (3.8%)	5 (2.0%)
emm82	93 (9.1%)	28 (1.1%)	0 (0.0%)	6 (2.4%)
emm80	64 (6.3%)	19 (0.7%)	1 (0.8%)	0 (0.0%)
emm74	45 (4.4%)	231 (8.7%)	0 (0.0%)	5 (2.0%)
emm83	33 (3.2%)	35 (1.3%)	1 (0.8%)	0 (0.0%)
emm41	32 (3.1%)	20 (0.8%)	1 (0.8%)	0 (0.0%)
emm89	31 (3.0%)	157 (5.9%)	0 (0.0%)	7 (2.8%)
emm92	31 (3.0%)	9 (0.3%)	0 (0.0%)	0 (0.0%)
emm53	24 (2.4%)	142 (5.4%)	0 (0.0%)	0 (0.0%)
emm59	24 (2.4%)	14 (0.5%)	0 (0.0%)	3 (1.2%)
Other	211 (20.7%)	1,360 (51.5%)	22 (16.5%)	123 (49.0%)
Total with <i>emm</i> type	1,018 (67.0%)	2,642 (67.3%)	133 (72.3%)	251 (64.4%)
Total without <i>emm</i> type	501 (33.0%)	1,286 (32.7%)	51 (27.7%)	139 (35.6%)
Total	1,519 (100.0%)	3,928 (100.0%)	184 (100.0%)	390 (100.0%)

Data source: Ontario. Ministry of Health. Integrated Public Health Information System (iPHIS) [database]. Toronto, ON: King's Printer for Ontario [extracted 2023 October 10].

* Cases with an unknown age are excluded from this table.

Technical Notes

- The data for this report were based on information entered in the Ontario Ministry of Health (MOH) integrated Public Health Information System (iPHIS) database **as of 8 a.m., October 10, 2023**.
- iPHIS is a dynamic disease reporting system that allows ongoing updates to previously entered data. As a result, data extracted from iPHIS represent a snapshot at the time of extraction and may differ from previous or subsequent reports.
- These data only represent laboratory-confirmed cases of iGAS reported to public health and recorded in iPHIS. As a result, all case counts are subject to varying degrees of underreporting due to a variety of factors, such as disease awareness and medical care seeking behaviours, that may depend on severity of illness, clinical practices, and changes in laboratory testing and reporting behaviours.
- Population estimates used to calculate rates for total cases, total hospital admissions and total deaths were calculated using the Ontario 2015, 2016, 2017, 2018, 2019 population estimates¹, sourced from Statistics Canada, and the Ontario 2023 population projections², sourced from the Ontario Ministry of Finance.
- Only iGAS cases meeting the confirmed case classification as listed in the Ontario Ministry Of Health (MOH) surveillance case definitions are included in the reported case counts.
 - Provincial surveillance case definitions available online under the Infectious Diseases Protocol are the most current.
 - Changes to provincial surveillance case definitions and disease classifications have occurred over the years and thus may impact the analysis of trends over time. Cases are classified in iPHIS based on the Ontario MOH surveillance case definitions in use at the time the case was identified.
 - PHO's technical report "Factors Affecting Reporting Diseases in Ontario: Case Definition Changes and Associated Trends 1991-2016" and its associated appendix provide more detailed information on this topic.
- Cases are reported based on the Episode Date, which is an estimate of the onset date of disease for a case. In order to determine this date, the following hierarchy exists in iPHIS: Onset Date > Specimen Collection Date > Lab Test Date > Reported Date.
 - For example: If an Onset Date exists, it will be used as the Episode Date. If Onset Date is not available, then the next available date in the hierarchy (i.e., Specimen Collection Date) will be used, and so on.
- Hospitalized iGAS cases were determined based on a reported intervention type description of "Hospitalization" or "ICU" and a reported intervention start date on or after the case's episode date.
- Fatal iGAS cases were determined based on a case outcome description of "Fatal" and the type of death not being reported as "Reportable disease was unrelated to cause of death."
- Cases for which the Diagnosing Health Unit (DHU) was reported as MOHLTC (to signify a case that is not a resident of Ontario) or MUSKOKA-PARRY SOUND (a public health unit that no longer exists) were excluded from this analysis.

References

1. Statistics Canada. Population estimates 2001-2021: table 1 - annual population estimates by age and sex for July 1, 2001 to 2021, health regions, Ontario [unpublished data table]. Ottawa, ON: Government of Canada; 2022 [received 2022 Mar 25]
2. Population Reporting. Population projections public health unit, 2021-2046 [data file]. Toronto, ON: Ministry of Finance [producer]; Toronto, ON: Ontario. Ministry of Health, IntelliHealth Ontario [distributor]; [data extracted 2022 Jan 13]

Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Invasive Group A Streptococcal (iGAS) Disease in Ontario: October 1, 2022 to September 30, 2023. Toronto, ON: King's Printer for Ontario; 2023.

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