

Pharmacy Policy

Immune Globulin

Policy Number: 9.110

Version Number: 2.1

Version Effective Date: 1/1/2022

Product Applicability All Plan⁺ Products

Well Sense Health Plan

New Hampshire Medicaid

Boston Medical Center HealthNet Plan

MassHealth - MCO

MassHealth - ACO

Qualified Health Plans/ConnectorCare/Employer Choice Direct

Senior Care Options

Note: Disclaimer and audit information is located at the end of this document.

Prior Authorization Policy

Products Affected:

- Hyqvia SC
- Xembify SC

Available through Medical Benefit Only (MBO)

- Asceniv IV
- Bivigam IV
- Cutaquig SC
- Cuvitru SQ
- Flebogamma DIF IV
- Gamastan IM
- Gammagard IV and SC
- Gammagard S/D IV Less IgA IV
- Gammaked IV
- Gammaplex IV
- Gamunex-C IV
- Hizentra SC
- Octagam IV
- Panzyga IV
- Privigen IV

⁺ Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

Recommended Authorization Criteria

Coverage of intravenous immune globulin (IVIG) & subcutaneous immune globulin (SCIG) products is recommended in patients who meet one of the following criteria.

(NOTE: Criteria for intramuscular immune globulin [Gamastan] is listed separately at the end of this policy.)

Primary Immunodeficiencies (PID). Approve for the duration noted if the patient meets ONE of the following (A or B):

- A) Initial Therapy:** Approve for 6 months if the patient meets BOTH of the following criteria (i and ii):
- i. IVIG/SCIG is prescribed by or in consultation with an allergist/immunologist, immunologist, otolaryngologist (ear nose and throat [ENT] physician), pulmonologist, or an infectious diseases physician who treats patients with primary immune deficiencies; AND
 - ii. The patient meets ONE of the following (a, b, or c):
 - o **NOTE:** An exception can be made for the impaired antibody response if, according to the prescriber, the delay caused by pre-vaccination and post-vaccination antibody measurement would be deleterious to the patient's health.
 - a) The patient has a diagnosis of congenital agammaglobulinemia, X-linked agammaglobulinemia, other agammaglobulinemia due to the absence of B-cells, Wiskott-Aldrich syndrome, ataxia telangiectasia, DiGeorge syndrome, severe combined immunodeficiency (SCID), Hyper-Immunoglobulin M (IgM) syndromes, an IgG level lower than 250 mg/dL, or a primary immune deficiency which has been confirmed by genetic or molecular testing; OR
 - b) The patient has a diagnosis of common variable immunodeficiency (CVID), unspecified hypogammaglobulinemia, or other immunodeficiencies with significant hypogammaglobulinemia and meets the following (1 and either 2 or 3):
 - (1) The patient's pretreatment IgG level is below the normal range (age-adjusted and according to the normal reference range for the reporting laboratory); AND
 - (2) The patient has an impaired antibody response (i.e., failure to produce antibodies to specific antigens); OR
 - (3) The patient has recurrent infections; OR
 - c) The patient has an IgG subclass deficiency or a diagnosis of selective antibody deficiency (SAD) and meets the following criteria (1 and 2):
 - (1) The patient has an impaired antibody response (i.e., failure to produce antibodies to specific antigens); AND
 - (2) The patient has recurrent infections.
- B) Patients Currently Receiving IVIG/SCIG:** Approve for 1 year if the patient has been diagnosed with a primary immunodeficiency and is continuing to receive benefit from the product (e.g., increased IgG levels, preventing or controlling infections).

1. B-Cell Chronic Lymphocytic Leukemia (CLL) for Prevention of Bacterial Infections. Approve for the duration noted if the patient meets ONE of the following (A or B):

- o **A) Initial Therapy:** Approve for 4 months if the patient meets ALL of the following criteria (i or ii, and iii):
 - i. The patient has an immunoglobulin G (IgG) level < 500 mg/dL (5.0 g/L); OR
 - ii. The patient has a history of recurrent bacterial infections; AND
 - iii. IVIG/SCIG is prescribed by or in consultation with an oncologist, hematologist, or infectious diseases physician.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

B) Patients Currently Receiving IVIG: Approve for 6 months if the patient is maintaining an IgG trough (pre-dose) level of about 500 mg/dL and up to 700 mg/dL to prevent bacterial infections.

2. Chronic Inflammatory Demyelinating Polyneuropathy (CIDP) or Polyradiculoneuropathy. Approve for the duration noted if the patient meets ONE of the following (A or B):

A) Initial Therapy: Approve for 3 months if the patient meets the following (i and ii):

- i. IVIG/SCIG is prescribed by or in consultation with a neurologist; AND
- ii. Electrodiagnostic studies support the diagnosis of CIDP.

B) Patients Currently Receiving IVIG: Approve for 1 year of therapy if the patient has a clinically significant improvement in neurologic symptoms (for example, improvement in disability; nerve conduction study results improved or stabilized; physical examination show improvement in neurological symptoms, strength, and sensation) as determined by the prescriber (a neurologist or in consultation with a neurologist). The patient may not have a full response after the initial 3 months, but there should be some response.

4. Idiopathic (Immune) Thrombocytopenic Purpura (ITP) or Immune Thrombocytopenia (IT), Acute and Chronic. Approve for the duration noted if the patient meets ONE of the following (A or B):

A) Initial Therapy: Various approval durations apply.

i. Adults and adolescents (> 17 years of age) with ITP/IT. Approve for ONE of the following (a, b, or c):

a) Acute bleeding in a patient who is newly diagnosed or requiring therapy for the first time OR in patients with persistent or chronic ITP. Approve IVIG for 1 month if the patient meets the following criteria (1, 2, and 3):

(1) IVIG/SCIG is prescribed by or in consultation with a hematologist; AND

(2) One of the following applies:

- The patient has tried a systemic corticosteroid (e.g., prednisone) for ITP/IT; OR
- There is an urgent need to increase the platelet count quickly AND IVIG/SCIG will be started with a systemic corticosteroid; OR
- A corticosteroid is contraindicated according to the prescriber; AND

(3) The platelet count is $< 30 \times 10^9/L$ or $30,000/\mu L$. OR

b) To increase platelet counts before surgical procedures (e.g., splenectomy) or dental procedures, approve IVIG/SCIG for 1 month if the patient meets the following criteria (1 and 2):

(1) IVIG/SCIG is prescribed by or in consultation with a hematologist; AND

(2) The platelet count is $< 50 \times 10^9/L$ or $50,000/\mu L$ OR if the patient is undergoing major surgery (e.g., central nervous system or cardiac surgery) and the platelet count is $< 75 \times 10^9/L$ or $75,000/\mu L$. OR

c) The patient has persistent (3 to 12 months duration) or chronic (≥ 12 months duration) ITP/IT. Approve for 1 year if the patient meets the following criteria (1, 2, and 3):

(1) IVIG/SCIG is prescribed by or in consultation with a hematologist; AND

(2) One of the following applies:

- The patient has tried a systemic corticosteroid (e.g., prednisone) for ITP/IT; OR
- There is an urgent need to increase the platelet count quickly AND IVIG/SCIG will be started with a systemic corticosteroid; OR
- A corticosteroid is contraindicated according to the prescriber; AND

(3) IVIG/SCIG is required to prevent bleeding.

ii. Children and adolescents (≤ 17 years of age) with ITP/IT. Approve for one of the following (a, b, c, or d):

a) Acute bleeding in a patient who is newly diagnosed or requiring therapy for the first time OR in patients with persistent or chronic ITP. Approve for 1 month if the patient meets the following criteria (1 and 2):

(1) IVIG/SCIG is prescribed by or in consultation with a hematologist; AND

(2) There is significant acute mucous membrane bleeding or other noncutaneous bleeding; OR

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

- b) The patient has *persistent* (3 to 12 months) or *chronic* (\geq 12 months) ITP/IT. Approve for 1 year if the patient meets the following criteria (1 and 2):
 - (1) IVIG/SCIG is prescribed by or in consultation with a hematologist; AND
 - (2) IVIG/SCIG is required to prevent bleeding; OR
 - c) Inaccessibility (such as travel, distance from hospital), activity level of the patient, or noncompliance is a concern with the prescriber. Approve for 1 year if the patient meets the following criteria (1 and 2):
 - (1) IVIG/SCIG is prescribed by or in consultation with a hematologist; AND
 - (2) Child/adolescent is at risk of bleeding; OR
 - d) To increase the platelet count before major surgery such as splenectomy, or before other surgery, dental extraction(s), or other procedures likely to cause blood loss. Approve for 1 month if IVIG/SCIG is prescribed by or in consultation with a hematologist.
- iii. Pregnant patient with ITP/IT. Approve for one of the following (a or b):
- a) Before normal vaginal delivery, cesarean section, or spinal or epidural anesthesia. Approve for 2 weeks if IVIG/SCIG is prescribed by or in consultation with a hematologist; OR
 - b) Pregnant patient in any trimester. Approve for 3 months if IVIG/SCIG is prescribed by or in consultation with a hematologist. (This does not include before normal vaginal delivery, cesarean section, or spinal or epidural anesthesia.)
- B) Patients Currently Receiving IVIG/SCIG:** Approve for 1 year in children, adolescents, and adults with persistent or chronic ITP/IT, if the patient responded with increased platelet count and/or absence of significant bleeding and the patient requires additional therapy with IVIG/SCIG to prevent bleeding, according to the prescriber.

Use the Initial Therapy criteria above in A) for patients who require additional therapy for one of the following: 1) acute bleeding, 2) to increase platelet counts before surgical or dental procedures, or 3) pregnant patients.

See Appendix A for more information on IVIG/SCIG use in ITP.

- 5. Kawasaki Disease.** Approve a single dose if the patient meets the following criteria (A and B):
- A) IVIG/SCIG is prescribed by or in consultation with a pediatric cardiologist or a pediatric infectious diseases physician; AND
 - B) The patient has persistent or recrudescing (recurring) fever or signs of inflammation at least 36 hours after completing the initial IVIG/SCIG infusion(s).

Note: These criteria assume that the first dose was given in a hospital within 7 to 10 days of onset.

- 6. Multifocal Motor Neuropathy (MMN) (Treatment).** Approve for the duration noted if the patient meets ONE of the following (A or B):
- A) Initial Therapy: Approve for 6 months if prescribed by or in consultation with a neurologist.
 - B) Patients Currently Receiving IVIG/SCIG: Approve for 1 year if the patient has improvement in neurologic symptoms as determined by the prescriber (a neurologist or in consultation with a neurologist). IVIG should be discontinued in patients who do not respond after the first 6 months of therapy. Approve for 1 year in patients who are responding (that is, maintaining optimal function) according to the prescriber.

