

## OTHER PROPHYLACTIC AGENTS

### HUMAN IMMUNE GLOBULIN (GAMMA GLOBULIN)

For passive immunization against diseases. Administered intramuscularly (IM).

A. Immune globulin (IG), prepared from plasma of unselected donors for passive immunization against infectious agents to which antibody levels in general donor populations are relatively high.

1. Established efficacy: Benefit established.

a) Viral Hepatitis, type A:

Travelers: All susceptible persons traveling to or working in countries that have high or intermediate hepatitis A endemicity should be vaccinated or receive IG before departure. For healthy persons aged < 40 years, 1 dose of single-antigen hepatitis A vaccine administered at any time before departure can provide adequate protection. For optimal protection, older adults, immunocompromised persons, and persons with chronic liver disease or other chronic medical conditions planning to depart to an area in < 2 weeks should receive the initial dose of vaccine and also simultaneously can be administered IG (0.02 mL/kg) at a separate anatomic injection site. Completion of the vaccine series according to the licensed schedule is necessary for long-term protection.

Travelers who elect not to receive vaccine, are aged < 12 months, or are allergic to a vaccine component should receive a single dose of IG (0.02 mL/kg), which provides effective protection against hepatitis A for up to 3 months. Such travelers whose travel period is expected to be > 2 months should be administered IG at 0.06 mL/kg (maximum 5 mL); administration must be repeated if the travel period is > 5 months. (For those who may require repeated IG prophylaxis, screening for anti-HAV may be useful to determine susceptibility and eliminate unnecessary IG doses for those already immune.)

Post-exposure prophylaxis: Persons who recently have been exposed to HAV and who previously have not received hepatitis A vaccine should be administered a single dose of single-antigen vaccine or IG (0.02 mL/kg) as soon as possible. The efficacy of IG or vaccine when administered > 2 weeks after exposure has not been established.

For healthy persons aged 12 months through 40 years, single-antigen hepatitis A vaccine at the age-appropriate dose is preferred to IG because of vaccine advantages that include long-term protection and ease of administration. For persons aged > 40 years, IG is preferred because of the absence of information regarding vaccine performance and the more severe manifestations of hepatitis A in this age group; vaccine can be used if IG cannot be obtained. The magnitude of the risk for HAV transmission from the exposure should be considered in decisions to use IG or vaccine. IG should be used for children aged < 12 months, immunocompromised persons, persons who have had chronic liver disease diagnosed, and persons for whom vaccine is contraindicated.

Persons administered IG for whom hepatitis A vaccine also is recommended for other reasons should receive a dose of vaccine simultaneously with IG. For persons who receive vaccine, the second dose should be administered according to the licensed schedule to complete the series.

Close personal contact. Hepatitis A vaccine or IG should be administered to all previously unvaccinated household and sexual contacts of persons with serologically confirmed hepatitis A. Persons who have shared illicit drugs with a person who has serologically confirmed HAV should receive hepatitis A vaccine, or IG and hepatitis A vaccine simultaneously. Consideration also should be given to providing IG or hepatitis A vaccine to persons with other types of ongoing, close personal contact (e.g., regular babysitting) with a person with hepatitis A.

Child care centers. Hepatitis A vaccine or IG should be administered to all previously unvaccinated staff members and attendees of child care centers or homes if 1) one or more cases of hepatitis A are recognized in children or employees or 2) cases are recognized in two or more households of center attendees. In centers that do not provide care to children who wear diapers, hepatitis A vaccine or IG need be administered only to classroom contacts of the index patient. When an outbreak occurs (i.e., hepatitis A cases in three or more families), hepatitis A vaccine or IG also should be considered for members of households that have children (center attendees) in diapers.

