



# INFECTIOUS DISEASES

Volume 24, Issue 2

NEWSLETTER

Fall 2021



## Chair's Letter

Hello once again, SOID members!

Since our last newsletter in the spring, COVID-19 has once again proven to be a nasty adversary. Fortunately, at the national level, our current disease surge may indeed be abating. I hope that is the case in your community.

SOID efforts continue and I'd like to start by noting the great success of the just completed AAP Pediatric Infectious Diseases Virtual Course (formerly PREP:ID). There were 314 registrants! This course's development was particularly challenging as we had to meet the AAP's charge to be more inclusive to general pediatricians in format and content, without losing well-earned value to our ID fellows. A big thank you to Deb Palazzi, Andrea Hahn, Kari Simonsen, and Bob Tanz who worked closely with our PIDS partners to make this happen.

We have moved forward with our Chapter Grants initiative. Our first recipients are New York Chapter 1, New York Chapter 2, and Puerto Rico. SOID is happy to have launched this new initiative to support education at the Chapter level. Read below the details of the plans for ID outreach using SOID funding. Similarly, West Virginia University Department of Pediatrics is the recipient of the 2021-

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2022 SOID (annual) S. Michael Marcy Visiting Professorship. This is another longstanding outreach opportunity for the Section, of which we are very proud. Also, congratulations to Sandor Feldman, professor emeritus at the University of Mississippi Medical Center, the recipient of the 2021 SOID Award for Lifetime Contribution in Infectious Disease Education. See here for exactly why he richly deserves our respect: <https://www.aap.org/en/community/aap-sections/infectious-diseases/award-for-contribution-in-id-education/>.

To plagiarize myself from the last newsletter, this newsletter is “chock full of information.” Christina Nelson from CDC tells us how COVID-19 has rendered our non-COVID-19 disease surveillance less reliable. Jane Carnazzo adds her substantial general pediatrics experience to the COVID-19 vaccine debate topics. Also included in this newsletter are vignettes of MIS-C in previously healthy children from Dr Jantusch, a data-driven opinion piece from our SOID fellows on COVID-19 vaccine issues, particularly vaccine resistance, and a typically insightful piece by Chris Harrison on the (potential) collateral damage to mumps prevention from the pandemic. Lots of other info on new policies and guidelines, the latest Red Book edition, a review of recent ID literature, and coding updates. Many thanks to all SOID members who contributed and particularly to Editors Jennifer Read and Jane Carnazzo.

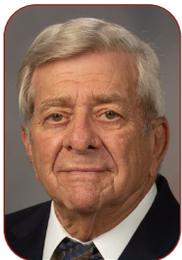
We welcome our new Executive Committee Training Fellow Liaison, Jency Daniel, a pediatric infectious diseases fellow in the Children's National Hospital/ FDA-CDER track. Also, welcome to our new Education Subcommittee Training Fellow Liaison Ganga Moorthy, pediatric infectious diseases and global health fellow at Duke University Medical Center. We highly value our fellows who hold leadership positions at SOID. And finally, we are truly grateful to Bob Frenck for all his hard work as he rotates off the Executive Committee. He will, however, remain firmly ensconced as Education Subcommittee Chairperson. Thank you, Bob, for remaining committed to the nitty gritty details of SOID work.

As always, if you have colleagues interested in the SOID type of national outreach and collaboration, please refer them to [join the Section](#).

*Ken Zangwill, MD*

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## Section on Infectious Diseases 2021 Award for Lifetime Contribution in Infectious Diseases Education



The SOID Executive Committee is pleased to award **Sandor Feldman MD, FAAP** the 2021 Award for Lifetime Contribution in Infectious Diseases Education in recognition of his outstanding commitment to the education of pediatricians regarding infectious diseases. Dr Feldman is professor emeritus of pediatrics at the University of Mississippi Medical Center.

Dr Feldman's career has forever been at the juncture of academia and outreach. Whether it be at St. Jude or the University of Mississippi, his emphasis has always been on creating the most significant effect for children and the physicians who care for them.

Following his residency, Dr Feldman was recruited by his mentor, Dr Walter Hughes, to St. Jude Children's Research Hospital for his pediatric infectious disease fellowship. After completing his fellowship, he remained at St. Jude as Chief of Clinical Infectious Diseases and Director of General Pediatrics. His clinical work was the treatment of infections in children with leukemia and other childhood cancers. His research focused on treatment of viral infections and vaccine studies in children with cancer. During that time, the AIDS epidemic was affecting the nation, and he was instrumental in the treatment and management of the disease in HIV infected children. In Memphis, he was also Associate Professor of Pediatrics at the University of Tennessee/LeBonheur Children's Hospital.

In 1987, Dr Feldman was recruited to the University of Mississippi as the first and only Pediatric Infectious Disease specialist in the state. When he made the 200-mile journey from Memphis to Jackson, he brought the same zeal for children with sickle cell anemia, HIV infection, vaccine research, and interacting with professionals caring for children.

While at the University of Mississippi, he was the sole teacher of Pediatric Infectious Disease for every medical student and resident

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## **SOID 2021 Award for Lifetime Contribution in Infectious Disease Education** *Continued from Page 2*

for many years. He traveled to Mississippi's remotest regions educating nurses and physicians about the latest vaccine information. He lectured at hospital grand rounds, individual physician offices, federally qualified health centers and rural health centers, health departments, and conferences of the Mississippi Chapter of the AAP.

Throughout his career, Dr Feldman has worked with local health departments in furthering vaccine education and uptake. Through his health department work in 'retirement,' he has had his most extensive outreach to pediatricians. No matter how remote the community, Dr Feldman has traveled to approximately 90% of the clinics and hospitals in the state to discuss pediatric infectious disease topics.

Although he has labored without the spotlight of the national press, children in rural Tennessee and Mississippi, children with HIV, TB, sickle cell anemia, as well as the physicians who care for them have benefited from his tireless work.

The award for Dr Feldman will be presented virtually during the fall 2021 meeting of the SOID Executive Committee.

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## **Welcome to new SOID Executive Committee Training Fellow Liaison**



**Jency Daniel, MD** is currently a second-year pediatric infectious diseases fellow in the Children's National Hospital/FDA-CDER track. In addition to rotating on academically robust General and Immunocompromised/Transplant ID services, she also works as a clinical reviewer for new drug applications seeking FDA approval. She is a lifelong New Yorker and proud alum of Siena College, Albany Medical College, and New York Medical College's pediatric residency at Westchester Medical Center/ Maria Fareri Children's Hospital. She is now a fond DC transplant who was drawn to the vibrancy of the city, full of passionate, driven people seeking to effect important changes for the better. Not only does she love collaborative learning, challenging clinical cases, tropical and emerging diseases, global health, and epidemiology but has a particular penchant for health policy and legislative advocacy. Unrelated to any of this, she also loves hip hop, writing, pretending to be a TV/ film/ food critic, photography, travel off the beaten path, improv and standup comedy, and themed parties.

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## **Welcome to new SOID Education Subcommittee Training Fellow Liaison**



**Ganga Moorthy, MD** is a second-year pediatric infectious diseases and global health fellow at Duke University Medical Center. She graduated from the University of Oklahoma and obtained her medical degree from the University of Oklahoma College of Medicine. She completed her pediatrics residency training at Duke where she also served as a chief resident. Her research interests are in global (and local) antimicrobial stewardship, leveraging QI frameworks to improve outcomes from infectious diseases, and health disparities. During fellowship, Ganga is pursuing a Master of Science in Global Health degree through the Duke Hubert-Yeargan Center for Global Health. She will spend time during fellowship conducting research on antimicrobial resistance patterns associated with neonatal sepsis and outcomes from febrile illness in Moshi, Tanzania. Her overarching career goal is to become a clinician educator and an independent researcher focused on improving therapeutic and diagnostic capacity, decreasing mortality from pediatric and neonatal sepsis, and reducing the prevalence of antimicrobial resistant infections in global settings. When she isn't working, Ganga enjoys being outside (especially hiking and gardening), traveling, eating ice cream, and watching OU football.