Other Uses with Supportive Evidence

- 7. Antibody-Mediated Rejection (AMBR) in Solid Organ Transplant (e.g., Kidney, Heart, Lung, Liver).** Approve for 6 months if prescribed by or in consultation with a physician affiliated with a transplant center.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

8. Autoimmune Mucocutaneous Blistering Diseases (Pemphigus Vulgaris, Pemphigus Foliaceus, Bullous Pemphigoid, Mucous Membrane Pemphigoid [Cicatricial Pemphigoid], and Epidermolysis Bullosa Acquisita). Approve for the duration noted if the patient meets ONE of the following (A or B):

- A) Initial Therapy:** Approve for 6 months if the patient meets BOTH of the following criteria (i and ii):
- i. IVIG/SCIG is prescribed by or in consultation with a dermatologist; AND
 - ii. The patient meets ONE of the following criteria (a, b, or c):
 - a) The patient has tried a systemic corticosteroid OR a corticosteroid is contraindicated according to the prescriber AND the patient has tried an immunosuppressive agent (e.g., azathioprine, cyclophosphamide, dapsone, methotrexate [MTX], cyclosporine, mycophenolate mofetil, tacrolimus) OR an immunosuppressive agent is contraindicated according to the prescriber; OR
 - b) The patient has rapid, debilitating, progressive disease, that cannot be controlled with a systemic corticosteroid and an immunosuppressive agent; OR
 - c) The disease is so serious that there is inadequate time for therapy with a systemic corticosteroid and an immunosuppressive agent to have a rapid enough effect.
- B) Patients Currently Receiving IVIG/SCIG:** Approve for 1 year if the patient has responded (previous lesions are healing and there are fewer new lesions) according to the prescriber.

Conventional therapy (a systemic corticosteroid and an immunosuppressive agent) is started at the same time or before IVIG/SCIG. Many case reports and uncontrolled case series suggest benefit of IVIG/SCIG in patients with recalcitrant disease or in those with contraindications to conventional therapy.²⁸⁻³⁰

9. Cytomegalovirus (CMV) Interstitial Pneumonia in Patients with Cancer or Transplant-Related Infection. Approve for 2 months if prescribed by or in consultation with an oncologist, hematologist, or an infectious diseases physician.

For CMV pneumonia, therapy consists of ganciclovir IV injection (or foscarnet IV injection if CMV is ganciclovir-resistant) and IVIG/SCIG in combination.³¹ The NCCN guidelines on prevention and treatment of cancer-related infections (version 1.2019) show IVIG/SCIG may be added to ganciclovir or foscarnet for treatment of CMV pneumonia.³¹

10. Dermatomyositis or Polymyositis. Approve for the duration noted if the patient meets ONE of the following (A or B):

- A) Initial Therapy:** Approve for 6 months if the patient meets ALL of the following criteria (i, ii, and iii):
- i. IVIG/SCIG is prescribed by or in consultation with a neurologist or a rheumatologist; AND
 - ii. The patient has tried a systemic corticosteroid OR a corticosteroid is contraindicated according to the prescriber; AND
 - iii. The patient has tried an immunosuppressive agent (e.g., azathioprine, MTX, cyclosporine, cyclophosphamide, mycophenolate mofetil) OR an immunosuppressive agent is contraindicated according to the prescriber.
- B) Patients Currently Receiving IVIG/SCIG:** Approve for 1 year if the patient has responded (such as improved muscle strength, improved neuromuscular symptoms, improved functional ability) according to the prescriber.

IVIG/SCIG may be used in patients with dermatomyositis with severe active illness for whom other interventions have been unsuccessful or intolerable.^{32,33}

IVIG/SCIG may be considered amongst the treatment options for patients with polymyositis not responding to first line immunosuppressive treatment.³² In uncontrolled series, IVIG/SCIG has been effective in polymyositis.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

11. Desensitization Therapy Prior to and Immediately after Solid Organ (Kidney, Heart, Lung, Liver, Intestinal) Transplantation. Approve for the duration noted if the patient meets ONE of the following (A or B):

- A) Initial Therapy: Approve for 4 months if prescribed by or in consultation with a physician affiliated with a transplant center.
- B) Patients Currently Receiving IVIG/SCIG: Approve for 1 year if given before transplantation OR approve for one dose if given post-transplantation.

Patients with preexisting anti-human leukocyte antigen (HLA) antibodies (sensitized patients) are more likely to have a positive cross match with possible donors and have a lower likelihood of receiving a solid organ transplant with longer wait times. Most of the information on use of IVIG/SCIG for desensitization is in patients with kidney transplantation but many of the same principles apply to transplantation of other organs and tissues.^{34,35} Current protocols include using low-dose IVIG/SCIG with plasma exchange or high-dose IVIG/SCIG with or without B-cell depletions with Rituxan[®] (rituximab injection for IV infusion).¹⁸

12. Guillain Barré Syndrome (GBS). Approve for the duration noted if the patient meets ONE of the following (A or B):

- A) Initial Therapy: Approve for 1 month (this is to provide one course of therapy [divided doses given over 2 to 5 days]) if the patient meets BOTH of the following criteria (i and ii):
 - i. IVIG/SCIG is prescribed by or in consultation with a neurologist or a specialist with experience in diagnosing and treating patients with GBS; AND
 - ii. The patient meets one of the following criteria (a or b):
 - a) IVIG/SCIG is initiated within 2 weeks and no longer than 4 weeks of onset of neuropathic symptoms (weakness, inability to stand or walk without assistance, respiratory or bulbar weakness); OR
 - b) The patient has had a relapse (treatment related fluctuation), but had an initial response to IVIG.
- B) Patients Currently Receiving IVIG/SCIG: Approve for 1 month (this is to provide a second course [divided doses given over 2 to 5 days]) about 3 weeks after the first course

The American Academy of Neurology (AAN) recommends IVIG/SCIG in patients who require aid to walk within 2 or 4 weeks from the onset of neuropathic symptoms.³⁷

The effect of IVIG/SCIG in GBS has only been investigated in randomized controlled trials in patients who are unable to walk at nadir (i.e., severely affected patients), not in mildly affected patients who are able to walk unaided at nadir.³⁸ IVIG/SCIG is not indicated or proven to be effective in mildly affected GBS patients.^{32,38}

13. Hematologic Neoplasm-Associated Hypogammaglobulinemia or Hypogammaglobulinemia after B-cell Targeted Therapies (Secondary Immunodeficiency [SID]). Approve for the duration noted if the patient meets ONE of the following (A or B):

(See B-Cell Chronic Lymphocytic Leukemia [CLL] for Prevention of Bacterial Infections and Multiple Myeloma for these diagnosis-specific criteria) (Some examples of B-cell targeted therapy are chimeric antigen receptor [CAR]-T cell therapy [e.g., Kymriah], a rituximab product, Besponsa [inotuzumab ozogamicin].)

- A) Initial Therapy: Approve for 6 months if the patient meets ALL of the following criteria (i, ii and iii):
 - i. The patient has an immunoglobulin G (IgG) level of < 500 mg/dL (excluding paraprotein); AND
 - ii. The patient has recurrent or severe bacterial infections or there is a high risk of infection, according to the prescriber; AND
 - iii. IVIG/SCIG is being prescribed by or in consultation with an oncologist, hematologist, infectious disease physician, or immunologist.
- B) Patients Currently Receiving IVIG/SCIG: Approve for 6 months if the patient is maintaining an IgG level of over 400 mg/dL and having a positive response to therapy (e.g., decrease in infections), according to the prescriber.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

14. Hematopoietic Cell Transplantation (HCT) to Prevent Bacterial Infection. Approve for the duration noted if the patient meets ONE of the following (A or B):

- A) Initial Therapy:** Approve for 3 months if the patient meets ALL of the following criteria (i, ii, iii, and iv):
- i. IVIG/SCIG is prescribed by or in consultation with a hematologist, oncologist or infectious diseases physician; AND
 - ii. The patient has had a HCT within the previous year; AND
 - iii. The patient has an immunoglobulin G (IgG) level < 500 mg/dL OR the patient has multiple myeloma or malignant macroglobulinemia; AND
 - iv. According to the prescriber the patient has a significant risk of having frequent and/or severe bacterial infections.
- B) Patients Currently Receiving IVIG/SCIG:** Approve for 6 months if the patient requires IVIG/SCIG to maintain trough IgG levels greater than 400 to 500 mg/dL AND who according to the prescriber has significant risk of having frequent and/or severe bacterial infections.

15. Human Immunodeficiency Virus (HIV)-Associated Thrombocytopenia. Approve for 1 month if the patient meets the following criteria (A and B):

- A)** IVIG/SCIG is prescribed by or in consultation with an infectious diseases specialist or a physician who specializes in the treatment of HIV infection; AND
- B)** The patient meets ONE of the following criteria (i or ii):
- i. The patient is receiving combination antiretroviral therapy (cART) for their HIV infection; OR
 - ii. The patient has clinically significant bleeding complications according to the prescriber.

Secondary ITP can occur in patients with HIV infection.²⁴ Effective viral suppression using antiretroviral therapy improves HIV-associated cytopenias, including thrombocytopenia. Treatment of secondary ITP (HIV-associated) with short-term corticosteroid therapy increases the platelet count in a similar manner as in non-HIV infected persons and does not appear to be associated with adverse effects. IVIG/SCIG and Rh₀(D) immune globulin (IV or intramuscular [IM] injection) [Rhophylac[®]/WinRho[®] SDF] have been reported to increase the platelet count. Splenectomy is an effective option for patients who fail to respond to corticosteroid or IVIG/SCIG therapy.

Rh₀(D) immune globulin is FDA-approved in non-splenectomized, Rh₀(D) positive patients for the treatment of childhood acute or chronic ITP, chronic ITP in adults, and ITP secondary to HIV infection (adults and children).⁴¹ The safety and efficacy of Rh₀(D) immune globulin have not been evaluated in patients who are splenectomized or in patients who are Rh₀(D) negative. The American Society of Hematology (ASH) guidelines for immune thrombocytopenia recommend initial treatment with corticosteroids, IVIG/SCIG, or Rh₀(D) immune globulin for patients with secondary ITP due to HIV (no preference for initial therapy is expressed).²⁴ In symptomatic patients who fail one of these therapies, splenectomy is recommended. No platelet count cut-offs are addressed in this patient population.

