



## Meeting the Challenges of Immunizing Adults



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### ABSTRACT

The overall burden of illness from diseases for which vaccines are available disproportionately falls on adults. Adults are recommended to receive vaccinations based on their age, underlying medical conditions, lifestyle, prior vaccinations, and other considerations. Updated vaccine recommendations from CDC are published annually in the U.S. Adult Immunization Schedule. Vaccine use among U.S. adults is low. Although receipt of a provider (physician or other vaccinating healthcare provider) recommendation is a key predictor of vaccination, more often consumers report not receiving vaccine recommendations at healthcare provider visits. Although providers support the benefits of vaccination, they also report several barriers to vaccinating adults, including the cost of providing vaccination services, inadequate or inconsistent payment for vaccines and vaccine administration, and acute medical care taking precedence over preventive services. Despite these challenges, a number of strategies have been demonstrated to substantially improve adult vaccine coverage, including patient and provider reminders and standing orders for vaccination. Providers are encouraged to incorporate routine assessment of their adult patients' vaccination needs during all clinical encounters to ensure patients receive recommendations for needed vaccines and are either offered needed vaccines or referred for vaccination.

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### 1. Introduction

Vaccinations are recommended from birth through adulthood. The pediatric vaccination program in the U.S. is without question one of the most successful public health programs on record, resulting in millions of lives saved and illnesses prevented [1]. Pediatric vaccination not only prevents disease, disability, and death among those vaccinated but also contributes to lowering the risk of these same outcomes among those who are not vaccinated through increasing population immunity and reducing transmission. Vaccination rates in the U.S. for most routinely recommended pediatric vaccinations reach 90% or more for most vaccines within a few years after a new recommendation is published due in part to school entry requirements and the Vaccines for Children entitlement program, which ensures access to vaccines for uninsured children. Notable exceptions to generally high pediatric vaccination rates are human papillomavirus (HPV)

vaccine, and annual influenza vaccination, neither of which are routinely required for school entry [2,3].

In contrast to most routinely recommended pediatric vaccines, adult vaccination levels in the U.S. are low (Table 1) [4]. Many factors contribute to these low rates, including complexities in how adult vaccinations are paid for by private and public insurers, limited funding for vaccination of uninsured adults, costs of and requirements for stocking vaccines, concerns among providers about adequate reimbursement for vaccination, lack of vaccine requirements for adults except for healthcare workers and college entry, gaps in incorporation of routine vaccine needs assessment and recommendations for adults during healthcare visits, limited use of tools to assist providers with implementation of the complex adult vaccine schedule, such as use of immunization information systems, and limited awareness among the public about adult vaccinations [7–9]. Even for vaccines that have been recommended for more than 20 years, such as pneumococcal polysaccharide 23-valent vaccine (PPSV23) and seasonal influenza vaccine for adults aged ≥65 years, which are 100% covered by Medicare Part B, more than a third of adults are unvaccinated [4]. This article provides an overview of the burden of illness among adults for selected vaccine-preventable diseases, effectiveness of selected vaccines, barriers for vaccinating adults in the U.S., and examples of successful strategies

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**Table 1**  
Immunization Rates for Selected Vaccines and Adult Populations in the U.S.

Vaccine	Age group or risk group	Vaccination coverage (%)	Year	Data source
Pneumococcal vaccine <sup>a</sup>	18–64-year-old high risk	21	2013	NHIS <sup>b,c</sup>
	≥65 years	60	2013	NHIS <sup>b</sup>
Herpes zoster	≥60	24	2013	NHIS <sup>b</sup>
	18–49 years	32	2013–2014 influenza season	BRFSS <sup>d</sup>
Influenza vaccine	50–64 years	45	2013–2014 influenza season	BRFSS
	≥65 years	65	2013–2014 influenza seasons	BRFSS
	Healthcare personnel	75	2013–2014 influenza seasons	Internet panel survey <sup>e</sup>
	Pregnant women	52	2013–2014 influenza seasons	Internet panel survey <sup>f</sup>
	≥19 years	17	2013	NHIS <sup>b</sup>
Tdap <sup>b,g</sup>	Healthcare personnel	37	2013	NHIS <sup>b</sup>
	19–49 years	63	2013	NHIS <sup>b</sup>
Td in past 10 years <sup>b,g</sup>	50–65 years	64	2013	NHIS <sup>b</sup>
	≥65 years	56	2013	NHIS <sup>b</sup>
	≥19 years	9	2013	NHIS <sup>b</sup>
Hepatitis A	≥19 years with chronic liver disease	13	2013	NHIS <sup>b</sup>
	≥19 years with travel to area where Hepatitis A endemic	16	2013	NHIS <sup>b</sup>
	≥19 years	25	2013	NHIS <sup>b</sup>
Hepatitis B	≥19 years with chronic liver disease	34	2013	NHIS <sup>b</sup>
	≥19 years with travel to area where Hepatitis B endemic	33	2013	NHIS <sup>b</sup>
	19–59 years with diabetes	26	2013	NHIS <sup>b</sup>
	Healthcare personnel	62	2013	NHIS <sup>b</sup>
HPV	Females 19–26 years	37	2013	NHIS <sup>b</sup>
	Males 19–21 years	8	2013	NHIS <sup>b</sup>

