



Discussion

The impact of COVID-19 on pediatric vaccination rates in Alabama

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The United States (U.S.) declared a national emergency in response to the coronavirus disease 2019 (COVID-19) pandemic, on March 13, 2020. Public health officials have emphasized the importance of preventive measures, particularly social distancing, which has demonstrated significant success in slowing the transmission of COVID-19 (Lange et al., 2020). To facilitate such distancing, 42 states initiated stay-at-home orders of varying stringency and duration in spring 2020 (CDC, 2020). Alabama was among these, introducing its stay-at-home order on April 3, 2020 which was in effect until April 30th, 2020 (Governor TOoA, 2020). This stay-at-home order required residents to stay in their place of residence except as necessary to perform any essential activities which included: to obtain necessary supplies, to obtain or provide necessary services, to attend religious services, to take care of others, to work, to engage in outdoor activities, to seek shelter, to travel as required by law, and/or to see a family member (Governor TOoA, 2020). This national state of emergency and the subsequent state-level restrictions forced physicians to adapt their practices in ways previously unfathomed. Telehealth visits became the forefront of patient care, with outpatient in-person visits decreasing approximately 60% in early April (The Impact of the COVID-19 Pandemic on Outpatient Visits: Changing Patterns of Care in the Newest COVID-19 Hot Spots, 2020). This drastic shift in traditional care delivery was made primarily to protect patients and providers from unnecessary exposures and was initially implemented as a brief, temporary measure.

Despite some rebound of in-person visits, the general volume of these remains substantially lower than prior to the pandemic. This is particularly true for pediatric populations when comparing current rates of overall visits and well-child visits to pre-COVID-19 rates (The Impact of the COVID-19 Pandemic on Outpatient Visits: Changing Patterns of Care in the Newest COVID-19 Hot Spots, 2020). Well-child visits are extremely important for children and adolescents for many reasons. These visits allow providers to conduct appropriate screenings, perform physical exams, complete laboratory evaluations, and provide essential vaccinations (Guidance on Providing Pediatric Well-Care During

COVID-19, 2020). Routine vaccination within this population is critically important to reducing the risk of disease outbreak, preventing associated morbidity and mortality, and maintaining public health and safety. Vaccine administration at recommended ages and according to recommended intervals, keeping with the guidelines of the Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP) provides optimal immune response in pediatric patients (Timing and Guidelines, 2020). Although perhaps a less prominent outcome of the COVID-19 pandemic in the U.S., unsurprisingly, declines in well-child visits have been accompanied by significant decreases in pediatric vaccinations. Data from the state of Alabama's vaccination registry, the Alabama Department of Public Health (ADPH) Immunization Patient Resources with Integrated Technology (ImmPRINT), illustrate how negatively the pandemic has impacted childhood and adolescent vaccinations. The most recent data available for vaccination rates of patients ages 19 months through 18 years from March-May 2019 were compared to vaccination rates for the same age groups from March-May 2020.

The overall vaccination rate for the 2020 period decreased between 50.8% and 59.2% compared to the 2019 period for each age group. Adolescents ages 11–13 years demonstrated the largest rate decrease for overall vaccination (59.2%). The vaccine with the single largest decrease in one age group was the Tdap vaccine among children 11–13 years old, with a 64.1% reduction. This was closely followed by the Hepatitis B vaccine among adolescents ages 19 months through 6 years, with a decrease of 62.9%. With a reduction of 53.4%, Varicella vaccination demonstrated the sharpest decline within its recommended age group, 19 months through 6 years. Similarly, MMR vaccine uptake also declined by 54.7% in the 19 month to 6-year-old age group.

Many pandemic-related factors have contributed to the sharp declines observed in Alabama's vaccination rates. Although direct access to other U.S. state vaccination registries is not widely available, it is likely that many other states are experiencing similar vaccination trends, making this an important issue to investigate. The main

Abbreviations: U.S., United States; COVID-19, coronavirus disease 2019; CDC, Centers for Disease Control and Prevention; ACIP, Advisory Committee on Immunization Practices; ADPH, Alabama Department of Public Health; ImmPRINT, Immunization Patient Resources with Integrated Technology; MMR, measles, mumps, and rubella; Tdap, tetanus, diphtheria, and pertussis.