## Ripple Effect: The Effect of COVID-19 on Infectious Disease Surveillance

Christina A. Nelson, MD, MPH

*Division of Vector-Borne Diseases, National Center for Emerging and Zoonotic Infectious Diseases, Centers for Disease Control and Prevention, Fort Collins, Colorado*

Public health surveillance is “the collection, analysis, and use of data to target public health prevention. It is the foundation of public health practice.”<sup>1</sup> Disease surveillance has been an integral part of public health for centuries. During a devastating outbreak of plague in the town of Alghero, Italy in 1582, Dr Quinto Angelerio played a pivotal role in fighting the epidemic by introducing novel prevention measures. The town of Alghero was divided into 10 wards, each assigned a Health Deputy. “The Health Deputies...gathered twice a day in the so-called ‘City House’ to follow the course of the epidemic and to transmit the information to [authorities and] physicians.” Surveillance data allowed timely tracking of where and when cases were occurring, and persons suspected of having plague were then quickly isolated at designated centers. These data and the resulting control measures undoubtedly curbed the epidemic and spared the surrounding districts from the spread of plague.<sup>2</sup>

Disease control efforts rely on surveillance data in many ways. In order to mitigate an infectious disease, it is important to understand in whom, when, and where it is occurring, whether disease patterns have changed over time. Moreover, surveillance provides critical input on the effect of public health interventions, allowing comparison of pre- and post-intervention data to determine whether the intervention was effective.

In order for an infectious disease to be reported, three essential events must first lead to a diagnosis: the patient accesses health care, the clinician considers that particular disease in light of the patient’s presentation, and the clinician supports or verifies the diagnosis by laboratory testing or other means. Each of these events have clearly been affected by the COVID-19 pandemic. Not surprisingly, based on preliminary data it appears that once a condition has been diagnosed, the actual reporting of the condition has been affected by the pandemic as well.

Surveillance takes resources. Lots of them. Passive surveillance relies on clinicians, laboratories, and hospitals to submit notifications of reportable diseases. Naturally the COVID-19 pandemic has affected these systems since health care workers have been strapped for time and other resources needed to report diseases.

Active surveillance, on the other hand, involves case finding by contacting patients, clinicians, or laboratories; pulling data from electronic health records; or conducting field visits. This type of surveillance can be even more costly or labor intensive.

Once a disease is reported, state and local health departments compile the reports and follow up on cases when necessary. For the 120 diseases deemed nationally notifiable in the United States, surveillance data on these diseases is then transmitted to CDC’s National Notifiable Diseases Surveillance System (NNDSS).<sup>3</sup>

Surveillance case counts for non-COVID infectious diseases are expected to decrease in 2020-2021 due to missed diagnoses and diminished reporting.<sup>4,5</sup> For example, a survey indicated that people spent more time outdoors in 2020 versus 2019,<sup>6</sup> so experts believed the risk of Lyme disease and other tick-borne diseases was greater than in previous years. However, preliminary data suggest that there will likely be a decrease in positive laboratory reports referred to health departments for investigation in 2020.<sup>7</sup> Similarly, provisional NNDSS data indicate sharp decreases in case counts for ehrlichiosis (decrease from 2,093 cases in 2019 to 959 in 2020) and anaplasmosis (decrease from 5,655 cases in 2019 to 3,196 in 2020).<sup>8</sup> There have also been substantial declines in the number of reported tuberculosis cases (20% decrease from 2019 to 2020) and sexually transmitted diseases (50% decrease in April 2020 vs. April 2019). The reasons for this are multifactorial and likely include reduced transmission, undetected cases, and decreased reporting.<sup>9,10</sup>

Pressure from the COVID-19 pandemic exposed the vulnerabilities in disease surveillance and just how resource intensive some surveillance systems can be. According to a state health department staff member, “COVID delayed many of our surveillance activities. We also were unable to interview [patients with X] like we normally would like to.”

Changes are coming to reduce the burden of reporting and surveillance for some infectious diseases, and they couldn’t be more timely.

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## Ripple Effect: The Effect of COVID-19 on Infectious Disease Surveillance Continued from Page 4

Lyme disease surveillance will soon be modified to utilize a laboratory only case classification system for high-incidence states, eliminating the need for detailed case investigations in areas where the risk of Lyme disease is already established.<sup>11</sup>

The full extent of the effect of COVID-19 on infectious disease surveillance remains to be seen. One thing that is already clear – when interpreting surveillance case counts for 2020-2021, we will have to do so with a grain of salt. Or better yet, an entire bucket of salt.

Disclaimer: The opinions expressed in this article are those of the author and do not reflect the view of the Centers for Disease Control and Prevention, the Department of Health and Human Services, or the United States Government.

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## Why should we include children less than 12 years of age in COVID-19 clinical studies?

## Should we vaccinate children under 12 years against COVID-19?

*Jane Carnazzo, MD, Children's Hospital and Medical Center, Omaha, Nebraska*

By the time you read this, the answer to these questions and others may be answered and/or there may be new questions that need to be answered. The debate as I write the article is whether children under 12 years of age should be vaccinated against COVID-19. What we do know is that the vaccines do provide protection for those over twelve years of age but there are some side effects that vary between the available COVID-19 vaccines. Do these risks outweigh the benefits of vaccination? So far the benefits do outweigh the risk for those

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## Why should we include children less than 12 years of age in COVID-19 . . . *Continued from Page 5*

over 12 yrs. of age. The vaccine studies have not finished for this age group, but I anticipate they will provide us with guidance. As with all the vaccines that have been developed in the last 30-40 years (the years I have been practicing pediatrics) the studies and the practice of preventing illnesses has made the decision to vaccinate very clear.

Why are we so torn this time? Why do we not see just the facts and the science? We know from history that immunizing the majority is what will make the difference. When they tried to only immunize women against Rubella, we could not stop congenital infections. We know that to stop or slow the cancer seen with HPV takes immunizing both sexes. I remember a day when Varicella was a common childhood disease and now new residents, and students don't even know what it looks like. It was not as much a medical benefit that sold the vaccine as it was the financial impact to families and communities with the illness lasting 10-14 days depending on when the lesions all dried up. I think we need to consider the impact to society. What effects does COVID-19 have on persons beyond the actual patient with COVID-19 disease?

We know that most children don't get very ill with COVID-19 but for those that do why not prevent it. We know that children are often very effective spreaders of disease and many live within multigenerational homes. So, who will they infect and how does that then affect the family they live with and those even beyond the walls of their homes? I would like to believe that we as pediatricians will do the right thing for our patients and their families. The Medical home cares for the whole child and that includes the family.

School has restarted and so has the climb of COVID19 infections in children. Will we see more severe disease in children? When will a new variant appear? Will there be more long term effects in children? Could those who get myocarditis with the vaccine potentially be the child who suffers more long term effects should they get COVID19 disease? I presently care for an adolescent patient who is still struggling with the effects of COVID19 over six months from when she was infected. MIS-C (multisystem inflammatory disorder in children) has been documented early in the pandemic and proven to be devastating for some. Many of those affected by MIS-C were previously healthy. Will we see more or different effects among children with mild disease?

I have provided the perspective of a general pediatrician faced with the daily controversy of to vaccinate or not. Staff, patients and family all pose the question. Do I vaccinate myself, my children and why?

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## MIS-C cases among previously healthy children: Two vignettes

*Barbara Jantausch, MD (on behalf of the MIS-C Task Force of Children's National Hospital, Washington, DC)*

### Vignette #1

A previously healthy 9-year-old girl presented with a 3-day history of fever, with a maximum temperature of 105°F, and bilateral conjunctival injection. She had been evaluated at an outside hospital, diagnosed with COVID-19, and discharged to home. The mother had been diagnosed with COVID-19 one month ago. On examination, the patient had bilateral non-exudative conjunctivitis, a strawberry tongue and palmar and plantar erythema. She had elevated concentrations of alanine aminotransferase (ALT) (83 IU/L) and C-reactive protein (CRP) (7.9 mg/dL). Concentrations of ferritin, international normalized ratio (INR) and d-dimer were also elevated. The patient's N-terminal brain natriuretic peptide (BNP) and troponin values were normal. Her SARS-CoV2 antibody (IgG) assay was positive. She was diagnosed with multisystem inflammatory syndrome in children (MIS-C) and treatment with intravenous immune globulin (IVIG) and aspirin were initiated on hospital day (HD) #1. An echocardiogram showed a small fusiform aneurysm of the left main coronary artery and of the left anterior descending (LAD) artery with a small pericardial effusion. Anticoagulation therapy with enoxaparin sodium was initiated. The patient defervesced on HD #2. On HD #3, the patient developed tachypnea and hypotension requiring transfer to the intensive care unit. The BNP concentration was 3,565 pg/ml prior to transfer and troponin remained normal. Treatment with an interleukin-1 (IL-1) receptor antagonist (anakinra) was initiated. Repeat echocardiogram showed a prominent left coronary artery and a normal-sized LAD. She required oxygen but no intubation or pressor support. The patient was transferred back to the pediatric floor when clinically improved. She was discharged on HD #12 on aspirin and rivaroxaban therapy. She had follow-up with cardiology and rheumatology as an outpatient and subsequently did well.

