



Commentary

Improving Adolescent Immunization Coverage: The Time to Act Is Now


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Data from the Centers for Disease Control and Prevention's (CDC) 2016 National Immunization Survey-Teen was recently released and, once again, adolescent immunization rates for some vaccines recommended by the Advisory Committee on Immunization Practices are disappointingly low [1]. The CDC recommends adolescents receive four immunizations—two of which are administered as multidose series—to help protect against meningococcal meningitis; human papillomavirus; tetanus, diphtheria, and pertussis (whooping cough); and influenza. Despite these recommendations, in 2016 only 39% of 13-through 17-year-olds who received the first dose of meningococcal meningitis vaccine (MenACWY) received the recommended second dose, and only 43% of girls and 32% of boys completed the human papillomavirus vaccine series [1]. While the majority (88%) of teens received the tetanus, diphtheria, and pertussis booster, there is still room for improvement. Furthermore, less than half of teens 13 through 17 years of age were vaccinated against the flu during the 2015–2016 influenza season [2].

The recent addition of a 16-year-old column on the CDC's Child and Adolescent Immunization Schedule [3] is an important step in the right direction with respect to the MenACWY booster and consideration for the administration of meningococcal B (MenB) vaccine, but we need to promote a more action-oriented approach among health-care providers. Invasive meningococcal disease caused by bacterial meningitis has significant financial, medical, and psychosocial consequences [4]. The two available vaccines in the U.S., MenACWY and MenB, have been shown to be effective for the prevention of the A, B, C, W, and Y serogroups [5]. However, confusion about the Category B Advisory Committee on Immunization Practices MenB recommendation, in

particular, may have resulted in underutilization, although the American Academy of Pediatrics clearly encourages pediatricians to discuss this vaccine with parents and families [6,7].

The Unity Consortium recently issued a whitepaper titled *Adolescent Immunization: Understanding Challenges and Framing Solutions for Healthcare Providers* [8]. It summarizes the current immunization landscape, including barriers to successful implementation, and highlights potential solutions to help reach important immunization targets for this population. The whitepaper was developed following a November 2016 roundtable (see Table 1) where the group's members, liaisons, and invited experts shared their knowledge and experience and looked for common elements among successful adolescent immunization initiatives. It concludes that best practices in adolescent immunization include improvements in one or more of the following areas: access, education, advocacy, systems, and measurement.

The whitepaper also puts forth a call to action called the Immunization Neighborhood, Sharing, Platform, Educate, Champions and Talk (INSPECT) Imperatives, which take into account both the obstacles to adolescent immunization and the solution-based elements identified by the Unity Roundtable. The INSPECT Imperatives provide overarching guidance for health-care providers and urge providers, provider organizations, and health-care systems to take a look at their current adolescent immunization practices and consider how they could improve vaccination coverage among their patients. For those ready to take action, it provides a solid blueprint.

First and foremost, we must increase access for adolescents by expanding and integrating the immunization neighborhood. If teenagers are not showing up for routine well visits, we need to meet them where they are, including at schools, public health venues, acute and urgent care settings, flu clinics, and pharmacies [9]. Integrated care between physicians and other complementary health-care providers is necessary to ensure that these opportunities for vaccination are not missed [10]. Vaccination assessments should also become routine in school physicals, sick visits, and ongoing care for chronic conditions and injuries [11]. Expanded evening and weekend hours should also

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All authors contributed to the conceptualization and writing of this commentary.

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Table 1
Unity roundtable participants

| Name | Affiliation |
|--------------------------------|---|
| Tracy Bieber ^a | Sanford Health |
| Marla Dalton ^a | National Foundation for Infectious Diseases |
| Claire Hannan ^a | Association of Immunization Managers |
| David Kaplan | University of Colorado, Children's Hospital |
| Judy Klein ^a | Unity Consortium |
| Amy Middleman | University of Oklahoma Health Sciences Center |
| Mark Ritter | Texas Department of State Health Services, Immunization Branch |
| Mitchel Rothholz ^a | American Pharmacists Association |
| Jason Rubin | Walgreens |
| Shannon Stokley ^a | Centers for Disease Control and Prevention |
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be considered to help increase access for time-strapped teens who juggle school, sports, jobs, and extracurricular activities.

We also need to do a better job of leveraging technology and improving information sharing. Technology offers new and emerging tools to improve vaccination tracking and screening. It can also improve efficiencies and help integrate information within the immunization neighborhood. The utilization of tools such as electronic health records, standing orders, and reminder/recall notifications should become standards of practice at both the individual provider level as well as throughout integrated health systems and networks of care. The use of immunization information systems (formerly known as registries) should be universal and utilized for both accessing records prior to vaccination and reporting after vaccination to improve tracking and integrated care. Well-populated immunization information systems and electronic health records will increase the efficiency for assessing the vaccination needs of patients [12–16].

The INSPECT Imperatives also call for the establishment of an immunization platform for older adolescents at age 16. As outlined in the Society for Adolescent Health and Medicine's recent position statement, *Establishing an Immunization Platform for 16-Year-Olds in the United States* [17], and the Adolescent Immunization Initiative whitepaper, *Rationale for an Immunization Platform at 16 Years of Age* [18], providers should establish a routine 16-year-old preventive visit, creating an opportunity for immunization and a discussion of health-care topics uniquely relevant to older teens and young adults.

There is also a need for the continued education of parents and teens to increase the understanding of vaccines and to raise the priority for immunization [19,20]. A recent Unity-sponsored Harris poll conducted from September to October 2016 found that nearly one in four parents and teens do not know how being vaccinated helps teens [21]. We cannot expect parents and teens to make immunization a priority if we are not effectively communicating to them the reasons why they should do so. Careful examination and/or research on what approaches, channels, and messages are most effective in reaching older adolescents are necessary. Pilot communication programs using new media and technology should be implemented. Health-care providers must also give confident, concise, and consistent recommendations to parents and adolescents for all recommended vaccines, as provider recommendation is a strong determinant in parent and adolescent agreement to vaccinate [9].

