Immunizations

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KEY POINTS

- The pretravel provider must address vaccine-preventable illnesses with every traveler and make vaccine recommendations based on travelers' past vaccination history, medical history, and anticipated itinerary and activities.
- As a general rule, domestic vaccine-preventable illnesses, including influenza and hepatitis A, are more common in international travelers than are exotic or low-income-nation-associated vaccine-preventative illnesses, such as typhoid fever or Japanese encephalitis; hence, pretravel providers should first ensure that travelers are current on domestic or routine immunizations.
- Additional immunizations may be indicated depending on a traveler's anticipated itinerary, activities, mode of travel, and length of stay.

Advising the traveler about vaccine-preventable diseases is a cornerstone of the pretravel consultation. In addition to ensuring that travelers are current regarding routine, or domestic vaccinations, pretravel providers may advise additional vaccinations depending on itinerary, mode of travel, anticipated activities, and duration of stay.

The approach to a patient regarding vaccines for travel is guided by understanding a few basic principles of immunization. Active immunization occurs when a person's immune system responds to specific antigens by producing antibodies: protection elicited by active immunization may last months or years, or be lifelong, depending on the antigen. Active immunity may be acquired either by surviving a natural infection or by receiving vaccination with disease-specific antigens.

Vaccine antigens consisting of live attenuated microorganisms (viruses or bacteria) generally produce the most robust immune responses compared with inactivated vaccines containing killed microorganisms or purified antigen derivatives. However, severe adverse vaccine-associated reactions are more likely with live vaccines than with inactivated ones. Live vaccines are biologically fragile and must be stored and

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handled carefully in order to preserve efficacy, a challenge to the distribution of such vaccines in tropical climates (eg, measles-mumps-rubella vaccine). Vaccines using protein antigens or polysaccharide antigens coupled to protein carriers elicit a more durable response than polysaccharide antigens alone. Although inactivated and purified antigen derivative vaccines generally tend to have a lower adverse side effects profile in recipients compared with live vaccines, multiple doses are usually necessary to attain protective levels of antibody (eg, inactivated polio vaccine).

Passive immunization refers to the process by which a person receives immune protection by transfer of antibodies produced by another person or animal. This immunization provides temporary protection, as the passively transferred antibodies degenerate over time. An example of passive immunization is the protection of babies by antibodies passed from their mothers in the final 1 to 2 months of pregnancy. This protection lasts for up to 1 year. Another example of passive immunization is the administration of human immune globulin (IG), which was commonly given to travelers for protection against hepatitis A before the approval of the hepatitis A vaccine in 1995.

IG contains human antibodies derived by pooling the immunoglobulin G (IgG) antibody fraction from serum samples of thousands of donors. The antibodies contained in IG reflect the immune status of the donor pool and may differ from country to country. In the United States, IG usually contains antibodies against some of the vaccine-preventable diseases covered by the routine immunization programs (eg, tetanus, diphtheria, measles, mumps, rubella, polio, hepatitis A) as well as some of the prevalent communicable diseases, whereas IG prepared in Asia is more likely to contain antibodies against hepatitis B and hepatitis E.

Human hyperimmune globulin contains high titers of antibody against a specific disease pathogen and is used for postexposure prophylaxis in highly susceptible patients exposed to certain infectious diseases, such as hepatitis B (HBIG), rabies (RIG), and varicella (VZIG).[1]

ROUTINE VACCINES

Vaccine-preventable diseases addressed in public health programs for the routine immunization of infants, children, and adults, such as measles, hepatitis A, and influenza, are more commonly acquired by international travelers than are the more exotic travel diseases, such as typhoid fever and cholera. Thus, the starting point of counseling on travel immunizations during the pretravel encounter should be to verify that the traveler is up to date on the routine or domestic vaccinations and to identify if any booster doses are needed. The Advisory Committee on Immunization Practices (ACIP) at the Centers for Disease Control and Prevention (CDC) reviews vaccines licensed by the Food and Drug Administration (FDA) and makes annual recommendations for routine pediatric and adult immunization schedules in the United States, with interim updates as needed. The ACIP also reviews travel and special vaccines. The vaccine schedules, recommendations, and updates are available at http://www.cdc.gov.

Tetanus, Diphtheria, Pertussis

Cases of tetanus, pertussis, and diphtheria are more common in low-income nations because of suboptimal vaccine coverage. Children should receive the primary series of 5 doses of diphtheria, tetanus, and acellular pertussis (whooping cough) at 2, 4, 6, and 15 to 18 months of age and at 4 to 6 years of age. Tetanus and diphtheria (Td) should be given to adolescents and adults as a booster dose every 10 years. The