Reference of the Week


Premise/Methods: 1. The degree to which children (ages 1-10 years) acquire and transmit SARS-CoV-2 remains uncertain though there is some evidence that children are less infectious than adults. 2. The mild clinical presentation or asymptomatic nature of pediatric SARS-CoV-2 infections could be a hidden driver of the pandemic. 3. This is a multicenter, cross-sectional study on the point prevalence of SARS-CoV-2 infections and seroprevalence in a paired parent-child study design in southwest Germany.

Findings: 1. 2,482 child-parent pairs were analyzed: median age 6 years (range, 1-10 years); 51% male children; 2,482 parents’ median age 40 years (range 23-66 years); 24.8% male parents; 583 children attended daycare (31%). 2. 2 participants, 1 child and corresponding parent, were SARS-CoV-2 PCR positive consistent with neutralizing antibodies in both. 3. 22 of 2482 children (0.9%) and 48 of 2482 parents (1.9%) were seropositive, furthermore only 3 of the 580 children in daycare were seropositive (0.5%). 4. The combination of a parent who was seropositive and a corresponding child who was seronegative (n = 34) was 4.3 (95% CI, 1.19-15.52) times more common than the combination of a parent who was seronegative and a corresponding child who was seropositive (n = 8) (P < .001).

Transmission of SARS-CoV-2 occurs in asymptomatic and mildly symptomatic individuals, but this study suggests children age 1-10 years of age are less infectious than their adult counterparts. Coupled to the evidence that acquisition of the virus is also very low in children this knowledge can help inform policy decisions regarding elementary school opening.

Other References:


<table>
<thead>
<tr>
<th>Variant</th>
<th>Emergence</th>
<th>First Circulation</th>
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<tbody>
<tr>
<td>L452Y (CAL.20C)</td>
<td>November 2020</td>
<td>California</td>
<td>Zhang W. doi: <a href="https://doi.org/10.1101/2021.01.18.21249786">https://doi.org/10.1101/2021.01.18.21249786</a></td>
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<tr>
<td>P.1</td>
<td>January 2021</td>
<td>Brazil</td>
<td>Sabino EC. doi:10.1016/S0140-6736(21)00183-5</td>
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4. The concern is that as variants develop the current vaccines will not be effective. The current neutralizing monoclonal antibodies are not effective against the South African variant.

Recommendations: 1. Characterize viruses that appear to cause vaccine failure. 2. USA needs an active sequencing and surveillance system. 3. Serum repository from individuals who have been immunized for testing against new variants. 4. Reducing the spread of new variants needs to be a priority. 5. Continual re-designing of mRNA and non-replicating adenovirus vaccines to thwart new variants. 6. Now more than ever: mask, physical distancing, avoid congregate settings, quarantine, and isolation when applicable. Figure from Korber B et al.

Premise/Methods: 1. The “last immunologic hug” from the delivering mother is transplacental antibody delivery to the newborn. 2. It is not known whether maternal antibody to SARS-CoV-2 is passed to the newborn via the placenta. 3. It is unclear whether immunization of the expecting woman to SARS-CoV-2 will result in protection to the newborn. 4. Maternal blood and cord blood were tested for SARS-CoV-2 antibody (IgG and/or IgM); transfer ratio (infant IgG/maternal IgG); and days between NP-PCR testing and delivery were reported.

Findings: 1. Matched maternal-cord blood sera was tested for 1,471 mother/newborn dyads including 21 twin deliveries: 83 women (30%) were SARS-CoV-2 seropositive; 72 infants born to seropositive women were seropositive (83%); no infants born to 1,388 seronegative mothers were seropositive; 60% of seropositive mothers were asymptomatic. 2. SARS-CoV-2 IgM antibody was not detected in any of the 72 infants born to seropositive mothers and IgM antibodies were similar whether seropositive or seronegative. 3. Transfer ratios were high, 0.90 (0.76-1.07). 4. This study suggests the vaccination of the mother can provide protection of the fetus from SARS-CoV-2 infection.


Premise/Methods: 1. Vaccinations are among the most cost-effective interventions yet their impact on disadvantaged populations is not clearly known. 2. Low and middle income countries (LMIC) struggle with death registration and disease surveillance limiting the ability to estimate the impact of vaccination. 3. The Vaccine Impact Modelling Consortium (VIMC) comprises of 18 modelling groups to approximate vaccination impact diseases caused by 10 different pathogens across 98 countries. 4. The modelling groups provided pathogen-specific vaccine impact estimates for hepatitis B virus, H influenzae type B, HPV, Japanese encephalitis, measles, N meningitidis serogroup A, S pneumoniae (prevented by PCV), rotavirus, rubella virus, and yellow fever virus.

Findings: 1. The average number of vaccines received per child increased across the majority of the 98 LMICs between 2000 and 2019: both increases in the coverage of existing vaccines (eg, measles-containing vaccines) and the introduction of new vaccines (eg, rotavirus vaccine) contribute to this trend. 2. 69 million (95% CrI 52–88) deaths were estimated to be averted between 2000 and 2030, of which 37 million (30–48) were averted between 2000 and 2019. 3. Of the ten pathogens, vaccination against measles has the largest impact, with 56 million (39–74) deaths averted between 2000 and 2030. 4. In the absence of vaccination, all-cause mortality among children younger than 5 years would be 45% higher than currently observed.

Figure: Estimates of deaths averted by vaccination in 98 countries

(A) Estimates of death averted by calendar year (summing across all ages) and pathogen. (B) Estimates of deaths averted by year of birth (summing across lifetime) and pathogen.

This article provides emphatic talking points to encourage parents and others to follow vaccination recommendations. Remember, at least 25% of HCWs are hesitant in taking the COVID-19 vaccine.

Premise/Methods. 1. MIS-C is a serious post-infectious inflammatory disorder occurring 2-4 weeks after infection with SARS-CoV-2 with a wide range of clinical features including acute cardiac dysfunction in 60% to 75% of cases. 2. Optimal treatment of MIS-C is unclear with various agents being utilized including IVIG, steroids, and cytokine blockade or inhibitors. 3. This is a retrospective cohort study drawn from a national surveillance system with propensity score-matched analysis. 4. The primary outcome is treatment failure defined as persistence of fever 2 days after the introduction of initial therapy or recrudescence of fever within 7 days comparing IVIG + steroids and IVIG alone.

Findings: 1. 106 patients met the WHO criteria and received one of the two treatment regimens: median age 8.6 years (IQR 4.7-12.1); 58% female; 46 (41%) received hemodynamic support; 29 (26%) received mechanical ventilation; no deaths. 2. 34 subjects received IVIG + methylprednisolone and 72 received IVIG alone and most subjects had positive serology and/or PCR testing. 3. IVIG and methylprednisolone compared with IVIG alone was associated with a lower rate of treatment failure (3/32 [9%] vs 24/64 [38%]). 4. Treatment with IVIG and methylprednisolone vs IVIG alone was associated with a lower rate of second-line treatment; secondary acute left ventricular dysfunction; and hemodynamic support. The duration of PICU stay was also significantly shorter (median, 4 vs 6 days).

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