

Per manufacturer, Comvax has no known incompatibility with MMR vaccine or with the DTaP booster at 15 months. No data are available regarding compatibility with IPV, Varivax®, or the primary series of DTaP.

## SPECIAL CONSIDERATIONS

Premature infants should be vaccinated according to the schedule recommended for full-term infants, beginning at age 2 months.

### *Lapsed Schedule*

According to ACIP guidelines on general recommendations for immunization, an interruption in a vaccination schedule does not require restarting the entire series of a vaccine or toxoid nor does it require the addition of extra doses. The series should be resumed with the next dose in the series, and any subsequent doses should be administered at the same interval as if the series had not been interrupted.

---

---

## HEPATITIS A AND A/B VACCINES

---

---

### SHORELAND VACCINE RECOMMENDATIONS FOR TRAVELERS

#### *Indications for Travelers*

- Hepatitis A virus (HAV) infection is moderately to highly endemic in all developing countries, and all travelers to those destinations should receive hepatitis A vaccine.
- Travelers who do not perceive that their own itineraries warrant hepatitis A vaccine should be reminded that many cases of travel-related hepatitis A occur in travelers staying in deluxe accommodations in major cities and on “standard” tourist or resort itineraries, even if they exhibit caution in food- and beverage-consumption behaviors.
- Risk is highest for long-stay travelers; those with adventurous eating habits; those who travel outside pre-arranged, fixed itineraries (including common tourist packages), especially in rural areas; and those who eat or drink frequently in settings of poor sanitation.
- Some non-developing countries may have increased risk of hepatitis A associated with risk behaviors (including those listed above) that may warrant vaccination of such travelers or at least of those risk-averse travelers who desire maximum pre-travel protection.
- Shoreland recommends the use of hepatitis A vaccine for traveling children  $\geq 1$  year of age.
  - ◆ Hepatitis A vaccines are licensed in the U.S. and Canada for children as young as 1 year of age.
  - ◆ In the U.S., hepatitis A vaccine is a routine immunization for children at age 1 year.
  - ◆ Risk of clinical illness is practically nonexistent for infants  $< 12$  months of age staying or residing in settings with good hygiene (i.e., babies who are breastfed or bottle fed using safe water for formula reconstitution; babies eating commercial

baby food with no exposure to locally prepared foods that adults would eat). IG is not routinely advised and is rarely given in this situation.

- ♦ Risk of mild clinical illness is low for infants < 12 months of age staying or residing in situations where there is significant exposure to local foods that adults would eat. IG may be given to these infants but only if there is concern about transmission of hepatitis A to unvaccinated household contacts.
- A single dose of single antigen hepatitis A vaccine given any time before travel will provide adequate protection for most healthy persons.
- Travelers who are immune compromised or who have chronic liver disease or other chronic medical conditions and are planning to depart in less than 2 weeks should receive both the initial dose of hepatitis A vaccine and IG.
- At-risk travelers who choose not to receive vaccine or who cannot receive vaccine due to allergy should receive 1 dose of IG.
- The combination HepA-HepB vaccine is recommended in the U.S. for persons 18 years of age or older who are at risk for both forms of hepatitis.

**Note:** Shoreland's vaccine recommendations, which focus primarily on the risk to the individual traveler, reflect a synthesis and reconciliation of available advice from CDC, ACIP, AAP, and WHO, as well as ongoing global surveillance and the published literature. These recommendations may differ from those of individual countries' public health authorities.

## WHAT'S NEW

ACIP published the 2012 recommended and catch-up immunization schedules for children and adolescents on February 10, 2012 (MMWR 61, No. 5); see *Tables CH-1 (Recommended Immunization Schedule for Persons Aged 0-6 Years)*, *CH-2 (Recommended Immunization Schedule for Persons Aged 7-18 Years)*, *CAT-1 (Catch-up Schedule for Children Aged 4 Months-6 Years)*, and *CAT-2 (Catch-up Schedule for Children Aged 7-18 Years)*. These schedules are also approved by AAP and AAFP.

