Standard Infusion Guidelines for IVIG

Standard Infusion Guideline Recommendations for Ontario

Purpose of the Infusion Guideline Recommendations

To provide health care practitioners involved in the infusion of IVIG with best practice information.

Information in this document can be incorporated into institution specific policies and procedures.

- This guideline does not apply to Subcutaneous Infusion Immune Globulin product, e.g. Vivaglobin

General Principles for IVIG Infusion

- Refer to any institution specific policies when infusing IVIG.
- Check the package insert for complete information.
- Rounding doses to the nearest vial size (e.g. 2.5 or 5 g) is appropriate to ensure adequate therapy and efficient use of product.
- Avoid mixing brands at a single visit/infusion.
- Utilize aseptic technique when handling IVIG.
- Pooling of product should be performed in laminar flow hoods in Blood Transfusion Laboratory (BTL) or Pharmacy. (Note: this principle applies for institutions that pool product prior to issue from inventory).
- Avoid bubbles in the IVIG product. The following practices have minimized bubbles forming in the product:
  - Allow the product to come to room temperature (do not heat).
  - Avoid shaking the product when handling.
  - Following package insert information, place the bottle on a flat surface and spike at a 90° angle through the centre circle of the stopper.

Infusion Guidelines for IVIG

Pre-Infusion

- Verify that the clinical indication for receiving IVIG treatment is documented in patient’s record and/or on IVIG order.
- Verify that informed consent has been obtained.
- Assess whether any contraindications for a particular IVIG product exists and identify patients at increased risk for adverse events prior to commencing infusion.
- Review history of previous infusion of IVIG or other blood components.
- Assess patient’s clinical status on day of infusion.
- Record patient weight, known allergies, and medications. (Measure patient weight at recommended intervals.)
- Ensure dose reflects patient’s current weight. [Consider dose adjustment for obese patients using weight calculator (see page 30 in toolkit for further information) where institutional policies apply.]
- Determine whether any pre-infusion blood work is required for this infusion event.
  - Blood work may be required for certain patients. This may include platelet count for ITP patients, plasma IgG levels for immune deficiency patients, and/or baseline testing for initial infusions. Obtaining baseline liver and renal function tests may be appropriate for some patients. Patients who are receiving high dose IVIG should be monitored for hemolysis.
**Infusion**
- **Prime** line with 5% dextrose (refer to package insert for other possible compatible solutions). Use standard vented tubing – no filter is required.
- **Obtain** product from Blood Transfusion Laboratory or Pharmacy.
- **Measure and record** baseline vital signs.
- **Set** initial infusion rate (source: package insert or institutional policy where applicable). An infusion pump is recommended if available. Infusion pumps help with setting precise infusion rates and include air alarms providing added safety when infusing from bottles.
  - **Initial rate:** For first time patients in particular a slow infusion rate (e.g. 0.5 mL/kg/hr) is recommended for the first 15-30 minutes (institution specific).
  - **Check vital signs**
  - **Standard rate:** After the initial time interval and rate, set rate as per manufacturer’s insert or institution specific standard rate
  - **Repeat vital signs at required intervals.**
  - **Maximum rate:** In patients that tolerate rapid infusion, infuse up to manufacturer’s insert recommendation or institution specific standard rate (e.g. 4 mL/kg/hr).
  - **Note:** When identifying patients who may tolerate rapid infusion, consider the following:
    - Vital signs, and patient’s tolerance of the current and previous infusions
    - Dosage and brand of product and the indication for receiving IVIG
    - Cardiovascular status

- **Monitor** patient for signs of adverse reactions. If an adverse reaction is suspected STOP infusion and notify patient’s physician. (Refer to Adverse Event chart on page 28 of this toolkit).
- **Measure and record** vital signs throughout infusion (e.g. with change in infusion rate, every 30-60 minutes or as per institutional policy).

**Post Infusion**
- **Complete** documentation including brand, dose and lot numbers of product.
- **Report** adverse events to Blood Transfusion Laboratory.
- **Report** and return to BTL any unused or defective vials including any vials associated with adverse events.
- **Educate** patients, and provide them with a fact sheet including post infusion adverse events instructions
  - Encourage the reporting of adverse reactions, this can be facilitated using the fact sheet.
Notes

- **Patients** receiving large dose/long treatment with IVIG may develop hemolysis, which is defined as follows:
  - a fall of at least 10 g/L in hemoglobin (Hb)
  - a positive direct antiglobulin test (DAT)
  - at least two of the following:
    - increased reticulocyte count
    - increased lactate dehydrogenase
    - low haptoglobin
    - hyperbilirubinemia
    - hemoglobinemia
    - hemoglobinuria
    - presence of significant spherocytosis
  (Reference: IVIG Hemolysis Pharmacovigilance Group)

- **Record** the brand of IVIG used at each infusion, at issuing location (BTL or Pharmacy) and/or infusion location (patient's record).

- **Check** vital signs when switching from one lot number of product to another; it is not necessary to slow down the infusion rate when changing lot numbers.

