Site Applicability
BC Children’s Hospital only.

Practice Level/Competencies
- Hospital orientation
- Completion of “Administration of Blood Products” module on the Learning Hub.

Policy Statement(s)
- Refer to Transfusion Standards on ePOPS.
- Emergency ward stock may be used in PICU and Emergency Department (ED)
- Transfusion medicine laboratory (TML) do not issue Albumin in a syringe.
- Clinical staff may prepared the syringe at the patient’s bedside.
- The transfusion must be completed within four hours of spiking the bottle.
- Do not store Albumin in medication fridges.
- Improvised warming should not be used
- Store Albumin in the box.

Equipment & Supplies
- 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)
- Syringe for albumin
- 18 gauge needle for aspirating albumin, or
- Vented bag spike with clave connecter, for PICU only
- 10 mL prefilled syringes with 0.9% Normal Saline for priming & flushing the line
- Microbore tubing
- Infusion pump “brain”
- Syringe pump

From Transfusion Medicine Laboratory
- Albumin (store albumin in its box until ready for transfusion)
- Transfusion tag attached to bottle of Albumin
- Transfusion record

Procedure

<table>
<thead>
<tr>
<th>STEPS</th>
<th>RATIONALE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.VERIFY</strong> Albumin order.</td>
<td>Blood products shall be prescribed by a health care provider with blood prescribing privileges.</td>
</tr>
<tr>
<td><strong>2.ENSURE</strong> that informed consent for albumin transfusion is complete and current. Refer to Consent for Blood Transfusion Reference Guide Informed consent need not be obtained in the following situations:</td>
<td>Informed consent is required by law for the transfusion of all blood products. Is the consent current? Consent for transfusion is applicable • for the duration of a hospital stay, or • applicable for the course of the treatment in the case of ongoing treatment</td>
</tr>
</tbody>
</table>
- 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
ADMINISTRATION OF ALBUMIN SYRINGE METHOD

DOCUMENT TYPE: PROCEDURE

- When there is no substitute decision maker.

3. NOTIFY TML of planned transfusion by sending the completed Component/ Derivative/Factor Concentrate Request form to TML

\textbf{No cross match} or ABO required for albumin transfusion.

To avoid unnecessary delay in transfusion

4. ENSURE that the patient/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

\textbf{No identification band, No Transfusion}

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

5. ENSURE intravenous access is patent and has sufficient gauge to safely administer Albumin. See Table 1 below

Gauge or lumen size should be large enough to allow the flow within the specified administration time and to prevent cell damage

\begin{table}[h]
\centering
\caption{Intravenous Access for Administration of Blood Products (Volumetric)}
\begin{tabular}{|l|c|l|}
\hline
\textbf{Peripheral Intravenous Access} & & \\
\hline
\textbf{Patient Group} & \textbf{Lumen Size} & \textbf{Comment} \\
\hline
Pediatric & 22 & 24 Gauge & Suitable for blood product transfusion \\
Neonatal & ≥ 26 Gauge & Suitable for blood product transfusion \\
\hline
\textbf{Central Venous Access Devices} & & \\
\hline
\textbf{Patient Group} & \textbf{Lumen Size} & \textbf{Comment} \\
\hline
All & All & Suitable for blood product transfusion \\
\hline
\textbf{Cuffed & Uncuffed Peripherally Inserted Central Catheter (PICC)} & & \\
\hline
\textbf{Patient Group} & \textbf{Lumen Size} & \textbf{Comment} \\
\hline
All & 3 French or greater & Suitable for blood product transfusion. \\
All & 2 French or smaller & \textbf{DO NOT} use for blood product transfusion. \\
\hline
\textbf{Uncuffed Double Lumen 4 French PICC} & & \\
\hline
\textbf{Patient Group} & \textbf{Lumen Size} & \textbf{Comment} \\
\hline
All & 20 Gauge (= 3 French) & Suitable for blood product transfusion \\
All & 23 Gauge (= 2 French) & \textbf{DO NOT} use for blood product transfusion \\
\hline
\end{tabular}
\end{table}

6. Preform a pre-transfusion patient assessment

\textbf{OBTAIN} baseline vital signs.

