

IN FOCUS

COVID-19 IN CHILDREN

Reporting period: 1 January to 23 May 2020

A review of COVID-19 cases in children up to 23 May found:

- Eighty-one children were diagnosed with COVID-19 including 59 (73%) locally acquired infections and 22 (23%) overseas acquired infections.
- The rate of diagnosed COVID-19 infection in adults was approximately 10 times the rate reported in children (0.05 per 1,000 in those aged 0-17 years compared with 0.48 per 1,000 people in those aged 18 and over).
- While testing rates were lower in children compared with adults, so was the proportion positive of tests that were positive, indicating limited spread of COVID-19 among children. The proportion of tests that were positive ranged from 0.1% in children aged 0-4 years up to 0.3% in children aged 12 to 17 years compared with 0.6% to 1% in adult age groups.
- Of the 59 locally acquired cases, 44 (75%) had a likely source of infection identified. Where known, the majority of children (34 cases) were infected by a household member, typically a parent who had a known exposure to COVID-19 outside the home. No child (diagnosed by PCR) was found to have been infected by another child.
- While children are known to spread other respiratory diseases within households, this was not observed for COVID-19. There were nine households (total of 21 people) in which a child was the first in the family known to have COVID-19 and the family members had no known previous exposure to COVID-19. Child-to-adult transmission was likely in only one household involving a 17 year-old and his father. No additional cases were identified among the remaining 20 household members.

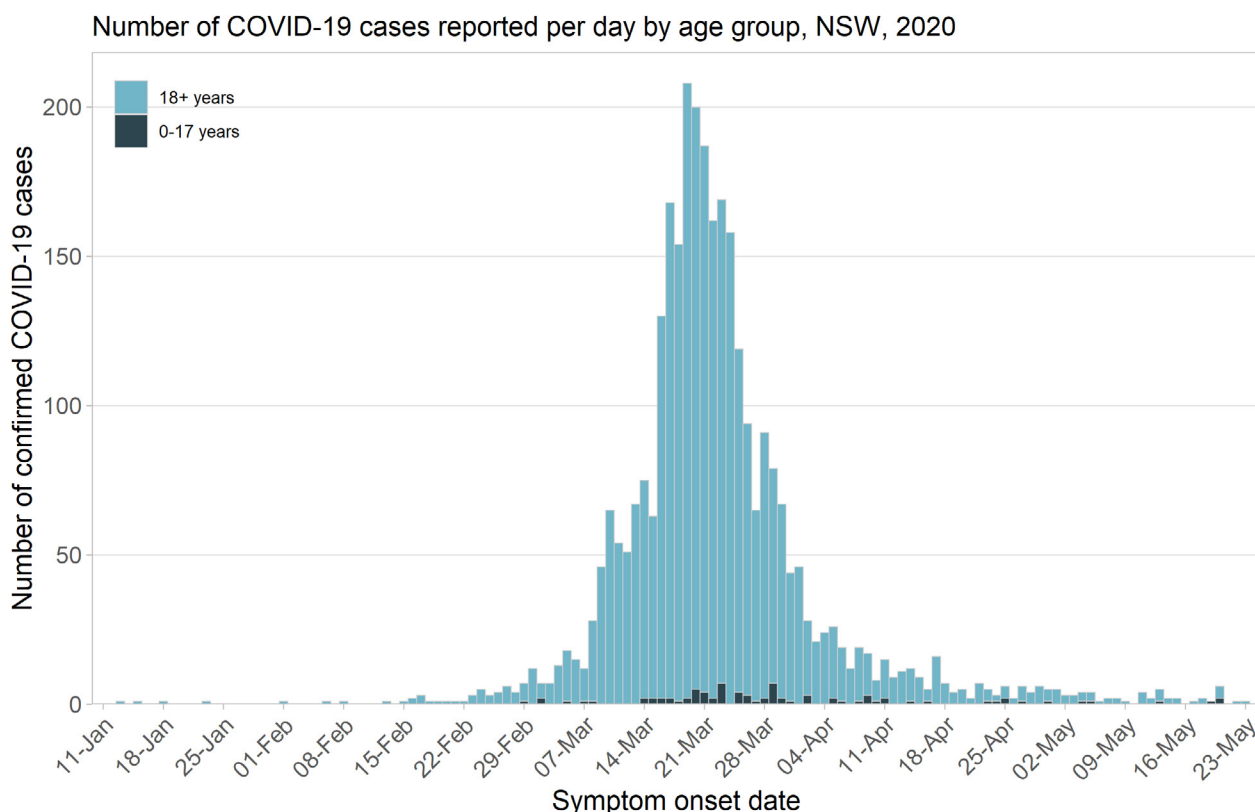
Reporting period: 1 January to 23 May 2020