On February 3, 2012, ACIP published the 2012 adult immunization schedule for the U.S. (CDC: MMWR 61, No. 4). See *Table ADT-1 (Recommended Adult Immunization Schedule—U.S.)*.

An updated *Vaccine Information Statement (VIS)* dated October 25, 2011, has been issued for hepatitis A vaccine.

## GENERAL INFORMATION

### *Disease*

Hepatitis A is a viral infection of the liver characterized by malaise, fever, nausea, vomiting, and jaundice. HAV infection results in lifelong immunity to hepatitis A.

Transmission is primarily via person-to-person contact, generally through fecal contamination and oral ingestion. The virus can be spread through contaminated food (such as uncooked fruits and vegetables), shellfish, ice, and water. Transmission is facilitated by poor personal hygiene, poor sanitation, and intimate (intra-household or sexual) contact. Blood-borne transmission is uncommon but possible via blood transfusion or contaminated blood products.

- Hepatitis A virus (HAV) is inactivated by boiling or cooking to > 185°F (85°C) for 1 minute, but it is possible for foods to become contaminated after cooking. Sufficient chlorination of water, as recommended in the U.S., will inactivate the virus.

The incubation period is usually 15-50 days (average 28). The disease usually does not last longer than 2 months, although 10-15% of symptomatic patients have signs and symptoms for as long as 6 months. With HAV infections, relapsing hepatitis occurs; fulminant hepatitis is rare, and chronic hepatitis does not occur.

HAV infection is highly endemic throughout developing countries. For travelers to countries with intermediate or high levels of transmission, risk of HAV infection increases with duration of travel. Risk is highest for persons who live in or visit rural areas, trek in back country, eat or drink frequently in settings of poor sanitation, or have close physical contact with local persons (especially young children) in settings with poor sanitary conditions. Nevertheless, many cases of travel-related hepatitis A occur in travelers with “standard” tourist itineraries, accommodations, and food- and beverage-consumption behaviors.

### ***Vaccines - U.S.***

#### ***Hepatitis A Vaccines***

- **Havrix<sup>®</sup>** has 2 formulations: pediatric and adult.
  - ♦ pediatric: each 0.5 mL dose contains 720 ELISA Units
  - ♦ adult: each 1.0 mL dose contains 1,440 ELISA Units
  - ♦ Havrix is thimerosal free and preservative free.
  - ♦ Havrix is available in single-dose vials and 2 types of pre-filled syringes.
  - ♦ latex content:
    - The tip cap and the plunger of one type of pre-filled syringe contain dry natural latex rubber; the tip cap of the other type of pre-filled syringe may contain natural rubber latex. (*See package insert for latex content by NDC number.*)
    - The vial stopper does not contain latex.
- **Vaqta<sup>®</sup>** has 2 formulations: pediatric/adolescent and adult.
  - ♦ pediatric/adolescent: Each 0.5 mL dose contains approximately 25 units of hepatitis A virus antigen.
  - ♦ adult: Each 1.0 mL dose contains approximately 50 units of hepatitis A virus antigen.
  - ♦ Vaqta is thimerosal free.
  - ♦ Presentations available include: 0.5 mL pediatric dose in single-dose vials and in single-dose pre-filled syringes; 1.0 mL adult dose in single-dose vials and in single-dose pre-filled syringes.
  - ♦ The vial stoppers, syringe plunger stoppers, and tip caps contain dry natural latex rubber.

#### ***Combination HepA-HepB Vaccine***

- **Twinrix<sup>®</sup>** is composed of Havrix and Engerix-B.
  - ♦ Twinrix is not approved for persons < 18 years of age in the U.S.

- ◆ Each 1.0 mL dose contains 720 ELISA units of hepatitis A virus antigen and 20  $\mu\text{g}$  of hepatitis B virus antigen.
- ◆ Twinrix is thimerosal free and preservative free.
- ◆ latex content:
  - The tip cap and the plunger of one type of pre-filled syringe contain dry natural latex rubber; the tip cap of the other type of pre-filled syringe may contain natural rubber latex. (*See package insert for latex content by NDC number.*)
  - The vial stopper does not contain latex.

