Overcoming Challenges to Childhood Immunizations Status

Svapna S. Sabnis, MBBS[a,*], James H. Conway, MD[b]

KEYWORDS

• Childhood immunization • Vaccines • Health disparities • Missed opportunities
• Vaccine hesitancy • Immunization information systems

KEY POINTS

- Multiple strategies should be considered to address improving immunization rates and decreasing disparities.
- These may be at a physician or patient level, practice or health systems level, community level, as well as at a state and national level.
- Use of immunization information systems is vital in effectively implementing these strategies.

INTRODUCTION

Vaccines are one of the greatest public health achievements and are one of most cost-effective ways to prevent diseases and advance global welfare.[1] Although immunization coverage rates have been steadily increasing in the United States, overall rates are still less than the 90% target for Healthy People 2020. In 2013, vaccination coverage for children 19 to 35 months old reached the 90% national Healthy People 2020 target for measles, mumps, and rubella vaccine (MMR), hepatitis B vaccine (Hep B), poliovirus vaccine, and varicella vaccine. However, coverage rates were below target levels for diphtheria, tetanus, and pertussis vaccine (DTaP), pneumococcal conjugate vaccine (PCV), *Haemophilus influenzae* type b vaccine (Hib), hepatitis A

Disclosures: Dr S.S. Sabnis has nothing to disclose. Dr J.H. Conway has received financial support for research from Sanofi Pasteur (IRB protocol M-2009-1222, Award #PRJ31GT), and has served as a consultant for Merck Vaccines. Neither of these associations has influenced any of the materials or information in this article.

[a] Department of Pediatrics, Downtown Health Center, Medical College of Wisconsin, 1020 North 12th Street, Milwaukee, WI 53233, USA; [b] Division of Pediatric Infectious Diseases, University of Wisconsin School of Medicine & Public Health, 600 Highland Avenue, H4/450 CSC, Madison, WI 53792, USA
* Corresponding author.
E-mail address: ssabnis@mcw.edu

Pediatr Clin N Am 62 (2015) 1093–1109
http://dx.doi.org/10.1016/j.pcl.2015.05.004 **pediatric.theclinics.com**
0031-3955/15/$ – see front matter

vaccine (Hep A), rotavirus, and the hepatitis B birth dose.[2] For the combined series recommended for children aged 19 to 35 months (4:3:1:3*:3:1:4)[1] national rates were 70.4%.

Increasing rates have led to dramatic declines in illness and mortality related to vaccine-preventable illness[3] (**Table1**). Routine childhood vaccinations also significantly decrease costs to society.[4] However, disparities remain with significantly less vaccination coverage for black children (65%) and children living below the federal poverty level (64.4%).[2] DTaP, PCV, Hib, and rotavirus in particular had lower immunization rates, suggesting that these children had difficulty in maintaining regular and on-time well-child visits.

Adolescent immunization rates have also increased for routinely recommended vaccines to 86.0% for greater than or equal to 1 tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (TdaP) vaccine; 77.8% for greater than or equal to 1 meningococcal conjugate vaccine for serotypes A, C, Y and W (MenACWY) vaccine;

Table 1
Estimated numbers of illnesses, hospitalizations, and deaths prevented by routine childhood immunization for selected vaccine-preventable diseases among children born during the Vaccines for Children era in the United States, 1994 to 2013

	Cases Prevented (in Thousands)		
Vaccine-preventable Disease[a]	**Illnesses**	**Hospitalizations**	**Deaths**
Diphtheria	5073	5073	507.3
Tetanus	3	3	0.5
Pertussis	54,406	2697	20.3
Hib	361	334	13.7
Polio	1244	530	14.8
Measles	70,748	8877	57.3
Mumps	42,704	1361	0.2
Rubella	36,540	134	0.3
Congenital rubella syndrome	12	17	1.3
Hep B	4007	623	59.7
Varicella	68,445	176	1.2
Pneumococcus-related diseases[b]	26,578	903	55.0
Rotavirus	11,968	327	0.1
Total	322,089	21,055	731.7

[a] Vaccines were considered as preventing disease for birth cohorts born in all years during 1994 to 2013 except for the following, which were only in use for part of the 20-year period: varicella, 1996 to 2013; 7-valent and 13-valent pneumococcal conjugate vaccines, 2001 to 2013; and rotavirus, 2007 to 2013.

[b] Includes invasive pneumococcal disease, otitis media, and pneumonia.

From Whitney CG, Zhou F, Singleton J, et al. Benefits from immunization during the vaccines for children program era - United States, 1994–2013. MMWR Morb Mortal Wkly Rep 2014;63(16):354.

[1] Combined vaccine series for 19 to 35 months includes greater than or equal to 4 doses of DTaP, greater than or equal to 3 doses of poliovirus vaccine, greater than or equal to 1 dose of measles-containing vaccine, full series of Hib vaccine ($\geq$3 or $\geq$4 doses, depending on product type), greater than or equal to 3 doses of Hep B, greater than or equal to 1 dose of varicella vaccine, and greater than or equal to 4 doses of PCV.