This is a summary of all COVID-19 infections in children diagnosed in NSW (including those who were infected overseas and returned to NSW and those infected in NSW) in the period 1 January to 23 May 2020. Excluded from this report are cases diagnosed by serology as part of an enhanced investigation in the schools setting. Refer to Sections 2 and 3 for a review of recent local transmission in all age groups.

How many children have been diagnosed with COVID-19 in NSW?

In total, 81 children (aged 0 to 17 years) were diagnosed with COVID-19 in NSW. Of these 81 children, 23 (28%) were aged 0 to 4 years, 25 (31%) aged 5 to 11 years and 33 (41%) were aged 12 to 17 years.

Each bar in the graph below represents the number of new cases based on the date the person started to feel unwell (date of symptom onset) from January to 23 May 2020.¹ During this period the date of symptom onset for children ranged from 29 February to 19 May 2020.



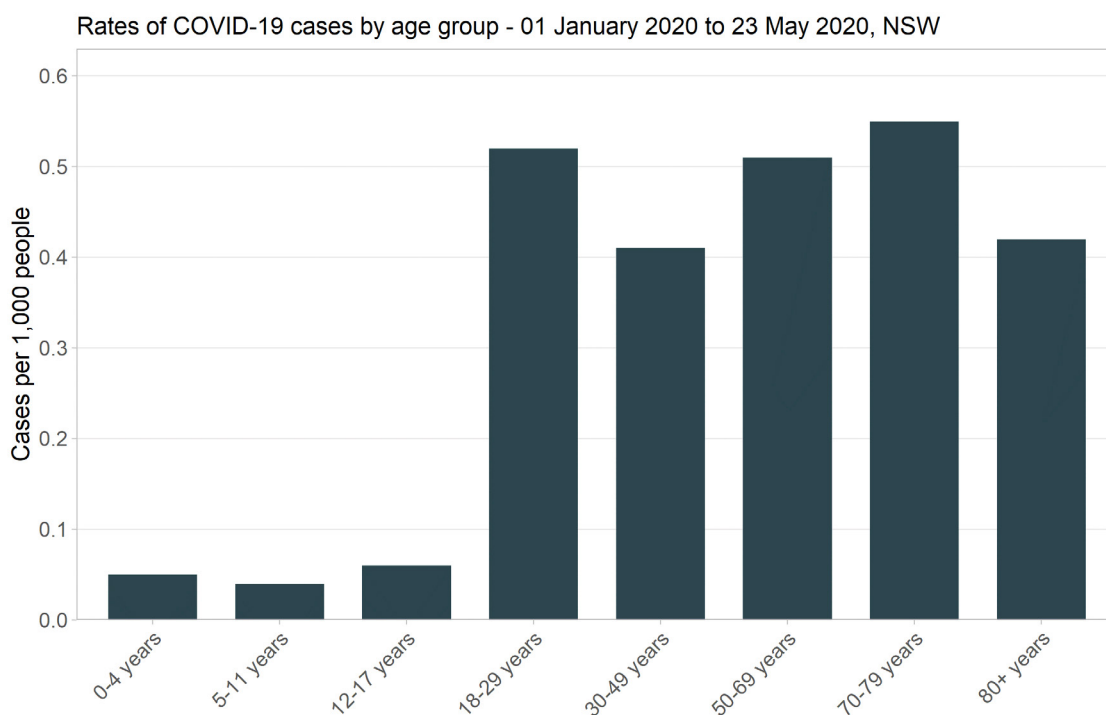
Interpretation: Children were a very small proportion (3%) of all COVID-19 cases diagnosed in NSW to 23 May 2020.

