

# Immune Globulin (Human)

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BayGam®

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## Solvent/Detergent Treated

### DESCRIPTION

Immune Globulin (Human) — BayGam® treated with solvent/detergent is a sterile solution of immune globulin for intramuscular administration; it contains no preservative. BayGam is prepared by cold ethanol fractionation from human plasma. The immune globulin is isolated from solubilized Cohn fraction II. The fraction II solution is adjusted to a final concentration of 0.3% tri-n-butyl phosphate (TNBP) and 0.2% sodium cholate. After the addition of solvent (TNBP) and detergent (sodium cholate), the solution is heated to 30°C and maintained at that temperature for not less than 6 hours. After the viral inactivation step, the reactants are removed by precipitation, filtration and finally ultrafiltration and diafiltration. BayGam is formulated as a 15–18% protein solution at a pH of 6.4–7.2 in 0.21–0.32 M glycine. BayGam is then incubated in the final container for 21–28 days at 20–27°C.

The removal and inactivation of spiked model enveloped and non-enveloped viruses during the manufacturing process for BayGam has been validated in laboratory studies. Human Immunodeficiency Virus, Type 1 (HIV-1), was chosen as the relevant virus for blood products; Bovine Viral Diarrhea Virus (BVDV) was chosen to model Hepatitis C virus; Pseudorabies virus (PRV) was chosen to model Hepatitis B virus and the Herpes viruses; and Reo virus type 3 (Reo) was chosen to model non-enveloped viruses and for its resistance to physical and chemical inactivation. Significant removal of model enveloped and non-enveloped viruses is achieved at two steps in the Cohn fractionation process leading to the collection of Cohn Fraction II: the precipitation and removal of Fraction III in the processing of Fraction II + IIIW suspension to Effluent III and the filtration step in the processing of Effluent III to Filtrate III. Significant inactivation of enveloped viruses is achieved at the time of treatment of solubilized Cohn Fraction II with TNBP/sodium cholate.

### CLINICAL PHARMACOLOGY

Peak levels of immunoglobulin G are obtained approximately 2 days after intramuscular injection of BayGam.<sup>1</sup> The half-life of IgG in the circulation of individuals with normal IgG levels is 23 days.<sup>2</sup>

Passive immunization with BayGam modifies hepatitis A, prevents or modifies measles, and provides replacement therapy in persons with hypogammaglobulinemia or agammaglobulinemia. BayGam is not standardized with respect to antibody titers against hepatitis B surface antigen (HBsAg) and should not be used for prophylaxis of viral hepatitis type B. Prophylactic treatment to prevent hepatitis B can best be accomplished with use of Hepatitis B Immune Globulin (Human), often in combination with Hepatitis B Vaccine.<sup>3</sup>

BayGam may be of benefit in women who have been exposed to rubella in the first trimester of pregnancy and who will not consider a therapeutic abortion.<sup>4</sup> BayGam may also be considered for use in immunocompromised patients for passive immunization against varicella if Varicella-Zoster Immune Globulin (Human) is not available.<sup>5</sup>

Immune Globulin (Human) is not indicated for routine prophylaxis or treatment of rubella, poliomyelitis, mumps, or varicella. It is not indicated for allergy or asthma in patients who have normal levels of immunoglobulin.<sup>6</sup>

In a clinical study in eight healthy human adults receiving another hyperimmune immune globulin product treated with solvent/detergent, Rabies Immune Globulin (Human), BayRab®, prepared by the same manufacturing process, detectable passive antibody titers were observed in the serum of all subjects by 24 hours post injection and persisted through the 21 day study period. These results suggest that passive immunization with immune globulin products is not affected by the solvent/detergent treatment.

## INDICATIONS AND USAGE

### Hepatitis A

The prophylactic value of BayGam is greatest when given before or soon after exposure to hepatitis A. BayGam is not indicated in persons with clinical manifestations of hepatitis A or in those exposed more than 2 weeks previously.