In contrast to immune globulin, hepatitis A vaccine is not derived from blood products. It is an inactivated, viral antigen vaccine.

Currently licensed hepatitis A vaccines can be used interchangeably.

Clinical studies for all currently licensed hepatitis A vaccines have demonstrated excellent protective efficacy, immunogenicity, and safety.

See “Immune Globulin” for information on IG used for prevention of hepatitis A.

### ***Vaccines - Available outside the U.S.***

#### ***Hepatitis A Vaccine***

- **Avaxim**<sup>®</sup> (sanofi pasteur) is available in Canada and elsewhere. In Canada, Avaxim is available in adult and pediatric formulations for ages  $\geq 12$  years and 1-15 years, respectively. A booster is given after 6-12 months.
  - ◆ This vaccine may have different approved age ranges and booster schedules in other countries. Check the package insert for the country of use.
  - ◆ This vaccine is thimerosal free.
- **Havrix**<sup>®</sup> (GSK) is available in Canada.
  - ◆ This vaccine is thimerosal free.
- **Epaxal**<sup>®</sup> (Crucell) is licensed in Canada but currently not available.
  - ◆ This vaccine contains thimerosal.

#### ***Combination HepA-HepB Vaccine***

**Twinrix** (GSK) is available in adult and pediatric (Twinrix Junior) formulations in Canada and Europe.

- This vaccine contains a trace amount of thimerosal and should be considered equivalent to thimerosal-free products.

#### ***Combination HepA-Typhoid Vaccines***

Several combined inactivated hepatitis A and Vi polysaccharide typhoid vaccines are available outside the U.S. Check package inserts carefully for full prescribing information.

- **Vivaxim**<sup>®</sup> (sanofi pasteur), for use in persons  $\geq 16$  years of age, is available in Canada, Europe, and elsewhere. One dose of the combination vaccine administered IM is followed by a booster dose of hepatitis A vaccine 6-12 months later. Protection against typhoid lasts about 3 years. This vaccine is thimerosal free.
  - ◆ This vaccine is also known as Viatim in some countries.

- **Viatim**<sup>®</sup> (sanofi pasteur), for use in persons  $\geq 16$  years of age, is available in Europe. One dose of the combination vaccine administered IM is followed by a booster dose of hepatitis A vaccine 6-36 months later. Protection against typhoid lasts about 3 years. This vaccine is thimerosal free.
- **Hepatyrix**<sup>®</sup> (GSK), for use in persons  $\geq 15$  years of age, is available in the U.K. One dose of the combination vaccine administered IM is followed by a booster dose of hepatitis A vaccine 6-12 months later. Protection against typhoid lasts about 3 years. This vaccine is thimerosal free.

### *Indications for Vaccination (CDC)*

Routine childhood immunization with hepatitis A vaccine:

- All children should receive a dose of hepatitis A vaccine at age 1 year (i.e., 12-23 months), with a second dose given at least 6 months later. Children not fully vaccinated by age 2 years should be vaccinated at subsequent visits.
- Vaccination is also recommended for unvaccinated older children (2-18 years) who are at increased risk of infection, live in areas where vaccination programs target older children, or for whom immunity is desired.
  - ◆ Catch-up vaccination of unvaccinated children ages 2-18 years can also be considered in areas without an existing program for vaccination of this age group, especially in the context of increasing incidence or ongoing outbreaks among children or adolescents.

Vaccinate any person seeking protection from hepatitis A virus (HAV) infection.

