**PURPOSE**

To provide guidelines for the administration of IVIG via syringe delivery

**SITE APPLICABILITY**

BC Children’s Hospital only

**EQUIPMENT**

- Patient chart with blood product order and consent for blood transfusion
- Patient Identification band
- Personal Protective Equipment (PPE): gloves, goggles, +/-gown, mask
- Chlorhexidine/alcohol swabs
- Cap (for post transfusion CVC cap change)
- Sterile white cap (to cap of existing infusion)
- 10 mL pre-filled syringes with 0.9% Normal Saline or D5W for priming & flushing the line
- Needleless connector (cap)
- Microbore 60 tubing
- Infusion pump "brain"
- Syringe pump
- From Transfusion Medicine Laboratory
  - IVIG in a syringe
  - Transfusion tag attached to syringe
  - Transfusion Record

**PRE-TRANSFUSION**

<table>
<thead>
<tr>
<th>PROCEDURE</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>ENSURE</strong> order for blood product exists. Preprinted order forms are available IVIG.</td>
<td>Blood products shall be prescribed by a health care provider with blood prescribing privileges.</td>
</tr>
</tbody>
</table>
| 2. **ENSURE** that informed consent for transfusion is complete and current. **Informed consent need not be obtained:**  
- When urgent treatment is necessary to preserve a patient's life and continuing health, and  
- When it is not reasonably possible to obtain consent, and  
- When there is no substitute decision maker | Informed Consent is required by law for the transfusion of all blood products. |
| 3. **DETERMINE** if a Group & Screen / Cross Match is required. Refer to blood product fact sheet. **ABO group** required prior to administration of first dose of IVIG only. **ENSURE** that Transfusion Medicine Laboratory has a current ABO group if required. | Non group O patients receiving an IVIG dose of 1g/kg or more are at increased risk of hemolysis. **To identify patients who are at increased risk of hemolysis.** |
| 4. **Calculate** total volume required. 1 Gram = 10 mL **Calculate** volume required for each syringe. **Refer** to IVIG rates tables. **Maximum volume in a syringe is 50mL.** **Total volume** in each syringe should not exceed the volume that can be infused in 3.5h*. **Request** 75% of volume that can be infused in 3.5 h in each syringe for patients receiving IVIG for the first time; patients receiving high dose IVIG i.e. >1gr/kg; Kawasaki patients; or patients who have reacted to IVIG previously**. | *Although you have 4 hours from the time of issue to infuse the IVIG it usually takes 30 minutes to transport the product and conduct the pre-transfusion checks. Therefore, we calculate the volume that can be transfused in 3.5 h to allow 30 minutes for transport and the checking procedure. **This measure will minimize product wastage as these patients may not tolerate the infusion at the maximum rate or the infusion may have to be interrupted.** |
**ADMINISTRATION OF IVIG SYRINGE METHOD**

**NOT APPLICABLE IN NICU**

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**PRE-TRANSFUSION**

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<tr>
<td><strong>5.</strong> ENSURE that TML is aware of the planned transfusion. Complete/Send the Blood Component/Derivative/Factor Concentrate Request form to TML. Inform TML of total volume required in each syringe.</td>
<td>To avoid unnecessary delay in transfusion.</td>
</tr>
<tr>
<td><strong>6.</strong> ENSURE that the guardian is aware of the planned transfusion. Explain reason for transfusion and transfusion procedure to patient. Provide patient/guardian with the information pamphlet “Blood Transfusion Answers to Some Common Questions” if necessary.</td>
<td>Allow the guardian to prepare for the procedure. To ensure that the guardian understands the reason for transfusion and the transfusion procedure.</td>
</tr>
<tr>
<td><strong>7.</strong> ENSURE that a patient identification band/card is in place. <strong>No identification band/card, No Transfusion</strong></td>
<td>A missing identification band is a significant factor to patient misidentification and wrong product to patient incidents. Transfusion should not be administered to patients who lack positive identification</td>
</tr>
<tr>
<td><strong>8.</strong> ENSURE peripheral vascular access or central vascular access line of sufficient gauge is established for the transfusion based on clinical status of patient and urgency of transfusion, see table 1 below.</td>
<td>Gauge or lumen size should be large enough to allow the flow of the IVIG product within the specified administration time and to prevent cell damage.</td>
</tr>
</tbody>
</table>