### Vignette #2

A 7-year-old boy with no significant past medical history presented with 3 days of fever (maximum temperature of 104°F) and right

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**MIS-C cases among previously healthy children: Two vignettes** *Continued from Page 6*

lower quadrant (RLQ) abdominal pain. He had one episode of emesis but no diarrhea. He had been diagnosed with COVID-19 two to three weeks prior to presentation. Two days prior to presentation he was evaluated at an outside hospital for RLQ pain and had a normal abdominal ultrasound with no visualization of the appendix and a normal CT scan of the abdomen. Laboratory evaluation at the time of presentation showed a normal WBC count of 7000 per microliter with 20% bands and elevated concentrations of blood urea nitrogen (18 mg/dL) and creatinine (0.83 mg/dL). His C-reactive protein (CRP) concentration was elevated (30 mg/dL) as was the erythrocyte sedimentation rate (45). He was admitted to the hospital with a diagnosis of multisystem inflammatory syndrome in children (MIS-C) on the basis of fever and evidence of involvement of two organ systems (gastrointestinal and renal). The SARS-CoV-2 PCR assay was negative and the SARS-CoV-2 antibody (IgG) assay was positive. Treatment was initiated with intravenous immune globulin (IVIG) and aspirin upon admission. On hospital day (HD) #1 he developed tachypnea and tachycardia with elevation of N-terminal brain natriuretic peptide (BNP) to 1,165 pg/mL with a normal troponin. On HD #2 he developed increased work of breathing and was transferred to the intensive care unit where he required intubation and mechanical ventilation, as well as pressor support with epinephrine. He was treated with anakinra and enoxaparin sodium and subsequently methylprednisolone. His troponin level became elevated on HD #3. His serial echocardiograms showed no coronary artery ectasia or pericardial effusion. However, on HD #4 his echocardiogram demonstrated left ventricular systolic function at the lower level of normal despite vasopressor support and he was placed on milrinone therapy. He was transferred from the intensive care unit to the pediatric floor on HD #8. His BNP normalized prior to discharge and troponin and CRP were improving. He was discharged on HD #11 and follow-up with cardiology and rheumatology as an outpatient were arranged. After hospital discharge, he resumed his usual activities.

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**ID Training Fellows Column – COVID-19 vaccines, adverse effects, and vaccine hesitancy: an evidence-based opinion**

*Rachit Chawla, MD, Harbor-UCLA Medical Center, Torrance, CA*

*Jency Daniel, MD, Children's National Hospital, Washington, DC*

*Ganga Moorthy, MD, Duke University Medical Center, Durham, NC*

**Pediatric COVID-19 Vaccine Clinical Trials Data and Adverse Effects**

Data suggest that SARS-CoV-2 vaccinations are highly effective, safe, and incredibly important to decrease mortality from COVID-19 and contain the spread of variants. The U.S. Food and Drug Administration (FDA) initially authorized the use of the Pfizer-BioNTech mRNA COVID-19 vaccination for those 16 years and older, but expanded the Emergency Use Authorization (EUA) to adolescents 12 to 15 years of age in May 2021.<sup>1</sup> This came after the results of a randomized, double-blinded placebo-controlled Phase II/III clinical trial of over 2,000 participants showed 100% efficacy in preventing symptomatic infection and promising immune-bridging data.<sup>2</sup> In this clinical trial, reactogenicity symptoms were mostly mild to moderate with rare serious adverse events and no deaths.<sup>2</sup> The CDC's Advisory Committee on Immunization Practices (ACIP) has recommended Pfizer vaccinations in adolescents. Moderna has also completed a clinical trial of 12- to 18-year-olds that enrolled over 3,700 participants and showed no infections in fully vaccinated adolescents.<sup>3</sup> Moderna filed for an expanded EUA in June 2021.

Pfizer-BioNTech and Moderna are currently conducting Phase I clinical trials in younger children aged 6 months to <12 years. These trials are important to determine both safety and appropriate dosing as vaccination expands to younger children. Results are expected in fall/winter 2021 and, if safe and efficacious, authorization for younger children could occur in late 2021 or early 2022.

Nationally, the most recent CDC data show that 27.9% of 12- to 15-year-olds and 39.4% of 16- to 17-year-olds have been fully vaccinated.<sup>4</sup> There has been concern regarding cases of myocarditis, particularly in males aged 12-29 years old shortly after receiving the second dose of an mRNA COVID-19 vaccine. Review of reported cases by the CDC and ACIP showed that there is an association between vaccination and myocarditis in this population; however, the overall rate of myocarditis is low, cases are mostly mild with minimal hospitalizations, and early outcomes are encouraging, though long-term follow up is necessary. In July 2021, the ACIP concluded that the benefits of COVID-19 vaccination in adolescents and young adults clearly outweigh the risk of myocarditis, particularly given the risk of cardiac involvement with SARS-CoV-2 infection.<sup>5</sup> Other rare side effects such as thrombocytopenia have been reported with Pfizer and Moderna vaccines.

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## ID Training Fellows Column . . . *Continued from Page 7*

Though younger individuals are less likely to have severe disease, the number of cases of COVID-19 are increasing in children and adolescents as the Delta variant spreads across the United States. Additionally, the changing landscape of COVID-19 has implications for school reopening this fall. As a significant portion of the student population is not yet eligible for vaccination, the American Academy of Pediatrics recently recommended continuing universal masking for students older than two years of age and all school staff to protect unvaccinated students and decrease in-school transmission of SARS-CoV-2 and other respiratory viruses.<sup>6</sup> Until overall vaccine uptake improves and vaccines are authorized for younger children, COVID-19 remains a significant health risk for children.

### Pediatric COVID-19 Vaccine Hesitancy and Resistance

As COVID-19 continues to pose a risk to people of all ages, providers are faced with the compounding issue of vaccine hesitancy and resistance. This ongoing challenge, coupled with the novel nature of the COVID-19 pandemic, the unprecedented rapid timeline over which the COVID-19 vaccines were developed, and the vaccines' current status under FDA EUA has coalesced for many into vaccine hesitancy and resistance specifically regarding the COVID-19 vaccines including among parents who are not otherwise skeptical of vaccines.

Parents are more likely to be vaccine-hesitant and vaccine-resistant than non-parent adults in the United States, with mothers more commonly reporting that they are extremely unlikely to vaccinate their children against COVID-19 than fathers. Vaccine resistance is overall similar among white, Hispanic and black parents, while Asian American parents are less resistant. There are only modest differences seen in vaccine hesitancy and resistance rates seen among urban, suburban, and rural residents.<sup>7</sup>

Some of the most often cited reasons for continued hesitancy and resistance include pervasive false notions that children are not severely affected by COVID-19 illness and therefore do not need to be vaccinated, as well as concerns about post-vaccine adverse effects including myocarditis and blood clots. At the time of this writing, almost 4.09 million children have tested positive for COVID-19 since the onset of the pandemic with an uptick in pediatric cases in mid-July after several months of steadily declining cases.<sup>8</sup> As of July 14, 2021, there have been 335 deaths involving COVID-19 among children under 18 years of age.<sup>9</sup> As of June 28, 2021, there have been 37 deaths among 4,196 total pediatric patients meeting case definition criteria for multisystem inflammatory syndrome in children (MIS-C).<sup>10</sup>

People who are now vaccinated cite a variety of influential factors in their decision, including conversations with family, friends, and personal physicians about their personal experiences of vaccination without serious side effects; being able to safely visit with families; and easing of restrictions. Some only plan to get vaccinated if required, and many cite concerns about side effects as the top reason why they haven't gotten a vaccine yet.<sup>11</sup> Similar to views on employer requirements, about half the public overall support K-12 schools requiring COVID-19 vaccination, but most parents are opposed, with divisions seen along partisan lines. Many parents favor a "wait and see" approach to vaccinating their children aged 12-17 years.<sup>12</sup>

Despite the many challenges, there are entry points for dispelling myths and assuaging fears among parents. Most parents do believe that COVID-19 is still a serious problem and worry about their child getting ill. Most parents have reported they would feel safer sending their children to school if their children were vaccinated or if they knew that most other students were vaccinated. Indeed, more than 80% of parents in one survey reported that protecting their children from the virus and wanting their children to go to school free from worry about COVID-19 were important reasons to vaccinate their children, and 77% reported that protecting their children was an important reason to get vaccinated themselves.<sup>13</sup>