- **Match** patient’s need to appropriate product.
  - Note: While this was crucial when lyophilized product was in use, it may be less applicable now. (For example, product requirement may vary in terms of IgA content and that is a consideration in certain patients.)

- **Maintain** individual chronically infused patients on the same IVIG product whenever possible.
  - Note: Practice varies on this issue depending on institution and availability of product.
STOP infusion and notify patient's physician if:
• Significant change\(^*\) in systolic or diastolic blood pressure.
• Temperature 38°C or more and increased by at least 1.0°C from baseline
• Appearance of flushing, rigors (shaking chills), urticaria, itching, wheezing, tightness in chest, abdominal cramps, headache, nausea/vomiting or red urine.

Report all suspected reactions to the Blood Transfusion Laboratory:

<table>
<thead>
<tr>
<th>Reaction Type</th>
<th>Signs and Symptoms</th>
<th>Severity</th>
<th>Frequency</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor-possible rate related reactions</td>
<td>Chills; headache; nausea</td>
<td>Mild</td>
<td>Common</td>
<td>First infusion: Stop IVIG, Consult Physician and Report to Blood Transfusion Laboratory (BTL) If symptoms are minor the infusion may be restarted at a reduced rate. Recurrent reactions may require appropriate premedication and/or a change in IVIG product Subsequent treatments: May not need to stop IVIG and may not need to report reaction to Blood Transfusion Laboratory-Consult institutional policy.</td>
</tr>
<tr>
<td>Other minor or moderate reactions</td>
<td>Anxiety, fever, rigors, rash, itchiness, flushing, chest, back or abdominal pain, nausea, vomiting, tachycardia, hypo or hypertension</td>
<td>Moderate</td>
<td>Occasional</td>
<td>Stop IVIG, Consult Physician. Contact physician for assessment and symptomatic treatment. If symptoms are minor the infusion may be continued at a reduced rate. Recurrent reactions require appropriate premedication and/or a change in IVIG product Report to Blood Transfusion Laboratory</td>
</tr>
<tr>
<td>Anaphylaxis</td>
<td>Facial and/or tongue swelling, chest tightness, airway edema, dyspnea, hypotension, shock, tachycardia, nausea/ vomiting, widespread rash (&gt;2/3 body), anxiety, fever</td>
<td>Severe</td>
<td>Rare</td>
<td>Stop IVIG, Do not restart, Consult Physician. May require epinephrine promptly. Often reaction to IgA in an IgA deficient patient Report to Blood Transfusion Laboratory</td>
</tr>
<tr>
<td>Acute (&lt;24hr) or delayed (&gt;24hr) hemolysis</td>
<td>Fever, back pain, dyspnea. Changes in urine colour (red/brown urine); fall in hemoglobin (at least 10g/L); increase in indirect bilirubin and in LDH</td>
<td>Mild to severe</td>
<td>Rare</td>
<td>Stop IVIG, Do not restart, Consult Physician. Contact physician for assessment. Often due to anti-A antibodies in IVIG directed against a patient whose blood group is A or AB. Report to Blood Transfusion Laboratory</td>
</tr>
<tr>
<td>Aseptic Meningitis</td>
<td>Severe and incapacitating headache with nuchal rigidity, drowsiness, fever, lethargy, photophobia, painful eye movements, nausea, vomiting, diarrhea, pharyngitis, deterioration of mental status</td>
<td>Severe</td>
<td>Rare</td>
<td>Stop IVIG, Do not restart, Consult Physician. Usually resolves spontaneously in 1-2 days. Report to Blood Transfusion Laboratory</td>
</tr>
<tr>
<td>Acute renal failure</td>
<td>Peripheral edema, periorbital edema, urination changes, increased serum creatinine, hypertension, back pain, flank pain, blood in urine</td>
<td>Severe</td>
<td>Rare</td>
<td>Stop IVIG, Consult Physician Predisposing factors: age&gt;65, Diabetes Mellitus, preexisting renal insufficiency Report to Blood Transfusion Laboratory</td>
</tr>
<tr>
<td>Thromboembolic events</td>
<td>Symptoms related to myocardial infarction, transient ischemic attack, stroke, deep vein thrombosis</td>
<td>Severe</td>
<td>Rare</td>
<td>Stop IVIG, Consult Physician Causative relationship not clearly understood. Possibly related to increases in viscosity Report to Blood Transfusion Laboratory</td>
</tr>
<tr>
<td>Viral or Prion Transmission (Delayed)</td>
<td>Variable Diagnosed through transmissible disease tests</td>
<td>Severe</td>
<td>No reported cases of HIV or HBV. No reported HCV since 1995 No reported cases of HIV or HBV. No reported HCV since 1995</td>
<td>Effective viral reduction measures. Prion (vCJD) transmission theoretical risk Report to Blood Transfusion Laboratory</td>
</tr>
</tbody>
</table>

\(^*\) Significant change is 20 percent or more.