### Table 1: Intravenous Access for Administration of Blood Products (Syringe)

<table>
<thead>
<tr>
<th>Peripheral Intravenous Access</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Patient Group</td>
<td>Lumen Size</td>
</tr>
<tr>
<td>Pediatric</td>
<td>22 &amp; 24 Gauge</td>
</tr>
<tr>
<td>Neonatal</td>
<td>≥ 26 Gauge</td>
</tr>
</tbody>
</table>

### Central Venous Access Devices

<table>
<thead>
<tr>
<th>Central Venous Access Devices</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Patient Group</td>
<td>Lumen Size</td>
</tr>
<tr>
<td>All</td>
<td>All</td>
</tr>
</tbody>
</table>

### Cuffed & Uncuffed Peripherally Inserted Central Catheter (PICC)

<table>
<thead>
<tr>
<th>Cuffed &amp; Uncuffed Peripherally Inserted Central Catheter (PICC)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Patient Group</td>
<td>Lumen Size</td>
</tr>
<tr>
<td>Pediatric</td>
<td>3 French or greater</td>
</tr>
<tr>
<td>Neonatal</td>
<td>2 French or smaller</td>
</tr>
</tbody>
</table>

### Uncuffed Double Lumen 4 French PICC

<table>
<thead>
<tr>
<th>Uncuffed Double Lumen 4 French PICC</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Patient Group</td>
<td>Lumen Size</td>
</tr>
<tr>
<td>Pediatric</td>
<td>20 Gauge (= 3 French)</td>
</tr>
<tr>
<td>Neonatal</td>
<td>23 Gauge (= 2 French)</td>
</tr>
</tbody>
</table>

**9.** ENSURE a dedicated line for the administration of IVIG product.  
- IVIG is compatible with 0.9% Normal Saline and D5W.  
**10.** PERFORM a pre transfusion patient assessment  

**To avoid inadvertent co-administration of incompatible fluids or medications.**

**Identify any clinical manifestations that may be**
## ADMINISTRATION OF IVIG SYRINGE METHOD

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<tr>
<td>within 30 minutes of commencing the transfusion and PRIOR to removing cap on the syringe. Record baseline vital signs: • Heart rate • Blood pressure • Temperature • Respiratory rate</td>
<td>cause for delaying the transfusion e.g. fever. Identify any pre-existing clinical manifestations that may be confused with a transfusion reaction e.g. fever or pre-existing rash. Identify any existing clinical manifestations that may predispose the patient to a transfusion reaction e.g. Transfusion Associated Circulatory Overload.</td>
</tr>
</tbody>
</table>

**Note:**
Include O2 Saturation level; chest auscultation and a review of fluid balance for patients who are considered high risk e.g. patients with coexisting medical conditions such as renal failure or cardiovascular disease or patients who have experienced previous transfusion reactions.

11. **ADMINISTER** pre medications as ordered.

   Any pre medication prescribed should be administered at a suitable time before infusion begins to allow for effectiveness.

12. **DOCUMENT** findings of pre transfusion assessment including any pre-medication related to transfusion preparation, e.g. diuretics or antihistamines.

   Establish baseline levels so that any transfusion-related deviations in patient’s clinical condition will be recognized.

13. Arrange for the **TRANSPORT** of IVIG immediately prior to initiation of planned infusion. **Complete** the Blood Release Request Form. **Only one syringe of IVIG is requested at a time.**

   Avoid delays in initiating the transfusion. Ensure that the person transporting the blood product obtains the right blood product for the right patient. **Avoid wastage of IVIG products.**

14. **ASSEMBLE** required equipment. **Note:**

   Blood products issued in a syringe are pre-filtered and do not require an in-line filter at the time of administration.