Vaccinate persons with the following indications:

- susceptible persons traveling to or working in areas of intermediate or high risk for hepatitis A transmission, especially persons who plan frequent trips or have prolonged stays
  - ◆ Risk is highest for persons who live in or visit rural areas, trek in back country, eat or drink frequently in settings of poor sanitation, or have close physical contact with local persons (especially young children) in settings with poor sanitary conditions.
  - ◆ This recommendation does not include travelers to North America (except Mexico), Japan, Australia, New Zealand, or western Europe.
  - ◆ A single dose of single antigen hepatitis A vaccine given at any time before departure can provide adequate protection for most healthy persons.
  - ◆ Older adults, immunocompromised persons, and those who have chronic liver disease or other chronic medical conditions who are planning to depart in  $\leq 2$  weeks should receive the initial dose of hepatitis A vaccine and IG.
  - ◆ Children  $< 1$  year of age should receive IG.
- men who have sex with men and persons who use injection drugs
- persons working with HAV-infected primates or with HAV in a research laboratory setting
- persons with chronic liver disease (including persons waiting for or who have received liver transplants) and persons who receive clotting factor concentrates
- unvaccinated persons who anticipate close personal contact (household or regular babysitting) with an international adoptee from a country with high or intermediate

endemicty during the first 60 days after arrival of adoptee in the U.S. (The first dose should be administered as soon as adoption is planned, ideally > 2 weeks before arrival of the adoptee. The second dose should be given at least 6 months later to provide long-term immunity.)

The combination hepatitis A/B vaccine is recommended for persons 18 years of age or older who are at risk for both forms of hepatitis.

### ADMINISTRATION: HAVRIX, TWINRIX

Federal law mandates that U.S. health care providers who administer hepatitis A vaccine provide the patient with the most current *Vaccine Information Statement (VIS)* for hepatitis A vaccine prior to administering each dose of this vaccine. If the vaccinee is a child, the information should be given to the child's parent or legal representative. If a combination hepatitis A/B vaccine is administered, a *VIS* for hepatitis B and a *VIS* for hepatitis A must be provided. Both the date the *VIS* was given to the patient and the publication date of the *VIS* should be recorded in the patient's chart. (See "Recordkeeping.")

Vaccine doses administered  $\leq 4$  days before the minimum interval or age can be counted as valid, but this 4-day "grace period" should not be used when scheduling future vaccination visits. Doses administered  $\geq 5$  days before the minimum age or interval should not be counted as valid doses and should be repeated as age-appropriate. The repeat dose should be spaced after the invalid dose according to the recommended minimum interval.

Also see "Accelerated Immunization Schedules."

#### Pediatric (1-18 Years)

##### *Dose/Route*

0.5 mL (720 ELISA Units), intramuscular, deltoid area (avoid buttock)

##### *Schedule*

##### Primary:

**Havrix:** 2 doses (0, 6-12 months)

- Routine schedule for children age 1 year:
  - ♦ Give the first dose at age 1 year (12-23 months).
  - ♦ Give the second dose at least 6 months later.
- Schedule for unimmunized travelers age 1-18 years:
  - ♦ The first dose may be given at any time before departure, per ACIP and AAP (2 weeks prior to departure, per manufacturer).
    - Persons with certain medical conditions and older adults should receive both hepatitis A vaccine and IG if departing in  $\leq 2$  weeks.
  - ♦ The second dose should be given 6-12 months after the first dose (or at any time after 6 months have elapsed since the first dose). For persons with lapsed hepatitis A immunization (i.e., > 12 months), the second dose can be given regardless of the amount of time elapsed since the initial dose of vaccine. (See "Special Considerations.")

*ADMINISTRATION continued on next page*

*ADMINISTRATION continued from previous page*

- Schedule for other persons at high risk: 2 doses given at least 6 months apart
  - ♦ WHO recommends the second dose be given 6-24 months after the first dose.
  - ♦ The literature suggests a good booster effect even when the second dose is administered up to 5 years later.

**Twinrix:** not licensed for persons < 18 years of age in the U.S.

Booster: not yet determined

### **Adult (≥ 19 Years)**

Note: Twinrix is licensed for persons ≥ 18 years of age in the U.S.