We need to build trust in vaccination with clear and accurate messaging among healthcare personnel and communities. We need to regularly communicate both what is known and unknown about the vaccines; proactively address and mitigate the spread of misinformation; equip providers to have empathetic vaccine conversations and motivational interviews; empower vaccine recipients to share their personal stories and reasons for vaccination; and collaborate with trusted messengers including faith-based and community leaders to tailor and share culturally appropriate materials.<sup>14</sup>

In addition to these mass vaccination strategies, there is also a need to pivot towards more targeted outreach strategies. Knowing that young mothers are particularly hesitant and resistant to COVID-19 vaccines, we as pediatric providers are critically situated to address this population. As it stands now, our voices providing answers are often drowned out by media saturation with misinformation. Our efforts need to outpace those, as the data have also shown the importance of pediatricians and primary care providers as key trusted

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## ID Training Fellows Column . . . *Continued from Page 8*

messengers of reliable information and persuaders of the skeptical.<sup>10,15</sup> Primary care providers should be sought out as key grassroots messengers in this campaign. Recommendations to vaccinate that are considered high-quality provide strong endorsement, emphasize preventive benefits, and convey a sense of urgency.<sup>16</sup> Being persistent and revisiting the conversation in subsequent visits is also critical.<sup>17</sup> Ultimately, a pro-vaccine message is more likely to be effective if it is framed with an emphasis on how lives could be saved, how disease transmission could be stalled, and how the overall risk of vaccine-related adverse effects is lower than the risks of illness itself.<sup>18</sup>

Not only do we need to persuade, but perhaps more importantly we need to listen. People in community, and parents, are concerned and have many questions. We are in a position to address those concerns and provide answers. Since the beginning of the modern anti-vaccination movement, some amount of public trust in the medical community has been eroded. While the efforts to bolster confidence in COVID-19 vaccines are ongoing, our broader efforts in bridging the gap to restore public trust must continue as well.

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## **ID Pearls and Other Gems - Pandemic Vaccine Disruption – A Risk for Mumps Outbreaks in 2021-2022?**

*Christopher J. Harrison, MD, Children's Mercy Hospital and UMKC, Kansas City, MO*

**Vaccine disruption.** Due to shortages of personal protective equipment and social distancing recommendations, severe cutbacks for in-person visits, particularly for well-child visits, caused vaccine uptake to take a big hit during the first few months of the SARS-CoV-2 pandemic (estimates of 1 million fewer doses ordered in the second quarter of 2020 compared to 2019). A 47% relative decline in vaccines administered to 5-month-olds and a 58% decline among 16-month-olds in 2020 compared to 2019 occurred in Texas; similar disruptions occurred in California.<sup>1,2</sup> In early summer 2020, the AAP had recommended that clinicians focus well-care efforts on <2-year-olds and defer older children well-visits until more plentiful resources would allow catch-up of the older children's vaccines. MMR uptake became a concern, particularly second doses at 4–6 years-old. That said, rebounds in uptake of at least some vaccines in some age groups occurred in late 2020 with increases in PPE and lesser social restrictions.<sup>2</sup> But what residual vulnerabilities may still exist?

**Mumps vaccine – a potential weak spot.** The weak link in MMR is the mumps component. Primary vaccine failure can occur in up to 10%. Further, single-dose vaccine-induced protection begins to wane by school age. So, a second dose in the preschool age is recommended for longer lasting and more complete protection.

Interestingly, studies of vaccine-induced antibodies at 10-12 years after the last dose of 1- vs. 2-dose regimens have shown little difference, (75-95% antibodies).<sup>3</sup> And overall clinical protection seems similar in 1- vs. 2-dose schedules (81-91% 1-dose and 80%–92% 2-dose vaccine effectiveness (VE) in the US).<sup>4,5</sup> Yet, multiple mumps outbreaks, mostly in adolescents/young adults and the unvaccinated<sup>6</sup>, required temporary recommendations for extra doses in at-risk adolescents/young adults to control outbreaks.<sup>4</sup>

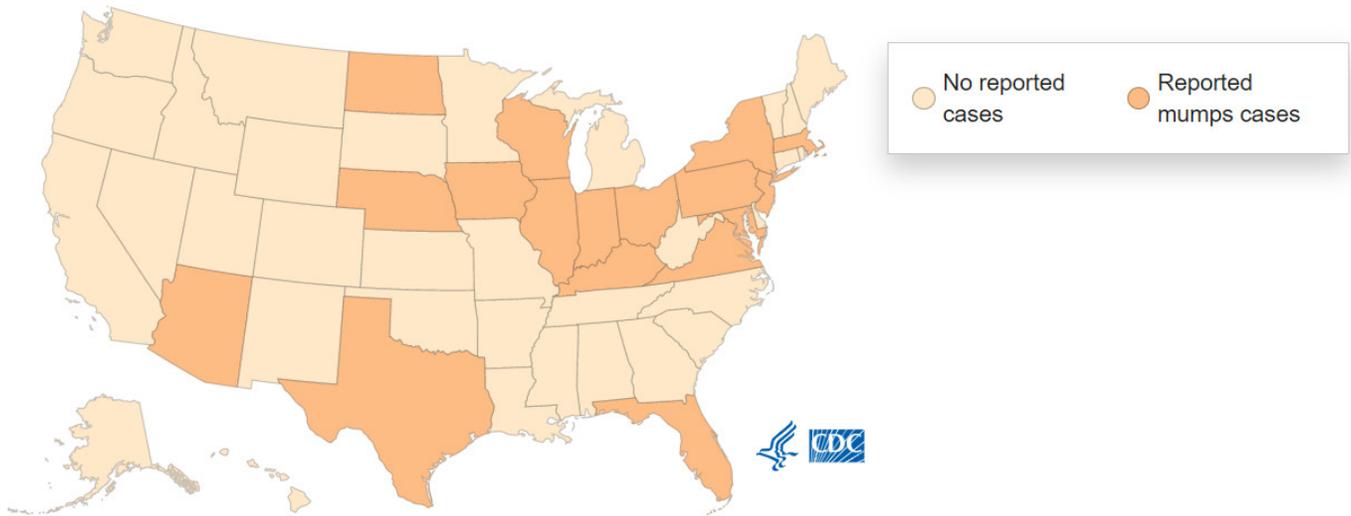
**Dumb Luck in 2020.** Usually, outbreaks occur when vaccination coverage drops (e.g., <90% for any given sub-population); transmission rates, case numbers, and outbreak duration increase in proportion to the drop in vaccination rates. But 2020-21 has been the exception so far. Instead of increased mumps in 2020-2021 so far, cases actually decreased compared to the six prior years. This case decrease was not due to high vaccine coverage or some master stroke of mumps-specific interventions, but most likely due to masking/social distancing/hand hygiene that prevented transmission of nearly all viruses, including mumps. That said, sporadic mumps cases still occurred in the U.S both before and after the start of the pandemic (142 cases from 32 locales in 2020). See Figure 1 for states reporting mumps in 2021.<sup>7</sup>

**Outbreaks are yet to come?** Despite no outbreaks in 2020, the near future may be a different story. Due to pandemic fatigue and persistent pandemic disbelief in nearly half the US population, most folks are not complying with social distancing/mask recommendations reinstated in the face of Delta and Gamma SARS-CoV-2 variants now dominating in the US. Should we also worry about mumps? Other viruses are making comebacks. Since mid-June, major RSV outbreaks occurred in Kansas City (Figure 2) and nationally<sup>8</sup> this summer during a decidedly non-RSV time of the year due to reduced restrictions in late June, prior to July 4th when non-masked groups