   Facilitates completion of task in a timely manner.

15. **START** the transfusion within 20 minutes of issue. **Note:**

   • If the transfusion cannot be started return the IVIG product to TML immediately.
   • The transfusion must be completed within 4 hours of issue.
   • Consult TML if there are concerns about completing the transfusion within the four hour time limit.
   **NEVER** store IVIG products in unapproved fridges such as ward or medication fridges. **Improvised warming should never be used.**

   To avoid unnecessary wastage of an expensive and scarce resource. If IVIG is out of temperature controlled storage for greater than 30 minutes it cannot be returned. **IVIG products must be stored in special temperature controlled fridges.** **These methods may damage the product and cause harm to the patient.**

16. **PERFORM** the pre transfusion check. **Note:**

   The pre transfusion check must be completed by **two health care providers**, with required competencies, one of whom shall initiate the transfusion. **Initial check:**

   **Visual Inspection:**

   **To ensure that the Right Patient receives the Right Product.** **To detect any abnormalities that may indicate that the transfusion should not proceed.**
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<tr>
<td>The integrity of the IVIG product is checked for:</td>
<td></td>
</tr>
<tr>
<td>• Leak at syringe cap</td>
<td>• Turbidity</td>
</tr>
<tr>
<td><strong>⚠️ IVIG that appears abnormal should not be transfused without further investigation. Contact TML @ 7388 for an explanation of abnormal appearance.</strong></td>
<td></td>
</tr>
</tbody>
</table>

### Initial check

CONFIRM that Informed Consent exists.

### Compare the patient details:

- First and last name
- DOB
- MRUN
- Front sheet of the patient chart
- Blood product order
- Product Tag
- Transfusion record

### Check IVIG order for:

- Specific blood product e.g. IVIG
- Dose in grams
- Volume in mLs
- Date of the transfusion
- Rate or duration of infusion
- Pre/post transfusion medication orders

The information on the IVIG syringe label, the product tag & the transfusion record must match. Compare information on the IVIG syringe label, the product tag and transfusion record.

**Patient information:**
- First & last name
- DOB
- MRUN

**Product information:**
- IVIG concentration
- Lot number(s)
- Expiry date & time

⚠️ Check for any TML comments

### Final check in the presence of the patient

1. Ask guardian, where possible, to state their infant's full name and date of birth and compare to patient details on patient identification band/card.
2. **Compare the patient details:**
   - First and last name
   - DOB
   - MRUN
3. **With patient details on:**
   - Patient identification band/card

Consent is required for transfusion of IVIG.

The intended recipient must be properly identified prior to transfusion.

To ensure that you are aware of the infusion rate, special requirements, any modifications, pre or post medications etc. that have been ordered for the transfusion.

To ensure that patient information and product details on the transfusion record and product tag are identical.

To ensure that the product has not expired.

To ensure that required special requirements and/or modifications have been met.

The majority of transfusion-associated mortality is due to patients receiving the wrong blood product, or blood intended for another patient. The bedside check is a vital step in preventing serious transfusion error. Vigilance in checking to ensure that the right blood is given to the right patient is mandatory.
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PRE-TRANSFUSION

<table>
<thead>
<tr>
<th>PROCEDURE</th>
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</tr>
</thead>
<tbody>
<tr>
<td>• Product Tag</td>
<td>If you find any discrepancies DO NOT proceed. Contact TML @ 7388 immediately.</td>
</tr>
<tr>
<td>• Transfusion record</td>
<td>The product tag must remain attached to the product for the duration of the transfusion.</td>
</tr>
<tr>
<td><strong>If this product is not the intended product for your patient another patient may be at risk i.e. another patient may be about to receive the wrong product.</strong></td>
<td></td>
</tr>
</tbody>
</table>