If a food handler receives a diagnosis of hepatitis A, vaccine or IG should be administered to other food handlers at the same establishment. Because common-source transmission to patrons is unlikely, hepatitis A vaccine or IG administration to patrons typically is not indicated but may be considered if 1) during the time when the food handler was likely to be infectious, the food handler both directly handled uncooked or cooked foods and had diarrhea or poor hygienic practices and 2) patrons can be identified and treated < 2 weeks after the exposure. In settings in which repeated exposures to HAV might have occurred (e.g., institutional cafeterias), stronger consideration of hepatitis A vaccine or IG use could be warranted. In the event of a common-source outbreak, postexposure prophylaxis should not be provided to exposed persons after cases have begun to occur because the 2-week period after exposure during which IG or hepatitis A vaccine is known to be effective will have been exceeded.

b) Measles: If administered within 6 days of exposure, IG can prevent or modify measles in a non-immune person. However, any immunity conferred is temporary unless modified or typical measles occurs. The usual recommended dose of IG is 0.25 mL/kg (0.11 mL/lb) of body weight (maximum dose = 15 mL). For immunocompromised persons the dose is 0.5 mL/kg of body weight (maximum dose = 15 mL). For persons receiving IGIV therapy, administration of at least 100 mg/kg within 3 weeks before measles exposure should be sufficient to prevent measles infection.

IG is indicated for susceptible household contacts of measles patients, particularly those for whom the risk for complications is increased (i.e., infants aged < 12 months, pregnant women, or immunocompromised persons). Infants < 6 months of age are usually immune because of passively acquired maternal antibodies. However, if measles is diagnosed in a mother, unvaccinated children of all ages in the household who lack other evidence of measles immunity should receive IG. IG prophylaxis is not indicated for household contacts who have received a dose of measles vaccine on or after the first birthday, unless they are immunocompromised. Only if administered within 72 hours of initial measles exposure is MMR vaccine acceptable for postexposure prophylaxis in household contacts aged

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> 6 months except pregnant women, immunocompromised patients, and others for whom vaccine is contraindicated. IG should not be used to control measles outbreaks. Any person exposed to measles who lacks evidence of measles immunity and to whom IG is administered should subsequently receive MMR vaccine, which should be administered no earlier than 5-6 months after IG administration, provided the person is then aged  $\geq 12$  months and the vaccine is not otherwise contraindicated.

2. Efficacy equivocal: Benefit, if any, not established
  - a) Prevention of rubella in the first trimester of pregnancy
  - b) Prevention of viral hepatitis type b. Use HBIG.
  - c) Hepatitis C
  - a) Hepatitis E
- B. Specific immune globulins, prepared from plasma of donors selected because of high levels of antibody to the specific diseases.
  1. Tetanus immune globulin (TIG): 250 U for wound prophylaxis; 3,000-6,000 U for therapy (see "Wound Management").
  2. Rabies immune globulin (RIG): See "Rabies Prevention Flowchart."
  3. Hepatitis B immune globulin (HBIG): HBIG is recommended for post-exposure prophylaxis to HBV by percutaneous, mucosal, sexual, household or Perinatal exposure. HBIG should be given as soon as possible, preferably within 12 hours for Perinatal exposure, within 24 hours for percutaneous or mucosal exposure, and within 14 days of sexual contact. The dose is 0.5 mL for newborns and 0.06 mL/kg (max. 5 mL) for others.
  4. Varicella-zoster immune globulin (VariZIG): Currently there is no licensed Varicella zoster immune globulin in the United States. There is an investigational varicella zoster immune globulin (VariZIG) available for use under IND protocols, which may prevent or modify V-Z infection if administered within 96 hours after exposure.

