The Challenge of Clearly Counting COVID-19 Cases in Children

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In this issue of *Pediatrics*, Sisk et al[1] used state and territory health department data to describe temporal and geographic trends in coronavirus disease 2019 (COVID-19) among children over a 4-month period. The authors found that in the latter half of the study period, the proportion of cases identified in children increased threefold to fourfold from the start of the study period.

We were struck by several features of this report, which we feel have implications for COVID-19 surveillance. First, there was substantial heterogeneity across the data sources aggregated regarding definitions (including the chronological definition of a child) and the data reported. There was also variation across surveillance methods regarding which tests were used and reported. For example, Texas only reports confirmed cases, defined by polymerase chain reaction, and does not report rapid antigen tests, which define a probable case,[2] leading to an underestimation of the burden of disease. These variations make comparisons across regions and within regions over time challenging. Because we are likely to be living with the pandemic until there is widespread availability and uptake of an effective vaccine, the standardization of reporting (as is done for other infectious diseases) going forward would allow for more transparent quantification and assessment of the impact of public health interventions and, ultimately, vaccine efficacy.

Second, pediatric data are typically not disaggregated by age. Disaggregated data are important because much remains to be learned about the dynamics of viral transmission by age group. For example, although viral loads in upper respiratory tract secretions are high in all age groups,[3] transmission from older children appears to be more common than for younger children.[4] Treating the entire pediatric age cohort as monolithic has the potential to bury important epidemiological associations and trends, particularly if factors other than viral load are most associated with the transmission of severe acute respiratory syndrome coronavirus 2. For example, asymptomatic infection is more common in young children than in adolescents,[5] and asymptomatic patients may transmit the virus less effectively than overtly symptomatic patients. The ability to assess data separately for younger and older children will become even more important with the emphasis on school reopenings.

Third, although children aged <18 years compose 22% of the US population,[6] only 9% of all cases have been reported in children. This is likely due in part to more ill patients being most frequently tested, with surveillance typically being passive, on the basis of patients seeking medical care. Additionally, the nonspecific and often mild symptoms seen in infants and young children,[7] combined with the inability to ascertain more specific symptoms (eg, anosmia) for the preverbal child, necessitate a high index of suspicion for COVID-19 to be diagnosed in children. Active,

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DOI: https://doi.org/10.1542/peds.2020-031682

Accepted for publication Sep 22, 2020

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PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

FINANCIAL DISCLOSURE: The authors have indicated they have no financial relationships relevant to this article to disclose.

FUNDING: No external funding.

POTENTIAL CONFLICT OF INTEREST: Dr Cruz is an associate editor for *Pediatrics*; and Drs Shaman and Dayan have indicated they have no potential conflicts of interest to disclose.

COMPANION PAPER: A companion to this article can be found online at www.pediatrics.org/cgi/doi/10.1542/peds.2020-027425.

To cite: Cruz AT, Shaman J, Dayan PS. The Challenge of Clearly Counting COVID-19 Cases in Children. *Pediatrics.* 2020;146(6):e2020031682

longitudinal surveillance of both children and adults across the spectrum of symptom severity, including the asymptomatic, would more clearly identify the incidence and trends of severe acute respiratory syndrome coronavirus 2 across ages and locale.[8] Finally, underdiagnosis of pediatric cases may also be due to infrastructure barriers. Many public and commercial testing venues have opted not to test toddler- or preschool-aged children,[9] leading to systemic discrepancies in access to testing compared with adults.

Although testing does not artificially increase case counts, the variation in access to and reporting of testing does have the consequence of artificially depressing case counts in children. We have opportunities to improve surveillance data by expanding the accessibility of tests to children, conducting active as well as passive surveillance, more fully integrating children into contact tracing, standardizing reporting criteria across states, and disaggregating pediatric data into more epidemiologically meaningful age brackets. Implementing these modifications would allow for a more data-driven, phased approach to reopening schools and other institutions on the basis of local transmission patterns.

ABBREVIATION

COVID-19: coronavirus disease 2019

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Pediatrics originally published online September 29, 2020; originally published online September 29, 2020;

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