



Laboratory-confirmed COVID-19 in children and youth in Canada, January 15–April 27, 2020

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Editor's note: This article has been submitted as a Rapid Communication to provide current information related to COVID-19 that may have immediate implications.

Abstract

Understanding the epidemiology of COVID-19 among children and youth in Canada will help to inform public health measures in settings where children gather. As of April 27, 2020, provinces and territories provided the Public Health Agency of Canada with detailed information on 24,079 cases, of which 3.9% (n=938) were younger than 20 years of age. The detection rate per 100,000 population was lower in this age group (11.9 per 100,000), compared with those aged 20–59 years (72.4 per 100,000) and 60 and older (113.6 per 100,000). The median age among those younger than 20 years of age was 13 years, and cases were distributed equally across male and female genders. Among provinces and territories with more than 100 cases, 1.6% to 9.8% of cases were younger than 20 years of age. Cases in this age group were more likely to be asymptomatic: 10.7% compared with 2.4% in those aged 20–59 years and 4.1% in those aged 60 and older. Children and youth experienced severe outcomes less often, but 2.2% (n=15/672) of cases within this age group were severe enough to require hospitalization. Based on available exposure information, 11.3% (n=59/520) of cases aged younger than 20 years had no known contact with a case. Canadian findings align with those of other countries.

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Introduction

As of April 27, 2020, there were 47,327 COVID-19 cases reported in Canada. With the growth in new cases slowing, provincial, territorial and federal governments are planning how and when to ease some public health measures including the timing and parameters for reopening schools, daycares and other settings where children gather. To inform such decisions, it is important to understand the epidemiology of COVID-19 among children and youth in Canada.

Current situation

Data for this analysis were drawn from laboratory-confirmed cases reported to the Public Health Agency of Canada (PHAC) as of April 27, 2020. Of the 47,327 cases reported up to that date, detailed information was provided to PHAC for 26,876 cases. Of these, 24,723 were laboratory-confirmed and 24,079 included information on age. Among these cases, 3.9% (n=938) were younger than 20 years of age, and form the basis for this analysis.

The rate of laboratory-confirmed COVID-19 cases was lower in individuals under 20 years of age at 11.9 per 100,000 (1), compared with 72.4 per 100,000 for those 20 to 59 years of age and 113.6 per 100,000 for those 60 years of age and older ($p < 0.001$). Rates per 100,000 population were consistent (7.1–11.4 per 100,000) across finer age groups for children younger than 15 years of age, while the 15–19 years of age group had a higher rate (20.7 per 100,000) (see **Table 1**). This difference may be due to adolescents being more independent than younger age groups and therefore more able to seek out social contact with peers (2). It is also important to note that observed

Table 1: Age distribution among cases younger than 20 years of age (N=938)

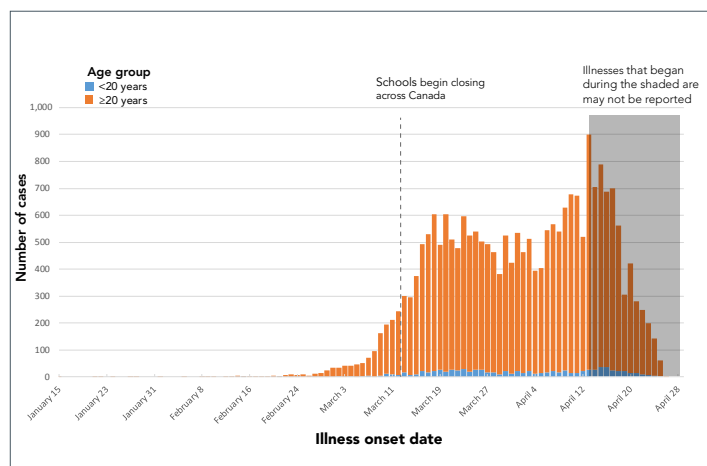
Age group (years)	Frequency		Rate per 100,000
	n	%	
Younger than 1	42	4.5	11.4
1–4	109	11.6	7.1
5–9	152	16.2	7.5
10–14	215	22.9	11.2
15–19	420	44.8	20.7
Total	938	100	11.9



differences in rates across age groups may be due, in part, to differences in laboratory testing patterns by age.

Among the cases younger than 20 years, 50.7% were female and the median age was 13 years. The proportion of cases younger than 20 years reported daily remained fairly consistent over time on the days where cases numbered more than 100 (**Figure 1**), ranging from 2.1% to 6.9%. Information on exposure category was available for 55.4% (n=520/938) of cases younger than 20 years for which PHAC received more detailed information. Of these, 20.4% were exposed internationally, 9.6% were contacts of travelers from affected areas, 58.7% were contacts of cases infected in Canada and 11.3% had no known contact with cases. The younger age groups (0 to 4, 5 to 9 and 10 to 14 years) had a lower percentage of cases with no known contact with a case (8.0%, 8.3% and 9.7%, respectively) compared with the 15–19 year age group, in which 15.1% of cases had no known contact.