17. DOCUMENT the checking procedure by signing the transfusion record.
   **Record:**
   • Signature of both staff members who carried out the pre transfusion check
   • Date of transfusion
   • Start time.
   **To confirm that the pre transfusion checking procedure has been completed.**

TRANSFUSION

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>18. Immediately after the verification checks have been completed INITIATE the transfusion.</td>
<td>To prevent contamination of the product.</td>
</tr>
<tr>
<td>• Wash hands; apply personal protective equipment and prepare field and equipment.</td>
<td>Prevent errors in the rate of infusion.</td>
</tr>
<tr>
<td>• Prime microbore tubing with blood product.</td>
<td></td>
</tr>
<tr>
<td>• Load syringe into syringe pump and prime using prime option on pump. <strong>Label</strong> pump channel.</td>
<td></td>
</tr>
<tr>
<td>• Program pump to run at the appropriate infusion rate, see table 2 below. <strong>Confirm</strong> the programmed rate and volume to be infused.</td>
<td></td>
</tr>
<tr>
<td>• Clamp IV. Delay existing infusion for the durations of the transfusion.</td>
<td></td>
</tr>
<tr>
<td>• Disconnect existing infusion. <strong>Place</strong> sterile white cap on disconnected line to maintain sterility.</td>
<td></td>
</tr>
<tr>
<td>• Clean connection cap. <strong>Flush</strong> with 0.9% Normal Saline or D5W and <strong>clamp</strong>.</td>
<td></td>
</tr>
<tr>
<td>• Connect IVIG line to patient’s IV access and start transfusion.</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2: IVIG Infusion Rate Table for all patients.**

<table>
<thead>
<tr>
<th>Start Rate 1st 30 min</th>
<th>2nd 30 min</th>
<th>3rd 30 min</th>
<th>Maximum Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 mL/kg/h</td>
<td>1 mL/kg/h</td>
<td>2 mL/kg/h</td>
<td>4 mL/kg/h</td>
</tr>
</tbody>
</table>

If initial infusion rate is well tolerated, increase the rate of the infusion at 30 min intervals.

For patients with renal dysfunction or at risk of renal dysfunction infuse at lowest rate possible and maximum rate should not exceed 2 mL/kg/hr.

Slower infusion rates may reduce rate related transient side effects/transfusion reactions.

Assess patient prior to each rate increase and after introducing a new lot number.

When introducing new lot numbers, it is not necessary to reduce the infusion rate.

19. MONITORING see table 3 below:
   • Instruct the guardian to inform a HCP immediately if they observe:
   **Guardians will be aware of the:**
   • S&S of a transfusion reaction
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## TRANSFUSION

<table>
<thead>
<tr>
<th>PROCEDURE</th>
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</tr>
</thead>
<tbody>
<tr>
<td>• Hives / Itching</td>
<td>• Actions to take should they experience a transfusion reaction</td>
</tr>
<tr>
<td>• Nausea / Vomiting</td>
<td></td>
</tr>
<tr>
<td>• Flushing</td>
<td></td>
</tr>
</tbody>
</table>

### Table 3: Patient Monitoring During IVIg Transfusion for all patients.

**Remain with, or be in a position to closely observe, the patient for the first 15 minutes** following the start of the infusion (when product actually reaches the patient) and observe for signs and symptoms of a transfusion reaction.

**Measure Vital signs:**

<table>
<thead>
<tr>
<th>After 15 minutes</th>
<th>Prior to each rate increase</th>
<th>30 minutes after introducing a new lot number</th>
<th>Hourly once maximum rate is achieved</th>
<th>Within 60 minutes of completion of the infusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Heart rate</td>
<td>• Blood Pressure</td>
<td>• Temperature</td>
<td>• Respiration rate</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

- Increase observation for high risk patients e.g. neonates, unaccompanied infants / children, clinically unstable or unconscious patients.
- Monitor O₂ saturation level for neonates & fluid balance in patients who are at risk of fluid overload.
- **Serious and life threatening reactions (anaphylaxis) can occur unpredictably and progress rapidly therefore patients must be closely monitored throughout the transfusion.**

20. If a second syringe of IVIG is required:

- **NOTIFY** TML one hour before IVIG is required
- **REPEAT** steps 13 to 19
- **START** the infusion at the highest rate achieved in the previous transfusion e.g. if the last syringe was running at a rate of 10 mLs/h start this syringe at 10 mLs/h.
- **When introducing new lot numbers, it is not necessary to reduce the infusion rate.**
- **Change the microbore tubing after the entire transfusion is complete.**

To ensure TML staff have sufficient time to prepare next syringe of IVIG.