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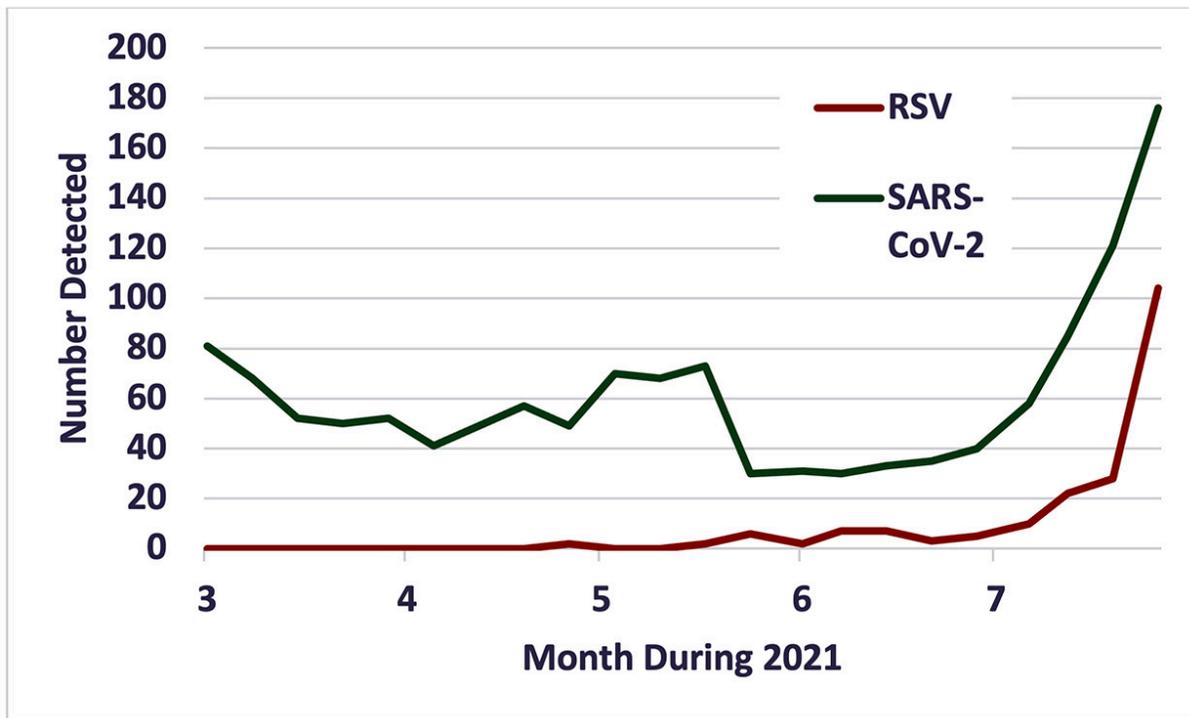
**ID Pearls and Other Gems - Pandemic Vaccine Disruption . . .** *Continued from Page 10*

**Figure 1. Mumps Reported in 2021.**



Adapted from<sup>9</sup> <https://www.cdc.gov/mumps/outbreaks.html>

**Figure 2. Detection of SARS-CoV-2 and RSV during March through July 2021 in Kansas City.**



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**Figure 3.**



From<sup>7</sup> <https://www.cdc.gov/mumps/vaccination.html#outbreaks-still-occur>

celebrated together. More opportunities for viral spread have, i.e., Labor Day, school start-up and athletic stadiums filled to capacity, and will continue through Halloween and other Holidays. So, if mumps vaccination rates are not >90% nationally and in sub-locales, sporadic cases may spark multiple outbreaks mumps in late 2021-early 2022.

**Mumps review.** Most of us have not seen mumps lately, so let's review the clinical manifestations of mumps. Non-symptomatic or minimally symptomatic (nonspecific or primarily respiratory symptoms only) mumps occurs but is rarely diagnosed. In clinically apparent cases, a prodrome (low-grade fever, headache, anorexia, malaise, and/or myalgias) precedes classic salivary gland swelling by three to four days. The enlarged salivary glands (usually unilateral) are painful and tender. Recall Stenson's duct inflammation as one potential sign. With parotid involvement (most cases), the angle of the ear initially pushes upward/outward; the swelling then progresses to surround the mandibular angle, making it not visible or nonpalpable (Figure 3). Parotid size is largest for first three days, usually lasts five days and most often resolves by day 10. With submandibular or sublingual salivary gland involvement (10% of cases), the submental swelling has similar time courses. Head/neck lymph node inflammation is the most frequent condition confused with mumps, but is differentiated by lymph nodes having better-defined borders, no ear protrusion or obscuring of the mandibular angle and being located usually behind the mandibular angle.

**Mumps diagnosis.** Mumps RT-PCR or viral culture of buccal swab samples (preferred specimen) can confirm infection. There can be times when urine and/or CSF testing (meningoencephalitis) can be useful. IgM titers (best within 5 days of symptoms) are usually helpful, but a negative IgM does not rule out mumps infection. Most patients will have positive IgG from prior vaccine, so IgG is usually not recommended.

**Complications.** After puberty, orchitis occurs in 30% of unvaccinated vs. 6% of vaccinated males with mumps (~75% unilateral). While mumps orchitis has not been linked to infertility, hypofertility and/or testicular atrophy may occur. Post pubertal females may develop oophoritis and/or mastitis ( $\leq 1\%$ ). Pancreatitis, deafness, meningitis, and encephalitis are seen <1%. Very rarely, myocarditis, nephritis, seizures, cranial nerve palsies, or hydrocephalus may occur. No mumps-related deaths have been reported in the United States during recent mumps outbreaks.<sup>10</sup>

Remember mumps can occur in the fully vaccinated, but symptoms are usually less severe and complications even rarer than in under-/un-vaccinated. So, mumps remains in differential diagnoses in all patients with salivary gland inflammation or signs/symptoms of possible mumps complications, regardless of vaccination status.

**Our role.** As pediatric providers, we have always been a major force in preventing diseases with vaccines. Our longstanding dedication to timely MMR administration at 12-15 months and 4-6 years has been key. Now, we may need some extra effort to catch-up any who have fallen behind during the pandemic. We can make the difference. Our strong advocacy may be the critical factor in ensuring no mumps outbreaks in the next year.

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## Chapter Column - Inaugural year of SOID Chapter Grant Program

In 2021, the SOID launched its chapter grant program to support infectious disease education and collaboration and integration of infectious disease (ID)-focused activities into chapter activities. Activities supported by this grant program focus on areas of interest to general pediatricians and other care providers with an interest in ID (eg, medical students, infection preventionists, etc.). The SOID is pleased to announce the following AAP chapters as grant recipients for this inaugural year: New York Chapter 1, New York Chapter 2, and Puerto Rico. Read below for a summary of what each chapter has planned for the coming year.

New York Chapter 1 plans to use its grant from the SOID to create a chapter subcommittee on ID, a collaboration dedicated to establishing a standard process for the routine assessment, compilation, and distribution of ID education and updates on guidance regarding testing, treatment, and infection prevention to Chapter members. While the Chapter has addressed topics relevant to the ID field through intermittent scheduling of didactic webinars and vaccine advocacy projects, the creation of an ID committee will ensure the routine dissemination of relevant and current ID education to all members of the Chapter.

New York Chapter 2 proposes to expand an existing lecture that provides trainees with tools and strategies to address parental vaccine hesitancy to all 14 residency programs chapter-wide with subsequent evaluation of the lecture's effect on trainees' ability to address parental vaccine concerns. This novel program differs from typical chapter educational outreach. The grant from SOID will allow the chapter to meet trainees and interested academically affiliated pediatricians at their home institution, expanding outreach efforts and reinforcing the value of AAP membership.

The Puerto Rico Chapter plans to recruit an infectious disease champion from the Chapter to assess pediatric ID topics of priority and address these topics in a webinar for all Chapter members. Focusing an educational activity on the topic of pediatric ID will be a new initiative for the Puerto Rico AAP Chapter, allowing an ID specialist to become a voice in the chapter and advocate for other initiatives to improve relevant clinical practices.

## New ID Policy/Guidelines

*Andrea Sperduto, MD, Cleveland Clinic Foundation, Cleveland, OH*

### American Academy of Pediatrics

A. Recommended Childhood and Adolescent Immunization Schedule: United States, 2021. *Pediatrics* 2021;147(3):e2020049775.

<https://pediatrics.aappublications.org/content/147/3/e2020049775>

B. COVID-19 Vaccines in Children and Adolescents. *Pediatrics* 2021;May 12, 2021.

- The AAP recommends COVID-19 vaccination for all children and adolescents 12 years of age and older who do not have contraindications using a COVID-19 vaccine authorized for use for their age.