### Measles (Rubeola)

BayGam should be given to prevent or modify measles in a susceptible person exposed fewer than 6 days previously.<sup>7</sup> A susceptible person is one who has not been vaccinated and has not had measles previously. BayGam may be especially indicated for susceptible household contacts of measles patients, particularly contacts under 1 year of age, for whom the risk of complications is highest.<sup>7</sup> **BayGam and measles vaccine should not be given at the same time.**<sup>7</sup> If a child is older than 12 months and has received BayGam, he should be given measles vaccine about 3 months later when the measles antibody titer will have disappeared. If a susceptible child exposed to measles is immunocompromised, BayGam should be given immediately.<sup>8</sup> Children who are immunocompromised should not receive measles vaccine or any other live viral vaccine.

### Varicella

Passive immunization against varicella in immunosuppressed patients is best accomplished by use of Varicella-Zoster Immune Globulin (Human) [VZIG]. If VZIG is unavailable, BayGam, promptly given, may also modify varicella.<sup>5</sup>

### Rubella

The routine use of BayGam for prophylaxis of rubella in early pregnancy is of dubious value and cannot be justified.<sup>6</sup> Some studies suggest that the use of BayGam in exposed, susceptible women can lessen the likelihood of infection and fetal damage; therefore, BayGam may benefit those women who will **not** consider a therapeutic abortion.<sup>4</sup>

### Immunoglobulin Deficiency

In patients with immunoglobulin deficiencies, BayGam may prevent serious infection. However, BayGam may not prevent chronic infections of the external secretory tissues such as the respiratory and gastrointestinal tract. Prophylactic therapy, especially against infections due to encapsulated bacteria, is effective in Bruton-type, sex-linked, congenital agammaglobulinemia, agammaglobulinemia associated with thymoma, and acquired agammaglobulinemia.

## CONTRAINDICATIONS

BayGam should not be given to persons with isolated immunoglobulin A (IgA) deficiency. Such persons have the potential for developing antibodies to IgA and could have anaphylactic reactions to subsequent administration of blood products that contain IgA.<sup>9</sup>

BayGam should not be administered to patients who have severe thrombocytopenia or any coagulation disorder that would contraindicate intramuscular injections.

## WARNINGS

**BayGam is made from human plasma. Products made from human plasma may contain infectious agents, such as viruses, that can cause disease. The risk that such products will transmit an infectious agent has been reduced by screening plasma donors for prior exposure to certain viruses, by testing for the presence of certain current virus infections, and by inactivating and/or removing certain viruses. Despite these measures, such products can still potentially transmit disease. There is also the possibility that unknown infectious agents may be present in such products. Individuals who receive infusions of blood or plasma products may develop signs and/or symptoms of some viral infections, particularly hepatitis C. ALL infections thought by a physician possibly to have been transmitted by this product should be reported by the physician or other healthcare provider to Bayer Corporation [1-800-288-8371]. The physician should discuss the risks and benefits of this product with the patient, before prescribing or administering it to the patient.**

BayGam should be given with caution to patients with a history of prior systemic allergic reactions following the administration of human immunoglobulin preparations.<sup>9</sup>

## PRECAUTIONS

### General

**Immune Globulin (Human) should not be administered intravenously because of the potential for serious reactions.** Injections should be made intramuscularly, and care should be taken to draw back on the plunger of the syringe before injection in order to be certain that the needle is not in a blood vessel.

**Skin tests should not be done.** In most human beings the intradermal injection of concentrated gamma globulin solution with its buffers causes a localized area of inflammation which can be misinterpreted as a positive allergic reaction. In actuality, this does not represent an allergy; rather, it is localized tissue irritation of a chemical nature. Misinterpretation of the results of such tests can lead the physician to withhold badly needed human immunoglobulin from a patient who is not actually allergic to this material. True allergic responses to human gamma globulin given in the prescribed intramuscular manner are rare.

Although systemic reactions to intramuscularly administered immunoglobulin preparations are rare, epinephrine should be available for treatment of acute allergic symptoms.

### Clinical and Laboratory Tests

None required.

