

## Adult Immunization Guidelines: A Patient Safety and Quality-of-Care Issue

“As there are persons who mend torn garments, so there are physicians who heal the sick; but your duty is far nobler and one befitting a just person—namely to keep people in health.”

—Xenophon in *Cryopaedia*, 400 BC

Vaccines are among the most effective public health and medical strategies for protecting and preserving health. Along with other public health measures, the control of infectious diseases, primarily by vaccines, doubled the life span during the 20th century (1). Still, almost 50 000 Americans die of vaccine-preventable diseases each year (99% of them are adults), and hundreds of thousands more are hospitalized. Physicians should know the Adult Immunization Schedule and should develop policies and procedures to ensure that adult patients receive the appropriate vaccines. Toolkits for accomplishing this are available from the American College of Physicians (ACP) Adult Immunization Initiative ([www.acponline.org/aii/index.html](http://www.acponline.org/aii/index.html)) and from the Centers for Disease Control and Prevention (CDC) ([www.cdc.gov/vaccines](http://www.cdc.gov/vaccines)). The core knowledge in these toolkits is the Adult Immunization Schedule, one lynchpin of public health programs in the United States.

This issue marks the first time that *Annals* has published the recommended Adult Immunization Schedule (2). The purpose of the schedule is to guide practitioners in the use of vaccines. The schedule is the product of a federal advisory committee (Advisory Committee on Immunization Practices [ACIP]), which consists of experts in vaccinology, public health, infectious diseases, and related disciplines. The committee released the first schedule in 2002 and publishes annual updates. *Annals* readers should note that the ACP Board of Regents, on the recommendation of its Adult Immunization Initiative Physician Advisory Board, has endorsed the 2007 Adult Immunization Schedule. *Annals* plans to publish annual updates to the schedule.

The authority of the schedule rests on a solid base of expertise. In addition to committee members, ACIP is assisted by a cadre of liaison representatives designated by professional societies and federal agencies. The liaison representatives contribute to the deliberations but do not vote. The ACIP, in conjunction with CDC staff members, develop and disseminate these recommendations after a systematic review of the data available. The recommendations are informed by data on disease epidemiology, vaccine safety and efficacy, cost-effectiveness, and feasibility. These diverse inputs mean that the Adult Immunization Schedule incorporates the principles of clinical and public health practice, which denotes that it mirrors the dual function of most vaccines against communicable diseases: to protect both the individual and the community.

The recommendations describe the vaccines and identify the populations to be vaccinated. The schedule consists of 2 tables—1 table listing the vaccines recommended for different age groups, and the other listing vaccines recommended for different medical (for example, patients with asplenia) and lifestyle indications (for example, health care workers). The reader can access the full texts of the recommendations for each vaccine at [www.cdc.gov/vaccines/recs/default.htm](http://www.cdc.gov/vaccines/recs/default.htm). The full Adult Immunization Schedule is available at [www.cdc.gov/vaccines/recs/schedules/adult-schedule.htm](http://www.cdc.gov/vaccines/recs/schedules/adult-schedule.htm), and it includes all routinely recommended vaccines—but not travel-related vaccines.

### NEW VACCINES

Important new vaccines appear in this year's schedule—including vaccines to prevent herpes zoster, human papillomavirus (HPV), and pertussis. Below is a brief outline of these vaccines.

#### Herpes Zoster

A vaccine to prevent herpes zoster and its associated complications—primarily postherpetic neuralgia—was licensed for use in the United States in May 2007 (3). The vaccine is indicated for routine administration to all immunocompetent adults age 60 years or older. The vaccine is contraindicated in all HIV-infected and other immunocompromised adults. The vaccine is administered once in a single dose. Whether booster doses will be needed is unknown.

#### Human Papillomavirus

A vaccine to prevent HPV and its most significant complications—cervical cancer and genital warts—was licensed for use in 2006 (4). The vaccine is indicated for all women 11 to 26 years of age. The vaccine is administered in a 3-dose series (0, 2, and 6 months). The vaccine includes 4 subtypes of HPV that cause approximately 70% of cervical cancer and 90% of genital warts. Women infected with 1 or more subtypes may still develop protective antibodies against other subtypes included in the vaccine. This vaccine is contraindicated during pregnancy.