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## New ID Policy/Guidelines *Continued from Page 13*

- The AAP supports coadministration of routine childhood and adolescent immunizations with COVID-19 vaccines (or vaccination in the days before or after) for children and adolescents who are behind on or due for immunizations.  
<https://pediatrics.aappublications.org/content/early/2021/05/11/peds.2021-052336>

### C. COVID-19 Clinical Interim Guidance.

<https://services.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/>

- Updated as new information becomes available and based on current evidence.
- Guidance is regularly reviewed.
- Recently updated examples are:
  - Caring for Patients in Inpatient and Outpatient Settings During Episodes of Surge (9/23/21)  
<https://www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/caring-for-patients-in-inpatient-and-outpatient-settings-during-episodes-of-surge/>
  - Providing Acute Care in the Ambulatory Setting During the COVID-19 Pandemic (9/23/21)  
<https://www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/caring-for-children-with-acute-illness-in-the-ambulatory-care-setting-during-the-public-health-emergency/>
  - Interim Guidance for Use of Palivizumab Prophylaxis to Prevent Hospitalization From Severe Respiratory Syncytial Virus Infection During the Current Atypical Interseasonal RSV Spread (9/23/21)  
<https://www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/interim-guidance-for-use-of-palivizumab-prophylaxis-to-prevent-hospitalization/>
  - Outpatient COVID-19 Management Strategies in Children and Adolescents (9/23/21)  
<https://www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/outpatient-covid-19-management-strategies-in-children-and-adolescents/>
  - COVID-19 Interim Guidance: Return to Sports and Physical Activity (9/20/21)  
<https://www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/covid-19-interim-guidance-return-to-sports/>
  - Caring for Children and Youth With Special Health Care Needs During the COVID-19 Pandemic (9/20/21)  
<https://www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/caring-for-children-and-youth-with-special-health-care-needs-during-the-covid-19-pandemic/>

### Morbidity and Mortality Weekly Report

A. Use of mRNA COVID-19 Vaccine After Reports of Myocarditis Among Vaccine Recipients: Update from the Advisory Committee on Immunizations Practices- United States, June 2021. MMWR:70 (early release/July 6, 2021).

- Background information:
  - In general, myocarditis is that it typically occurs more commonly in males with highest incidence among infants, adolescents and young adults.
  - Symptoms typically include chest pain, dyspnea and/or palpitations.
  - Diagnostic evaluation might reveal elevated troponin level, abnormal EKG, echocardiogram or cardiac magnetic resonance imaging findings.
  - Treatment is supportive most often. Exercise restriction is recommended until heart recovers.
- There is an elevated risk of myocarditis among mRNA COVID-19 vaccinees (particularly in males aged 12-29 years, more often following 2nd dose).
- On June 23, 2021, the ACIP concluded that the benefits of COVID-19 vaccination to individual persons and at the population level clearly outweighed the risks of myocarditis after vaccination.
- As of June 11, 2021, 52 million doses of the mRNA vaccine had been administered to persons aged 12-29 years (30 million for the first dose and 22 million for second doses).

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**New ID Policy/Guidelines** *Continued from Page 14*

- Through VAERS, 1,226 reports of myocarditis after mRNA vaccines were received during Dec. 29, 2020- June 11, 2021. Median age was 26 years (range: 12-94 years), with median symptom onset interval of 3 days after vaccination (range: 0-179 days).
  - Myocarditis reporting rates were 40.6 cases per million second doses of mRNA COVID-19 vaccines administered to males aged 12-29 yrs. and 2.4 per million administered to males aged >30 yrs. For females: 4.2 cases per million aged 12-29 yrs. and 1.0 cases per million aged >30 years.  
[https://www.cdc.gov/mmwr/volumes/70/wr/mm7027e2.htm?s\\_cid=mm7027e2\\_w](https://www.cdc.gov/mmwr/volumes/70/wr/mm7027e2.htm?s_cid=mm7027e2_w)
- B. Updated Recommendations from the Advisory Committee on Immunization Practices for Use of the Janssen (Johnson & Johnson) COVID-19 Vaccine After Reports of Thrombosis with Thrombocytopenia Syndrome Among Vaccine Recipients- United States, April 2021. MMWR:70(17);651-656.
- Feb. 27, 2021, FDA issued an Emergency Use Authorization (EUA) for the Janssen COVID-19 vaccine.
  - Feb. 28, 2021, ACIP issued interim recommendations.
  - April 13, 2021, CDC and FDA recommended Pause in use.
  - April 23, 2021, after discussion of benefits and risks, ACIP reaffirmed its interim recommendations for use of vaccines in all persons >18 years of age which now includes warning that rare clotting events might occur after vaccination primarily in women 18-49 years of age.  
[https://www.cdc.gov/mmwr/volumes/70/wr/mm7017e4.htm?s\\_cid=mm7017e4\\_w](https://www.cdc.gov/mmwr/volumes/70/wr/mm7017e4.htm?s_cid=mm7017e4_w)
- C. Clinical Guidelines for Diagnosis and Treatment of Botulism, 2021. MMWR:70(2);1-30.
- The following syndromes are described: foodborne botulism, wound botulism, inhalational botulism, and iatrogenic botulism (exposure by injections for cosmetic or therapeutic purposes).
  - Diagnosis relies on recognizing the clinical syndrome of cranial nerve palsies followed by bilateral symmetric descending flaccid paralysis affecting proximal before distal limb musculature and can progress to respiratory failure and death. Patients rarely report pain.
  - Clinical tool developed and presented in report (Box 1).
  - Treatment with Botulinum antitoxin usually needs to be started before laboratory testing results confirm diagnosis.
  - Infant Botulism Syndrome
    - Infant Botulism is a very rare and sporadic condition caused by colonization of intestine with clostridia and in situ toxin production. This is treated with human origin anti-A, anti-B botulinum antitoxin (Baby BIG).
    - Infant Botulism Syndrome is caused by other toxins that infants can ingest and need to be treated with BAT (Botulinum antitoxin heptavalent). This often occurs as part of a group of cases.  
<https://www.cdc.gov/mmwr/volumes/70/rr/rr7002a1.htm>
- D. The Advisory Committee on Immunization Practices' Interim Recommendation for Use of Pfizer-BioNTech COVID-19 Vaccine in Adolescents Aged 12-15 Years- United States, May 2021. MMWR70(20);749-752.  
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**Infectious Diseases Society of America**

- A. Infectious Diseases Society of America Guidelines on the Treatment and Management of Patients with COVID-19.
- Updated 6/25/21.
  - Overview of treatment guidelines in a Summary Table for use in various settings (ambulatory, hospitalized mild, severe and critical) with strength of recommendations based on evidence available in literature.
  - Full details of each treatment discussed.  
<https://www.idsociety.org/practice-guideline/covid-19-guideline-treatment-and-management/>
- B. Infectious Diseases Society of America Guidelines on the Diagnosis of COVID-19: Antigen (Ag) Testing.
- Updated May 26, 2021.

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## New ID Policy/Guidelines *Continued from Page 15*

- Many immunoassays to detect SARS-CoV-2 protein Ags are now available.
  - With comparison to standard nucleic acid amplification testing (NAAT) as the reference standard, Rapid Ag tests have high specificity and low to modest sensitivity.
  - Many variables affect accuracy of tests (viral load, differences between symptomatic and asymptomatic individuals and time of testing after onset of symptoms).
  - NAAT remains diagnostic method of choice for accuracy.
  - Usefulness of Ag testing was graded as low to moderate.
  - Detailed discussion of usage in various scenarios (repeat Ag testing, screening asymptomatics).  
<https://www.idsociety.org/practice-guideline/covid-19-guideline-antigen-testing/>
- C. Clinical Practice Guideline by the Infectious Diseases Society of America (IDSA) and Society for Healthcare Epidemiology of America (SHEA): 2021 Focused Update Guidelines on Management of *Clostridioides difficile* Infection in Adults. Clin Inf Dis, 6/24/2021.
- Prior publication in 2018 detailed guidelines in adults and children.
  - Specifically addresses the use of fidaxomicin and bezlotoxumab for the treatment of *Clostridioides difficile* infections (CDI).
  - For initial CDI episode, fidaxomicin (if available) should be used rather than standard course of vancomycin.
  - Use of fidaxomicin in recurrent CDI is discussed.
  - Use of bezlotoxumab as a co-intervention with standard-of-care antibiotics for recurrent CDI (within 6 mos.) is discussed.
  - Neither fidaxomicin or bezlotoxumab are approved in children.  
<https://www.idsociety.org/practice-guideline/clostridioides-difficile-2021-focused-update/>

### HIV Guidelines

Complete guidelines and information can be found at: <https://clinicalinfo.hiv.gov/en/guidelines> and are updated periodically. Some of the highlights are listed below:

- A. Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection.
- Last updated April 7, 2021.
  - Dolutegravir (DTR) is available in a dispersible tablet so now recommended as *Preferred* to use DTR plus 2 ARV Regimen for infants and young children (aged  $\geq 4$  wks. and weighing  $\geq 3$  kg).
  - Bictegravir (BIC) now available as a component of the fixed-dose combination tablet bictegravir/emtricitabine/tenofovir alafenamide (Biktarvy) and is now recommended as a *Preferred* ARV regimen for children aged  $\geq 6$  yrs. and weighing  $\geq 25$  kg.
  - Raltegravir (RAL) plus 2 NRTIs has been changed to *Alternative* integrase strand transfer inhibitor-based regimen for children aged  $\geq 4$  wks. rather than *Preferred*.
  - Abacavir (ABC) plus lamivudine or emtricitabine is recommended as *Preferred* for use in infants and children aged  $\geq 1$  mos.
  - Zidovudine is now suggested as *Alternative* NRTI for use in infants and children aged  $\geq 1$  mos.
  - Although maraviroc is FDA-approved, it is not recommended as first-line treatment due to some limitations discussed.  
<https://clinicalinfo.hiv.gov/en/guidelines/pediatric-arv/whats-new-guidelines>
- B. Recommendations for the Use of ARV Drugs in Pregnant Women with HIV Infections and Interventions to Reduce Perinatal HIV Transmission.
- Updated February 10, 2021.
  - Dolutegravir (DTG) is now recommended as *Preferred* antiretroviral drug throughout pregnancy and for women who are trying to conceive.
    - Decision based on updated data showing that the increased risk of neural tube defects is very small and advantages of DTG are greater (once-daily dosing, well-tolerated, produces rapid durable viral load suppression).
  - Lopinaivir/ritonavir are now *Not Recommended* except in special circumstances based on increased risk of preterm delivery and

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## New ID Policy/Guidelines *Continued from Page 16*

small for gestational age infants as well as potential nausea/vomiting and twice daily dosing.

- Tenofovir alafenamide (TAF) is recommended as *Alternative* NRTI due to safety data.
- Cobicistat containing ARV regimens pose a risk for low drug levels and viral rebound in second and third trimesters. Frequent viral load monitoring is needed or may want to switch to new regimen.
- Fostemsavir, a new ARV, has been classified as Insufficient Data for use in pregnancy.  
<https://clinicalinfo.hiv.gov/en/guidelines/perinatal/whats-new-guidelines>

### C. Guidance for COVID-19 and People with HIV.

- Updated Feb. 26, 2021.
- Clinicians should refer to updated sources for more specific recommendations regarding prevention, diagnosis and treatment of COVID-19 including the NIH COVID-19 TREATMENT GUIDELINES, which has a section on Special Considerations in People with HIV.
- It is not known whether people with HIV are at greater risk of acquiring SARS-CoV-2 infection.
- People with HIV should receive SARS-CoV-2 vaccines, regardless of CD4 or viral load, because the potential benefits outweigh potential risks.  
<https://clinicalinfo.hiv.gov/en/guidelines/covid-19-and-persons-hiv-interim-guidance/interim-guidance-covid-19-and-persons-hiv>

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## Policy highlights from the AAP Committee on Infectious Diseases

### AAP statements under development or revision

1. Care of the Infant Exposed Congenitally to Cytomegalovirus (CMV) - Postnatal Exposure, Screening, and Treatment
2. Recommendations for Prevention and Control of Influenza in Children, 2021-2022
3. Tuberculosis Infection in Children: Testing and Treatment
4. Infectious Diseases in Newborns Associated with Non-traditional Perinatal Practices
5. Updated Guidance for Palivizumab Prophylaxis Among Infants and Young Children at Increased Risk of Hospitalization for Respiratory Syncytial Virus Infection (technical report only)
6. Oral vs. Intravenous Antibiotic Therapy for Serious Pediatric Infections
7. Fecal Microbiota Transplantation (FMT): Guidance for the Pediatrician
8. Drinking Water from Private Wells and Risks to Children
9. Head Lice

### Guidelines in progress with external organizations

1. IDSA Community-Acquired Pneumonia (CAP) in Infants and Children

## 2021 Red Book: Definitive source on pediatric infectious diseases in its 32nd edition

David W. Kimberlin, MD  
Adapted from AAP News, May 2021

The *Red Book: 2021 Report of the Committee on Infectious Diseases* is the first edition in the manual's 80-year history to be produced during a global pandemic of this magnitude. It continues to be your best resource for managing common and obscure infections as well as preparing your office, hospital or clinic to prevent infectious disease outbreaks.

Now in its 32nd edition, the *Red Book* has been the definitive source for the diagnosis, treatment and prevention of pediatric infectious diseases since 1938. More than 500 contributors from pediatrics, family practice, obstetrics and gynecology, the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration provided key content, ensuring that this is the most comprehensive *Red Book* ever. The breadth of knowledge that these world experts bring and the efficient manner in which the material is presented in the print format make this a unique product for busy pediatricians and pediatric subspecialists.

Every one of the 242 chapters has been revised since the 2018 edition, including an overhaul of the coronavirus chapter. Two chapters have been added, one an extensive systems-based treatment table and the other a chapter on *Pseudomonas*.

Tables, figures and diagrams have been developed to ensure you can access information rapidly to manage patients. These and other changes are summarized over 14 pages at the beginning of the new edition.

Among the more important changes is a new way to retrieve information using the systems-based treatment table. The chapters in Section 3 continue to be pathogen-specific. So, if you know that the organism causing an infection is Group B *Streptococcus* (GBS), for example, you can go to the GBS chapter to determine the optimal management.

But when first seeing a patient, you know what body system is involved (e.g., urinary tract, central nervous system or bone and joint) but do not yet know the organism causing the infection. The new systems-based treatment table in Section 4 allows you to quickly identify the differential diagnosis of most likely pathogens, the optimal empiric antibiotic(s) to use and the usual treatment duration. Once the organism is identified on culture, you can refer to the pathogen-specific chapters in Section 3 for additional management.

The *Red Book* also includes immunization-related updates.

- There are new resources and information on vaccine ingredients and the new hexavalent vaccine.
- Meningococcal vaccine recommendations now include the new MenACWY vaccine, MenQuadfi.
- A new figure shows which influenza vaccines are indicated for which age groups, and live attenuated influenza vaccine contraindications have been expanded (e.g., in patients who have had cochlear implants).
- A new figure simplifies decision-making for administration of the hepatitis B birth dose by birth weight and maternal HBsAg status.
- Recommendations have been added on when to count Tdap vs. DTaP doses by age (especially in 7- to 10-year-olds).

### Other changes

- The table of disease- or condition-specific recommendations for exclusion of children from group child care has been updated.
- All chapters relating to sexually transmitted infections have been harmonized with the 2021 CDC guidelines that are in the final stages of development.
- Hepatitis C treatment options extend down to 3 years of age.
- New figures summarize HIV newborn testing and prophylaxis recommendations.
- New measles postexposure prophylaxis tables have been added.
- The Lyme disease and babesiosis chapters have been harmonized with new guidelines from the Infectious Diseases Society of America.
- The differential diagnosis for and management of recurrent pinworm infection have been included as has a ranking of treatment options for molluscum.

*Continued on Page 19*

**2021 Red Book: Definitive source on pediatric infectious diseases . . .** *Continued from Page 18*

- Risk assessment approaches for GBS disease in neonates have been added.
- The lice treatment table has been updated with new products and over-the-counter indications.

An old African proverb states that if you want to go fast, go alone, but if you want to go far, go together. The Red Book's impact is due to the hundreds of people who contributed to it. These individuals go far together to improve the lives of children in the U.S. and around the world. It is the hope that these efforts will contribute to the work you do every day to keep children healthy.

*Dr Kimberlin is editor of the 2021 Red Book.*

**Resources** (click on the hyperlinks below)

- Eligible AAP members can request one complimentary copy of the 2021 Red Book at <https://shop.aap.org/getredbook/>. AAP medical student members, international members, corresponding fellows and lapsed members are not eligible. Books ship to U.S. addresses only in June. A \$17 shipping and handling fee will be applied.
- Members also get access to Red Book Online at <https://redbook.solutions.aap.org/>.
- New webinar! Dr David Kimberlin, Editor, provides an overview of key updates in the 32nd edition of the Red Book. [Click here](#) to access the webinar.

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## Review of the recent Infectious Disease literature

These summaries and commentaries are completed by volunteers the SOID membership. Each is responsible for reviewing the current infectious disease literature for several journals. They select an interesting article and present it for your review to help keep you current on various issues.