16. Human Immunodeficiency Virus (HIV)-Infected Infants and Children to Prevent Recurrent Bacterial Infections. Approve for the duration noted if the patient meets ONE of the following (A or B):

- A) Initial Therapy:** Approve for 6 months if the patient meets the following criteria (i, ii, iii and iv):
- i. IVIG/SCIG is prescribed by or in consultation with an infectious diseases specialist or an immunologist; AND
 - ii. The patient is < 13 years of age; AND
 - iii. The patient is receiving combination antiretroviral therapy (cART); AND
 - iv. The patient has ONE of the following (a, b, or c):

^{*} Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

- a) Hypogammaglobulinemia (i.e., IgG < 400 mg/dL); OR
 - b) Functional antibody deficiency is demonstrated by poor specific antibody titers (that is, the patient does not develop specific antibody responses against protein and polysaccharide antigens); OR
 - c) Functional antibody deficiency is demonstrated by the patient having recurrent (two or more per year), serious bacterial infections (e.g., bacteremia, meningitis, pneumonia) despite administration of combination antiretroviral therapy (cART) and appropriate antimicrobial prophylaxis.
- B) Patients Currently Receiving IVIG/SCIG:** Approve for 1 year if the frequency and/or severity of infections have decreased according to the prescriber.

17. Immunotherapy-Related Toxicities Associated with Checkpoint Inhibitor Therapy. Approve for the duration noted if the patient meets ONE of the following (A or B):

Note: Examples of checkpoint inhibitors are: Keytruda (pembrolizumab), Opdivo (nivolumab), Yervoy (ipilimumab), Tecentriq (atezolizumab), Bavencio (avelumab), Imfinzi (durvalumab).

- A) Initial Therapy:** Approve for 1 month if the patient meets the following criteria (i or ii):
- i. The patient has tried a systemic corticosteroid (e.g., prednisone, methylprednisolone) and has not adequately responded to therapy OR IVIG/SCIG is being started with a systemic corticosteroid; OR
 - ii. A corticosteroid is contraindicated, per the prescriber.
- B) Patients Currently Receiving IVIG/SCIG:** Approve for 6 months if the patient is having a positive response to therapy, as determined by the prescriber, and the prescriber has determined extended therapy is required.

18. Lambert-Eaton Myasthenic Syndrome (LEMS). Approve for the duration noted if the patient meets ONE of the following (A or B):

- A) Initial Therapy:** Approve for 1 month (to allow for one course of therapy [divided doses given over 2 to 5 days]) if the patient meets the following criteria (i, ii and iii):
- i. IVIG/SCIG is prescribed by or in consultation with a neurologist; AND
 - ii. The patient is having refractory weakness after symptomatic treatment of LEMS with an amifampridine product (e.g., Firdapse, Ruzurgi), guanidine, or pyridostigmine; AND
 - iii. The patient meets ONE of the following (a or b):
 - a) The patient has paraneoplastic LEMS; OR
 - b) The patient has non-paraneoplastic LEMS AND has tried a systemic corticosteroid (e.g., prednisone) or another immunosuppressive agent (e.g., azathioprine), or has a contraindication to corticosteroids and/or immunosuppressive agents, according to the prescriber.
- B) Patients Currently Receiving IVIG/SCIG:** Approve for 1 year if the patient has a response (for example, improved muscle strength, other clinical response) or continued effectiveness, according to the prescriber.

IVIG/SCIG may be used as an alternative in patients who do not respond or do not tolerate other therapies for LEMS.¹⁸

19. Multiple Myeloma. Approve for the duration noted if the patient meets ONE of the following (A or B):

- A) Initial Therapy:** Approve for 6 months if the patient meets the following criteria (i, and ii):
- i. The patient has severe recurrent bacterial infections according to the prescriber; AND
 - ii. IVIG/SCIG is prescribed by or in consultation with a hematologist, oncologist, or infectious diseases specialist.
- B) Patients Currently Receiving IVIG/SCIG:** Approve for 1 year.

^{*} Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

20. Multiple Sclerosis (MS), Acute Severe Exacerbation or Relapses. Approve for 1 month (this is to provide one course of therapy [either a single dose or in divided doses given over 1 to 5 days]) if the patient meets BOTH of the following criteria (A and B):

- A) IVIG/SCIG is prescribed by or in consultation with, a neurologist or a physician who specializes in the treatment of MS; AND
- B) The patient meets ONE of the following criteria (i or ii):
 - i. The patient has either not responded to or has had a significant adverse reaction with systemic corticosteroids (e.g., methylprednisolone sodium succinate injection) OR plasma exchange; OR (Note: A trial of Acthar[®] H.P. gel [repository corticotropin injection; adrenocorticotrophic hormone, ACTH] would also count toward meeting this requirement.)
 - ii. A systemic corticosteroid is contraindicated, according to the prescriber.

21. Multiple Sclerosis (MS), Post-Partum to Prevent Relapses. Approve for the duration noted if the patient meets ONE of the following (A or B):

- A) Initial Therapy: Approve for 6 months if the patient meets the following criteria (i and ii):
 - i. IVIG/SCIG is prescribed by or in consultation with, a neurologist or a physician who specializes in the treatment of MS; AND
 - ii. The patient is not currently receiving disease modifying therapy (DMT) for MS to prevent relapses.
 - o Note: Disease modifying therapy can include: Avonex[®] [interferon beta-1a injection, IM], Plegridy[®] [peginterferon beta-1a SC injection], Rebif[®] [interferon beta-1a injection, SC], Betaseron[®]/Extavia[®] [interferon beta-1b injection], Copaxone[®]/Glatopa[™] [glatiramer acetate injection, SC], Gilenya[®] [fingolimod capsules], Lemtrada[™] (alemtuzumab injection for IV use), Aubagio[®] [teriflunomide tablets], Mavenclad[®] [cladribine tablets], Mayzent[®] [siponimoid tablets], Tecfidera[®] [dimethyl fumarate capsules], Tysabri[®] [natalizumab injection], Novantrone[®] [mitoxantrone injection]).

B) Patients Currently Receiving IVIG/SCIG: Approve for a second 6 months of therapy if the patient is not taking a disease modifying therapy (DMT) for MS.

Note: Disease modifying therapy can include: Avonex [interferon beta-1a injection, IM], Plegridy [peginterferon beta-1a SC injection], Rebif [interferon beta-1a injection, SC], Betaseron/Extavia [interferon beta-1b injection], Copaxone/Glatopa [glatiramer acetate injection, SC], Gilenya [fingolimod capsules], Lemtrada (alemtuzumab injection for IV use), Aubagio [teriflunomide tablets], Mavenclad [cladribine tablets], Mayzent [siponimoid tablets], Tecfidera [dimethyl fumarate capsules], Tysabri [natalizumab injection], Novantrone [mitoxantrone injection]).

None of the DMTs have been approved for use in women who are nursing. IVIG/SCIG is the treatment of choice for post-partum mothers with MS who are nursing.⁴⁶

22. Myasthenia Gravis. Approve for the duration noted if the patient meets ONE of the following (A or B or C):

- A) Initial Therapy for Short-Term (Acute) Use: Approve for 5 days (to allow for one course of therapy to be given in divided doses over 2 to 5 consecutive days) if the patient meets the following criteria (i and ii):
 - i. IVIG/SCIG is prescribed by or in consultation with a neurologist; AND
 - ii. The patient meets ONE of the following conditions (a, b, c, or d):
 - a) The patient has an exacerbation of myasthenia gravis; OR
 - b) The patient requires stabilization of myasthenia gravis before surgery; OR

⁴⁶ Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

- c) The patient has been started on an immunosuppressive drug (e.g., azathioprine, cyclosporine, cyclophosphamide, mycophenolate mofetil, MTX, or tacrolimus) and is waiting for full effect; OR
 - d) The patient is starting therapy with a corticosteroid and IVIG/SCIG is being given to prevent or minimize exacerbations.
- B) Initial Therapy for Maintenance:** Approve for 1 year if the patient meets ALL of the following criteria (i, ii, iii, and iv):
- i. IVIG/SCIG is prescribed by or in consultation with a neurologist; AND
 - ii. The patient has refractory myasthenia gravis; AND
 - iii. The patient has tried pyridostigmine; AND
 - iv. The patient has tried immunosuppressive therapy with at least one of the following agents: azathioprine, cyclosporine, cyclophosphamide, mycophenolate mofetil, MTX, tacrolimus AND has had an inadequate response.
- C) Patients Currently Receiving IVIG/SCIG for Maintenance Therapy:** Approve for 1 year if the patient is responding according to the prescriber.

Patients who require additional short-term (acute) therapy for exacerbations or relapses are reviewed using the Initial Therapy for Short-Term Use above in A).

Note: Patients with myasthenia gravis crisis are hospitalized. Crisis is defined by respiratory failure resulting from myasthenic weakness and necessitating assisted ventilation.

23. Passive Immunization for Measles (Post-Exposure Prophylaxis). Approve for 1 day (to allow for a single dose) if the patient meets ONE of the following criteria (A or B):

- A)** The patient is pregnant and meets the following criteria (i and ii):
- i. The patient has been exposed to measles and IVIG/SCIG will be given within 6 days of exposure; AND
 - ii. The patient does not have evidence of immunity to measles (i.e., the patient does not have a history of the disease or age-appropriate vaccination); OR
- B)** The patient is severely immunocompromised (e.g., patients with a bone marrow transplant, graft-versus-host disease [GVHD], acute lymphoblastic leukemia [ALL], acquired immunodeficiency syndrome [AIDS], human immunodeficiency virus [HIV]-infected patients) according to the prescriber, AND the patient has been exposed to measles and IVIG/SCIG will be given within 6 days of exposure.

Note: For patients with primary immune deficiency, see criteria for Primary Immunodeficiencies.

24. Passive Immunization for Varicella (Chickenpox) [Post-Exposure Prophylaxis]. Approve for 1 day (to allow for a single dose) if the patient meets ONE of the following criteria (A or B):

- A)** The patient is human immunodeficiency virus (HIV)-infected and meets ALL of the following criteria (i, ii and iii):
- i. IVIG/SCIG is prescribed by or in consultation with an infectious diseases specialist or an immunologist; AND
 - ii. VariZIG[®] (varicella zoster immune globulin [human] IM injection) is not available; AND
 - iii. The patient does not have evidence of immunity to varicella (i.e., patient does not have a history of the disease or age-appropriate vaccination);

OR

- B)** The patient is not HIV-infected and meets ALL of the following criteria (i, ii, iii, and iv):
- i. IVIG/SCIG is prescribed by or in consultation with an infectious diseases specialist or immunologist; AND
 - ii. VariZIG (varicella zoster immune globulin [human] IM injection) is not available; AND

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

- iii. The patient does not have evidence of immunity to varicella (i.e., patient does not have a history of the disease or age-appropriate vaccination); AND
- iv. The patient meets ONE of the following criteria (a or b):
 - a) The patient is immune compromised; OR
 - b) The patient is pregnant.

