IMMUNE GLOBULIN
(im-emyoon glo-byoo-lin)
immune globulin IM
GamaSTAN S/D
immune globulin IV
Carimune NF, Flegyplasma, GammaSTAN S/D, Gammagard, Gamunex C;
Neogam IV, Privigen
immune globulin Subcut
Gamunex C, Flegyplasma, Vauglamine
Classification
Therapeutic: vaccines/immunizing agents
Pharmacologic: immune globulins
Pregnancy Category C

Indications
IM: Provides passive immunity to a variety of infections including: Hepatitis A, Measles (rubeola) when immune sera are unavailable or when there is insufficient time for active immunization to take place. IV: Useful in patients with immunodeficiency syndromes who are unable to produce IgG-type antibodies. Prevention of bacterial infections in patients with B-cell chronic lymphocytic leukemia (Gammagard S/D only). Prevention of bacterial infections in children infected with HIV. Treatment of idiopathic thrombocytopenic purpura (Carimune NF, Gammagard S/D, Gamunex-C). Treatment of Kawasaki syndrome (Iveegam EN and Gammagard SD). Treatment of chronic inflammatory demyelinating polyneuropathy (Gamunex—C only). Treatment of primary immune deficiency (Gamunex-C only). Subcut: Treatment of primary immune deficiency.

Action

Pharmacokinetics
Absorption: IV administration results in complete bioavailability. Well absorbed following IM administration; 75% bioavailable following Subcut administration.
Distribution: Equally and evenly distributed.
Metabolism and Excretion: Removed by redistribution, tissue binding, and catabolism.
Half-Life: 21–24 days.

TIME/ACTION PROFILE (antibody levels)
ROUTE ONSET PEAK DURATION
Subcut 1 wk unknown unknown
IM 5 days unknown unknown
IV immediate unknown 3–4 wk

Contraindications/Precautions
Contraindicated in: Hypersensitivity to immune globulins or additives (maltose, dimerose, glycine, polyethylene glycol, albumin); Selective IgA deficiency; IgE mediated antibodies to IgA.
Use Cautiously in: Thrombocytopenia (IM use); Cardiovascular disease or history of thrombotic events (q risk of vascular occlusion); Renal impairment, age over 65 yr, diabetes mellitus volume depletion, severe paraneoplastic or concurrent use of nephrotoxic agents (q risk of renal failure: uses lower infusion rate); prolonged immobilization, hypercoagulability, history of thrombosis, estrogen use, including vascular calibers, cardiovascular disease (q risk of thrombosis); Products containing sucrose (q risk of renal failure); Agammaglobulinemia or hypogammaglobulinemia (q risk of hypotension and anaphylaxis following rapid IV administration); OB: Has been used during pregnancy, although safety is not established.

Adverse Reactions/Side Effects
CNS: headache, lightheadedness, malaise, muscle stiffness.
CV: THROMBOEMBOLIC EVENTS, chest pain, vascular occlusion.
GI: nausea.
GU: RENAL FAILURE, diuresis (maltose containing products), nephrotic syndrome.
Derm: cyanosis, urticaria, phlebitis, local inflammation, phlebitis.
Local: muscle stiffness at IV site, local inflammation, arthralgia, back pain, headache, local inflammation.
Hemat: anaphylaxis, angioedema, chills, fever, sweating.
Respiratory: dyspnea, wheezing.
Musculoskeletal: back pain, joint pain.
Interactions
Drug-Drug: May interfere with the immune response to some live-virus vaccines, including measles, mumps, and rubella virus vaccine (do not administer within 3 mo of immune globulin).

