ADMINISTRATION OF IVIG
SYRINGE METHOD NICU

PURPOSE
To provide guidelines for the administration IVIG via syringe delivery in the Neonatal Intensive Care Unit.

SITE APPLICABILITY
Neonatal Intensive Care Unit.

EQUIPMENT
- Patient chart with prescriber’s order and consent for blood transfusion
- Personal Protective Equipment (PPE): gloves, goggles, +/-gown, mask
- Chlorhexidine/alcohol swabs
- Smartsite Cap (for post transfusion CVC cap change)
- 10 mL syringes with D5W for priming & flushing the line
- Sterile green towel
- Needleless connector (cap)
- Microbore 60” tubing
- Infusion pump “brain”
- Syringe pump

From Transfusion Medicine Laboratory (TML)
- Pre filtered IVIG in 60 mL syringe
- Transfusion tag attached to syringe
- Transfusion record

PRE-TRANSFUSION PROCEDURE

<table>
<thead>
<tr>
<th>PROCEDURE</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>ENSURE</strong> order for blood product exists. For neo-natal dosage guidelines, see table 1 below. <strong>Note:</strong> Use IVIG Pre printed order forms</td>
<td>Blood products shall be prescribed by a health care provider with blood prescribing privileges.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition</th>
<th>Dose</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonatal Allo-Immune Thrombocytopenia (NAIT)</td>
<td>1 g/kg/dose</td>
<td>May repeat in 24 hr</td>
</tr>
<tr>
<td>Hemolytic disease of the newborn due to Rhesus or ABO</td>
<td>0.5 to 1 g/kg/dose</td>
<td>May repeat in 12 hr</td>
</tr>
</tbody>
</table>

**IVIG Infusion Rate Table**

<table>
<thead>
<tr>
<th>Start Rate</th>
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<td>1st 30 min</td>
<td>1 mL/kg/hr</td>
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<td>4 mL/kg/hr, or 2 mL/kg/hr for patients with renal dysfunction or at risk of renal dysfunction</td>
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2. **CONFIRM** that informed consent for blood 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 IVIG products.**

3. **ENSURE** that the guardian is aware of the planned transfusion. **Explain** the reason for transfusion and transfusion procedure to guardian. **Provide** guardian with the information pamphlet “Blood Transfusion Answers to Some Common Questions” if necessary.

**Allow the guardian to prepare for the procedure.**
To ensure that the guardian understands the reason for transfusion and the transfusion procedure.
4. **DETERMINE** if a Group & Screen / Cross Match is required. Refer to IVIG 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 are at increased risk of hemolysis.

5. **PREPARE** the Blood Component/Derivative/Factor Concentrate Request Form and the Blood Release Request Form. 
   - **Give** both forms to the unit clerk and ask the unit clerk to **send** the Blood Component/Derivative/ Factor Concentrate Request Form to TML. 
   - The Blood Release Request Form is not sent to TML at this point.

To avoid unnecessary delay in transfusion.

6. **ENSURE** that a patient identification band is in place
   - **No identification band, No Transfusion**

A missing identification band is a significant factor in patient misidentification and wrong product to patient incidents. 
Transfusion should not be administered to patients who lack positive identification

7. **ENSURE** peripheral intravenous catheter (PIV), central venous catheter (CVC) or umbilical venous catheter (UVC) of sufficient gauge is established for the transfusion of blood product(s) based on clinical status of patient and urgency of transfusion, see table 2 below.

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.

<table>
<thead>
<tr>
<th>Intravenous Access</th>
<th>Lumen Size</th>
<th>Transfusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIV</td>
<td>≥ 26 Gauge</td>
<td>Can be used for transfusion of all blood products.</td>
</tr>
<tr>
<td>UVC</td>
<td>≥ 3.5 French</td>
<td></td>
</tr>
<tr>
<td>Cuffed &amp; uncuffed Central Venous Catheter</td>
<td>≥ 3 French</td>
<td></td>
</tr>
<tr>
<td>Cuffed &amp; uncuffed Peripherally Inserted Central Catheter</td>
<td>≥ 3 French</td>
<td></td>
</tr>
<tr>
<td>Cuffed &amp; uncuffed Peripherally Inserted Central Catheter</td>
<td>&lt; 3 French</td>
<td><strong>DO NOT</strong> use for blood product transfusion.</td>
</tr>
</tbody>
</table>

8. **ENSURE** a dedicated line for the administration of IVIG products. 
   - IVIG is compatible with **D5W** only.