#### *Dose/Route*

**Havrix:** 1.0 mL (1,440 ELISA Units), intramuscular, deltoid area (avoid buttock)

**Twinrix:** 1.0 mL (20 μg of hepatitis B [Engerix-B] and 720 ELISA units of hepatitis A [Havrix]), intramuscular, in deltoid muscle for persons ≥ 18 years of age

#### *Schedule*

##### Primary:

**Havrix:** 2 doses (0, 6-12 months)

- For travelers, give the first dose at any time before departure, per ACIP and AAP (2 weeks prior to departure, per manufacturer).
  - ♦ Older adults and persons with certain medical conditions should receive both hepatitis A vaccine and IG if departing in ≤ 2 weeks.
- Give the second dose 6-12 months after the first dose (or at any time after 6 months have elapsed since the first dose). For persons with lapsed hepatitis A immunization (i.e., > 12 months), the second dose can be given regardless of the amount of time elapsed since the initial dose of vaccine. (See “*Special Considerations.*”)
  - ♦ WHO recommends the second dose be given 6-24 months after the first dose.
  - ♦ The literature suggests a good booster effect even when the second dose is administered up to 5 years later.

**Twinrix:** 3 doses (0, 1, 6 months)

- Routine schedule: 1 dose each at 0, 1, and 6 months.
- Accelerated schedule: 4 doses total—1 dose each on days 0, 7, and 21-30 and a fourth dose at 12 months. (The 4-day “grace period” does not apply to this accelerated schedule.) This accelerated regimen should be considered for departures occurring in less than 6 months where hepatitis B protection is needed.

A complete hepatitis A series consists of any of the following:

- 2 doses of hepatitis A vaccine
- 3 doses of Twinrix
- 2 doses of Twinrix + 1 dose hepatitis A vaccine\*
- 1 dose of Twinrix + 2 doses of hepatitis A vaccine\*

\* If a hepatitis A series was begun with but not completed using Twinrix, additional hepatitis A-containing vaccine is required, because the hepatitis A antigen content in a dose of Twinrix is half that of the hepatitis A antigen content in a dose of adult hepatitis A vaccine.

**Booster:** not yet determined

- Per WHO, a booster dose is not recommended.

## ADMINISTRATION: VAQTA

Federal law mandates that U.S. health care providers who administer hepatitis A vaccine provide the patient with the most current *Vaccine Information Statement (VIS)* for hepatitis A vaccine prior to administering each dose of this vaccine. If the vaccinee is a child, the information should be given to the child's parent or legal representative. Both the date the *VIS* was given to the patient and the publication date of the *VIS* should be recorded in the patient's chart. (See "Recordkeeping.")

Vaccine doses administered  $\leq 4$  days before the minimum interval or age can be counted as valid, but this 4-day "grace period" should not be used when scheduling future vaccination visits. Doses administered  $\geq 5$  days before the minimum age or interval should not be counted as valid doses and should be repeated as age-appropriate. The repeat dose should be spaced after the invalid dose according to the recommended minimum interval.

Also see "Accelerated Immunization Schedules."

### Pediatric (1-18 Years)

#### Dose/Route

0.5 mL (approximately 25 units of hepatitis A virus antigen), intramuscular, deltoid muscle preferred (avoid buttock)

#### Schedule

**Primary:** 2 doses (0, 6-18 months)

- Routine schedule for children aged 1 year:
  - ♦ Give the first dose at age 1 year (12-23 months).
  - ♦ Give the second dose at least 6 months later (6-18 months).
- Schedule for unimmunized travelers aged 1-18 years:
  - ♦ The first dose may be given at any time before departure, per ACIP and AAP (2 weeks prior to departure, per manufacturer).
    - Persons with certain medical conditions should receive both hepatitis A vaccine and IG if departing in  $\leq 2$  weeks.
  - ♦ Give the second dose 6-18 months after the first dose (or at any time after 6 months have elapsed since the first dose). For persons with lapsed hepatitis A immunization (i.e.,  $> 18$  months), the second dose can be given regardless of the amount of time elapsed since the initial dose of vaccine. (See "Special Considerations.")
- Schedule for other persons at high risk: 2 doses given at least 6 months apart (6-18 months)

ADMINISTRATION continued on next page

**ADMINISTRATION** *continued from previous page*

- WHO recommends the second dose be given 6-24 months after the first dose.
- The literature suggests a good booster effect even when the second dose is administered up to 5 years after the first dose.