25. Pure Red Blood Cell Aplasia (PRCA) Secondary to Chronic (Persistent) Parvovirus B19 Infection. Approve for the duration noted if the patient meets ONE of the following (A or B):

- A) Initial Therapy: Approve for 2 months if the patient meets ALL of the following criteria (i, ii, and iii):
 - i. IVIG/SCIG is prescribed by or in consultation with an infectious diseases specialist, immunologist, hematologist, or transplant specialist; AND
 - ii. The patient has a chronic immunodeficiency condition (e.g., patients with HIV infection, solid organ transplants [e.g., renal, liver], chemotherapy for hematologic malignancy); AND
 - iii. The patient has clinically significant anemia as determined by the prescriber OR the patient is transfusion dependent.
- B) Patients Currently Receiving IVIG/SCIG: Approve for 3 months in patients who responded with an increase in hemoglobin to previous IVIG/SCIG therapy but relapse when off IVIG/SCIG or in patients who respond and require maintenance therapy to prevent relapse.

26. Pure Red Blood Cell Aplasia (PRCA), Immunologic Subtype. Approve for the duration noted if the patient meets ONE of the following (A or B):

- A) Initial Therapy: Approve for 1 month if the patient meets ALL of the following criteria (i, ii, and iii):
 - i. IVIG/SCIG is prescribed by or in consultation with an infectious diseases specialist, immunologist, hematologist, or transplant specialist; AND
 - ii. The patient has tried a systemic corticosteroid (e.g., prednisone); AND
 - iii. The patient has tried either cyclophosphamide OR cyclosporine.
- B) Patients Currently Receiving IVIG/SCIG: Approve for 1 month if the patient has responded with an increase in hemoglobin and reticulocytosis, according to the prescriber.

27. Stiff-Person Syndrome (Moersch-Woltman Syndrome). Approve for the duration noted if the patient meets ONE of the following (A or B):

- A) Initial Therapy: Approve for 3 months if the patient meets the following criteria (i and ii):
 - i. IVIG/SCIG is prescribed by or in consultation with a neurologist; AND
 - ii. The patient meets ONE of the following criteria (a or b):
 - a) The patient has tried a benzodiazepine (e.g., diazepam) OR baclofen; OR
 - b) The patient has contraindications to both a benzodiazepine AND baclofen according to the prescriber.
- B) Patients Currently Receiving IVIG/SCIG: Approve for 1 year if the patient has responded (such as reduced stiffness or frequency of spasms, ability to walk unassisted) according to the prescriber.

28. Thrombocytopenia, Feto-neonatal Alloimmune. Approve for 6 months if the pregnant mother or newborn patient is prescribed IVIG/SCIG by or in consultation with a hematologist or an obstetrician.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

29. Pediatric autoimmune neuropsychiatric disorder associated with group A streptococci (PANDAS) / Pediatric acute onset neuropsychiatric syndrome (PANS): Approve for 6 months

- a. Diagnosis of pediatric autoimmune neuropsychiatric disorder associated with group A streptococci (PANDAS) OR pediatric acute onset neuropsychiatric syndrome (PANS); **AND**
- b. Medication prescribed by or in consultation with a pediatric psychiatrist or pediatric neurologist; **AND**
- c. ~~For a diagnosis of PANDAS~~ Member has been evaluated for and if applicable treated for infective causes; **AND**
- d. Prescriber will continue with individualized standard neuropsychiatric treatment while undergoing immune globulin treatment; **AND**
- e. Member is less than 18 years of age

Coverage Criteria for Gammastan (MBO):

- a. Hepatitis A exposure and the exposure was no more than 2 weeks previously; **OR**
- b. Measles exposure and the exposure was no more than 6 days previously; **AND**
 - a. Member has not had a previous vaccination or previous measles outbreak; **OR**
 - b. Member is immunocompromised; **OR**
- c. Varicella-zoster immune globulin (VariZig) is unavailable and member is immunosuppressed; **OR**
- d. Rubella postexposure prophylaxis; **AND**
 - a. Member is pregnant and has been exposed to Rubella; **AND**
 - b. Member will not consider a therapeutic abortion

EXCLUSION CRITERIA

When immune globulin is prescribed for condition(s) in which there is insufficient clinical evidence to support its use and/ or if the request is for one for the following:

- Adrenoleukodystrophy
- Alzheimer's Disease (AD)
- Amyotrophic Lateral Sclerosis
- Anemia, Aplastic
- Asthma
- Atopic Dermatitis
- Autism
- BK Virus Associated Nephropathy (BKVAN) in Kidney Transplant Patient
- Chronic Fatigue Syndrome
- Chronic Myasthenia Gravis
- Complex Regional Pain Syndrome (Reflex Sympathetic Dystrophy)
- Crohn's Disease
- Cystic Fibrosis
- Cytomegalovirus (CMV) Disease Prophylaxis in Hematopoietic Cell Transplantation [HCT] Recipients

^{*} Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

- Cytomegalovirus (CMV) Infection, Preemptive Therapy for Cytomegalovirus [CMV] Infection or Treatment of Cytomegalovirus {CMV} Disease, in Allogeneic Hematopoietic Cell Transplantation (HCT) Recipients
- Cytomegalovirus (CMV) Infections, Prophylaxis or Treatment in Solid Organ Transplantation, (e.g., Heart, Kidney) for Prophylaxis
- Diabetes Mellitus, Immunotherapy
- Epilepsy, Pediatric Intractable
- Fibromyalgia Syndrome
- Graft Versus Host Disease (GVHD), Acute [Within First 100 days After Hematopoietic Cell Transplantation {HCT}]
- Graft Versus Host Disease (GVHD), chronic, Prevention in Hematopoietic Cell Transplantation [HCT] Recipient
- Heart Block, Congenital (Prevention)
- Heart Failure, Chronic
- Hematopoietic Cell Transplantation (HCT) in Allogeneic Recipients from Human Leukocyte Antigen [HLA]-Identical Sibling Donors
- Human Immunodeficiency Virus (HIV) Infection, Adults, for Prophylaxis of Infections
- Immune Globulin M (IgM) Paraproteinemic Demyelinating Neuropathy [or Other Paraproteinemic Demyelinating Neuropathies]
- In Vitro Fertilization (IVF)
- Infantile Spasms (West Syndrome)
- Marburg Variant Multiple Sclerosis (MS)
- Multiple Sclerosis (MS), Primary or Secondary Progressive, Relapsing Remitting for the Prevention of Relapses
- Nephropathy, Membranous
- Organomegaly, Endocrinopathy, Monoclonal Gammopathy, and Skin Changes (POEMS) Syndrome
- Post-Polio Syndrome
- Recurrent Spontaneous Pregnancy Loss (RSPL) [Including Antiphospholipid Antibody-Positive Women]
- Selective Immune Globulin A (IgA) Deficiency as the Sole Immunologic Abnormality
- Systemic Lupus Erythematosus (SLE)
- Systemic Sclerosis (Scleroderma)
- Thrombocytopenia, Heparin-Induced (HIT)
- Thrombotic Thrombocytopenic Purpura (TTP)/Hemolytic Uremic Syndrome (HUS)
- Urticaria, Chronic Autoimmune
- Uveitis, Noninfectious

Applicable Coding:

Code	Medication
90283	Immune Globulin (IgIV), human, for intravenous use
90284	Immune globulin (SCIG), human, for use in subcutaneous infusions, 100 mg, each

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

J1459	Injection, immune globulin (Privigen), intravenous, non-lyophilized (e.g., liquid), 500 mg
J1556	Injection, immune globulin (Bivigam), 500 mg
J1557	Injection, immune globulin, (Gammaplex), intravenous, non-lyophilized (e.g., liquid), 500 mg
J1559	Injection, immune globulin (Hizentra), 100 mg
J1561	Injection, immune globulin, (Gamunex/Gamunex-C/Gammaked), intravenous, non-lyophilized (e.g., liquid), 500 mg
J1566	Injection, immune globulin, intravenous, lyophilized (e.g., powder), not otherwise specified, 500 mg
J1568	Injection, immune globulin, (Octagam), intravenous, non-lyophilized (e.g., liquid), 500 mg
J1569	Injection, immune globulin, (Gammagard), intravenous, non-lyophilized, (e.g., liquid), 500 mg
J1572	Injection, immune globulin, (Flebogamma/Flebogamma DIF), intravenous, non-lyophilized (e.g., liquid), 500 mg
J1599	Injection, immune globulin, intravenous, non-lyophilized (e.g. liquid), not otherwise specified, 500 mg
J1562	Injection, immune globulin (Vivaglobin), 100mg
J1575	Injection, immune globulin/kyaluronidase, (Hyqvia), 100mg immunoglobulin
J1555	Injection, immune globulin, (Cuvitru) Subcutaneous Inj 1gm/5ml
No code yet - use J1599 for unspecified	Injection, Immune Globulin (Human)-ifas IV Soln (Panzyga)
J3590	Immune globulin subcutaneous, Human – klhw 20% solution (Xembify)

Clinical Background Information and References

1. Agarwal S, Cunningham-Rundles C. Assessment and clinical interpretation of reduced IgG values. *Ann Allergy Asthma Immunol.* 2007;99:281-283.
2. Ahmed AR. Use of intravenous immunoglobulin therapy in autoimmune blistering diseases. *Int Immunopharmacol.* 2006;6:557-578.
3. Akdis CA, Akdis M, Bieber T, et al; European Academy of Allergology; Clinical Immunology/American Academy of Allergy, Asthma and Immunology/PRACTALL Consensus Group. Diagnosis and treatment of atopic dermatitis in children and adults: European Academy of Allergology and Clinical Immunology/American Academy of Allergy, Asthma and Immunology/PRACTALL Consensus Report. *Allergy.* 2006;61:969-987.
4. Allenspach E, Rawlings DJ, Scharenberg AM. X-Linked Severe Combined Immunodeficiency. 2003 Aug 26 [Updated 2013 Jan 24]. In: Pagon RA, Adam MP, Bird TD, et al., editors. *GeneReviews™* [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2014. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK1410/> Accessed 01/08/2014.
5. Ambler KL, Vickers LM, Leger CS, et al. Clinical features, treatment, and outcome of HIV-associated immune thrombocytopenia in the HAART era. *Adv Hematol.* 2012;2012:910954.
6. American Academy of Pediatrics. Kawasaki disease. In: Pickering LK (Ed). *Red Book Online: 2012 Report of the Committee on Infectious Diseases.* 29th Ed. Elk Grove Village, IL: American Academy of Pediatrics; 2012:454-460.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

