

NATIONAL INSTITUTES OF HEALTH
CLINICAL CENTER NURSING DEPARTMENT

Standard of Practice: Care of a Patient Receiving Intravenous Gamma Globulin (IVIG) or Subcutaneous Immunoglobulin (SCIG)

Essential Information:

1. IVIG is not compatible with any other drug and must be infused through a separate dedicated lumen.¹
2. It is recommended that IVIG not be administered within two hours of blood product administration in order to determine causal agent for adverse reaction as per DTM guidelines.
3. IVIG infusion titration rates will be specified in the medical order. Please refer to the Pharmacy Department Formulary/IVIG Guidelines [Immune Globulin Comparison Table](#) for infusion rate, filter requirements, and for compatible flush solution. Infusion rates must not exceed manufacturer guidelines.²
4. When pharmacy sends the medication, do not shake IV container, or syringe used for subcutaneous injection to avoid denaturing proteins.³
5. A filter is required or recommended for specific IVIG products. Please refer to the Pharmacy Department Formulary/IVIG link under administration at [Immune Globulin Comparison Table](#) or confirm with pharmacy. Filter provided by the Pharmacy. (Filter is not used for subcutaneous injection infusion).
6. Risk of adverse reactions may be increased in neonates and the elderly greater than 65 years, patients with history of diabetes, migraine headaches, cardiovascular or renal disease, those with fluid volume depletion, active infection, sepsis, history of previous reaction to immune globulin, or patients receiving known nephrotoxic drugs. Risks may be increased with initial treatment, switching brands of immune globulin, rapid infusion rate, and with treatment interruptions >8wks.^{4,5} Patients receiving high doses of IVIG (1-2 grams/kg) are at increased risk as well.

I. Assessment

1. Prior to immunoglobulin administration:
 - a. Assess patient for:
 - (1) Prior immunoglobulin use and reaction.
 - (2) History of live virus vaccinations,⁵ active infection, renal disease, and thromboembolic disease, including stroke and deep vein thrombosis.
 - (3) Review lab results; BUN, Creatinine, and CBC.
 - (4) For SCIG: assess for optimal subcutaneous sites which are free of lesions, redness, or skin alterations.
 - (5) For home SCIG: assess for commitment to therapy, at-home support, and readiness to learn and perform injections.¹¹
 - (6) Fluid status overload or dehydration.³
 - b. Assess orders for:
 - (1) Appropriate route of administration (IV vs. SC). See Appendix B for route of administration considerations.¹²
 - (2) Appropriate product/brand of IG. Ensure that the brand used with any prior IG reactions is documented in patient record.⁸
 - (3) Verify product/brand of IG ordered and compatible IVF.

II. Interventions

1. Prior to immunoglobulin administration
 - a. Obtain and record baseline vitals signs
 - b. Verify the following emergency supplies, medications, and relevant equipment are available on the patient care unit:
 - (1) 0.9% sodium chloride and administration set
 - (2) Oxygen

- (3) Suction
 - (4) Monitor vital signs
 - (5) Anaphylaxis/emergency treatment medications
 - c. Administer any pre-medications, as ordered.
 - d. Verify that patient has received adequate hydration or administer IV hydration as ordered.⁸
 - e. Provide family and patient education appropriate for the immunoglobulin product used
 - (1) Purpose of immunoglobulin administration
 - (2) Signs and symptoms of adverse reaction to immunoglobulin (immediate reaction occurs during and delayed reaction occurring 48-72 hours after infusion)¹
 - (3) Patient restriction to the unit until IVIG infusion completed.
 - (4) For home SCIG, teach the patient or caregiver proper technique and asepsis using their preferred learning style.¹¹
 - f. For SCIG, assess for optimal subcutaneous sites. This includes areas on the abdomen, thigh, upper arm and buttock, which should be lesion/irritant free. The site should be located away from bony prominences and the patient's waistline, and rotated with each injection.
 - (1) SCIG sites should be cleaned with a chlorhexidine gluconate/alcohol preparation (Chloraprep®); protect and secure needle with a transparent dressing.
 - (2) Appropriate length and gauge of subcutaneous needle for SCIG should be chosen by RN based on chosen administration site.
 - (3) EMLA® cream should be applied to chosen site(s) per MD order and pharmacy recommendations.
 - g. See Appendix C for further instruction on administering SCIG via Medfusion 3500 syringe pump.
2. During immunoglobulin administration
- a. Vital signs assessment for first-time IVIG infusion, or if interval between IVIG administrations is > 8 weeks, include monitoring vital signs at baseline and every 15 minutes for the first hour, every 30 minutes with each rate escalation, at the end of infusion, and prn.^{3,4,6}
 - b. Frequency for vital signs assessment for other than first-time administration (interval between IVIG administration is < 8 weeks) is baseline, 15 minutes after start of infusion, at end of infusion, and as needed.
 - c. If patient experiences any of the following, decrease immunoglobulin administration rate by 50% and notify the Licensed Independent Practitioner (LIP)^{1,6,7}
 - (1) temperature increase >1 degree Celsius **and** greater than 38 degrees Celsius, or chills
 - (2) nausea or vomiting
 - (3) joint, muscle, or back pain,
 - (4) palpitations, dizziness, tachycardia
 - (5) diaphoresis
 - (6) itching, rash
 - (7) flushing
 - (8) headache (commonly seen as immediate or delayed reaction)⁸
 - d. If patient experiences any of the following, stop the IVIG infusion, flush with the compatible solution, maintain IV patency and notify the LIP. If during a SCIG infusion, stop infusion and notify LIP:
 - (1) Hypotension, drop of B/P \geq 20 % of baseline
 - (2) Shortness of breath, dyspnea, respiratory distress
 - (3) Urticaria, edema of eyelids, lips, or tongue
 - (4) Vasomotor symptoms (chest tightness, tachycardia)
 - e. Monitor SCIG infusion site for irritation as this may be a sign that the needle is placed in the dermis rather than subcutaneous tissue.¹¹
 - f. See Appendix A for overview of adverse reactions and management of IVIG replacement