<sup>a</sup> Estimates reflect overall pneumococcal vaccine coverage for both PPSV23 and PCV13. Estimates of vaccination coverage for each individual vaccine are not currently available. Adults were considered at high risk for pneumococcal disease or its complications if they had ever been told by a doctor or other health professional that they had diabetes, emphysema, chronic obstructive pulmonary disease, coronary heart disease, angina, heart attack, or other heart condition; had a diagnosis of cancer during the previous 12 months (excluding nonmelanoma skin cancer); had ever been told by a doctor or other health professional that they had lymphoma, leukemia, or blood cancer; had been told by a doctor or other health professional that they had chronic bronchitis or weak or failing kidneys during the preceding 12 months; had an asthma episode or attack during the preceding 12 months; or were current smokers.

<sup>b</sup> Williams et al. (2015) [4].

<sup>c</sup> Details regarding methods used for the NHIS can be found at [www.cdc.gov/nchs/nhis/methods.htm](http://www.cdc.gov/nchs/nhis/methods.htm).

<sup>d</sup> Estimates of the percentage of people vaccinated are based on interviews conducted beginning September (BRFSS) or October (NIS) 2013 through June 2014 and reported vaccinations from July 2013 through May 2014. For California, BRFSS interview data were only available for September–December 2013, and thus estimates for persons aged ≥18 years only reflect vaccinations during July–November 2013. For Mississippi, sample size was insufficient from interviews conducted April–June 2014 to estimate vaccinations past the end of February 2014 for persons aged ≥18 years. Additional details can be found at [www.cdc.gov/flu/fluview/index.htm](http://www.cdc.gov/flu/fluview/index.htm).

<sup>e</sup> Black et al. (2014) [5].

<sup>f</sup> Ding et al. (2014) [6].

<sup>g</sup> Those without a “yes” or “no” classification for tetanus vaccination status during the previous 10 years or for tetanus vaccination during 2005–2013, or those who reported tetanus vaccination during 2005–2013 but were not told vaccine type by the provider or did not know vaccine type were excluded from estimations of Tdap coverage. Hence, the Tdap estimate is subject to considerable uncertainty. Further details regarding limitations of the NHIS estimates are included in the publication by Williams 2015. BRFSS, Behavioral Risk Factor Surveillance System; HPV, human papillomavirus; NHIS, National Health Interview Survey; Td, tetanus diphtheria; Tdap, tetanus, diphtheria, acellular pertussis.

to improve vaccine uptake among adults. Further details regarding all vaccines recommended for adults can be found at [www.cdc.gov/vaccines/hcp/acip-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/index.html).

## 2. Vaccine Recommendations

The Advisory Committee on Immunization Practices (ACIP) advises CDC regarding the use of vaccines in the U.S. [4]. The ACIP includes 14 voting members with expertise in the areas of vaccines, immunology, clinical care, public health, and infectious diseases, and one voting member who represents consumers, providing perspective on the social and community aspects of vaccination. ACIP reviews data on the effectiveness and safety of U.S. Food and Drug Administration–approved vaccines, and the epidemiology of vaccine-preventable diseases, including the cost effectiveness of different vaccination strategies. Recommendations may be updated as new information becomes available regarding vaccine effectiveness, safety, and changes in the epidemiology of vaccine-preventable diseases.

ACIP recommendations are reviewed by the Director of CDC and, if approved, are published in the *Morbidity and Mortality Weekly Report* and on the CDC website at [www.cdc.gov/vaccines/acip](http://www.cdc.gov/vaccines/acip). Recommendations for individual vaccines are incorporated annually into the Recommended Immunization Schedule for Persons Aged 0 Through 18 Years and the Recommended Adult Immunization

Schedule ([www.cdc.gov/vaccines/schedules/hcp/adult.html](http://www.cdc.gov/vaccines/schedules/hcp/adult.html)). The adult immunization schedule is also reviewed and approved by the American College of Physicians, American Academy of Family Physicians, American College of Obstetricians and Gynecologists, and the American College of Nurse–Midwives [10]. Recommendations for the use of vaccines in the U.S. are not reviewed by the U.S. Preventive Services Task Force, which has deferred this responsibility to ACIP [11].

In addition to ACIP, other professional medical organizations recommend use of vaccinations after their own reviews. For example, the American College of Cardiology recommends influenza vaccination for secondary prevention of acute cardiovascular events among people with atherosclerotic disease based on results of clinical studies indicating a reduced risk of acute cardiac events among patients vaccinated against influenza [12]. In addition, the Infectious Diseases Society of America has published guidance for the use of vaccines among immunocompromised people, and the American Society for Blood and Marrow Transplantation has published guidance of vaccination of people who have had hematopoietic cell transplantation [13,14]. Evidence-based reviews and graded recommendations of vaccine program implementation strategies are conducted by the Community Preventive Services Task Force ([www.thecommunityguide.org/vaccines/index.html](http://www.thecommunityguide.org/vaccines/index.html)) [15].

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