#### Pertussis

An acellular vaccine to prevent pertussis in adults was licensed in 2006 (tetanus, diphtheria, acellular pertussis; also known as Tdap) (5). The vaccine is indicated as a routine 1-time, 1-dose administration to all adults age 64 years or younger whose last tetanus–diphtheria (Td) booster was 10 years ago or more. Note that only 1 Tdap product is licensed for use in adults (Adacel, Sanofi Pasteur, Swiftwater, Pennsylvania). In general, the vaccine is not recommended for use during pregnancy. It may be substituted for the recommended Td booster, which adults

should receive every 10 years. The interval between a previous Td booster and a Tdap booster can be as short as 2 years for postpartum women, close contacts of infants younger than 12 months of age, and all health care workers with direct patient contact.

### Other Vaccines

The recommended schedule also contains guidelines for administering vaccines to HIV-infected adults. The recommendations are organized by vaccine, by medical and other indications, and by the CD4<sup>+</sup> T lymphocyte count as a measure of degree of immunosuppression.

### OLDER VACCINES

The 2007 update has new recommendations for several older vaccines.

#### New Indications for Influenza Vaccine

These recommendations include administering vaccine to persons with any condition that compromises handling of respiratory secretions or that increases the risk for aspiration (cognitive dysfunction, seizure disorder, spinal cord injury, or other neuromuscular disorders). In addition, physicians should be aware that the influenza vaccine is recommended for all women who are or will be pregnant during influenza season. Finally, given the risk for transmission of influenza from health care worker to patient and from health care worker to health care worker, the ACIP has placed renewed emphasis on the importance of immunizing all health care workers against influenza (6). In particular, the ACIP, Healthcare Infection Control Practices Advisory Committee, ACP, Infectious Diseases Society of America, and several other professional organizations have endorsed a requirement that all health care workers with direct patient contact receive annual influenza vaccine unless a contraindication exists or the person signs an informed declination form (7).

### Mumps

On the basis of recent large-scale mumps outbreaks within the United States, the ACIP has recommended a second dose of mumps vaccine for people in specific age groups or with risk factors (8). In particular, ACIP recommends a second dose for adults working in a health care facility. The vaccine generally given as MMR (measles–mumps–rubella) as immunity to 1 or more components (for example, measles and/or rubella) is not a contraindication to receiving the vaccine to ensure mumps immunity.

### Hepatitis B

The committee based its previous indications on an individual's occupational or lifestyle circumstances. It recently provided more comprehensive recommendations, stating that a patient's "acknowledgment of a specific risk factor should not be a requirement for vaccination." Thus, patients do not have to acknowledge at-risk sexual or drug-using behavior as a condition for receiving the vaccine.

Because sexual behaviors may place individuals at an increased risk for acquiring hepatitis B, the ACIP now recommends hepatitis B vaccine for all "sexually active persons who are not in a long-term mutually monogamous relationship." The committee now states that primary care and specialty medical settings should provide hepatitis B and other vaccines for adults.

### CONCLUSION

The ACP's Adult Immunization Initiative Physician Advisory Board hopes that annual publication of the Adult Immunization Schedule in *Annals* will provide increased visibility for adult vaccines while underscoring a practice's professional obligation to recommend and either deliver all recommended immunization services reliably or refer patients to a setting where they can receive these vaccines. This should be considered part of both patient safety and quality of care. With the advent of new, safe, and effective adult vaccines, we can expect renewed interest in adult immunization. The U.S. childhood immunization program is a remarkable success. Achieving the same level of success in adult immunization will be very difficult and will require hard work at every level from professional organizations, such as the ACP, to the individual practice. Nevertheless, the strengthened commitment of the ACP to endorse and *Annals'* willingness to publish the annual Adult Immunization Schedule yearly is an important step forward.

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