7. American Academy of Pediatrics. Human Immunodeficiency Virus Infection. In: Pickering LK, ed. Red Book Report of the Committee on Infectious Diseases. 29th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2012:418-439.
8. American Academy of Pediatrics. Varicella-Zoster Infections. In: Pickering LK, ed. Red Book Report of the Committee on Infectious Diseases. 29th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2012:774-789.
9. American College of Obstetricians and Gynecologists (ACOG). ACOG Practice Bulletin. Management of recurrent early pregnancy loss. Washington, DC: American College of Obstetricians and Gynecologists (ACOG); 2001 Feb.
10. Anderson D, Ali K, Blanchette V, et al. Guidelines on the use of intravenous immune globulin for hematologic conditions. *Transfus Med Rev.* 2007;21(2 Suppl 1):s9-s56.
11. Anyaegbu EI, Almond PS, Milligan T, et al. Intravenous immunoglobulin therapy in the treatment of BK viremia and nephropathy in pediatric renal transplant recipients. *Pediatr Transplant.* 2012;16:E19-24.
12. Ata B, Lin Tan S, Shehata F, et al. A systematic review of intravenous immunoglobulin for treatment of unexplained recurrent miscarriage. *Fertil Steril.* 2011;95:1080-1085.
13. Aukrust P, Yndestad A, Ueland T, et al. The role of intravenous immunoglobulin in the treatment of chronic heart failure. In. *J Cardiol.* 2006;112:40-45.
14. Balfour-Lynn IM, Mohan U, Bush A and Rosenthal M. Intravenous immunoglobulin for cystic fibrosis lung disease: a case series of 16 children. *Arch Dis Child.* 2004;89:315-319.
15. Baxter announces topline results of phase III study of immunoglobulin for Alzheimer's disease [press release]. Deerfield, IL: Baxter International Inc; May 7, 2013. Available at: http://www.baxter.com/press_room/press_releases/2013/05_07_13_gap_study.html Accessed January 6, 2014.
16. Becker MD, Rosenbaum JT. Current and future trends in the use of immunosuppressive agents in patients with uveitis. *Curr Opin Ophthalmol.* 2000;11:472-477.
17. Benesch M, Kerbl R, Lackner H, et al. Low-dose versus high-dose immunoglobulin for primary treatment of acute immune thrombocytopenic purpura in children: results of a prospective, randomized single-center trial. *J Pediatr Hematol Oncol.* 2003;25:797-800.
18. Berkovich R. Treatment of acute relapses in multiple sclerosis. *Neurotherapeutics.* 2013;10:97-105.
19. Berkowitz RL, Kolb EA, McFarland JG, et al. Parallel randomized trials of risk-based therapy for fetal alloimmune thrombocytopenia. *Obstet Gynecol.* 2006;107:91-96.
20. Berkowitz RL, Lesser ML, McFarland JG, et al. Antepartum treatment without early cordocentesis for standard-risk alloimmune thrombocytopenia: a randomized controlled trial. *Obstet Gynecol.* 2007;110(2 Pt 1):249-255.
21. Bertsias G, Ioannidis JP, Boletis J, et al; Task Force of the EULAR Standing Committee for International Clinical Studies Including Therapeutics. EULAR recommendations for the management of systemic lupus erythematosus. Report of a Task Force of the EULAR Standing Committee for International Clinical Studies Including Therapeutics. *Ann Rheum Dis.* 2008;67:195-205.
22. Bivigam liquid [product information]. Boca Raton, FL: Biotest Pharmaceuticals Corporation; June 2013.
23. Bonilla FA, Bernstein IL, Khan DA, et al; American Academy of Allergy, Asthma and Immunology; American College of Allergy, Asthma and Immunology; Joint Council of Allergy, Asthma and Immunology. Practice parameter for the diagnosis and management of primary immunodeficiency. *Ann Allergy Asthma Immunol.* 2005;94(5 Suppl 1):S1-63.
24. Branch DW, Peaceman AM, Druzin M, et al. A multicenter, placebo-controlled pilot study of intravenous immune globulin treatment of antiphospholipid syndrome during pregnancy. The Pregnancy Loss Study Group. *Am J Obstet Gynecol.* 2000;182(1 Pt 1):122-127.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

25. British Columbia Blood Coordinating Office. IVIG utilization management handbook. 1st Ed. British Columbia, Canada: Provincial Blood Coordinating Office; April 2002. Available at: <http://www.pbco.ca/images/Resources/Publications/ivighandbook-combined.pdf>. Accessed December 9, 2013.
26. British Committee for Standards in Haematology General Haematology Task Force. Guidelines for the investigation and management of idiopathic thrombocytopenic purpura in adults, children and in pregnancy. *Br J Haematol*. 2003;120:574-596.
27. Broliden K, Tolfvenstam T, Norbeck O. Clinical aspects of parvovirus B19 infection. *J Intern Med*. 2006;260:285-304.
28. Buckley RH. Immunoglobulin G subclass deficiency: fact or fancy? *Curr Allergy Asthma Reports*. 2002;2:356-360.
29. Cappa M, Bertini E, del Balzo P, et al. High dose immunoglobulin IV treatment in adrenoleukodystrophy. *J Neurol Neurosurg Psychiatry*. 1994;57 Suppl:69-70.
30. Carimune NF lyophilized [prescribing information]. Kankakee, IL: CSL Behring LLC (manufactured by CSL Behring AG, Bern, Switzerland); September 2013.
31. Caro XJ, Winter EF, Dumas AJ. A subset of fibromyalgia patients have findings suggestive of chronic inflammatory demyelinating polyneuropathy and appear to respond to IVIg. *Rheumatology (Oxford)*. 2008;47:208-211.
32. Centers for Disease Control and Prevention. Updated recommendations for use of VariZIG – United States, 2013. *MMWR*. 2013;62:574-576.
33. Chrissafidou A, Malek M, Musch E. Experimental study on the use of intravenous immunoglobulin (IVIg) in patients with steroid-resistant Crohn's disease. *Z Gastroenterol*. 2007;45:605-608.
34. Colagiuri S, Leong GM, Thayer Z, et al. Intravenous immunoglobulin therapy for autoimmune diabetes mellitus. *Clin Exp Rheumatol*. 1996;14 Suppl 15:S93-97.
35. Comi G, Roveri L, Swan A, et al; Inflammatory Neuropathy Cause and Treatment Group. A randomised controlled trial of intravenous immunoglobulin in IgM paraprotein associated demyelinating neuropathy. *J Neurol*. 2002;249:1370-1377.
36. Conley ME, Howard VC. X-Linked Agammaglobulinemia. 2001 Apr 5 [Updated 2011 Nov 17]. In: Pagon RA, Adam MP, Bird TD, et al., editors. *GeneReviews™* [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2014. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK1453/> Accessed 01/08/2014.
37. Cordonnier C, Chevret S, Legrand M, et al; GREFIG Study Group. Should immunoglobulin therapy be used in allogeneic stem-cell transplantation? A randomized, double-blind, dose effect, placebo-controlled, multicenter trial. *Ann Intern Med*. 2003;139:8-18.
38. Cortese I, Chaudhry V, So Y.T., et al. Evidence-based guideline update: Plasmapheresis in neurologic disorders: Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. *Neurology*. 2011;76:294-300.
39. Cunningham-Rundles C. How I treat common variable immune deficiency. *Blood*. 2010;116:7-15.
40. Dalakas MC. The role of high-dose immune globulin intravenous in the treatment of dermatomyositis. *Int Immunopharmacol*. 2006;6:550-556.
41. Dalakas MC, Fujii M, Li M, et al. High-dose intravenous immune globulin for stiff-person syndrome. *N Engl J Med*. 2001;345:1870-1876.
42. Dalakas MC, Illa I, Dambrosia JM, et al. A controlled trial of high-dose intravenous immune globulin infusions as treatment for dermatomyositis. *N Engl J Med*. 1993;329:1993-2000.
43. Dalakas MC, Stein DP, Otero C, et al. Effect of high-dose intravenous immunoglobulin on amyotrophic lateral sclerosis and multifocal motor neuropathy. *Arch Neurol*. 1994;51:861-864.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

44. Deane S, Selmi C, Naguwa SM, et al. Common variable immunodeficiency: etiological and treatment issues. *Int Arch Allergy Immunol.* 2009;150:311-324.
45. Dodel R, Rominger A, Bartenstein P, et al. Intravenous immunoglobulin for treatment of mild-to-moderate Alzheimer's disease: a phase 2, randomised, double-blind, placebo-controlled, dose-finding trial. *Lancet Neurol.* 2013;12:233-243.
46. Dodel RC, Du Y, Depboylu C, et al. Intravenous immunoglobulins containing antibodies against beta-amyloid for the treatment of Alzheimer's disease. *J Neurol Neurosurg Psychiatry.* 2004;75:1472-1474.
47. Donofrio PD, Berger A, Brannagan TH 3rd, et al. Consensus statement: the use of intravenous immunoglobulin in the treatment of neuromuscular conditions report of the AANEM ad hoc committee. *Muscle Nerve.* 2009;40:890-900.
48. Drugs and lactation database of the National Library of Medicine's TOXNET system (Globulin, Immune in Lactmed). Last revised: September 7, 2013. Available at: <http://toxnet.nlm.nih.gov> Accessed on December 3, 2013.
49. Eisen, H. Acute cardiac allograft rejection: Treatment. Available at UptoDate®. Last updated: May 10, 2017. Accessed February 27, 2018.
50. Elovaara I, Apostolski S, van Doorn P, et al. EFNS guidelines for the intravenous immunoglobulin in treatment of neurological diseases. *Eur J Neurol.* 2008;15:893-908.
51. Enk A and the European Dermatology Forum Guideline Subcommittee. Guidelines on the use of high-dose intravenous immunoglobulin in dermatology. *Eur J Dermatol.* 2009;19:90-98.
52. Fazekas F, Lublin FD, Li D, et al; UBC MS/MRI Research Group. Intravenous immunoglobulin in relapsing-remitting multiple sclerosis: a dose-finding trial. *Neurology.* 2008;71:265-271.
53. Feasby T, Banwell B, Benstead T, et al. Guidelines on the use of intravenous immune globulin for neurologic conditions. *Transfus Med Rev.* 2007;21(2 Suppl 1):S57-107.
54. Filipovich AH, Johnson J, Zhang K. WAS-Related Disorders. 2004 Sep 30 [Updated 2011 Jul 28]. In: Pagon RA, Adam MP, Bird TD, et al., editors. *GeneReviews™* [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2014. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK1178/> Accessed 01/08/2014.
55. Fillit H, Hess G, Hill J, et al. IV immunoglobulin is associated with a reduced risk of Alzheimer disease and related disorders. *Neurology.* 2009;73:108-185.
56. Flebogamma 5% or 10% DIF solution [prescribing information]. Los Angeles, CA: Grifols Biologicals, Inc (manufactured by Instituto Grifols, SA, Barcelona, Spain); September 2013.
57. Frankovich J, Swedo S, Murphy T, et al. Clinical Management of Pediatric Acute-Onset Neuropsychiatric Syndrom: Part II-Use of Immunomodulatory Therapies. *J Child Adolesc. Psychopharmacol.* 2017; 27;7: 574-593.
58. Fried AJ, Bonilla FA. Pathogenesis, diagnosis, and management of primary antibody deficiencies and infections. *Clin Microbiol Rev.* 2009;22:396-414.
59. Friedman DM, Llanos C, Izmirly PM, et al. Evaluation of fetuses in a study of intravenous immunoglobulin as preventative therapy for congenital heart block. Results of a multicenter, prospective, open-label clinical trial. *Arthritis Rheum.* 2010;62:1138-1146.
60. From the Global Strategy for Asthma Management and Prevention, Global Initiative for Asthma (GINA) 2012. Available from: http://www.ginasthma.org/local/uploads/files/GINA_Report_March13.pdf Accessed on: December 9, 2013.
61. Gajdos P, Chevret S, Clair B, et al. Clinical trial of plasma exchange and high-dose intravenous immunoglobulin in myasthenia gravis. *Ann Neurol.* 1997;41:789-796.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