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

9. **PERFORM** a pre transfusion patient assessment within 30 minutes of commencing the transfusion and **document** findings. 
   - **Measure:**
     - Heart rate
     - Blood pressure
     - Temperature
     - Respiratory rate & O₂ Saturation level
   - **Include:**
     - Chest auscultation
     - A check for positive fluid balance

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

10. **When TML phone to state that the blood product is ready for pick up the unit clerk will inform the RN.** 
    - The RN will instruct the unit clerk to:
      - **Send** the porter for the blood product, or
      - Wait until the RN is ready to proceed with the transfusion.

Ensure that the person transporting the blood product obtains the right blood product for the right patient.
The unit clerk will give the porter the Blood Release Request Form to take to TML.

**NOTE:** All transfusions must be initiated within 20 minutes of issue.
- Consult TML if there are concerns about completing the transfusion within the four hour time limit.
- If the transfusion cannot be started return the blood product to TML immediately.

11. **PERFORM** the pre transfusion check with second RN.

   a. **Visual Inspection:**
      The integrity of the IVIG product is checked for:
      - Leak at syringe cap
      - Turbidity
      - IVIG that appears abnormal should not be transfused without further investigation. Contact TML @ 7388 for an explanation of abnormal appearance.

   b. **CONFIRM** that Informed Consent has been obtained.
   c. **Check** that the patient details on all documentation match:
      - First and last name
      - DOB
      - MRUN
      - Administration summary in the patient chart
      - Blood product order
      - Product Tag
      - Transfusion record

   d. **Check physician order for:**
      - IVIG concentration
      - Dose in grams
      - Volume in mLS
      - Date on the order form
      - Rate of infusion
      - Intra/post transfusion medication orders

   e. **Compare details and match information on the label, the product tag & transfusion record for the following:**
      - **Patient information:**
        - First & last name
        - DOB
        - MRUN
      - **Product information:**
        - IVIG concentration
        - Lot number(s)
        - Expiry date & time
        - Check for any TML comments

   f. **Final check in the presence of the patient**
      1. Ask parent/guardian, where possible, to state their infant’s full name and date of birth and compare to patient details on patient identification band.

   To avoid unnecessary wastage of an expensive and scarce resource. If a blood product is out of temperature controlled storage for greater than 30 minutes it cannot be returned.
   To decrease the risk of bacterial contamination the transfusion must be completed within 4 hours of issue.

   To ensure that the **Right Patient** receives the **Right Product**.
   To detect any abnormalities that may indicate that the transfusion should not proceed

   Consent is required to the transfusion of IVIG.
   **The intended patient must be properly identified prior to transfusion**

   To ensure that you are aware of the infusion rate, pre or post medication etc. that have been ordered for the transfusion.

   To ensure that the information on the label on the IVIG syringe, product tag & transfusion record is identical.

   To ensure that the product has not expired.

   The majority of transfusion-associated mortality is due to patients receiving the wrong product, or blood intended for another patient. The bedside check is a vital step in preventing
2. Compare the patient details:
   - First and last name
   - DOB
   - MRUN
3. With patient details on:
   - Patient identification band
   - Product Tag
   - Transfusion Record

⚠️ If you find any discrepancies DO NOT proceed.
   Contact TML @ 7388 immediately.

The product tag must remain attached to the product for the duration of the transfusion.

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.

12. 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

#### PROCEDURE

13. Immediately after the verification checks have been completed **INITIATE** the transfusion.
   - **Wash** hands; apply personal protective equipment and prepare field and equipment.
   - **Prime** microbore tubing with blood product.
   - **Load** syringe into syringe pump
   - **Program** **volume** and **rate** on the pump, see table 3 for appropriate infusion rates.
   - **Prime** using prime option on pump.
   - **Label** pump channel.
   - **Double-check** the programmed rate and volume to be infused.

**Rationale**

To prevent contamination of the product. Prevent errors in the rate of infusion.