Patients without evidence of immunity to varicella (i.e., without history of disease or age-appropriate vaccination) who are at high risk for severe disease and complications, who have been exposed to varicella, and from whom informed consent has been obtained, are eligible to receive the IND application product under an expanded access protocol. The patient groups recommended by ACIP to receive VariZIG include the following:

- a) Immunocompromised patients without evidence of immunity after direct exposure to varicella or disseminated HZ patients, including persons who
  - 1) have primary and acquired immune-deficiency disorders,
  - 2) have neoplastic diseases, and
  - 3) are receiving immunosuppressive treatment.Patients receiving monthly high-dose IGIV (> 400 mg/kg) are likely to be protected and probably do not require VZIG if the last dose of IGIV was administered < 3 weeks before exposure.
- b) Neonates whose mothers have signs and symptoms of varicella around the time of delivery (i.e., 5 days before to 2 days after).
- c) Premature infants born at >28 weeks of gestation who are exposed during the neonatal period and whose mothers do not have evidence of immunity.
- d) Premature infants born at <28 weeks of gestation or who weigh <1,000 g at birth and were exposed during the neonatal period, regardless of maternal history of varicella disease or vaccination.

e) Pregnant women without evidence of immunity who have been exposed.

Investigational VariZIG is supplied in 125-U vials. The recommended dose is 125 units/10 kg body weight, up to a maximum of 625 units (five vials). The minimum dose is 125 U. This product can be requested from the sole authorized U.S. distributor, FFF Enterprises (Temecula, California) (24-hour telephone, 800-843-7477). For more information on ordering VariZIG see MMWR June 22, 2007/56(RR04): 29-32 (<http://www.cdc.gov/mmwr/PDF/rr/rr5604.pdf>). Any patient who receives VariZIG should be observed closely for signs or symptoms of varicella for 28 days after exposure because VariZIG might prolong the incubation period by >1 week. Antiviral therapy should be instituted immediately if signs or symptoms of varicella disease occur.

Immune globulin intravenous (IGIV): When indicated, health-care providers should make every effort to obtain and administer VariZIG. In situations in which administration of VariZIG does not appear possible within 96 hours of exposure, administration of immune globulin intravenous (IGIV) should be considered as an alternative. IGIV should also be administered within 96 hours of exposure. Although licensed IGIV preparations are known to contain anti-varicella antibody titers, the titer of any specific lot of IGIV that might be available is uncertain because IGIV is not routinely tested for anti-varicella antibodies. The recommended IGIV dose for postexposure prophylaxis of varicella is 400 mg/kg, administered once. For pregnant women who cannot receive VariZIG within 96 hours of exposure, clinicians may choose either to administer IGIV or closely monitor the women for signs and symptoms of varicella and institute treatment with acyclovir if illness occurs.

Note: Any type of immune globulin may cause biological false-positive serologic test (STS) for syphilis and *Treponema pallidum* inactivation (TPI) tests for syphilis. If a diagnosis of syphilis is being considered, a blood sample should be obtained prior to IG administration.

### NON-HUMAN ANTITOXINS

- A. Diphtheria antitoxin (equine origin) 20,000 to 120,000 U for therapy. Screen for horse serum allergy before use. Call ACDC at (213) 240-7942 (974-1234 after hours) to arrange for treatment of the patient.
- B. Botulinum antitoxin (equine origin): Trivalent (A, B, E) antitoxin preferable for therapy. Antitoxin therapy is more effective if undertaken early in the course of illness. Before administration of antitoxin, skin testing should be performed to test for sensitivity to serum or antitoxin (see package insert). Administration of one 10-ml vial of trivalent botulinum antitoxin by the intravenous route results in serum levels of type A, B, and E antibodies capable of neutralizing serum toxin concentrations many fold in excess of those reported for botulism patients. Therefore, after skin testing for sensitivity, contrary to the antitoxin package insert, administration of one vial of antitoxin intravenously is recommended and antitoxin need not be repeated since the circulating antitoxins have a half-life of 5 to 8 days. Call ACDC at (213) 24-7941 (974-1234 after hours) to arrange for treatment of the patient.

Note: Human derived botulinum antitoxin (BIG) is available from the California Department of Health Services and should be considered for use in infants in preference to equine derived antitoxin. Call the State at (510) 231-7600.