62. Gajdos P, Chevret S, Toyka KV. Intravenous immunoglobulin for myasthenia gravis. *Cochrane Database Syst Rev.* 2012 Dec 12;12:CD002277.
63. Gamimune N, 10% [prescribing information]. Elkhart, IN: Bayer Corporation; October 2008.
64. Gammagard Liquid 10% solution [prescribing information]. Westlake Village, CA: Baxter Healthcare Corporation; September 2013.
65. Gammagard S/D frozen dry IgA ≤ 2.2 mcg/mL or ≤ 1 mcg/mL in a 5% solution [prescribing information]. Westlake Village, CA: Baxter Healthcare Corporation; December 2011.
66. Gammaked 10% solution [prescribing information]. Cambridge, MA: Kedrion Biopharma, Inc (manufactured by Talecris Biotherapeutics, Inc {Grifols Therapeutics, Inc, Research Triangle Park, NC}); September 2013.
67. Gammaplex solution [prescribing information]. Raleigh, NC: BPL Inc. (manufactured by Bio Products Laboratory, Hertfordshire, UK); September 2013.
68. Gamunex-C 10% liquid [prescribing information]. Research Triangle Park, NC: Grifols (manufactured by Grifols Therapeutics Inc, Research Triangle Park, NC); September 2013.
69. Gatti R. Ataxia-Telangiectasia. 1999 Mar 19 [Updated 2010 Mar 11]. In: Pagon RA, Adam MP, Bird TD, et al., editors. *GeneReviews™* [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2014. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK26468/> Accessed 01/08/2014.
70. Geng J, Dong J, Li Y, et al. Intravenous immunoglobulin for epilepsy. *Cochrane Database of Systemic Reviews.* 2011;1:CD008557.
71. Goebel A, Baranowski A, Maurer K, et al. Intravenous immunoglobulin treatment of the complex regional pain syndrome a randomized trial. *Ann Intern Med.* 2010;152:152-158.
72. Gondolesi G, Blondeau B, Maurette R, et al. Pretransplant immunomodulation of highly sensitized small bowel transplant candidates with intravenous immune globulin. *Transplantation.* 2006;81:1743-1746.
73. Gonzalez H, Sunnerhagen KS, Sjöberg I, et al. Intravenous immunoglobulin for post-polio syndrome: a randomised controlled trial. *Lancet Neurol.* 2006;5:493-500.
74. Goodin DS, Frohman EM, Garmany GP Jr, et al; Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology and the MS Council for Clinical Practice Guidelines. Disease modifying therapies in multiple sclerosis: report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology and the MS Council for Clinical Practice Guidelines. *Neurology.* 2002;58:169-178.
75. Gray O, McDonnell GV, Forbes RB. Intravenous immunoglobulins for multiple sclerosis. *Cochrane Database Syst Rev.* 2003;(4):CD002936.
76. Gürcan HM, Jeph S, Ahmed AR. Intravenous immunoglobulin therapy in autoimmune mucocutaneous blistering diseases: a review of the evidence for its efficacy and safety. *Am J Clin Dermatol.* 2010;11:315-326.
77. Haas J, Hommes OR. A dose comparison study of IVIG in postpartum relapsing-remitting multiple sclerosis. *Mult Scler.* 2007;13:900-908.
78. Hack CE, Scheltens P. Intravenous immunoglobulins: a treatment for Alzheimer's disease? *J Neurol Neurosurg Psychiatry.* 2004;75:1374-1375.
79. Hadden RD, Hughes RA. Management of inflammatory neuropathies. *J Neurol Neurosurg Psychiatry.* 2003;74 Suppl 2:ii9-ii14.
80. Hanifin JM, Cooper KD, Ho V, et al. Guidelines of care for atopic dermatitis. *J Am Acad Dermatol.* 2004;50:391-404.
81. Hawksworth JS, Rosen-Bronson S, Island E, et al. Successful isolated intestinal transplantation in sensitized recipients with the use of virtual crossmatching. *Am J Transplant.* 2012;12 Suppl 4:s33-s42.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

82. Heinze E. Immunoglobulins in children with autoimmune diabetes mellitus. *Clin Exp Rheumatol.* 1996;14 Suppl 15:S99-102.
83. Hellwig K, Beste C, Schimrigk S and Chan A. Immunomodulation and postpartum relapses in patients with multiple sclerosis. *Ther Adv Neurol Disord.* 2009;2:7-11.
84. Herrod HG. Management of the patient with IgG subclass deficiency and/or selective antibody deficiency. *Ann Allergy.* 1993;70:3-8.
85. Hirsch HH, Randhawa P; AST Infectious Diseases Community of Practice. BK virus in solid organ transplant recipients. *Am J Transplant.* 2009 Dec;9 Suppl 4:S136-146.
86. Hommes OR, Sorensen PS, Fazekas F, et al. Intravenous immunoglobulin in secondary progressive multiple sclerosis: randomised placebo-controlled trial. *Lancet.* 2004;364:1149-1156.
87. Howard JF (ed). *Myasthenia gravis a manual for the health care provider.* Myasthenia Gravis Foundation of America, Inc. 2008. St Paul, MN. Available at: <http://www.myasthenia.org/LinkClick.aspx?fileticket=S472fPAE1ow%3d&tabid=125> Accessed 12/11/2013.
88. Hughes RA, Dalakas MC, Cornblath DR, et al. Clinical applications of intravenous immunoglobulins in neurology. *Clin Exp Immunol.* 2009;158 Suppl 1:34-42.
89. Hughes RA, Donofrio P, Bril V, et al; ICE Study Group. Intravenous immune globulin (10% caprylate-chromatography purified) for the treatment of chronic inflammatory demyelinating polyradiculoneuropathy (ICE study): a randomized placebo-controlled trial. *Lancet Neurol.* 2008;7:136-144.
90. Hughes RA, Wijdicks EF, Barohn R, et al. Quality Standards Subcommittee of the American Academy of Neurology. Practice parameter: immunotherapy for Guillain-Barre syndrome: report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology.* 2003;61:736-740. Guideline Reaffirmed August 8, 2008.
91. Hughes RA; Joint Task Force of the EFNS and the PNS. European Federation of Neurological Societies/Peripheral Nerve Society Guideline on management of multifocal motor neuropathy. Report of a joint task force of the European Federation of Neurological Societies and the Peripheral Nerve Society. *J Peripher Nerv Syst.* 2006;11:1-8.
92. Immune Deficiency Foundation. *Patient & Family Handbook for Primary Immunodeficiency diseases.* 5th edition. 2013. Available at: http://primaryimmune.org/wp-content/uploads/2013/06/IDF_Patient_Family_Handbook_5th_Edition.pdf. Accessed 12/09/2013.
93. Jabs DA, Rosenbaum JT, Foster CS, et al. Guidelines for the use of immunosuppressive drugs in patients with ocular inflammatory disorders: recommendations of an expert panel. *Am J Ophthalmol.* 2000;130:492-513.
94. John R, Lietz K, Burke E, et al. Intravenous immunoglobulin reduces anti-HLA alloreactivity and shortens waiting time to cardiac transplantation in highly sensitized left ventricular assist device recipients. *Circulation.* 1999;100[suppl II]:II229- II235.
95. Joint Task Force of the EFNS and the PNS. European Federation of Neurological Societies/Peripheral Nerve Society Guideline on management of chronic inflammatory demyelinating polyradiculoneuropathy: report of a joint task force of the European Federation of Neurological Societies and the Peripheral Nerve Society-First Revision. *J Peripher Nerv Syst.* 2010;15:1-9.
96. Joint Task Force of the EFNS and the PNS. European Federation of Neurological Societies/Peripheral Nerve Society Guideline on management of paraproteinemic demyelinating neuropathies. Report of a Joint Task Force of the European Federation of Neurological Societies and the Peripheral Nerve Society-first revision. *J Peripher Nerv Syst.* 2010;15:185-195.
97. Jolles S. A review of high-dose intravenous immunoglobulin treatment for atopic dermatitis. *Clin Exp Dermatol.* 2002;27:3-7.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