### Clinically Significant Product Interactions

Antibodies in the globulin preparation may interfere with the response to live viral vaccines such as measles, mumps, polio and rubella. Therefore, use of such vaccines should be deferred until approximately 3 months after Immune Globulin (Human) — BayGam® administration.

No interactions with other products are known.

### Pregnancy Category C

Animal reproduction studies have not been conducted with BayGam. It is also not known whether BayGam can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. BayGam should be given to a pregnant woman only if clearly needed.

### Pediatric Use

Safety and effectiveness in the pediatric population have not been established.

## ADVERSE REACTIONS

Local pain and tenderness at the injection site, urticaria, and angioedema may occur. Anaphylactic reactions, although rare, have been reported following the injection of human immune globulin preparations.<sup>6,9</sup> Anaphylaxis is more likely to occur if BayGam is given intravenously; therefore, BayGam must be administered only intramuscularly.

## DOSAGE AND ADMINISTRATION

BayGam is administered **intramuscularly** (see PRECAUTIONS), preferably in the anterolateral aspects of the upper thigh and the deltoid muscle of the upper arm. The gluteal region should not be used routinely as an injection site because of the risk of injury to the sciatic nerve. Doses over 10 mL should be divided and injected into several muscle sites to reduce local pain and discomfort. An individual decision as to which muscle is injected must be made for each patient based on the volume of material to be administered. If the gluteal region is used when very large volumes are to be injected or multiple doses are necessary, the central region **MUST** be avoided; only the upper, outer quadrant should be used.<sup>10</sup>

Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration, whenever solution and container permit.

A number of factors beyond our control could reduce the efficacy of this product or even result in an ill effect following its use. These include improper storage and handling of the product after it leaves our hands, diagnosis, dosage, method of administration, and biological differences in individual patients. Because of these factors, it is important that this product be stored properly and that the directions be followed carefully during use.

### Hepatitis A

BayGam in a dose of 0.01 mL/lb (0.02 mL/kg) is recommended for household and institutional hepatitis A case contacts.

The following doses of BayGam are recommended for persons who plan to travel in areas where hepatitis A is common.<sup>3</sup>

Length of Stay	Dose Volume
Less than 3 months	0.02 mL/kg
3 months or longer	0.06 mL/kg (repeat every 4–6 months)

### Measles (Rubeola)

BayGam should be given in a dose of 0.11 mL/lb (0.25 mL/kg) to prevent or modify measles in a susceptible person exposed fewer than 6 days previously.<sup>7</sup>

A susceptible child who is exposed to measles and who is immunocompromised should receive a dose of 0.5 mL/kg (maximum dose, 15 mL) of BayGam immediately.<sup>8</sup>

### Varicella

If Varicella-Zoster Immune Globulin (Human) is unavailable, BayGam at a dose of 0.6 to 1.2 mL/kg, promptly given, may also modify varicella.<sup>5</sup>

### Rubella

Some studies suggest that the use of BayGam in exposed, susceptible women can lessen the likelihood of infection and fetal damage; therefore, BayGam at a dose of 0.55 mL/kg may benefit those women who will not consider a therapeutic abortion.<sup>4</sup>

### Immunoglobulin Deficiency

BayGam may prevent serious infection in patients with immunoglobulin deficiencies if circulating IgG levels of approximately 200 mg/100 mL plasma are maintained. The recommended dosage is 0.66 mL/kg (at least 100 mg/kg) given every 3 to 4 weeks.<sup>6</sup> A double dose is given at onset of therapy; some patients may require more frequent injections.

### HOW SUPPLIED

BayGam is supplied in 2 mL and 10 mL single dose vials.

NDC Number	Size
0026-0635-02	2 mL vial (10 pack)
0026-0635-04	2 mL vial
0026-0635-10	10 mL vial (10 pack)
0026-0635-12	10 mL vial

### STORAGE

Store at 2–8°C (36–46°F). Do not freeze. Do not use after expiration date.

### CAUTION

R<sub>x</sub> only

U.S. federal law prohibits dispensing without prescription.

### REFERENCES

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