¹ Information collected by public health staff on interview with the case or case’s guardian at the time of diagnosis.

How do infection rates in children compare with adults?

The rate of COVID-19 in each age group takes into account the different number of people in the population in each age group so is a better way to compare infections than the number of cases in each age group.

The rate of COVID-19 cases in adults was approximately 10 times the rate reported in children (0.05 per 1,000 in those aged 0-17 years compared with 0.48 per 1,000 people in those aged 18 and over).

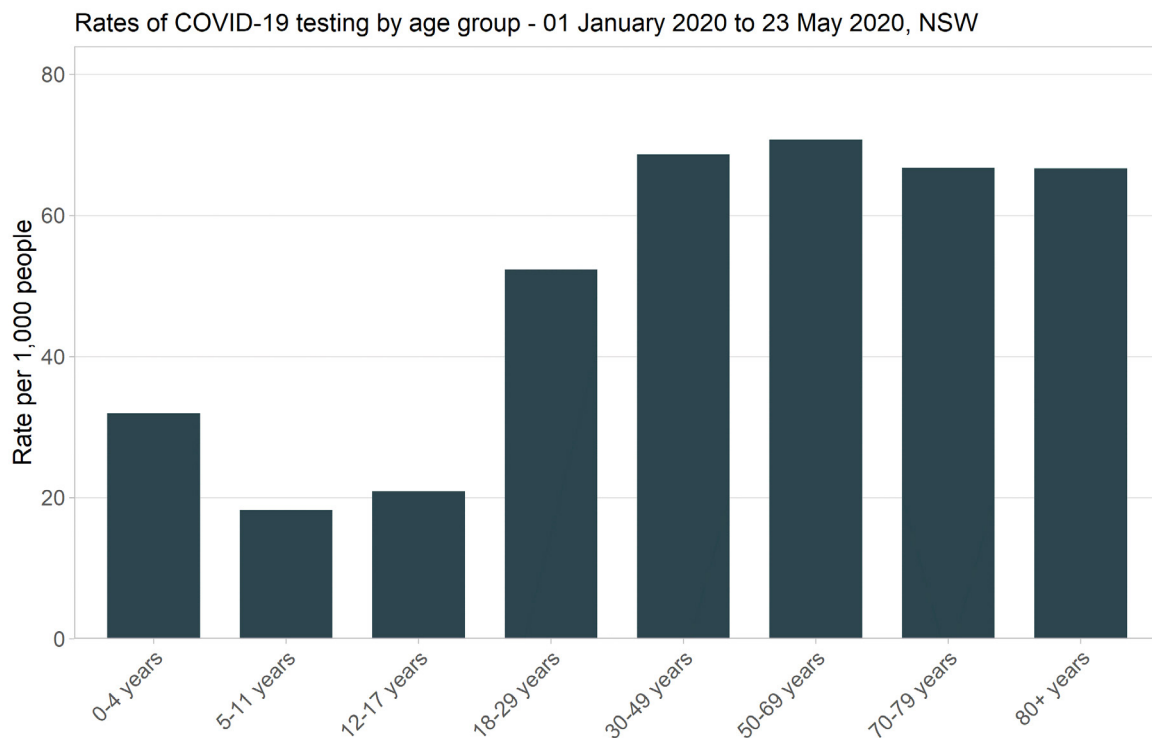


Interpretation: Rates of diagnosed COVID-19 infection in children were similar across all age groups (ranged from 0.04 per 1,000 children aged 5-11 years to 0.06 per 1,000 children aged 12 to 17 years). Rates were significantly lower when compared to those in older age groups (ranged from 0.41 per 1,000 people aged 30 to 49 years to 0.55 per 1,000 people aged 70 to 79 years). This is likely to reflect, at least in part, the higher number of adults who returned to NSW from countries with widespread COVID-19 transmission. It is also possible that children are more likely to experience mild symptoms and so are less likely to be tested.

A review of local transmission in Section 3 also shows lower rates of diagnosed COVID-19 infection in children when compared with adults.

How much testing is happening in children?

