

have been incorporated into some electronic health records to alert the provider when specific vaccines are indicated. Manual or automated reminders and standing orders have been discussed (see “Deciding Whom to Vaccinate,” above) and have consistently improved vaccination coverage in both office and hospital settings. Most clinicians’ estimates of their own performance diverge from objective measurements of their patients’ immunization coverage; quantitative assessment and feedback have been shown in pediatric and adolescent practices to increase immunization performance significantly. Some health plans have instituted incentives for providers with high rates of immunization coverage. Specialty providers, including obstetrician–gynecologists, may be the only providers serving some high-risk patients with indications for selected vaccines (e.g., Tdap, influenza, or pneumococcal polysaccharide vaccine).

Immunization Requirements Vaccination against selected communicable diseases is required for attendance at many universities and colleges as well as for service in the U.S. military or in some occupational settings (e.g., child care, laboratory, veterinary, and health care). Immunizations are recommended and sometimes required for travel to certain countries (Chap. 149).

Vaccination of Health Care Staff A particular area of focus for medical settings is vaccination of health care workers, including those with and without direct patient-care responsibilities. The Joint Commission (which accredits health care organizations), the CDC’s Healthcare Infection Control Practices Advisory Committee, and the ACIP all recommend influenza vaccination of all health care personnel; recommendations also focus on requiring documentation of declination for providers who do not accept annual influenza vaccination. As part of their participation in the Centers for Medicare and Medicaid Services’ Hospital Inpatient Quality Reporting program, acute-care hospitals are required to report the proportion of their health care personnel who have received seasonal influenza vaccine. Some institutions and jurisdictions have added mandates on influenza vaccination of health care workers and have expanded on earlier requirements related to vaccination or proof of immunity for hepatitis B, measles, mumps, rubella, and varicella.

VACCINATION IN NONMEDICAL SETTINGS

Receipt of vaccination in medical offices is most frequent among young children and adults ≥ 65 years of age. People in these age groups make more office visits and are more likely to receive care in a consistent “medical home” than are older children, adolescents, and nonelderly adults. Vaccination outside the medical home can expand access to those whose health care visits are limited and reduce the burden on busy clinical practices. In some locations, financial constraints related to inventory and storage requirements have led providers to stock few or no vaccines. Outside private office and hospital settings, vaccination may also occur at health department venues, workplaces, retail sites (including pharmacies and supermarkets), and schools or colleges.

When vaccines are given in nonmedical settings, it remains important for standards of immunization practice to be followed. Consumers should be provided with information on how to report adverse events (e.g., via provision of a VIS), and procedures should ensure that documentation of vaccine administration is forwarded to the primary care provider and the state or city public health immunization registry. Detailed documentation may be required for employment, school attendance, and travel. Personalized health records can help consumers keep track of their immunizations, and some occupational health clinics have incorporated automated immunization reports that help employees stay up-to-date with recommended vaccinations. Some pharmacy chain establishments are using automated systems to report immunization information to the state or local immunization information system.

PERFORMANCE MONITORING

Tracking of immunization coverage at national, state, institution, and practice levels can yield feedback to practitioners and programs

and facilitate quality improvement. Healthcare Effectiveness Data and Information Set (HEDIS) measures related to adult immunization facilitate comparison of health plans. The CDC’s National Immunization Survey and National Health Interview Survey provide selected information on immunization coverage among adults and track progress toward achievement of Healthy People 2020 targets for immunization coverage. Influenza and pneumococcal vaccine coverage rates have been higher among persons ≥ 65 years of age (60–70%) than among high-risk 18- to 64-year-olds. Figures on state-specific immunization coverage with pneumococcal polysaccharide and influenza vaccines (as measured through the CDC’s Behavioral Risk Factor Surveillance System) reveal substantial geographic variation in coverage. There are persistent disparities in adult immunization coverage rates between whites and racial and ethnic minorities. In contrast, racial and economic disparities in immunization of young children have been dramatically reduced during the past 20 years. Much of this progress is attributed to the Vaccines for Children Program, which since 1994 has entitled uninsured children to receive free vaccines.

FUTURE TRENDS

Although most vaccines developed in the twentieth century targeted common acute infectious diseases of childhood, more recently developed vaccines prevent chronic conditions prevalent among adults. Hepatitis B vaccine prevents hepatitis B–related cirrhosis and hepatocellular carcinoma, zoster vaccine prevents shingles and postherpetic neuralgia, and HPV vaccine prevents some types of cervical cancer, genital warts, and anogenital cancers and may also prevent some oropharyngeal cancers (although this outcome was not studied in prelicensure randomized controlled trials). New targets of vaccine development and research may further broaden the definition of vaccine-preventable disease. Research is ongoing on vaccines to prevent insulin-dependent diabetes mellitus, nicotine addiction, and Alzheimer’s disease. Expanding strategies for vaccine development are incorporating molecular approaches such as DNA, vector, and peptide vaccines. New technologies, such as the use of transdermal and other needle-less routes of administration, are being applied to vaccine delivery.

149 Health Recommendations for International Travel

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According to the World Tourism Organization, international tourist arrivals grew dramatically from 25 million in 1950 to >1 billion in 2012. Not only are more people traveling; travelers are seeking more exotic and remote destinations. Travel from industrialized to developing regions has been increasing, with Asia and the Pacific, Africa, and the Middle East now emerging destinations. Figure 149-1 summarizes the monthly incidence of health problems during travel in developing countries. Studies continue to show that 50–75% of short-term travelers to the tropics or subtropics report some health impairment. Most of these health problems are minor: only 5% require medical attention, and $<1\%$ require hospitalization. Although infectious agents contribute substantially to morbidity among travelers, these pathogens account for only $\sim 1\%$ of deaths in this population. Cardiovascular disease and injuries are the most frequent causes of death among travelers from the United States, accounting for 49% and 22% of deaths, respectively. Age-specific rates of death due to cardiovascular disease are similar among travelers and nontravelers. In contrast, rates of death due to injury (the majority from