III. Documentation

1. Document the following in approved medical record and in accordance with SOP: Medication Administration:⁹
 - a. Date/time of administration
 - b. Immunoglobulin brand and lot number, as written on label
 - c. Vital Signs
 - d. Adverse drug reactions
 - e. Assessments and interventions
 - f. Patient education
 - g. Site used and any site reactions from SCIG¹⁰

IV. References

1. Intravenous immune globulin: Drug information (2009). Retrieved May 5, 2009 from [UpToDate](#)
2. Brennan, V.M., Salome-Bentley, N.J., & Chapel, H.M. (2003). Prospective audit of adverse reactions occurring in 459 primary antibody-deficient patients receiving intravenous immunoglobulin. *Clinical Exp Immunology*, *133*,247-251.
3. Berger, M., Duff, K., Garrett, B., Sedlak, D., Blaese, R.M., & Belser, C.,(Eds.).Immune Deficiency Foundation Guide for Nurses on Immune Globulin Therapy for Primary Immunodeficiency Diseases. 2nd Edition. Retrieved April 1, 2012 from <http://primaryimmune.org/wp-content/uploads/2011/04/IDF-Guide-for-Nurses-on-Immune-Globulin-Therapy-for-Primary-Immunodeficiency-Diseases-2nd-Edition.pdf>
4. Singh-Grewal, S., Kemp, A., Wong, M., Arch, D. (2006). A Prospective Study of the Immediate and Delayed adverse events following IVIG infusions. *Child*, *91*:651-654.
- 5 . Rezaei, N., Abolhassani, H., Aghamohammadi, A., & Ochs, H. (2011). Indications and Safety of Intravenous and Subcutaneous Immunoglobulin Therapy. *Expert Rev. Clin. Immunol*, *7*(3), 301-316 (2011)
6. Ballow, M. (2007). Safety of IVIG therapy and infusion-related adverse events. *Immunology Research*. *38*,122-132.
7. Kirmse, J. (2009) Intravenous Immunoglobulin Therapy. *Home Healthcare Nurse .vol. 27 No.2 February 2009*
8. Thornby, K., Henneman, A., & Brown, D. (2015). Evidence-Based Strategies to Reduce Intravenous Immunoglobulin-Induced Headaches. *Annals of Pharmacotherapy*, *49*(6), 715-726.
9. Kirmse, J. (2006). Subcutaneous Administration of Immunoglobulin. *Journal of Infusion Nursing*.*29* (35), S15 S20
10. Murphy, E. Martin, S., & Patterson, J.V. (2005). Developing Practice Guidelines for the Administration of Intravenous Immunoglobulin. *Journal of Infusion Nursing*. *28*(4), 265-272.
11. Younger, M., Blouin, W., Duff, C., Epland, K., Murphy, E., & Sedlak, D. (2015). Subcutaneous Immunoglobulin Replacement Therapy: Ensuring Success. *Journal of Infusion Nursing*, *38*(1), 70-79.
12. Wasserman, R.L. (2012). Progress in Gammaglobulin Therapy for Immunodeficiency: From Subcutaneous to Intravenous Infusions and Back Again. *Journal of Clinical Immunology*, *32*, 1153-1164.

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