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Improving Pediatric Vaccination Coverage in the United States

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DESPITE THE SUCCESS the US vaccination program has achieved in eliminating measles, polio, and rubella, there remain gaps in vaccination coverage for some vaccines and populations.¹ Even before the COVID-19 pandemic impacted well child visits and delivery of routine vaccines,² there were indicators that vaccination coverage needed to be strengthened, including persistent disparities in coverage by sociodemographic characteristics.¹ This special issue of *Academic Pediatrics* includes a collection of commentaries and review articles from noted experts highlighting effective strategies immunization providers and programs can use for improving vaccination coverage among children and adolescents in the United States.

A major threat to the vaccination program, and overall public health, is vaccine hesitancy. Reasons for vaccine hesitancy are complex and personal, and understanding how to address hesitancy and increase confidence in vaccines will be crucial for maintaining high coverage. Because of the importance of this problem, several articles in this issue are devoted to combating vaccine hesitancy, starting with the commentary by Fisher et al describing the Centers for Disease Control and Prevention's Vaccinate with Confidence framework to build confidence in vaccines.³ Components of the framework include using data to identify undervaccinated communities; supporting parents, patients, and providers in vaccine communication; and partnerships to address myths and misinformation. A parent's perspective of addressing vaccine hesitancy is provided by Marotta and McNally,

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emphasizing the importance of storytelling, social norming techniques, and peer-to-peer influence.⁴ Daley and Glanz describe a framework for using social media to elevate positive vaccination voices from parents and respected national organizations, calling for effective, transparent and honest communications.⁵ To address vaccine hesitancy in pediatric and family medicine practices, Hackell and Edwards recommend that practices incorporate a strong statement on their own confidence in vaccines, advocate for vaccines at every opportunity, and develop policies for responding to parents who refuse vaccinations.⁶ Finally, Limaye et al summarize the evidence of effective strategies providers can use for communicating with parents including using a presumptive format to recommend vaccines, motivational interviewing, and tailoring information to increase message salience.⁷

Another framework featured in this issue is the Increasing Vaccination Model from Brewer.⁸ Because interventions focused on changing thoughts and feelings have, in general, not been shown to be effective, he proposes that focus should, instead, be on interventions that directly change behavior. One intervention shown to be effective at changing behavior, reminder/recall notices, is summarized by Kempe et al.⁹ In this review article, the authors discuss how effectiveness varies by modality, vaccine, age group, and whether conducted centrally by a health system or by an individual practice, while also discussing challenges to implementation and sustainability. Additional effective interventions at the practice level, summarized by Rand and Humiston, include assessment and feedback, which may boost motivation, and interventions to decrease missed opportunities during visits such as previsit planning or huddles that inform provider prompts or standing orders, if used.¹⁰ Multifaceted interventions that include feedback reports, prompts, and education may be the most promising at increasing vaccination coverage.

Two articles included in this issue focus on the changing landscape of pediatric care and how this can be used to promote pediatric vaccinations. Fiks et al provide an overview of different health systems and how they are uniquely positioned to promote pediatric vaccination, including their overall scale (both human and technical resources), ability to use databases to provide feedback to clinicians on their performance and vaccination rates, setting policies to remove barriers to vaccination (ie, standing orders), and their ability to reach out directly to patients and families.¹¹ Hofstetter and Schaffer review alternative settings that may be uniquely positioned to help reach underserved communities, such as schools, emergency rooms, hospitals, and pharmacies.¹²

Understanding the variety of strategies available and the evidence supporting their use is important, but having appropriate infrastructure, resources, political will, and professional support are critical for successful and sustainable implementation. Stockwell et al propose a framework by Proctor which aims to operationalize implementation strategies along 7 dimensions to help move implementation of strategies from research into practice.¹³ Using this framework can help immunization providers decide which strategy may be the most appropriate for a given practice or population. Having a strong data infrastructure is also key. Complete and accurate immunization data is critical for identifying populations of interest as well as evaluating the success of the intervention. Immunization information systems operated at state and local levels provide consolidated, electronic immunization histories to assist with clinical decision making and can be a powerful tool to help support

improving vaccination coverage. Gibbs-Scharf et al provide an overview of the state of immunization information systems and efforts underway to move toward a nationwide network and repository of immunization data.¹⁴ Understanding the costs associated with implementation will also inform which strategies may be feasible in a given setting. Hong et al provide a review of the cost of interventions broken down by intervention type, age group, and vaccine type (routine or influenza), with the cost per child ranging from \$0.10 to \$537.38.¹⁵ Pan describes 4 ways parents, medical providers, and the media can assist with developing political will so that vaccination becomes the social norm and not the exception.¹⁶ Finally, O’Leary et al summarize essential education (for parents, trainees, and practicing clinicians), advocacy, policy, and research support for current and future clinicians provided by professional organizations including the American Academy of Pediatrics, American Academy of Family Physicians, Society of Adolescent Health and Medicine, Pediatric Infectious Disease Society, and the Society for Teachers of Family Medicine.¹⁷

Finally, a commentary by Rodewald discusses international vaccine delivery for children, putting US efforts in a global context.¹⁸ This commentary discusses 3 global efforts to achieve and sustain high immunization rates in children, all with high relevance to US efforts. It also highlights the importance of schools as allies in vaccine delivery in many countries, with important lessons for how the United States might elevate the role of schools in vaccine delivery.

As shown in this supplement, there are many evidence-based practices that can help to raise childhood immunization rates in this country. In addition, addressing vaccine hesitancy, building vaccine confidence, and optimizing practice as well as health system strategies will be critical during this decade. These areas of focus are particularly important as we recover from the COVID-19 pandemic and work to get children caught up on vaccines they may have missed as well as promote vaccine equity. Utilizing the strategies reviewed in this supplement, immunization providers and programs throughout the United States can achieve and maintain high vaccination coverage.

Disclaimer:

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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