Route/Dosage
Primary Immunodeficiency Disorder

<table>
<thead>
<tr>
<th>Condition</th>
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<tbody>
<tr>
<td>Primary Immunodeficiency Disorder</td>
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<tr>
<td>Subcut (Adults and Children):</td>
<td>Dose is administered 1 wk after IGIV dose. Dose is determined by multiplying previous IGIV dose by 1.37, then divide into weekly doses based on frequency of previous treatment. Recommended dose is 100–200 mg/kg/wk.</td>
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<tr>
<td>IV (Adults and Children):</td>
<td>500–600 mg (1–6 ml/kg) q 1–4 wk.</td>
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Hepatitis A Prophylaxis (IM)

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<tr>
<td>IM (Adults and Children):</td>
<td>0.02 mL/kg (for pre-exposure prophylaxis, higher doses — 0.06 mL/kg q 4–6 mo are used if exposure will last 3 mo).</td>
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Hepatitis B Prophylaxis (IM)

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<tr>
<td>IM (Adults and Children):</td>
<td>0.6–1.2 mL/kg if vaccine contains immune globulin is nontolerable.</td>
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Rubella (M)

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<th>Condition</th>
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<tbody>
<tr>
<td>IM (Adults and Children):</td>
<td>0.55 mL/kg.</td>
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Immunodeficiency (IV)

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<th>Condition</th>
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<tbody>
<tr>
<td>IV (Adults and Children):</td>
<td>200–800 mg (4–8 mL) (4–8 mL/infusion; if response is inadequate, may be given monthly).</td>
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Idiopathic Thrombocytopenic Purpura

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<tr>
<td>IV (Adults and Children):</td>
<td>0.4–4.0 g (for 2–3 days, then 0.8 g/kg single infusion as needed to maintain platelet count of 50,000 cells/mm³) of prevent bleeding, doses up to 0.8–1.0 g/kg may be needed.</td>
</tr>
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IV (Adults and Children): Pentagly and Gamunex—C 1 g/kg daily for 2 consecutive days for a total of 2 g/kg.

Prevention of Bacterial Infections in HIV-Infected Patients, or B cell CLL

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<td>IV (Adults and Children):</td>
<td>400 mg/kg q 3–4 wk.</td>
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Kawasaki Syndrome

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<td>IV (Children):</td>
<td>400 mg/kg/day for 4 consecutive days or 1–2 g/kg single dose given with aspirin therapy; may be started within 10 days of onset of symptoms.</td>
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Chronic Inflammatory Demyelinating Polyneuropathy

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<td>IV (Adults):</td>
<td>2–5 g/kg in divided doses over 2–4 consecutive days initially, then 1 g/kg administered over one day (or 0.5 g/kg administered over 2 consecutive days) q 3 wk.</td>
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NURSING IMPLICATIONS

Assessment
● For passive immunity, determine the date of exposure to infection. Immune globulin should be administered within 2 wk of exposure to hepatitis A and within 6 days after exposure to measles.
● Monitor vital signs continuously during infusion of immune globulin IV and assess patient for signs of anaphylaxis (hypotension, flushing, chest tightness, wheezing, fever, diaphoresis) for 1 hr following initiation of infusion. Epinephrine and antihistamines should be available for treatment of anaphylactic reactions.
● Assess patient for acute meningitis syndrome (AMS). Occurs infrequently, usually within several hrs to two days of treatment. Symptoms include severe headache, neck stiffness, fever, photophobia, alertness, visual acuity, and blurred vision. Patients receiving high doses (2 g/kg) are at higher risk. Conduct a complete neurological exam with CSF to rule out other causes of meningitis. AMS usually resolves within several days with discontinuation of immune globulin.
● Leukemia: Monitor patient for signs of infection (vital signs, WBC) during therapy.
● Lab Test Considerations: Monitor platelet counts in patients being treated for idiopathic thrombocytopenic purpura.
● Monitor renal function periodically during therapy.
Potential Nursing Diagnoses
Risk for infection (Infections)