- Heart rate
- Blood pressure
- Temperature
- Respiratory rate

The baseline vital signs must be recorded no greater than 30 minutes before the start of the transfusion

\textbf{For patients considered high risk:}

\textbf{ASSESS} O₂ saturation level; complete a chest

A \textbf{course of treatment} is defined as the total course of therapy from induction to completion of treatment.

- For patients with prolonged transfusion needs consent should be obtained annually.

\textbf{Identify any clinical manifestations:}

- that may be cause for delaying the transfusion e.g. fever;
- that may be confused with a transfusion reaction e.g. fever or pre-existing rash;
- that may predispose the patient to a transfusion reaction e.g. positive fluid balance

Extra assessment suggested for patients with coexisting medical conditions such as renal failure or cardiovascular disease or patients who have experienced previous transfusion reactions.
7. **ADMINISTER** pre medications as ordered

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

9. **ASSEMBLE** required equipment
   - Albumin requires a dedicated line.
   - Albumin is compatible with 0.9% Normal Saline, Plasma-Lyte, and D5W.
   **Compatibility Exception:**
   - If approved by physician, co-administration of Furosemide (Lasix) with Albumin can be considered as a last resort for optimal fluid balance.
   - Use Backflow Y-connector or a three way stopcock to administer Furosemide during the Albumin infusion.

10. **ARRANGE** for the transport of albumin, or **Complete** and send the Blood Release Request Form to TML
    **Refer** to transport of blood reference guide
    - The porter service must be used to transport Albumin.
    - **PICU & ED:** use ward stock for emergency transfusions.

11. **PERFORM** the pre transfusion **patient and product checks**, when the albumin arrives on the unit.
    - The pre transfusion checks must be completed by two healthcare providers, with required competencies, one of whom shall initiate the transfusion.
    - **PICU & ED:** If using ward stock albumin attach a Cerner label with patient identifiers to the transfusion record and product tag before starting the pre-transfusion checking process.

<table>
<thead>
<tr>
<th>a) <strong>Initial check: Visual Inspection</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The integrity of the albumin is checked for:</td>
</tr>
<tr>
<td>- Turbidity</td>
</tr>
<tr>
<td>- Particulate matter</td>
</tr>
<tr>
<td>- Abnormal colour</td>
</tr>
<tr>
<td>- Tampered cap</td>
</tr>
<tr>
<td><strong>Albumin that appears abnormal should not be transfused without further investigation.</strong></td>
</tr>
<tr>
<td><strong>Contact</strong> TML at 7388 for an explanation of the abnormal appearance.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>b) <strong>Second check: Consent &amp; Documentation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>i. <strong>CONFIRM</strong> that consent has been obtained and is current.</td>
</tr>
<tr>
<td>ii. <strong>Compare the patient details:</strong></td>
</tr>
<tr>
<td>- First and last name</td>
</tr>
<tr>
<td>- DOB</td>
</tr>
<tr>
<td>- MRUN</td>
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</table>

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

Avoid delays in initiating the transfusion.
Ensure that the person transporting the blood product obtains the right blood product for the right patient.
Albumin cannot be transported via the PTS because excessive bubbling will occur.

The majority of transfusion-associated mortality is due to patients receiving blood intended for another patient.

To detect any abnormalities that may indicate that the transfusion should not proceed.

Consent is required for the transfusion of albumin.

The intended patient must be properly identified prior to the transfusion.

Administration of 25% Albumin in error, instead of 5% Albumin, could result in circulatory overload.
On

- Demographic sheet
- Albumin order
- Transfusion Record
- Product tag

iii. CHECK the Albumin order for:
- Specific blood product e.g. albumin
- Concentration of albumin
- Volume in mL
- Date of the transfusion
- Rate or duration of infusion
- Transfusion related medication orders

iv. COMPARE details on the label on the albumin bottle, the transfusion record and product tag.

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

**Product information:**
- Concentration of albumin
- Lot numbers, including sub lot number
- Expiry date
- Check for any TML comments

The information on the label on the albumin bottle, transfusion record and product tag must match.
To ensure that:
- patient information and product details on the transfusion record and product tag are identical
- the product has not expired

| Lot number |
| Sub lot number |

---

c) Final check in the presence of the patient.

I. **Ask** patient/guardian, where possible, to state their full name and date of birth and **compare** to patient details on patient identification band/card.