Booster: not yet determined

- Per WHO, a booster dose is not recommended.

**Adult (≥ 19 Years)*****Dose/Route***

1.0 mL (approximately 50 units of hepatitis A virus antigen), intramuscular, deltoid muscle preferred

***Schedule***

Primary: 2 doses (0, 6-18 months)

- For travelers, give the first dose at any time before departure, per ACIP and AAP (2 weeks prior to departure, per manufacturer).
  - ♦ Older adults and persons with certain medical conditions should receive both hepatitis A vaccine and IG if departing in ≤ 2 weeks.
- Give the second dose 6-18 months after the first dose (or at any time after 6 months have elapsed since the first dose). For persons with lapsed hepatitis A immunization (i.e., > 18 months), the second dose can be given regardless of the amount of time elapsed since the initial dose of vaccine. (*See "Special Considerations."*)

Booster: not yet determined

**SIDE EFFECTS**

Side effects tend to be mild and transient. No serious adverse events have been observed.

Side effects of the combination hepatitis A/B vaccine (Twinrix) are reportedly similar in type and frequency to those of the individual vaccines (Havrix and Engerix-B) given concurrently.

Suspected allergic or adverse effects or medical care required after any immunization should be reported through the Vaccine Adverse Event Reporting System (VAERS). *See VAERS form and information.*

***Havrix***

In adults, the most frequent side effects are soreness at the injection site, headache, and malaise.

In children, the most frequent side effects are soreness and/or induration at the injection site, feeding problems, and headache.

***Vaqta***

In clinical trials with both children and adults, the most frequent complaints were injection site reactions (pain, tenderness, warmth, and swelling).

Some adults complained of headache, but this was less likely to occur in children and adolescents.

### *Twinrix*

Per package insert, the most common reactions are pain, redness, and swelling at the injection site. Secondary respiratory tract infections have been reported.

## PRECAUTIONS AND CONTRAINDICATIONS

### *General*

Consider postponing vaccination in persons with moderate or severe illness (with or without a fever) until recovery to minimize potential adverse effects.

Anaphylactic or other hypersensitive reaction to a previous dose contraindicates further immunization with that particular vaccine.

Anaphylactic or other hypersensitive reaction to a vaccine constituent contraindicates the use of vaccines containing that substance.

- Havrix should not be administered to persons with a history of hypersensitive reaction to aluminum, aluminum hydroxide, or the preservative 2-phenoxyethanol.
- Vaqta should not be administered to persons with a history of hypersensitive reaction to aluminum or aluminum hydroxide.
- Twinrix should not be administered to persons with a history of hypersensitive reaction to neomycin, yeast, aluminum, 2-phenoxyethanol, or formalin.
- Latex content: *See "Vaccines - U.S."*

Persons who are allergic to a vaccine component or who choose not to receive the vaccine should receive a single dose of IG (0.02 mL/kg), which provides effective protection for up to 3 months. (*See "Immune Globulin" for more information.*)

### *Bleeding Disorders*

This is an IM injection and may pose a risk for persons with bleeding disorders. *See "Bleeding Disorders and Vaccination."*

### *Compromised Immunity*

No special precautions need to be taken when vaccinating immunocompromised persons.

If this vaccine is administered to persons with malignancies, immune disorders, or those on immunosuppressive therapy, the expected immune response may not be obtained.

### *Pregnancy*

The safety of hepatitis A vaccine during pregnancy has not been determined; however, because hepatitis A vaccine is produced from inactivated hepatitis A virus, the theoretical risk to the developing fetus is expected to be low.

- The risk associated with vaccination should be weighed against the risk for hepatitis A in pregnant women who may be at high risk for exposure to hepatitis A virus.
- Immune globulin (IG) is a safe and effective means of preventing HAV, but immunization with hepatitis A vaccine gives a more complete and prolonged protection.