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<https://doi.org/10.1016/j.pmedr.2021.101320>

Received 30 October 2020; Received in revised form 4 January 2021; Accepted 20 January 2021

Available online 5 February 2021

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contributing factor to vaccination declines has been underestimation of the pandemic's longevity in the U.S. What began as the suspension and postponement of elective medical procedures and routine outpatient visits, including vaccinations, in mid-April has been extended indefinitely, in some cases. Although most providers began resuming elective procedures and more routine visits in late May and early June as state and local officials began lifting the restrictions for non-essential services ([The Impact of the COVID-19 Pandemic on Outpatient Visits: Changing Patterns of Care in the Newest COVID-19 Hot Spots, 2020](#)), COVID-19 has maintained its stranglehold on the U.S. It has become increasingly clear that providers must face the reality of this new normal and determine how best to provide care for their patients in the current environment. Although there have been increases in office visits, many providers continue to use telehealth as the mainstay of their practices in this new time. Even providers who have resumed in-person visits continue to experience a lower volume than in the past, presumably due to lingering concerns among patients and/or their parents/guardians ([The Impact of the COVID-19 Pandemic on Outpatient Visits: Changing Patterns of Care in the Newest COVID-19 Hot Spots, 2020](#)). An additional concern is what the public has come to view as “nonessential.” Many perceive well-visits as fitting into this category and consequently not worth the risk of potential exposure to COVID-19, despite possibly denying the opportunity for crucial pediatric vaccinations. Those visits may have seemed elective in the spring and into the summer when postponements were thought to be temporary measures, but as the pandemic has staggered on, not everyone has been vigilant with catching up. And while many pharmacies offer some vaccinations, most do not keep a wide range of pediatric vaccinations in stock, and pharmacists nationwide were only given broad permissions to administer any ACIP-recommended vaccination to children ages 3–18 in August 2020 ([Azar, 2020](#)).

Currently, the U.S. government, healthcare professionals, and researchers are rightly focused on the immediate response to COVID-19. However, the medical community must be cognizant that the pandemic continues to be a marathon rather than a sprint and adapt accordingly. We must emphasize to parents that routine healthcare cannot be deprioritized throughout the enduring battle against COVID-19. To the contrary, ample resources are needed to support delivery of routine vaccinations to prevent the possibility of concurrent infectious disease outbreaks. Special attention needs to be placed on identifying patients who have missed routine vaccinations during the lockdown period and scheduling appointments for catch up vaccinations, now that in-person office visits numbers are normalizing. Providers should find ways to minimize risks and alleviate patient concerns such as scheduling sick and well-child visits at different times of the day, physically separating patients in different locations, and maintaining rigorous sanitation. Innovative practices are also needed such as drive-thru vaccination visits in conjunction with telehealth well-child exams to provide opportunities for low-contact vaccinations; scheduling such drive-thru events on weekends would also increase convenience for working

parents. Physicians should also consider exploring coordination with local pharmacies, building on the recent declaration allowing broader, national vaccination privileges for pharmacists ([Azar, 2020](#)). This may include encouraging pharmacies to broaden their stock of vaccinations at this time. This would allow pediatricians to see patients for telehealth visits and write prescriptions for vaccinations which could then be administered at participating pharmacies.

To ensure success in improving vaccination rates, all of the proposed efforts will also require pairing with campaigns to increase knowledge and awareness among parents and even among other providers. The initiatives that succeed will be those that are comprehensive and employ multilevel strategies. As providers endeavor to close the gap for missed vaccinations and routine patient care, they should choose sustainable, feasible solutions that fit their practice model and their patients' needs. Immediate risks should be balanced with long-term care to ensure individual and population-wide health in the present and for the future. Increasing vaccinations to prevent the spread of vaccine-preventable diseases is inarguably a vital part of achieving these goals.

Funding source

None.

Financial Disclosure

None.

Contributors' Statement Page

All authors conceptualized, drafted, and reviewed the manuscript. All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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