**Magill SS, O'Leary E, Ray SM et al. Antimicrobial use in US hospitals: comparison of results from emerging infections program prevalence surveys, 2015 and 2011. *Clin Infect Dis* 2021; 72(10):1784-92.**

**Reviewed by:**

Jane M. Gould, MD, Medical Epidemiologist, Healthcare-Associated Infections/Antimicrobial Resistance Program, Division of Disease Control, Philadelphia Department of Public Health, Philadelphia, PA

The 2011 Emerging Infection Program (EIP) hospital prevalence survey of healthcare-associated infections and antimicrobial use (AU) identified that 50% of hospitalized patients received antimicrobial medications and that inappropriate AU was common. Overuse of antimicrobials fuels transmission of antimicrobial resistant pathogens and *C. difficile*. Since this survey was conducted, more emphasis has been placed on hospitals having robust antimicrobial stewardship (AS) programs. In 2014, the CDC recommended hospitals develop AS programs and released the "Core Elements of Hospital Antibiotic Stewardship" which described seven core elements of effective AS programs. In 2017, the Joint Commission required hospitals to adopt the seven core elements in their AS programs as a condition for accreditation and the Centers for Medicare and Medicaid Services (CMS) followed in 2019 with a final rule requiring hospitals and skilled nursing facilities to have AS programs as a condition of participation. Magill and colleagues repeated the EIP hospital AU survey in 2015 to describe AU prevalence estimates and to describe any inpatient AU changes since 2011.

Ten EIP states recruited the same hospitals from 2011 along with additional general, women's and children's hospitals using a stratified random-sampling approach based on acute care staffed bed size. Patient medical records were randomly selected from hospital census to collect demographic, clinical data and AU data on survey date or day before including medication name, routes, dates, rationale for use, infection-treatment site, onset locations, surgical prophylaxis duration and procedures. Antibacterial, antifungal, and selected antimycobacterial and antiviral medications administered by intravenous, intramuscular, oral/enteral or inhaled routes were included in the analysis. AU prevalence was defined as the percentage of patient receiving one or more antimicrobial medication on the survey date or day before. The investigators used the same AU screening criteria in 2011 except that the 2011 survey included dialysis patients with receipt of IV vancomycin or aminoglycosides in the four days before the survey. This data was excluded from the 2011 data when comparing with 2015 data.

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## Review of the recent Infectious Disease literature *Continued from Page 19*

Results of the 2015 survey revealed that, of the more than 12,000 patients in the study, 49.5% (95% confidence interval: 48.6-50.4%) received an antimicrobial medication on the survey date or day before comparable to findings in 2011. In 2015, AU was highest in surgical critical care and lowest in neonatal critical care and non-critical care locations. Compared to 2011, for most hospital locations there were no differences in AU prevalence in 2015 except for the neonatal critical care location; 22.8% in 2015 compared to 32.0% in 2011 (P=0.006). Overall, the antimicrobials used most commonly were the same in 2015 compared with 2011; fluoroquinolones, and third- or fourth-generation cephalosporins being the most commonly used. 2015 showed a decrease in fluoroquinolones, but an increase in third- or fourth-generation cephalosporins and carbapenems. The most common rationale for AU was infection treatment (4476 patients [73.6%]) versus surgical prophylaxis (1185 patients [19.5%]), medical prophylaxis (584 patients [9.6%]), non-infection-related (77 patients [1.3%]) or no documented rationale (229 patients [3.8%]). The percentage of AU with no rationale was similar 2015 versus 2011. Most patients received antibiotics for community onset infections with pneumonia being the most common reason accounting for 28.4%. Of those patients who received antimicrobials for surgical prophylaxis, medication duration was 24 hours or less for 75.4%, more than 24 hours in 20.2% and unknown 4.4%.

This study revealed some encouraging AU changes since 2011; namely the lower prevalence in neonatal critical care locations and a smaller percentage of patients receiving fluoroquinolones; perhaps a result of intensive stewardship activities and *C. difficile* prevention efforts, respectively. However still of concern is the higher prevalence of extended spectrum cephalosporins and carbapenem use, and the percentage of patients receiving prolonged surgical prophylaxis in 2015. Broad spectrum AU remained common in 2015 even for community-onset infections. The authors speculate that increasing antibiotic resistance may be a possible reason for the increased use of broad-spectrum antibiotics by wary clinicians. Pneumonia or respiratory tract infection was the most common reason for hospital AU and since there exists no gold standard diagnostic test to rule out bacterial lower respiratory tract infections, this undoubtedly affects AU. This survey suggest that AS programs should target their efforts towards addressing prolonged surgical prophylaxis and judicious AU for common infections such as lower respiratory tract infections, urinary tract infections and skin and soft tissue infections. Hopefully the EIP AU prevalence survey will be repeated (since it has now been 6 years since the 2015 survey and 4 years since the Joint Commission requirement) and will continue to demonstrate progress as well as opportunities for improvement in hospital AU.

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## Coding Updates

*Margaret Ikeda, MD*

*RBRVU Chair, SOID*

The following is new for Current Procedural Terminology (CPT) codes in 2021:

1. No more use of 99201. 99202-99205 and 99211-99215 have been modified.
2. A prolonged care code, 99417 for each 15 min, has been added for same day service and used with 99205 (99417 over 75 min for each 15 min) and 99215 (99417 over 55 min). Do not use 99354 and 99355. Refer to Prolonged Services Table, Appendix B of the [2021 Coding and Payment Tip Sheet for Transition from Pediatric to Adult Health Care](#).
3. Management services for a single complex problem, G2064 and G2065, have been added.

The following clinical vignettes demonstrate recommended use of CPT coding.

### **Interprofessional Consultation between Adult and Pediatric Primary Care Physicians**

Adult physician asks patient's previous pediatric physician for an interprofessional consultation on a pre-existing established diagnosis that the pediatrician has treated to determine subsequent management. History is reviewed, pediatrician makes some recommendations, and dictates a consultation report. 25 minutes for interprofessional consultation.

Coding: CPT99448 Interprofessional telephone/internet/EMR assessment and management service provided by consultative physician, including a verbal and written report to the requesting physician or qualified health care professional; 21-30 minutes of discussion and review.

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## Coding Updates *Continued from Page 20*

If this is an **Infectious Disease telephone/internet/EMR consultation** with a requesting pediatrician, the ID consultant coding is:

CPT 99446-449, 99451,99452 if there is no face-to-face contact with the patient. The consultant should not have seen the patient face-to-face in the last 14 days, nor should it be reported if the consultation leads to a transfer of care or other face-to-face service or a next available appointment with the consultant.

### **Initial Specialist Office Visit, via telehealth**

Includes a comprehensive history and a comprehensive physical using hosting pediatric office at originating site as the tele-presenter with the patient. Visit includes self-care assessment tool, discussion of where to get laboratory tests and medication refills. Results will be faxed to specialist's office and a follow-up telehealth visit is scheduled in one month.

Coding: CPT 99204-95 (OV, new, moderate decision making or 45-59 min, service rendered via real-time interactive audio and video telecommunications).

CPT 96160 (Patient focused health risk assessment)

### **Telehealth follow-up visit with specialist**

The treating specialist conducts the visit as the performing physician at the distant site with the patient in the local primary care office. Patient completes a risk assessment tool, specialist discusses need for outside studies, medication review with possible changes.

Coding: CPT 99214-5 (detailed history, moderate level of medical decision making or 30-39 minutes; modifier 95: synchronous telemedicine service via real-time 2-way interactive audio and video telecommunications system).

CPT 96160 (Patient-focused health risk assessment instrument)

### **References:**

1. McManus M, White P, Schmidt A, Slade R, Salus T, Bradley J. Got Transition: 2021 Coding and Payment Tip Sheet for Transition from Pediatric to Adult Health Care. March 2021. Available online: <https://www.gottransition.org/resource/?2021-coding-tip-sheet>. Accessed on August 16, 2021.

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## **Pediatric Subspecialties 101: Infectious Diseases**

[Listen in to the recording](#) of the AAP Section on Pediatric Trainees/Section on Infectious Diseases 101 webinar presentation on Pediatric Infectious Diseases and check out this list of [top 10 highlights from the webinar](#). Learn more about this training path and a day in the life of a pediatric infectious diseases specialist from guest presenters, Kathy Edwards, MD, FAAP, Bill Gruber, MD, FAAP, and Bonnie Maldonado, MD, FAAP.

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## **Welcome New SOID Members**

If you know of others who might be interested in joining the Academy and the Section please have them call AAP Customer Services at: 866-843-2271 or visit [www.aap.org](http://www.aap.org) and click on the "Become A Member" link in the upper righthand corner of the page. Current Academy members may join the Section [here](#) (member ID and login required).

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