Introduction
“What We Know So Far” documents are intended to provide an overview of some of the published and unpublished reports related to emerging issues with respect to coronavirus disease 2019 (COVID-19). The reports are found through ongoing scanning of the published literature and scientific grey literature (e.g., ProMed, CIDRAP, Johns Hopkins Situation Reports), as well as media reports. It is recognized that there may be additional information not captured in this document. As this is a rapidly evolving outbreak, the information will only be current as of the date the document was written.

Key Points
- The majority of COVID-19 cases to date have been reported in adults. Available data suggest approximately 1-2% of cases are in children. It is therefore possible that children have a lower infection prevalence.
- Early reports have been predominately case series and they suggest that children may have milder or asymptomatic infections. Therefore, the pediatric prevalence of COVID-19 is difficult to determine with certainty and currently may be underestimated.
- Reports thus far, albeit on small case numbers of pregnant women, have not identified vertical transmission.

Pediatric Infections in China
Numerous reports of pediatric infections in China have been published. The youngest case was 30 hours old. Based on early reports, infections in children appear mild and include some afebrile children. There have been multiple reports of asymptomatic infection.

Descriptions of Asymptomatic Pediatric Infection
- A report on an early familial cluster of COVID-19 stated that a 10-year-old child was infected. Despite reportedly being asymptomatic, throat and sputum samples were positive and a CT scan showed ground glass lung opacities.
- A report on nine hospitalized infants indicated that one was asymptomatic.
- The significance of asymptomatic infection on transmission remains unknown.
Description of Symptomatic Pediatric Infection

- A case series of 74 pediatric patients in China with data as of January 31, 2020 is available; age range was 1.5 months to 18 years. Of 31 children with temperature measurements, 28 (90%) had fever, which in most cases lasted one to two days. Other symptoms included cough, myalgia, nausea, vomiting and diarrhea.

- A report of the characteristics of 13 patients admitted to hospitals in Beijing notes that two patients were children (aged 2 and 15 years). The 2-year-old had intermittent fever for one week and persistent cough for 13 days before diagnosis. Since patients were transferred to a different hospital upon confirmation of COVID-19 infection, this report did not include descriptions of the entire disease course.

- A report on nine hospitalized infants indicated that four had fever, two had mild upper respiratory tract infections, two had no symptom information available and one was asymptomatic.

- A case report on the first reported pediatric infection in Shanghai stated that a 7-year-old previously healthy boy was admitted to hospital on January 19, 2020 with symptoms of cough, nasal discharge, fever of 38.3°C, anorexia and nausea. A nasopharyngeal swab tested positive for COVID-19 and a chest x-ray showed increased lung markings bilaterally, but no obvious pneumonia. The child was clinically improving on day six.

- A case report of a 3-month-old previously healthy girl indicated that she was admitted to hospital on January 26, 2020 for fever. Her chest x-ray was described to “show a shadow” and she subsequently developed a cough on January 29, 2020. Although a throat swab was negative, sputum and stool samples were positive for COVID-19.

Description of Severe Pediatric Infection

- A 13-month-old, previously healthy boy in China presented with symptoms of vomiting, diarrhea, fever, shortness of breath and oliguria. He subsequently developed pneumonia, acute respiratory distress syndrome, septic shock and acute renal failure. Imaging showed pneumonia and bilateral hydronephrosis. Throat swabs on day two and seven after admission were negative, but a third throat swab on day eight tested positive for COVID-19. This is the first report of severe pediatric COVID-19. It was unclear from this report if co-infections were excluded.

The Prevalence of Pediatric Infections in China

- No children were identified in initial case series that were published early in the outbreak. More recent reports have identified a small proportion of cases occurring among children.

  - A report of 44,672 confirmed cases up to February 11, 2020 was published by the Chinese Center for Disease Control and Prevention. Of these, 416 (0.9%) were among children age 0-9 years and 549 (1.2%) were in children age 10-19 years. There was one reported death in the 10-19-year-old group.

  - A report of 1,099 cases up to January 29, 2020 states that nine (0.9%) were in children ≤14 years.

- It is possible that these reports are underestimates, particularly if pediatric infections are milder.
Pediatric Cases Outside Mainland China

- Some media articles have included the age of cases detected internationally. There are reports of at least eight children outside of China who have been infected with COVID-19.
  - These have occurred in Australia (age 8), Singapore (age 6 months, 1, 2 and 17 years), Germany (two children with no age indicated), France (age 9) and Vietnam (age 16)
  - There are currently no reported pediatric cases in Canada, the United States, or the United Kingdom

Vertical Transmission

- A case series of nine pregnant women infected with COVID-19 has been published with no indication of vertical transmission. Presence of COVID-19 was not detected in amniotic fluid, cord blood, breast milk or from neonatal throat swabs. All patients were delivered by Caesarean section.

References

Descriptions of Pediatric Infections in China


The Prevalence of Pediatric Infections in China


Vertical Transmission


Pediatric Cases Outside Mainland China

10. Media article, “Queensland confirms third coronavirus case as eight-year-old child from Wuhan, China,” published 04 Feb 2020

11. Media article, “Coronavirus in Singapore: Of the 50 cases so far, local cases exceed imported ones,” published 09 February 2020

12. Press release, “Current information on the coronavirus situation in Bavaria - Bavarian Ministry of Health: Now a total of eleven cases,” published 06 Feb 2020 [Article in German]


14. Media article, “Vietnam confirms two new coronavirus cases, as all schools stay shut,” published 06 Feb 2020

Citation

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