Figure 1: Epidemiologic curve from January 15 to April 27, by age group^a, (N=22,973)



^a If date of illness onset was not available, the next available date of the following was used: specimen collection date and laboratory testing date

The distribution of cases in the younger than 20 years age category varied significantly across provinces and territories ($p < 0.001$) (see **Table 2**), which may reflect differences in the local epidemiology of COVID-19 across provinces and territories and/or differences in laboratory testing criteria across jurisdictions. Among the jurisdictions that reported more than 100 cases (this excludes Yukon, Northwest Territories, Nunavut and Prince Edward Island), in British Columbia, Saskatchewan, Manitoba and Ontario, 5.0% or less of all reported cases were younger than 20 years, while Alberta, Quebec, New Brunswick, Nova Scotia and Newfoundland and Labrador reported a higher proportion of cases in this age group (between 6.8% and 11.1%). At the time of this report, no outbreaks were noted in settings where children gather (e.g. daycares, schools, camps, etc.). This may be due to the early timing of schools and some daycare closures.

Information on whether cases were symptomatic or not was available for 24.7% (n=5,939/24,079) of cases for which PHAC

Table 2: Number and proportion of cases younger than 20 years of age, for provinces with more than 100 cases reported (N=937)

Province ^a	Number and proportion of cases	
	n	%
Ontario	328	2.2
Alberta	229	8.1
Quebec	226	7.3
Nova Scotia	85	9.8
British Columbia	25	1.6
Newfoundland and Labrador	22	8.6
Manitoba	10	4.0
New Brunswick	8	6.8
Saskatchewan	4	3.2

^a Yukon, Northwest Territories, Nunavut and Prince Edward Island were excluded as they had fewer than 100 cases for all ages for this time period

received detailed reports. A larger proportion of asymptomatic cases (10.7%) was noted in the younger than 20 years age group, compared with 2.4% in those aged 20–59 years and 4.1% in those aged 60 and older. These proportions are likely underestimates of asymptomatic cases across all age groups, given that, during the time period in question, testing was focused on high risk populations who were symptomatic.

Symptom information was available for 24.6% (n=5,912/24,079) of cases for which PHAC received detailed information. Of those who experienced symptoms, the three most common symptoms differed across age groups. The three most common symptoms for those younger than 20 years of age were cough (57.0%), runny nose (41.2%) and headache (39.4%); compared with cough (74.2%), headache (64.3%) and pain (56.0%) for those aged 20–59 years and cough (75.1%), weakness (56.2%) and fever (51.9%) for those aged 60 and older. Other common symptoms in those younger than 20 years of age included fever (36.4%), sore throat (34.3%), weakness (31.8%) and chills (30.6%).

Severe outcomes were less likely to occur in the younger age group. Hospitalization status was available for 57.0% of all cases (n=13,723/24,079) for which PHAC received detailed information. Among individuals younger than 20 years of age, 2.2% were hospitalized, compared with 10.4% in those aged 20–59 years and 35.6% among those aged 60 and older. Among those hospitalized, in cases younger than 20 years of age, 13.3% were admitted to the Intensive Care Unit. Across all age groups, these proportions likely overestimate the true proportion of COVID-19 infections that result in severe outcomes, as individuals who experienced more severe symptoms and outcomes may have been more likely to be tested and reported than those who were asymptomatic or had only mild symptoms.

Among those younger than 20 years of age, hospitalization information was available for 71.6% (n=672/938) of cases. There



were only 15 hospitalizations in this age group, among which infants younger than one year of age had a higher proportion of hospitalizations than other age groups (see **Table 3**). However, the numbers were small in this age group, and these results should be interpreted with caution. Within the 15 hospital admissions in cases younger than 20 years of age, two cases were admitted to the Intensive Care Unit, and both cases were younger than one year of age. No deaths were reported in individuals younger than 20 years of age as of the date of this report, based on public reporting by province and territory health officials.

Table 3: Hospitalization status for cases younger than 20 years of age (N=672)

Age group (years)	Hospitalized		Not hospitalized	
	n	%	n	%
Younger than 1	4	13.3	26	86.7
1–4	0	0	83	100
5–9	0	0	118	100
10–14	2	1.3	153	98.7
15–19	9	3.1	277	96.9
Total	15	2.2	657	97.8

Conclusion

The data presented in this report add to our knowledge of the epidemiology of COVID-19 among children and youth. Few reports have been published to date, but based on what is available in the published literature and from surveillance reports, the Canadian findings are in line with those from other countries. Fewer cases have been reported among children and youth, compared with older age groups (3–5). A higher proportion of children and youth were asymptomatic, and they experienced different symptoms than adults (6–8). While less severely affected (3–5), hospitalizations still occurred, including among infants (7,9) and, as in the United States, a larger proportion of infants were hospitalized when compared with older children and youth (8).

