Reference(s) of the Week

- Belay ED. Trends in Geographic and Temporal Distribution of US Children With Multisystem Inflammatory Syndrome During the COVID-19 Pandemic. JAMA pediatrics. 04.06.2021. https://jamanetwork.com/journals/jamapediatrics/fullarticle/2778429 pdf
Premise/Methods: 1. Patients with MIS-C predominantly have gastrointestinal and cardiovascular manifestations and less prominent respiratory symptoms and complications such as pneumonia and acute respiratory distress syndrome(ARDS) but the relative rarity of the condition has limited full definition of the disorder. **2.** The present study describes the details of MIS-C patients including their geographic and temporal distribution, clinical characteristics, treatment, and outcome. **3.** Patients reported to the CDC as having MIS-C were further scrutinized to provide strict criteria for inclusion into this review.
Findings: 1. 1733 patients with MIS-C met inclusion criteria: 994 (57.6%) were male; 1117 of 1586 patients (71.3%) with known race/ethnicity were either Hispanic (586 [37.4%]) or non-Hispanic Black (531 [33.9%]); the median age of patients was 9 (IQR, 5-13) years; the male : female ratio was roughly 1:1 for patients aged 0 to 4 years and progressively increased for subsequent age categories to 2:1 for patients aged 18 to 20 years. **2.** Symptoms per age: younger children were more likely to have conjunctival changes, rash, and abdominal pain; adolescents more commonly had chest pain, shortness of breath, cough and significantly had more cardiac dysfunction and a dx of myocarditis, *but* no significant difference in coronary artery dilation by age. **3.** Preceding symptoms of COVID-19 differed by age: 0-4 years of age, 16% had symptoms and an incidence of 2.3 MIS-C per 100,000; 18-20 years, 44-63% had symptoms and an incidence of 0.4 per 100,000. **4.** The geographic and temporal occurrence of MIS-C in close association with the COVID-19 pandemic and the high proportion of patients with IgG positivity are consistent with earlier hypotheses that the emergence of MIS-C is due to delayed immunologic responses to infection by SARS-CoV-2. *This study furthers our understanding of MIS-C. Importantly, the majority of younger children with the disorder were either asymptomatic or mildly effected by SARS-CoV-2 and tended not to have a cardiac presentation but could have coronary dilation as a sequelae.*

Other References:

- FDA News Release. Coronavirus (COVID-19) Update: FDA Continues to Advance Over-the Counter and Other Screening Test Development. 03.31.2021. https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-continues-advance-over-counter-and-other-screening-test-development pdf
Announcement: 1. The FDA authorized several tests for over-the-counter (OTC) use without a prescription when used for serial screening. **2.** In addition to the tests authorized for OTC use, one serial screening test was authorized for use in a point-of-care (POC) setting without a prescription, and an additional screening test was authorized for POC use with a prescription.
3. In total, the FDA has authorized three tests with serial screening claims (testing asymptomatic individuals multiple times on a routine basis). Specific tests authorized this week:
Quidel QuickVue At-Home OTC COVID-19 test - authorized for OTC at-home serial screening
Abbott BinaxNOW (multiple configurations)
> *Abbott BinaxNOW COVID-19 Antigen Self Test – authorized for OTC at-home serial screening*
> *Abbott BinaxNOW COVID-19 Ag Card 2 Home Test - authorized for OTC at-home serial screening with telehealth proctor*
> *Abbott BinaxNOW COVID-19 Ag 2 Card – authorized for POC serial screening without a prescription*
BD Veritor System for Rapid Detection of SARS-CoV-2 – authorized for POC serial screening with a prescription

4. Screening testing, especially with the over-the-counter tests, is an important part of the country's pandemic response—many schools, workplaces, communities, and other entities are setting up testing programs to quickly screen for COVID-19.

Lubrano R. Assessment of Respiratory Function in Infants and Young Children Wearing Face Masks During the COVID-19 pandemic. JAMA Network. 03.02.2021. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2776928 pdf
Premise/Methods: 1. The evidence for adverse outcomes associated with face mask use among children is poor, and the benefits of preventing individuals without symptoms or with mild symptoms from spreading the infection is obvious.
2. This was a study of healthy children divided into two groups: Group A, 4 months – 24 months and Group B, 24 months – 144 months. **3.** The primary aim was to determine if the use of surgical mask among younger children was associated with changes in partial pressure of end-tidal carbon dioxide (PETCO2), oxygen saturation (SaO2), pulse rate (PR), and respiratory rate (RR), or clinical signs of respiratory distress. **4.** The secondary aim was to determine if the use of masks in this population was associated

with a decrease in the perfusion index (PI).

Findings: 1. 47 children were enrolled in the study: Group A n=20, Group B n=25; equal distribution of male and female participants in both groups. **2.** At rest, there was no significant change in pulse rate, respiratory rate, oxygen saturation, or perfusion index in participants with or without a mask. **3.** During the walk test, there was a significant but physiologic irrelevant change in pulse rate and respiratory rate but not oxygen saturation, end-tidal CO2, or perfusion index. **4.** This study suggests that basic respiratory parameters are stable during mask-wearing in children from 2 years and older.

This is a simple study that is reassuring with regard to the parameters studied. It does not address changes is aerobic work beyond a simple walk test and the numbers of the children studied is limited. Masks in young children (< age 4 years) would likely require patient instruction and definitely supervision.

- Redd AD. CD8+ T cell responses in COVID-19 convalescent individuals target conserved epitopes from multiple prominent SARS-CoV-2 circulating variants. Open Forum Infectious Diseases (IDSA, accepted manuscript). 03.30.2021.
  [CD8+ T cell responses in COVID-19 convalescent individuals target conserved epitopes from multiple prominent SARS-CoV-2 circulating variants | Open Forum Infectious Diseases | Oxford Academic (oup.com)](#) pdf

  Premise/Methods: 1. Three major variants of concern (VOC), UK B.1.1.7, S Africa B.1.351, and Brazil B.1.1.248 all possess the N501Y mutation in the receptor binding domain of the SARS-CoV-2 spike protein, a primary target for neutralizing antibody (NAb) binding. **2.** NAb serves as the first line of defense against infection, but the CD8+ T cell response is also important for prevention of further disease progression. **3.** CD8+ T cell responses from 30 convalescent COVID-19 patients were assessed to ascertain potential immunity to the three major VOC.

  Findings: 1. There were 132 SARS-CoV-2-specific CD8+ T cell responses corresponding to 52 unique epitope reactivities from convalescent individuals directed against several structural and non-structural target epitopes from the entire proteome. **2.** Only one mutation overlapped from the three VOC with 52 CD8+ T cell epitopes previously identified in a group of convalescent individuals and does not likely significantly affect T cell binding or recognition. **3.** The data on CD8+ T cell responses from these 30 convalescent individuals are also in line with a prior report showing that the great majority of CD4+ and CD8+ T cell epitopes from the spike protein of the SARS-CoV-2 variants are also conserved in vaccinated individuals.

  This study is good news. Data now exists both for NAb and now T cell responses that the current VOC are harnessed by native and vaccine induced immunity.

SEE THE ARTICLE CABINET ON THE S: DRIVE, "COVID-19 ARTICLE RESOURCE CABINET" FOR CHILDREN'S FULL COLLECTION