Implementation

- **Subcut:** Administer in abdomen, thighs, upper arm or lateral hip. Allow solution to reach room temperature prior to administration. Do not shake. Mix varies from colorless to light brown, do not administer solutions that are cloudy, contain particulate matter, or are beyond expiration date. Inject into subcutaneous fat layer of abdomen, thighs, or upper arm. Do not administer subcut to distended abdomen or when skin is compromised. Do not give subcut to the same site in the same area within 6–8 weeks. Use separate sites, use Y-site or connection tubing and secure to administration tubing. Infuse using sterile gauze or transparent dressing. If using multiple simultaneous injections, use Y-site connection tubing and secure to administration tubing. Follow manufacturer’s instructions for filling pump reservoir, priming the pump, administration tubing, and Y-site tubing. Administer no more than 15 mL/site. Determine location and number of sites; sites should be at least 2 inches apart. Cleanse sites; grasp skin firmly between 2 fingers and insert needle into subcut tissue. Prior to administering, confirm needle is not in vein by attaching a syringe to end of peel-off label and gently pull back to make sure needle does not flow into tubing. Remove needle by applying sterile gauze or transparent dressing. If using multiple simultaneous sites, use Y-site connection tubing and secure to administration tubing. Follow manufacturer’s instructions for pump. Remove peel-off label if documentation for filling pump reservoir, priming the pump, administration tubing, and Y-site tubing. Administer at a rate of no more than 20 mL/hr/site.

- **IV Administration:** Use of the gluteal site should be reserved only for volumes exceeding 20 mL. Use of the gluteal site is not recommended for volumes >30 mL or when large volumes are administered into multiple injections to prevent damage to the sciatic nerve. Do not administer subcut, intradermally, or IV. Solution of IGIM should be transparent or opalescent and may be colorless or brownish. Do not administer IGIM subcut or IM.

- **Reconstitution:** Privigen, Gammmagard S/D, and Floxogamma should be reconstituted with sterile water for injection for a solution containing 50 mg/mL. Administer solution as soon as possible within 2 hr of reconstitution. IVIG should be administered undiluted via a 15–20 pore filter. Administer at a rate of 0.5 mg/kg/min, may be gradually increased to 4 mg/kg/min if well tolerated. Prolonged IV should be administered undiluted via a 15–20 pore filter. Administer at a rate of 0.5 mg/kg/min for 24 hr. If well tolerated, may be increased gradually every 15 min to a maximum of 4 mg/kg/min.

- **Y-Site Incompatibility:** Do not mix with other drugs or solutions. If adverse reactions occur, the rate of infusion may be increased gradually to a maximum of 4 mL/min.

- **Contraindications:** Do not administer IGIM subcut or IM.

- **Intermittent Infusion:** Instruct patient and parents administering subcut immune globulin at home the correct technique for administration and care of equipment.

- **Potential Nursing Diagnoses:** Risk for infection (Infections)

- **Implementation:** Administer immune globulin IV (IGIV) via IV infusion set containing an integral airway and 15-micron filter provided by the manufacturer. Administer at a rate of 0.5 mL/min for 30 min. If well tolerated, may be increased to a maximum of 0.10 mL/min. Administer IVIG subcut or IM. Do not administer IGIM subcut or IM.

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- **Intermittent Infusion:** Instruct patient and parents administering subcut immune globulin at home the correct technique for administration and care of equipment.
Advise patient to report symptoms of anaphylaxis immediately.

Inform patients that pain, tenderness, and muscle stiffness at the injection site may occur following IM injections of immune globulin. These may persist for several hours following administration.

Instruct patient to notify health care professional immediately if decreased urine output, sudden weight gain, edema, or shortness of breath occur.

**Evaluation/Desired Outcomes**

- Prevention of certain infectious diseases by provision of passive immunity in patients exposed to the infections or patients with immunodeficiency diseases.
- Increased platelet counts in patients with idiopathic thrombocytopenic purpura.
- Improved muscle function in patients with chronic inflammatory demyelinating polineuropathy (Gamunex only).

Why was this drug prescribed for your patient?