Per package insert, Twinrix should be given to pregnant women only if clearly indicated.

## COMPATIBILITY

There is no known incompatibility with other immunizations.

- For IG, see “*Special Considerations.*”

Immunizations administered concurrently should be given at different sites.

## SPECIAL CONSIDERATIONS

### *Postexposure Prophylaxis*

ACIP and AAP recommendations:

- Hepatitis A vaccine (a single dose of single antigen vaccine) is preferred over IG for healthy persons aged 12 months to 40 years.
- IG is preferred for persons > 40 years of age, but hepatitis A vaccine can be used if IG is unavailable.
- Children < 12 months of age, immunocompromised persons, persons with chronic liver disease, and those for whom vaccine is contraindicated should receive IG.

Per Canadian National Advisory Committee on Immunization, hepatitis A vaccine is recommended in preference to IG for postexposure prophylaxis of persons > 1 year of age.

Because hepatitis A has a relatively long incubation period, the vaccine may not prevent the disease in individuals who have an unrecognized hepatitis A infection at the time of vaccination.

### *Duration of Protection*

Hepatitis A vaccines are highly immunogenic, with demonstration of antibodies to HAV persisting for at least 15 years. Based on this and other current scientific evidence, protection is considered to be lifelong after a complete hepatitis A vaccination schedule (2 doses).

### *Pre-Vaccination Serologic Testing*

Pre-vaccination serologic testing may be indicated for adult travelers who are likely to have had HAV infection, if testing costs less than vaccination and will not interfere with completion of the vaccine series.

- This may include persons > 40 years of age, those with a history of hepatitis, older adolescents and adults in certain population groups (i.e., American Indians, Alaskan natives, and Hispanics), adults in certain groups that have a high prevalence of infection (e.g., men who have sex with men), and adults who were either born in or lived for extensive periods in geographic areas with a high endemism of hepatitis A infection.
- Anti-HAV IgM represents acute hepatitis A infection, and antibodies decline over several months.
- Anti-HAV IgG represents previous hepatitis A infection, and antibodies may persist for life.

### *Post-Vaccination Serologic Testing*

Post-vaccination serologic testing is not indicated because of the high rate of vaccine response among adults and children. In addition, not all testing methods used for rou-

tine diagnostic use in the U.S. have the sensitivity to detect low but protective anti-HAV concentrations after vaccination.

- It is not yet known what level of anti-HAV antibody is needed to provide protection against infection.
- Persons tested for anti-HAV after immunization may not have detectable antibody but still may be protected.

Vaccination of an immune person is not contraindicated and does not increase the risk for adverse effects.

Different strengths and/or concentrations of Havrix may be available or may be used for different patient populations in some countries. If questions arise concerning these other formulations, contact the manufacturer directly.

### *Lapsed Schedule*

According to ACIP guidelines on general recommendations for immunization, an interruption in a vaccination schedule does not require restarting the entire series of a vaccine or toxoid nor does it require the addition of extra doses. The series should be resumed with the next dose in the series, and any subsequent doses should be administered at the same interval as if the series had not been interrupted.

---



---

## HEPATITIS B

---



---

### SHORELAND VACCINE RECOMMENDATIONS FOR TRAVELERS

#### *Indications for Travelers*

Shoreland recommendations take into account destination, level of risk of hepatitis B in the country, duration of stay, and likelihood of high-risk activities. In the U.S. and many countries, hepatitis B is a routine childhood vaccine, and all children and adolescents should be vaccinated regardless of travel plans.

Indications for travelers to areas with high risk of hepatitis B include:

- prolonged stays
- frequent shorter stays in the same or other high-risk areas
- travelers with any possibility of a new sexual partner during the stay
- travelers with high potential to require medical or dental care in local facilities
  - ♦ those with underlying medical illness
  - ♦ those traveling for the purpose of seeking medical or dental care or consultation
  - ♦ adventure travelers
  - ♦ those who anticipate extensive use of local or public transportation
- travelers who might engage in tattooing, body piercing, or acupuncture
- health care workers