98. Jolles S, Sewell C, Webster D, et al. Adjunctive high-dose intravenous immunoglobulin treatment for resistant atopic dermatitis: efficacy and effects on intracellular cytokine levels and CD4 counts. *Acta Derm Venereol.* 2003;83:433-437.
99. Jordan SC, Toyoda M, and Kahwaji J. Clinical aspects of intravenous immunoglobulin use in solid organ transplant recipients. *Am J Transplant.* 2011;11:196-202.
100. Jordan SC, Tyan D, Stablein D, et al. Evaluation of intravenous immunoglobulin as an agent to lower allosensitization and improve transplantation in highly sensitized adult patients with end-stage renal disease: report of the NIH IG02 trial. *J Am Soc Nephrol.* 2004;15:3256-3262.
101. Jordan SC, Vo AA, Peng A, et al. Intravenous gammaglobulin (IVIg): a novel approach to improve transplant rates and outcomes in highly HLA-sensitized patients. *Am J Transplant.* 2006;6:459-466.
102. Juel VC. Compassionate Use of 3,4-Diaminopyridine. In: *ClinicalTrials.gov* [Internet]. Bethesda (MD): National Library of Medicine (US). 2000- [cited 2013 Dec 12]. Available from: <http://clinicaltrials.gov/show/NCT01765140> NLM Identifier: NCT 01765140.
103. Knezevic-Maramica I, Kruskall MS. Intravenous immune globulins: an update for clinicians. *Transfusion.* 2003;43:1460-1480.
104. Koopman FS, Uegaki K, Gilhus NE, et al. Treatment for postpolio syndrome. *Cochrane Database of Systematic Reviews.* 2011, Issue 2, Art. No.:CD007818.
105. Kossoff EH. Intractable childhood epilepsy: choosing between the treatments. *Semin Pediatr Neurol.* 2011;18:145-149.
106. Kuhar DT, Henderson DK, Struble KA, et al; US Public Health Service Working Group. Updated US Public Health Service guidelines for the management of occupational exposures to human immunodeficiency virus and recommendations for postexposure prophylaxis. Available at: <http://stacks.cdc.gov/view/cdc/20711> Accessed December 13, 2013.
107. Kurlan R, Kaplan EL. The pediatric autoimmune neuropsychiatric disorders associated with streptococcal infection (PANDAS) etiology for tics and obsessive-compulsive symptoms: hypothesis or entity? Practical considerations for the clinician. *Pediatrics.* 2004;113:883-886.
108. Leech SH, Lopez-Cepero M, LeFor WM, et al. Management of the sensitized cardiac recipient: the use of plasmapheresis and intravenous immunoglobulin. *Clin Transplant.* 2006;20:476-484.
109. LeHoang P, Cassoux N, George F, et al. Intravenous immunoglobulin (IVIg) for the treatment of birdshot retinochoroidopathy. *Ocul Immunol Inflamm.* 2000;8:49-57.
110. Levy Y, Amital H, Langevitz P, et al. Intravenous immunoglobulin modulates cutaneous involvement and reduces skin fibrosis in systemic sclerosis: an open-label study. *Arthritis Rheum.* 2004;50:1005-1007.
111. Ljungman P, Reusser P, de la Camara R, et al; for the Infectious Diseases Working Party of the European Group for Blood and Marrow Transplantation. Management of CMV infections: recommendations from the infectious diseases working party of the EBMT. *Bone Marrow Transplant.* 2004;33:1075-1081.
112. Loeffler DA. Intravenous immunoglobulin and Alzheimer's disease: what now? *J Neuroinflammation.* 2013;10:70.
113. Mackay MT, Weiss SK, Adams-Webber T, et al; American Academy of Neurology; Child Neurology Society. Practice parameter: medical treatment of infantile spasms: report of the American Academy of Neurology and the Child Neurology Society. *Neurology.* 2004;62:1668-1681.
114. Maddison P, Newsom-Davis J. Treatment for Lambert-Eaton myasthenic syndrome. *Cochrane Database Syst Rev.* 2011(2):CD003279.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

115. Marfo K, Lu A, Ling M, Akalin E. Desensitization protocols and their outcome. *Clin J Am Soc Nephrol.* 2011;6:922-936.
116. McLean HQ, Fiebelkorn AP, Temte JL, Wallace GS; Centers for Disease Control and Prevention. Prevention of measles, rubella, congenital rubella syndrome, and mumps, 2013: summary recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep.* 2013;62:1-34.
117. Merkies IS, Bril V, Dalakas MC, et al; ICE Study Group. Health-related quality-of-life improvements in CIDP with immune globulin IV 10%: the ICE Study. *Neurology.* 2009;72:1337-1344.
118. Meucci N, Nobile-Orazio E, and Scarlato G. Intravenous immunoglobulin therapy in amyotrophic lateral sclerosis. *J Neurol.* 1996;243:117-120.
119. Mouthon L, Lortholary O. Intravenous immunoglobulins in infectious diseases: where do we stand? *Clin Microbiol Infect.* 2003;9:333-338.
120. Nacci F, Righi A, Conforti ML, et al. Intravenous immunoglobulins improve the function and ameliorate joint involvement in systemic sclerosis: a pilot study. *Ann Rheum Dis.* 2007;66:977-979.
121. National Clinical Advisory Board of the National Multiple Sclerosis Society. Expert Opinion Paper. Treatment recommendations for physicians. Recommendations regarding corticosteroids in the management of multiple sclerosis. 2008. Available at <http://www.nationalmssociety.org/ms-clinical-care-network/clinical-resources-and-tools/publications/expert-opinion-papers/index.aspx>. Accessed on December 13, 2013.
122. National Institute of Mental Health. Intravenous immunoglobulin for PANDAS (pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections). In: *ClinicalTrials.gov* [Internet]. Bethesda (MD): National Library of Medicine (US). 200- [cited 2013 Dec 16]. Available from: <http://www.clinicaltrials.gov/ct2/show/NCT01281969?term=pandas&rank=2> NLM Identifier: NCT 01281969.
123. National Multiple Sclerosis Society. HP Acthar Gel (adrenocorticotrophic hormone [ACTH]). Available at <http://www.nationalmssociety.org/about-multiple-sclerosis/what-we-know-about-ms/treatments/medications/acth/index.aspx>. Accessed on December 13, 2013.
124. Neunert C, Lim W, Crowther M et al. The American Society of Hematology 2011 evidence-based practice guideline for immune thrombocytopenia. *Blood.* 2011;117:4190-4207.
125. Newburger JW, Takahashi M, Gerber MA, et al; Committee on Rheumatic Fever, Endocarditis and Kawasaki Disease; Council on Cardiovascular Disease in the Young; American Heart Association; American Academy of Pediatrics. Diagnosis, treatment, and long-term management of Kawasaki disease: a statement for health professionals from the Committee on Rheumatic Fever, Endocarditis and Kawasaki Disease, Council on Cardiovascular Disease in the Young, American Heart Association. *Circulation.* 2004;110:2747-2771.
126. Noh G, Lee KY. Intravenous immune globulin (i.v.IG) therapy in steroid-resistant atopic dermatitis. *J Korean Med Sci.* 1999;14:63-68.
127. Notarangelo, Luigi. Hyperimmunoglobulin M syndromes. Available from: UptoDate. Accessed 02/17/2016.
128. Ochs HD, Filipovich AH, Veys P, et al. Wiskott-Aldrich syndrome: diagnosis, clinical and laboratory manifestations, and treatment. *Biol Blood Marrow Transplant.* 2009;15(1 Suppl):84-90.
129. Ochs HD. Patients with abnormal IgM levels: assessment, clinical interpretation, and treatment. *Ann Allergy Asthma Immunol.* 2008;509-511.
130. Octagam liquid [prescribing information]. Hoboken, NJ: Octapharma USA, Inc (manufactured by Octapharma Pharmazeutika Produktionsges.m.b.H., Vienna, Austria); September 2013.
131. Onal S. Efficacy of intravenous immunoglobulin treatment in refractory uveitis. *Ocul Immunol Inflamm.* 2006;14:367-374.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

132. Orange J. Immune globulin therapy in primary immunodeficiency. Available at UptoDate®. Accessed February 2016.
133. Orange JS, Ballou M, Stiehm ER, et al. Use and interpretation of diagnostic vaccination in primary immunodeficiency: a working group report of the Basic and Clinical Immunology Interest Section of the American Academy of Allergy, Asthma & Immunology. *J Allergy Clin Immunol.* 2012;130(3 Suppl):S1-24.
134. Orange JS, Hossny EM, Weiler CR, et al. Use of intravenous immunoglobulin in human disease: A review of evidence by members of the Primary Immunodeficiency Committee of the American Academy of Allergy, Asthma and Immunology. *J Allergy Clin Immunol.* 2006;117(4 Suppl):S525-553.
135. PANDAS Physicians Network. Diagnostic Flowchart and Treatment Guidelines. Version 1. Accessed September 22, 2021. <https://www.pandasppn.org/flowchart/>
136. Panel on antiretroviral guidelines for adults and adolescents. Guidelines for the use of antiretroviral agents in HIV-1 infected adults and adolescents. Department of Health and Human Services. February 12, 2013; 1-267. Available at <http://www.aidsinfo.nih.gov/contentfiles/lvguidelines/adultandadolescentgl.pdf> Accessed December 13, 2013.
137. Panel on Opportunistic Infections in HIV-Exposed and HIV-Infected Children. Guidelines for the prevention and treatment of opportunistic infections in HIV-exposed and HIV-infected children. Department of Health and Human Services. Available at: http://aidsinfo.nih.gov/contentfiles/lvguidelines/oi_guidelines_pediatrics.pdf Accessed 12/17/2013.
138. Paris K, Sorensen RU. Assessment and clinical interpretation of polysaccharide antibody responses. *Ann Allergy Asthma Immunol.* 2007;99:462-464.
139. Patwa HS, Chaudhry V, Katzberg H, et al. Evidence-based guideline: intravenous immunoglobulin in the treatment of neuromuscular disorders: report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. *Neurology.* 2012;78:1009-1015.
140. Pereyra F, Rubin RH. Prevention and treatment of cytomegalovirus infection in solid organ transplant recipients. *Curr Opin Infect Dis.* 2004;17:357-361.
141. Pichichero, ME. PANDAS: Pediatric autoimmune neuropsychiatric disorder associated with group A streptococci.. Available at UptoDate®. Accessed September 2021.
142. Pisoni CN, Brucato A, Ruffatti A, et al. Failure of intravenous immunoglobulin to prevent congenital heart block. *Arthritis Rheum.* 2010;62: 1147-1152.
143. Powell RJ, Du Toit GL, Siddique N, et al; British Society for Allergy and Clinical Immunology (BSACI). BSACI guidelines for the management of urticaria in adults and children. *Br J Dermatol.* 2007;157:1116-1123.
144. Practice Committee of American Society for Reproductive Medicine. Anti-phospholipid antibodies do not affect IVF success. *Fertil Steril.* 2008;90(5 Suppl):S172-S173.
145. Preiksaitis JK, Brennan DC, Fishman J, et al. Canadian Society of Transplantation consensus workshop on cytomegalovirus management in solid organ transplantation final report. *Am J Transplant.* 2005;5:218-227.
146. Privigen 10% liquid [prescribing information]. Kankakee, IL: CSL Behring LLC (manufactured by CSL Behring AG, Bern, Switzerland); September 2013.
147. Provan D, Stasi R, Newland AC, et al. International consensus report on the investigation and management of primary immune thrombocytopenia. *Blood.* 2010;115:168-186.
148. Quaglia M, Stratta P. Idiopathic membranous nephropathy. *Drugs.* 2009;69:1303-1317.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