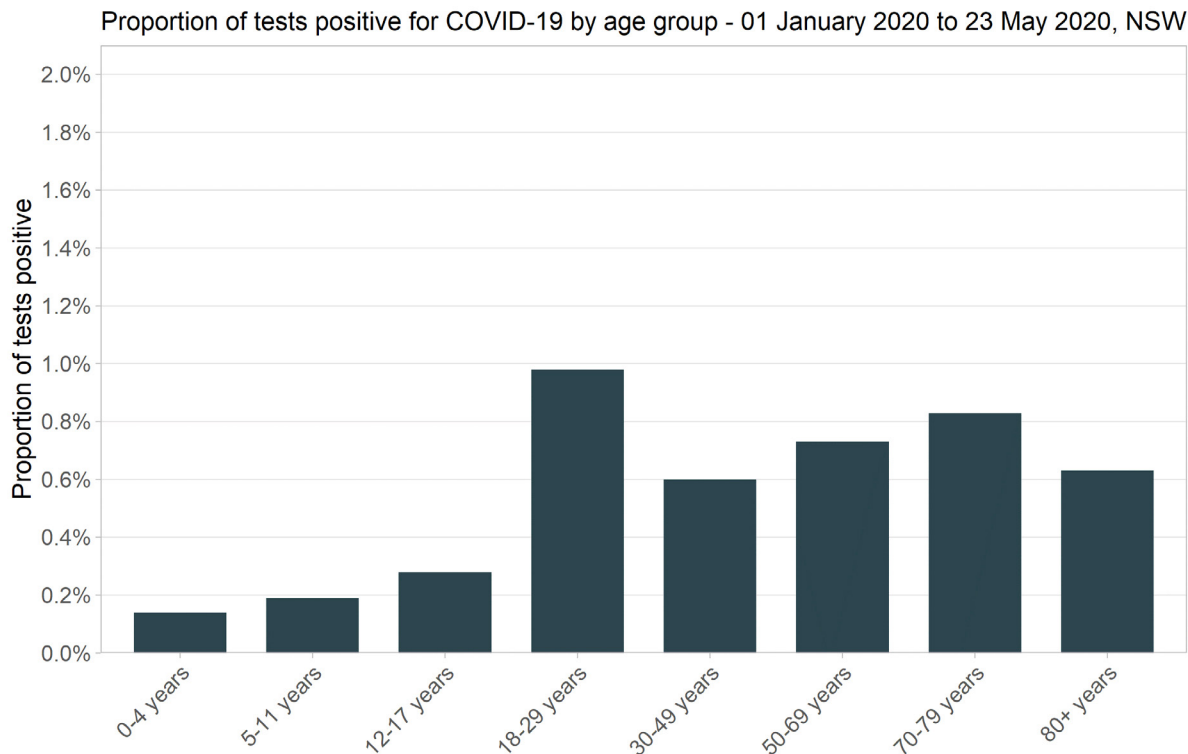
In total, 40,694 COVID-19 tests on 39,166 different children have been conducted in children up to 23 May – 9% of all tests.² As reported in Section 1, testing rates have increased across all age groups since the criteria for testing were expanded in April. While initially restricted to returned travellers and close contacts, testing is now recommended for anyone with respiratory symptoms (even if mild) or unexplained fever.



Interpretation: Among children, testing rates were highest in those aged 0 to 4 years (32 per 1,000 compared with 18 per 1,000 children aged 5-11 years and 21 per 1,000 children aged 12 to 17 years). These rates were substantially lower when compared to adult age groups (ranged from 52 per 1,000 people aged 18 to 29 years to 71 per 1,000 people aged 50 to 69 years).

² <https://www.health.nsw.gov.au/Infectious/covid-19/Pages/counting-tests.aspx>

What proportion of children tested are diagnosed with COVID-19?



