

A Pediatric Infectious Disease Perspective on COVID-19

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Abstract

This review compares and contrasts COVID-19 clinical and epidemiologic characteristics in children and neonates with those of other prevalent respiratory viruses. There are no distinguishing clinical features that would allow an infectious disease consultant to diagnose without laboratory testing. SARS-CoV-2 appears to be less common than RSV or influenza, with lower morbidity and mortality, and causes less severe disease in cancer-affected children.

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Introduction

Big reports of hospitalised patients in China, Italy, Spain, and the United States, large series of children alone, and numerous small series, family clusters, and case reports have taught us about the clinical aspects of COVID-19 infection in children. A review of these studies found that children make up a small percentage of patients with clinically identifiable SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2) symptoms (typically less than 2%). Furthermore, most children's infections are minor, with a considerable proportion (5%-21%) of them being completely asymptomatic and another huge group experiencing symptoms similar to a common viral upper respiratory infection. Even with the new discovery of the pediatric multisystem inflammatory disease, the proportion of children with severe illness is in the range of 1%-6%. Although reports of severity disparities by age have been conflicting, some have found an elevated risk during the first year of life and others during puberty. Asymptomatic infection isn't a distinguishing feature because nearly all common community-acquired viruses are excreted asymptotically in youngsters on a regular basis. The length of time that shedding occurs pre-symptomatically (as long as 48 hours) and the intensity of shedding may be distinguishing features.

The majority of youngsters infected with SARS-CoV-2 contracted the virus from an infected adult in their family. In most places, however, schools and daycares were shuttered relatively early as a reflexive response to the pandemic. As a result, when schools reopen, a key concern will be whether schoolchildren, like influenza, will be a source of infection for other children, their own parents, and teachers/daycare employees (thus imposing a multiplication impact on pandemic proportions).

The Multisystem Inflammatory Syndrome in Children (MIS-C) linked to COVID-19 has been the subject of national and international alerts since April 2020. This syndrome is characterised by a fever and an ill-appearing youngster. Clinical signs and symptoms are consistent with either complete fever plus (4 of 5 clinical criteria) rash, conjunctival suffusion, edoema of hands and feet, oral mucosal abnormalities, and lymphadenopathy] or incomplete Kawasaki syndrome in nearly half of the children.

In contrast to MIS-C, some children with underlying malignancies who are on immunosuppressive therapy tolerate SARS-CoV-2 infection surprisingly well.

The results of Real-Time Polymerase Chain Reaction (rt-PCR) testing for the virus on samples collected from the nose, throat, or nasopharynx have been used to diagnose COVID-19 in most studies. Saliva can also be used as a sample. Lower respiratory tract secretions, such as bronchoalveolar lavage or expectorated sputum, are even more likely to be positive, but they're harder to get by. The sensitivity of these tests was inconsistent at first, but newer nucleic acid assays are quite sensitive. The virus is present in high concentrations just before and after the development of respiratory symptoms, and it lasts for several days. It is crucial to note, however, that a positive test does not always indicate the presence of a living virus.

Acute respiratory tract infections are a primary cause of illness and mortality in children under the age of five worldwide. RSV, influenza, and Human Coronavirus (HCoV) are common viruses found in children, causing symptoms ranging from moderate Upper Respiratory Infections (URI) to severe Lower Respiratory Tract Infections (LRTI), which can lead to respiratory failure.

The most common symptoms in children (almost 50%) are fever and non-productive cough, but rhinorrhea, fever alone, or minor gastrointestinal symptoms such as abdominal pain,

diarrhoea, and vomiting are also seen. SARS-CoV-2 identification in asymptomatic children could indicate pre-symptomatic illness or true asymptomatic infection.