- **Decrease the risk of bacterial contamination.**

21. In the event of a suspected transfusion reaction:

- **STOP the transfusion immediately.**
- **Administer** D5W or 0.9% Normal Saline.
- **Reassess** patient vital signs.
- **Reconfirm** unique identifiers on both patient and blood product.
- **Seek** assistance and **notify** the physician.
- **Refer** to Transfusion Reaction Procedure & Quick Reference guide and **complete** the Transfusion Reaction Report Form.

To minimize patient harm.
To keep the vein open.
To seek direction for patient management.
To ensure correct procedure is followed.
To report the transfusion reaction.

22. **COMPLETION** of infusion.

**Stop** the infusion when the prescribed volume is infused.

- **Clamp** microbore tubing and **unload** syringe from the pump.
- **Clean** the connection between syringe and microbore tubing.
- **Detach** the IVIG syringe from tubing and replace with a prefilled 0.9% Normal Saline

- **TML does not include a discard volume in the syringe; the microbore tubing must be flushed to ensure all the IVIG is infused.**
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<tbody>
<tr>
<td>syringe.</td>
<td></td>
</tr>
</tbody>
</table>

IV. **Load** 0.9% Normal Saline syringe onto syringe pump (same pump used for the IVIG).

V. **Press** “restore” key on the syringe pump to maintain the same rate used for the IVIG transfusion.

VI. **Select** “volume to be infused” key on syringe pump and enter the volume of the flush

VII. **Stop** pump when normal saline flush is delivered.

VIII. **Clean** the connection between microbore tubing IV access.

IX. **Disconnect** the microbore tubing and syringe line.

X. **Reconnect** and **start** previously set aside existing infusion(s) or saline/heparin lock as per physician’s orders.

⚠️ Use minimum volume for fluid restricted patients.

23. **DISCARD** syringe and microbore tubing in biohazard container.

24. **PERFORM** post transfusion blood work if ordered.

25. **DOCUMENT**

   Complete the transfusion record:
   - Volume infused
   - End time
   - Transfusion reaction noted: yes or no

   Complete the product tag:
   - Date/Time transfused
   - Transfused by
   - Transfusion reaction noted: yes or no

   Complete patient notification tag section:
   - Date of transfusion

   Record in patients chart:
   - Vital signs
   - Volume infused
   - Patient’s response to transfusion
   - All interventions related to transfusion
   - If a transfusion reaction occurred record all S&S experienced by the patient

26. **FILE** transfusion record in patient’s chart.

27. **GIVE** the guardian the patient notification tag section of the blood product tag. The notification tag may be filed in the patient’s chart and given to the guardian at discharge.

28. **RETURN** the completed product tag to TML.

   - For units in the 1982 building; return the product tag by the internal post.

29. **OBSERVE** in-patients for S&S of a transfusion

   Transfusion reactions can occur after the
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<table>
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<tbody>
<tr>
<td>reaction post transfusion.</td>
<td>completion of the transfusion.</td>
</tr>
<tr>
<td>30. For outpatients, REVIEW post transfusion care and give the “Heading Home after a Transfusion” form to the guardian. Discharge when clinically stable.</td>
<td>Patient/guardian should be aware of the potential of transfusion reactions and post transfusion care.</td>
</tr>
</tbody>
</table>

REFERENCES

Product monographs: Gamunex, IGIVnex, Gammagard Liquid 10%