II. **Compare the patient details:**
- First and last name
- DOB
- MRN

III. **With patient details on:**
- Patient identification band/card
- Product Tag

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

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

The bedside check is a vital step in preventing serious transfusion error.

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
ADMINISTRATION OF ALBUMIN SYRINGE METHOD

TRANSFUSION

13. Immediately after the pre transfusions checks are completed **INITIATE** the transfusion
    - **Return** albumin to TML if the transfusion is cancelled.
    - **Consult** TML if there are concerns about completing the transfusion within four hours of spiking the bottle.

    a. **Wash** hands; apply personal protective equipment and prepare field and equipment.
    b. **Attach** syringe to clave connector *, see figure 1.
    c. **Flip** off plastic cap on top of the bottle and expose rubber stopper.
    d. **Clean** the exposed rubber stopper with alcohol swab, and allow to dry.
    e. **Insert** needle, or clave connector *, into the area delineated by the raised ring in the center of rubber stopper. The stopper should be penetrated perpendicular to the plane of the stopper within the ring. The bottle should be on a flat surface, see figure 2.
    f. **Open** the vent on the clave connector *, if used, see figure 3.
    g. **Aspirate** the required volume of albumin into the syringe.
       Include **additional volume** to allow for discard in the microbore tubing, for first draw.
    h. **Remove** and discard needle, or **disconnect** the syringe from the clave connector*
    i. **Transfer** the product tag from albumin bottle to the albumin syringe.
    j. **Attach** the syringe to microbore tubing.
    k. **Prime** the microbore tubing with albumin.
    l. **Load** syringe into syringe pump.
    m. **Label** pump channel.

*Clave connectors are used in PICU to allow for multiple draws.

**Do not re-enter the albumin bottle**, one spike per bottle.

**Albumin is stored at room temperature. Albumin must be protected from light during storage; however, it is not necessary to protect albumin from light during the infusion. These methods may damage the albumin and cause harm to the patient.**

Table 2: Infusion Rates for Non-Emergency Situations for all patients

<table>
<thead>
<tr>
<th>5% Albumin</th>
<th>25% Albumin</th>
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<tr>
<td>As per prescribers’ orders for remainder of infusion.</td>
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INFUSE each bottle at 1 mL/kg/h, **up to a maximum of 50 mL/h** (when product reaches the patient), for the first 15 minutes.

**ADJUST** the flow to the prescribed infusion rate, if there are no signs or symptoms of a transfusion reaction during the first 15 minutes.

**Figure 1 Clave Connector vent closed**

**Figure 2**

**Figure 2**

**Figure 3 Clave Connector vent opened**

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

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**Figure 1 Clave Connector vent closed**

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⚠️ **The product tag must remain attached to the product for the duration of the transfusion.**
**ADMINISTRATION OF ALBUMIN SYRINGE METHOD**

**DOCUMENT TYPE: PROCEDURE**

**Infusion** rate should be adjusted to individual requirements, based on initial assessment and monitoring of the patient’s status.

15. **MONITORING** see table 3 below:

**INSTRUCT** the patient/guardian to inform a HCP immediately if they experience:
- Hives
- Headache
- Nausea
- Difficulty in breathing

Patients will be aware of the:
- S&S of a transfusion reaction
- Actions to take should they experience a transfusion reaction

### Table 3: Patient Monitoring During Blood Product 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 reaches the patient) and observe for signs and symptoms of a transfusion reaction.

<table>
<thead>
<tr>
<th>Neonatal (less than 4 months old)</th>
<th>Pediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measure Vital signs:</strong></td>
<td><strong>Measure Vital signs:</strong></td>
</tr>
<tr>
<td>• After 15 minutes</td>
<td>• After 15 minutes</td>
</tr>
<tr>
<td>• After 30 minutes</td>
<td>• After 60 minutes</td>
</tr>
<tr>
<td>• After 60 minutes</td>
<td>• Hourly for remainder of the transfusion</td>
</tr>
<tr>
<td>• Hourly for remainder of the transfusion</td>
<td><strong>Post transfusion:</strong></td>
</tr>
<tr>
<td>• Within 60 minutes of completion of the transfusion</td>
<td>• Within 60 minutes of completion of the transfusion</td>
</tr>
</tbody>
</table>