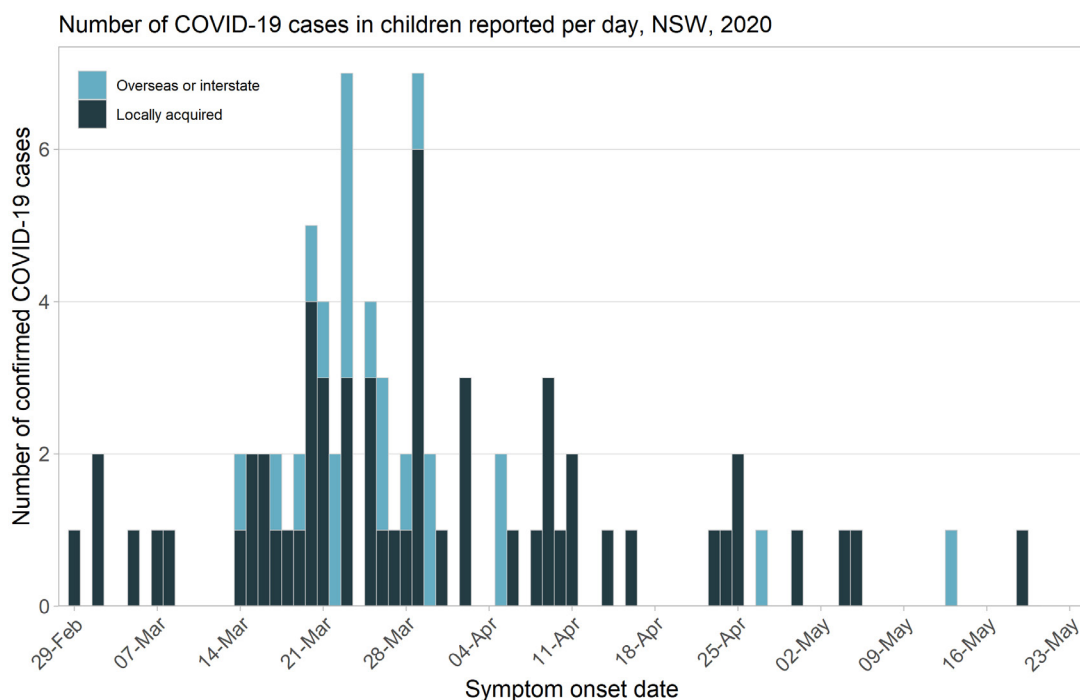
Interpretation: The proportion of tests that were positive for COVID-19 was less than 1% across all age groups indicating low rates of COVID-19 infection in NSW. Among children, the proportion of tests that were positive ranged from 0.1% to 0.3%. While testing rates were lower in children compared with adults, the low proportion of tests found to be positive indicates low rates of COVID-19 in younger age groups.

Is it more common for boys or girls to get infected?

As seen in adults in NSW, infections were evenly distributed amongst boys and girls.

How are children getting infected?

All cases of COVID-19 are investigated by public health staff to understand the source of the infection. The figure below shows where children have been infected (overseas or in NSW).



Interpretation: The majority of children (73%, 59 cases) have been infected with COVID-19 while in NSW. The remaining 27% (22 cases) acquired their infection overseas.

Locally acquired cases

Source of infection for 59 locally acquired COVID-19 cases in children to 23 May 2020

Source of infection	Number of cases	Proportion of locally acquired cases
Household member/s	34	58%
Confirmed cases outside the home	10	17%
Source not identified	15	25%
Total	59	100%

Interpretation: Children were most commonly infected by a household member.

Children infected in the home

Of the 34 children (comprising 28 different households) who likely contracted their infection at home, all lived with at least one COVID-19 positive adult who experienced symptoms prior to the child. The COVID-19 positive adult was one or both parents for 30 children, an adult sibling for two children, a grandmother for one child and a non-related adult household member for the remaining child.

Of the children infected at home, six (18%) were aged 0 to 4 years, 12 (35%) were aged 5 to 11 years and 16 (47%) were aged 12 to 17 years.

Children infected outside the home

Transmission likely occurred outside the home for 10 children including six children from a single child care centre (source of the outbreak identified as an adult), two with COVID-19 positive carers, one child likely infected by a teacher at a primary school (refer to the National Centre for Immunisation Research and Surveillance Report [COVID-19 in schools – the experience in NSW](#)) and one teenager who likely contracted COVID-19 from an adult colleague at work.³

Children with an unknown source of infection

The source of the infection was unable to be determined for 15 children with locally acquired infections (comprising 12 households) including a mother and two sons with similar dates of symptom onset (suggesting they shared the same source) and a family cluster of four cases (three adults and one child) with no obvious source of infection. The two most recently reported cases in children are undergoing further investigation.