If the dedicated access is a **CVC or PICC**:
   - **Clamp** CVC or PICC. **Delay** existing infusion for the duration of the transfusion.
   - **Clean** connection with CHG/ALC swab, **detach** and **cap** existing infusion from CVC or PICC using a sterile white cap, see image 1.
   - **Set** aside in sterile green towel for post transfusion reconnection.
   - **Clean** CVC cap with CHG/ALC swab and **flush** with 1mL of 0.9% Normal Saline using push-pause action and **clamp** see image 2.
   - **Connect** blood product line directly onto cap and **start** transfusion.

If dedicated access is **PIV**:
   - **Convert** PIV to saline lock.
   - **Clean** cap with CHG/ALC
   - **Connect** blood product line to patient’s IV access and **START** transfusion.
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Table 3: IVIG Infusion Rate Table

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Assess patient prior to each rate increase and measure vital signs as stated below.
Slower infusion rates may reduce rate related transient side effects/transfusion reactions.

14. MONITORING see table 4 below.

Table 4: Patient Monitoring during IVIg Transfusion

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

- Serious and life threatening reactions can occur unpredictably and progress rapidly therefore patients must be closely monitored throughout the transfusion.
- If a severe allergic reaction such as anaphylaxis occurs, symptoms usually appear early in the transfusion.

Measure Vital signs:

<table>
<thead>
<tr>
<th>After 15 minutes</th>
<th>Vital signs include:</th>
</tr>
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<tbody>
<tr>
<td>Prior to each rate increase</td>
<td>Heart rate</td>
</tr>
<tr>
<td>Hourly once maximum rate is achieved</td>
<td>Blood Pressure</td>
</tr>
<tr>
<td>Within 60 minutes of completion of the infusion</td>
<td>Temperature</td>
</tr>
<tr>
<td></td>
<td>Respiration Rate &amp; O₂ Saturation level</td>
</tr>
</tbody>
</table>

15. If a second syringe of IVIG is required:
- NOTIFY TML one hour before it is required.
- Repeat steps 10 to 14.
- Flush intravenous access with 1 to 2 mL of D5W in between transfusion.
- Change microbore tubing.
- 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/hr start this syringe at 10 mLs/hr.

To ensure TML staff have sufficient time to prepare next syringe of IVIG.
Decrease the risk of bacterial contamination.

16. In the event of a suspected transfusion reaction:
- STOP the transfusion immediately:
  - Disconnect transfusion tubing from cap.
  - Flush catheter with 1 to 2 mL D5W.
  - Start 0.9% Normal Saline infusion.
  - Reassess patient vital signs.
  - Reconfirm unique identifiers on both patient and blood product.
  - Seek assistance and notify physician.
  - Refer to Transfusion Reaction Procedure & Quick Reference Guide.
  - 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.
17. **COMPLETION** of transfusion.

STOP the infusion when the prescribed volume is infused.

**If the dedicated access is a CVC:**
- **Clean** the connection between microbore tubing IV access.
- **Disconnect** the microbore tubing and syringe line.
- **Flush** the catheter with 1 mL of 0.9% Normal Saline using pre filled syringe and clamp.
- **Change** smartsite cap.
- **Reconnect** and **start** previously set aside existing infusion(s).

**If dedicated access is PIV:**
- **Clean** the connection between microbore tubing IV access.
- **Change** smartsite cap
- **Flush** the catheter with 1 mL of 0.9% Normal Saline using pre filled syringe and clamp.
- **Convert** saline lock to PIV and **start** existing infusion(s).

Volume issued in the syringe allows for some discard in the microbore tubing. To ensure all the product is cleared from the administration set.

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

Universal precautions.

19. **DOCUMENT** at completion of transfusion

**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

At the time of the transfusion the patient’s medical chart shall be updated.

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

To ensure full traceability of the product.

21. **GIVE** the guardian the patient notification tag. The notification tag may be filed in the patient’s chart and given to the guardian at discharge.

All patients who receive a blood product should receive notification of the transfusion in writing.

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

To ensure full traceability of the product.

23. **OBSERVE** patient for S&S of a transfusion reaction post transfusion.

Transfusion reactions can occur after the completion of the transfusion.
REFERENCES


Product monographs: Gamunex, IGIVnex, Panzyga®, Octagam, Gammagard S/D.