Based on these and other findings, a significant proportion of cases among children and youth was asymptomatic. Though preliminary studies suggest children are less important sources of SARS-CoV-2 infection than adults, asymptomatic transmission has been noted (10). It will, therefore, be important to maintain key public health measures even as some controls are relaxed. Among these, behaviours such as staying home when ill, maintaining physical distancing, use of non-medical masks and frequent handwashing should continue to be encouraged in this age group to prevent transmission. As well, since higher rates of confirmed infection were observed in those aged 15–19 years, additional efforts to educate and reinforce public health preventative measures, such as physical distancing, may be needed to target this more independent and mobile age group.

To ensure that COVID-19 continues to be monitored in children and youth, plans are underway for enhanced surveillance of the pediatric population. Data will be available through multiple data streams in addition to province and territory case-based reporting. Enhanced surveillance will make use of existing administrative databases and surveillance systems, including the Canadian Institute for Health Information's Discharge Abstract Database, the Canadian Nosocomial Infections Surveillance Program and the Canadian Pediatric Surveillance Program. These data streams will provide complimentary information to monitor trends in severe pediatric cases, identify risk factors associated with disease, and assess the burden of disease within this population.

Authors' statement

DP — Conceptualization, original draft, review and editing
 CB — Data curation, formal analysis, review and editing
 MR — Data curation, formal analysis
 LW — Review and editing
 AC — Review and editing
 CA — Review and editing
 DM — Review and editing
 JP — Review and editing

Conflict of interest

None.

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PREVENT THE SPREAD OF COVID-19

CORONAVIRUS DISEASE (COVID-19): HOW TO CARE FOR A PERSON WITH COVID-19 AT HOME—ADVICE FOR CAREGIVERS

Limit contact

- Only one health person should provide care.
- Do not care for people who are sick with the disease, such as common cold, flu, or other viruses, at the same time.
- For protection, the caregiver should put on a mask to avoid breathing.
- If you breathe, the caregiver should put the mask in a plastic bag before leaving.

Protect yourself

- Coronavirus spreads more at a higher risk of infection. Always wear COVID-19 shield and care for someone with COVID-19.
- These proper personal protective measures, those with chronic medical conditions (e.g., heart disease), pregnant women, or immunocompromised people.
- Always wear a mask (2 meters) of the caregiver, wear a mask from respiratory system and eye protection.
- Wear disposable gloves when touching the patient. Clean, wash and avoid reuse or disposal.
- Do not use face masks or gloves.
- Clean your hands often at least 20 seconds, especially after contact with the patient and after touching gloves. Use soap and water or hand sanitizer.

WHAT IT IS

COVID-19 is an illness caused by a coronavirus. It causes respiratory illness and can be fatal, especially in older adults and those with underlying health conditions.

SYMPTOMS

Symptoms may be very mild or more serious. They may take up to 14 days to appear after exposure to the virus.

HOW IT SPREADS

Coronavirus can be commonly spread from an infected person through:

- respiratory droplets when you cough or sneeze
- close personal contact, such as touching or shaking hands
- touching something with the virus on it, such as your eyes, nose, mouth, hands, or clothes
- washing your hands

There is also a risk to spread through ventilation systems or through water.

PREVENTION

While outside of Canada, you may have come in contact with the virus that causes COVID-19.

MANDATORY SELF-ISOLATION

The Government of Canada has put in place emergency measures to slow the introduction and spread of COVID-19 in Canada. All persons entering Canada MUST self-isolate for 14 days subject to the monitoring of the risk of exposure to COVID-19 in Canada (order/mandatory isolation).

Your compliance with this Order is subject to monitoring, verification and enforcement. Those in isolation may face questions in a quarantine facility as well as fines and/or imprisonment.

IF YOU HAVE SYMPTOMS

If you have symptoms of COVID-19, you should:

- stay home to avoid spreading to others
- avoid work, school, day care, a public transit or bus
- call ahead before you visit a health care professional or call your local public health authority
- wear a mask when you visit a health care professional
- if you need immediate medical attention, call 911 and tell them your symptoms.

FOR MORE INFORMATION

1-833-784-4371

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COVID-19 Awareness Resources

- Get the latest guidance and awareness resources
- Some resources are available in multiple languages

Visit www.canada.ca/coronavirus