Of the 12 households, 10 were located in different suburbs across greater metropolitan Sydney with the remaining two located in separate regional towns.

Are children with COVID-19 infecting household members?

In order to prevent the spread of infection in the community, all household members of a COVID-19 infected person are isolated for 14 days from their last contact with the case and advised to seek COVID-19 testing if symptoms develop. As it is difficult for children to be isolated within a household, all those who live with a child with COVID-19 must remain in isolation for a further 14 days after the child is considered no longer infectious.

Excluding the two most recent cases under investigation, there were nine households in which a child was the first in the family known to have COVID-19 and the family members had no known previous exposure to COVID-19. The age of these cases ranged from 2 to 17 years with five children aged 0 to 4 years. The date the child first developed symptoms ranged from 8 March to 30 April 2020. In total, across the nine households, there were 16 adults and five children who shared the same house as a child known to have COVID-19. Child-to-adult transmission was likely in only one household involving a 17 year-old son and his father. There was no evidence of COVID-19 spreading to the remaining 20 family members.

In no case was a child identified as introducing COVID-19 into the household.

Overseas acquired cases

In total, 22 children diagnosed with COVID-19 in NSW were infected overseas. This includes eight cruise ship passengers, six travellers from Western Europe, four from the USA, and one each from Indonesia, India, Pakistan and Brazil.

³ This includes children who test positive to a validated specific SARS-CoV-2 nucleic acid test or have the virus identified by electron microscopy or viral culture. One child in NSW has been diagnosed by a positive antibody test four weeks after their exposure (PCR negative) as part of an investigation following a confirmed case in a school but is not included in this report.

Have Aboriginal children been infected?

In total, seven Aboriginal children have been diagnosed with COVID-19 up to 23 May. Of these, six children (in three separate families) acquired their infection in NSW through household contact with an adult who had a known exposure to COVID-19. The remaining child was infected overseas.

What are the symptoms in children?

The majority of symptomatic children had respiratory symptoms (with or without fever) at the time of case interview.⁴ The most commonly reported symptoms are shown in table below.

Fourteen children (17% including six aged 0 to 4 years, four aged 5 to 11 years and four aged 12 to 17 years) diagnosed with COVID-19 were reported to not have any symptoms. With the exception of the child who was tested as part of a family group and is pending further laboratory investigation, all of the asymptomatic cases were tested as they were known to have been at risk of exposure to COVID-19. Eight children had a known exposure outside the home and the remaining five children had an adult household member with a known exposure to COVID-19 outside the home. Testing is not recommended for those without symptoms except in special settings such as schools when a case has been identified.

Frequency of symptoms reported in children with COVID-19 by age group

Symptom	0-4 years (17 cases)		5-11 years* (20 cases)		12-17 years (29 cases)		Total (66 cases)	
	No.	%	No.	%	No.	%	No.	%
Cough	11	65%	7	35%	16	55%	34	52%
Fever	8	47%	7	35%	15	52%	30	45%
Runny/blocked nose	8	47%	9	45%	14	48%	31	47%
Sore throat	1	6%	5	25%	15	52%	21	32%
Fatigue	4	24%	6	30%	11	38%	21	32%
Diarrhoea	6	35%	1	5%	2	7%	9	14%
Vomiting	3	18%	5	25%	1	3%	9	14%

*Excluding a single case known to have symptoms but with information unavailable.

Interpretation: Cough, fever and runny/blocked nose were commonly reported in children across all age groups. Approximately half of the older children (aged 12 to 17) also experienced a sore throat.

How many children have recovered?

Recovery information was available for 71 children in NSW, all of whom had recovered. No admissions to critical care and no deaths have been reported.

While Paediatric Inflammatory Multisystem Syndrome Temporally associated with SARS-COV-2 (PIMS TS) has been reported internationally, no cases have been identified in NSW. Refer to Paediatric Active Enhanced Disease Surveillance (PAEDS) network for further information.

⁴ Information collected by public health staff on interview with the case or case's guardian at the time of diagnosis.