149. Radhakrishnan J, Cattran DC. The KDIGO practice guideline on glomerulonephritis: reading between the (guide)lines-- application to the individual patient. *Kidney Int.* 2012;82:840-856.
150. Relkin NR, Szabo P, Adamiak B, et al. 18-Month study of intravenous immunoglobulin for treatment of mild Alzheimer's disease. *Neurobiol Aging.* 2009;30:1728-1736.
151. Rizzo JD, Wingard JR, Tichelli A, et al. Recommended screening and preventive practices for long-term survivors after hematopoietic cell transplantation: joint recommendations of the European Group for Blood and Marrow Transplantation, the Center for International Blood and Marrow Transplant Research, and the American Society of Blood and Marrow Transplantation. *Biol Blood Marrow Transplant.* 2006;12:138-151.
152. Scaradavou A, Cunningham-Rundles S, Ho JL, et al. Superior effect of intravenous anti-D compared with IV gammaglobulin in the treatment of HIV-thrombocytopenia: results of a small, randomized prospective comparison. *Am. J. Hematol.* 2007;82:335-341.
153. Scharenberg AM, Hannibal MC, Torgerson T, et al. Common Variable Immune Deficiency Overview. 2006 Jul 5. In: Pagon RA, Adam MP, Bird TD, et al., editors. *GeneReviews™* [Internet]. Seattle (WA): University of Washington, Seattle; 1993 -2014. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK1299/> Accessed 01/08/2014.
154. Sener A, House AA, Jevnikar AM, et al. Intravenous immunoglobulin as a treatment for BK virus associated nephropathy:one-year follow-up of renal allograft recipients. *Transplantation.* 2006;81:117-120.
155. Shehata N, Palda VA, Meyer RM, et al. The use of immunoglobulin therapy for patients undergoing solid organ transplantation: an evidence-based practice guideline. *Transfus Med.* 2010;24(1 Suppl 1):S7-S27.
156. Silvergleid A, Ballow M. Overview of intravenous immune globulin (IVIg) therapy. Available at UptoDate®. Accessed February 2016.
157. Snowden JA, Ahmedzai SH, Ashcroft J, et al; Haemato-oncology Task Force of British Committee for Standards in Haematology and UK Myeloma Forum. Guidelines for supportive care in multiple myeloma 2011. *Br J Haematol.* 2011;154:76-103.
158. Sokos DR, Berger M, Lazarus HM. Intravenous immunoglobulin: appropriate indications and uses in hematopoietic stem cell transplantation. *Biol Blood Marrow Transplant.* 2002;8:117-130.
159. Spector SA, Gelber RD, McGrath N, et al. A controlled trial of intravenous immune globulin for the prevention of serious bacterial infections in children receiving zidovudine for advanced human immunodeficiency virus infection. Pediatric AIDS Clinical Trials Group. *N Engl J Med.* 1994;331:1181-1187.
160. Stasi R, Evangelista ML, Stipa E, et al. Idiopathic thrombocytopenic purpura: current concepts in pathophysiology and management. *Thromb Haemost.* 2008;99:4-13.
161. Stein MR, Nelson RP, Church JA, et al. Safety and efficacy of Privigen, a novel 10% liquid immunoglobulin preparation for intravenous use, in patients with primary immunodeficiencies. *J Clin Immunol.* 2009;29:137-144.
162. Stephenson MD, Kutteh WH, Purkiss S, et al. Intravenous immunoglobulin and idiopathic secondary recurrent miscarriage: a multicentered randomized placebo-controlled trial. *Hum Reprod.* 2010;25:2203-2209.
163. Sullivan KM, Storek J, Kopecky KJ, et al. A controlled trial of long-term administration of intravenous immunoglobulin to prevent late infection and chronic graft-vs.-host disease after marrow transplantation: clinical outcome and effect on subsequent immune recovery. *Biol Blood Marrow Transplant.* 1996;2:44-53.
164. Swedo SE, Leonard HL, Rapoport JL. The pediatric autoimmune neuropsychiatric disorders associated with streptococcal infection (PANDAS) subgroup: separating fact from fiction. *Pediatrics.* 2004;113:907-911.
165. Symington A, Paes B. Fetal and neonatal alloimmune thrombocytopenia: harvesting the evidence to develop a clinical approach to management. *Am J Perinatol.* 2011;28:137-144.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

166. The NCCN Multiple Myeloma Clinical Practice Guidelines in Oncology (Version 2.2014). © 2013 National Comprehensive Cancer Network, Inc. Available at: <http://www.nccn.org> Accessed December 3, 2013.
167. The NCCN Non-Hodgkin's Lymphomas Clinical Practice Guidelines in Oncology. (Version 1.2014). © 2014 National Comprehensive Cancer Network, Inc. Available at: <http://www.nccn.org>. Accessed 01/06/2014.
168. The NCCN Prevention and Treatment of Cancer-Related Infections Clinical Practice Guidelines in Oncology. (Version 1.2013). © 2013 National Comprehensive Cancer Network, Inc. Available at: <http://www.nccn.org>. Accessed 01/06/2014.
169. The Practice Committee of the American Society for Reproductive Medicine. Evaluation and treatment of recurrent pregnancy loss: a committee opinion. *Fertil Steril.* 2012;98:1103-1111.
170. Tomblyn M, Chiller T, Einsele H, et al; Center for International Blood and Marrow Research; National Marrow Donor program; European Blood and Marrow Transplant Group; American Society of Blood and Marrow Transplantation; Canadian Blood and Marrow Transplant Group; Infectious Diseases Society of America; Society for Healthcare Epidemiology of America; Association of Medical Microbiology and Infectious Disease Canada; Centers for Disease Control and Prevention.. Guidelines for preventing infectious complications among hematopoietic cell transplantations recipients: A global perspective. *Biol Blood Marrow Transplant.* 2009;15:1143-1238.
171. Van Doorn P, Kuitwaard K, Walgaard C, et al. IVIG treatment and prognosis in Guillain-Barre Syndrome. *J Clin Immunol.* 2010;30 Suppl1:s74-78.
172. van Riijhkevorsel-Harmant K, Delire M, Schmitz-Moorman W, and Wieser HG. Treatment of refractory epilepsy with intravenous immunoglobulins. Results of the first double-blind/dose finding clinical study. *Int J Clin Lab Res.* 1994;24:162-166.
173. VariZIG for intramuscular injection [prescribing information]. Winnipeg, Canada: Cangene Corporation; December 2012.
174. Vollmer-Conna U, Hickie I, Hadzi-Pavlovic D, et al. Intravenous immunoglobulin is ineffective in the treatment of patients with chronic fatigue syndrome. *Am J Med.* 1997;103:38-43.
175. Vukusic S, Hutchinson M, Hours M, et al and the Pregnancy in Multiple Sclerosis Group. Pregnancy and multiple sclerosis (the PRIMIS study): clinical predictors of post-partum relapse. *Brain.* 2004;127:1353-1360.
176. Wakim M, Alazard M, Yajima A, et al. High dose intravenous immunoglobulin in atopic dermatitis and hyper-IgE syndrome. *Ann Allergy Asthma Immunol.* 1998;81:153-158.
177. Weill Medical College of Cornell University. Phase II study of intravenous immunoglobulin (IVIg) for Alzheimer's disease. In: *ClinicalTrials.gov* [Internet]. Bethesda (MD): National Library of Medicine (US). 2000- [cited 2014 Jan 6] Available from: <http://www.clinicaltrials.gov/ct2/show/NCT00299988?term=alzheimer%27s+and+IVIG&rank=1> NLM Identifier: NCT00299988.
178. WinRho® SDF solution for injection [prescribing information]. Westlake Village, CA: Baxter Healthcare Corporation (manufactured by Cangene Corporation, Winnipeg, Canada); December 2010.
179. Yildirim-Toruner C, Diamond B. Current and novel therapeutics in the treatment of systemic lupus erythematosus. *J Allergy Clin Immunol.* 2011;127:303-312.
180. Young NS, Brown KE. Mechanisms of disease: Parvovirus B19. *N Engl J Med.* 2004;350:586-597.
181. Zinman L, Ng E, Bril V. IV immunoglobulin in patients with myasthenia gravis: a randomized controlled trial. *Neurology.* 2007;68:837-841.

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

182. Zuberbier T, Asero R, Bindslev-Jensen C, et al; Dermatology Section of the European Academy of Allergology and Clinical Immunology; Global Allergy and Asthma European Network; European Dermatology Forum; World Allergy Organization. EAACI/GA(2)LEN/EDF/WAO guideline: management of urticaria. Allergy. 2009;64:1427-1443.

Original Approval Date	Original Effective Date	Policy Owner	Approved by
12/1/2020	1/1/2021	Pharmacy Services	Pharmacy & Therapeutics (P&T) Committee

Policy Revisions History			
Review Date	Summary of Revisions	Revision Effective Date	Approved by
12/1/2020	9.129 IVIG SCIG Policy retired, new policy created.	1/1/2021	P&T Committee
8/12/2021	P&T Annual Review. Added back IVIG products, which are available via medical benefit only but still require PA. Added Gammastan criteria.	12/1/2021	P&T Committee
9/22/2021	Diagnoses of PANDAS/PANS added to policy in accordance with MA DOI requirements for 1/1/22	1/1/2022	P&T Committee

Next Review Date

8/2022

Other Applicable Policies

Reference to Applicable Laws and Regulations, If Any

Disclaimer Information

Medical Policies are the Plan's guidelines for determining the medical necessity of certain services or supplies for purposes of determining coverage. These Policies may also describe when a service or supply is considered experimental or investigational, or cosmetic. In making coverage decisions, the Plan uses these guidelines and other Plan Policies, as well as the Member's benefit document, and when appropriate, coordinates with the Member's health care Providers to consider the individual Member's health care needs.

Plan Policies are developed in accordance with applicable state and federal laws and regulations, and accrediting organization standards (including NCQA). Medical Policies are also developed, as appropriate, with consideration of the medical necessity definitions in various Plan products, review of current literature, consultation with practicing Providers in the Plan's service area who are medical experts in the particular field, and adherence to FDA and other government

* Plan refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.

agency policies. Applicable state or federal mandates, as well as the Member's benefit document, take precedence over these guidelines. Policies are reviewed and updated on an annual basis, or more frequently as needed. Treating providers are solely responsible for the medical advice and treatment of Members.

The use of this Policy is neither a guarantee of payment nor a final prediction of how a specific claim(s) will be adjudicated. Reimbursement is based on many factors, including member eligibility and benefits on the date of service; medical necessity; utilization management guidelines (when applicable); coordination of benefits; adherence with applicable Plan policies and procedures; clinical coding criteria; claim editing logic; and the applicable Plan – Provider agreement.

* *Plan* refers to Boston Medical Center Health Plan, Inc. and its affiliates and subsidiaries offering health coverage plans to enrolled members. The Plan operates in Massachusetts under the trade name Boston Medical Center HealthNet Plan and in other states under the trade name Well Sense Health Plan.