**Vital signs include:**

- Heart rate
- Blood Pressure
- Temperature
- Respiration Rate
- O₂ Saturation level
- Heart rate
- Blood Pressure
- Temperature
- Respiration rate

**Increase** observation for high risk patient’s e.g. clinically unstable or unconscious patients.

**Monitor** O₂ saturation level & fluid balance in patients who are at risk of fluid overload.

**If a severe allergic reaction such as anaphylaxis occurs, symptoms usually appear early in the transfusion.**

**Serious and life threatening reactions can occur unpredictably and progress rapidly therefore patients must be closely monitored throughout the transfusion.**

16. If a second

- **SYRINGE** is required **repeat g to m in step 14**
- **BOTTLE** is required:
  - request from TML
  - repeat steps 10 to 15
- **Change** the lines after the entire volume has been infused or after 12 hours, whichever comes first.

To ensure TML staff have sufficient time to prepare next bottle of albumin.

To prevent the growth of microorganisms as albumin contains no preservative.

17. In the event of a suspected transfusion reaction:

- **STOP** the transfusion immediately:
- **Administer** 0.9% Normal Saline
- **Reassess** patient vital signs
- **Reconfirm** unique identifiers on both patient and blood product.
- **Seek** assistance and **notify** physician.
- **Refer** to Transfusion Reaction Procedure & 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.

18. **COMPLETION** of infusion:

- **Clean** the connection between microbore

To ensure TML staff have sufficient time to prepare next bottle of albumin.

To prevent the growth of microorganisms as albumin contains no preservative.
tubing IV access.

- **Disconnect** the microbore tubing and syringe line.
- **Flush** the connection with 0.9% Normal Saline using pre filled syringe.
- Use minimum volume flush for fluid restricted patients.

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

19. **RETURN** to previously ordered intravenous solution, saline/heparin lock vascular access or discontinue IV as per prescriber’s orders.

20. **PERFORM** post transfusion blood work if ordered.
To monitor the response to the transfusion.

21. **DOCUMENT**
   - Complete the transfusion record:
     - Volume infused
     - End time
     - Transfusion reaction noted: yes or no
   - Complete the product tag:
     - Date transfused
     - 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.

22. **FILE** transfusion record in patient’s chart.
To ensure full traceability of the product.

23. **GIVE** the patient/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 patient/guardian at discharge.
All patients who receive a blood product should receive notification of the transfusion in writing.

24. **RETURN** the completed product tag to TML.
For units in the 1982 building, return the product tag by the internal post.
To ensure full traceability of the product.
These units are not connected to TML via the pneumatic tube system.

25. **OBSERVE** in-patients for signs & symptoms of a transfusion reaction post transfusion.
Transfusion reactions can occur after the completion of the transfusion.

26. For outpatients, **REVIEW** post transfusion care and **Give** the “Heading Home after a Transfusion” form to the patient/family. **Discharge** when clinically stable.
Patient/guardian should be aware of the potential of transfusion reactions and post transfusion care.

**Documentation**
- The transfusion record and product tag must be completed to ensure full traceability of blood components.
- The transfusion record is retained in the patient chart.
- The product tag is returned to transfusion medicine once the transfusion is complete.
- If PICU or ED ward stock albumin is used ensure that the transfusion record and product tag have patient identifiers, a Cerner label is acceptable.
Patient & Family Engagement/Education

- Provide the patient/guardian with the information pamphlet “Blood Transfusion Answers to Some Common Questions”, before the transfusion.
- Give the recipient notification tag to the patient/guardian after the transfusion.

References


Clinical Transfusion Resource Manual

Standards for Hospital Transfusion Services (Ver. 4.0). (2017). Ottawa, ON. Canadian Society for Transfusion Medicine.


Definitions

- Blood product (Plasma Derivative): A product derived from human or animal plasma by fractionation process, e.g. human serum albumin.
- Albumin is a plasma protein product.

Version History

<table>
<thead>
<tr>
<th>DATE</th>
<th>DOCUMENT NUMBER and TITLE</th>
<th>ACTION TAKEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-Jun-2020</td>
<td>C-0506-12-60694 Administration Of Albumin Syringe Method</td>
<td>Approved at: Transfusion Safety Committee</td>
</tr>
</tbody>
</table>

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