Finally, we must develop and empower immunization champions and emphasize the need to talk about quality improvement.

Immunization champions or advocates have the potential to significantly improve adolescent immunization coverage [22]. Within a practice, immunization champions often become passionate drivers for setting action plans, establishing and ensuring processes and accountability, providing ongoing communications and feedback, and training and motivating staff. Advocates can also help establish greater transparency and dissemination of practice- and provider-level immunization performance measurement to staff.

Lagging adolescent immunization rates should not be ignored or minimized. It is time to take action to solve the problem and offer greater protection to our adolescent and young adult population. The INSPECT Imperatives can help health-care providers improve immunization coverage and preventive care for our youth. There is no one-size-fits-all solution, and not all health-care providers can realistically take action on each imperative, but if individual providers, provider organizations, and health-care systems take action, the results would follow.

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References

- [1] Walker TY, Elam-Evans LD, Singleton JA, et al. National, regional, state, and selected local area vaccination coverage among adolescents aged 13–17 years—United States, 2016. *MMWR Morb Mortal Wkly Rep* 2017;66:874–82.
- [2] Centers for Disease Control and Prevention. Flu vaccination coverage, United States, 2015–2016 influenza season. Available at: <https://www.cdc.gov/flu/fluview/coverage-1516estimates.htm>. Accessed August 25, 2017.
- [3] Robinson CL, Romero JR, Kempe A, Pellegrini C. Advisory Committee on Immunization Practices recommended immunization schedule for children and adolescents aged 18 years or younger—United States, 2017. *MMWR Morb Mortal Wkly Rep* 2017;66:134–5.
- [4] Martinon-Torres F. Deciphering the burden of meningococcal disease: Conventional and under-recognized elements. *J Adolesc Health* 2016;59:S12–20.
- [5] Baker CJ. Prevention of meningococcal infection in the United States: Current recommendations and future considerations. *J Adolesc Health* 2016;59:S29–37.
- [6] Committee on Infectious Diseases. Recommendations for serogroup B meningococcal vaccine for persons 10 years and older. *Pediatrics* 2016;138:e20161890.
- [7] Marshall GS, Tan L. Understanding the Category B recommendation for serogroup B meningococcal vaccine. *Pediatrics* 2017;139:e20163484.
- [8] UNITY. Unity projects: Adolescent immunization: Understanding challenges and framing solutions for healthcare providers. Available at: <http://www.unity4teenvax.org/unity-projects/>. Accessed July 20, 2017.
- [9] Middleman AB. Adolescent immunizations: Policies to provide a shot in the arm for adolescents. *J Adolesc Health* 2007;41:109–18.
- [10] McLean HQ, VanWormer JJ, Chow BDW, et al. Improving human papillomavirus vaccine use in an integrated health system: Impact of a provider and staff intervention. *J Adolesc Health* 2017;61:252–8.
- [11] Schneyer RJ, Yang C, Bocchini JA Jr. Immunizing adolescents: A selected review of recent literature and US recommendations. *Curr Opin Pediatr* 2015;27:405–17.
- [12] Balog J. A three-step approach for creating successful electronic immunization record exchanges between clinical practice and public health. *Online J Public Health Inform* 2012;4:p11: ojphi.v4i3.4290. doi:10.5210/ ojphi.v4i3.4290.

- [13] Stevens LA, Palma JP, Pandher KK, Longhurst CA. Immunization registries in the EMR era. *Online J Public Health Inform* 2013;5:211.
- [14] Patel M, Pabst L, Chattopadhyay S, et al. Economic review of immunization information systems to increase vaccination rates: A community guide systematic review. *J Public Health Manag Pract* 2015;21:253–62.
- [15] Groom H, Hopkins D, Pabst L, et al. Immunization information systems to increase vaccination rates: A community guide systematic review. *J Public Health Manag Pract* 2015;21:227–48.
- [16] Centers for Disease Control and Prevention. Epidemiology and prevention of vaccine-preventable diseases. In: Hamborsky J, Kroger A, Wolfe S., editors. *Immunization strategies for healthcare practices and providers*. 13th ed. Washington (DC): Public Health Foundation; 2015. p. 33–46. [Chapter 3].
- [17] Society for Adolescent Health and Medicine. Establishing an immunization platform for 16-year-olds in the United States (Position Statement). *J Adolesc Health* 2017;60:475–6.
- [18] The Adolescent Immunization Initiative. Rationale for an immunization platform at 16 years of age (white paper). 2017. Available at: <https://www.give2mcv4.org/content/uploads/2017/03/rationale-for-16-year-old-immunization-platform.pdf>. Accessed July 20, 2017.
- [19] Bernstein HH, Bocchini JA, AAP Committee on Infectious Diseases. The need to optimize adolescent immunization. *Pediatrics* 2017;139:e20164186.
- [20] Gowda C, Schaffer SE, Dombkowski KJ, Dempsey AF. Understanding attitudes toward adolescent vaccination and the decision-making dynamic among adolescents, parents and providers. *BMC Public Health* 2012;12:509.
- [21] UNITY. Unity projects: Adolescent health and immunization poll. Available at: <http://www.unity4teenvax.org/unity-projects/>. Accessed July 20, 2017.
- [22] Lin CJ, Nowalk MP, Pavlik VN, et al. Using the 4 pillars™ practice transformation program to increase adult influenza vaccination and reduce missed opportunities in a randomized cluster trial. *BMC Infect Dis* 2016;16:623.