HEBRON FIRE PROTECTION District Standard Operating Guideline Manual			
	CHAPTER 3	**SOG Number:**	DRAFT
	SOG Title:	Blood Products Operating Guideline	
	Effective Date:	**Revised:**	
	07/2026	05/2026	

PURPOSE

Establish a Standard Operating Guideline (SOG) for the receipt, issue, storage, transport, monitoring, administration documentation, return, quarantine, and disposition of blood products used by Hebron Fire Protection District (HFPD), in collaboration with Hoxworth Blood Center requirements and applicable blood banking standards.

SCOPE

This SOG applies to all HFPD personnel trained or authorized to receive, handle, store, transport, monitor, administer, document, or dispose of pre-hospital blood products. Personnel shall not perform blood product tasks unless trained and approved for the assigned function.

GUIDELINE

1. **Approved Equipment and Storage Configuration**
    a. Blood products shall only be stored or transported in HFPD and Hoxworth Blood Center approved equipment that has been qualified/validated before use.
    b. The standard HFPD operational inventory shall consist of two (2) units of PRBCs and two (2) units of plasma. These units shall remain in the approved blood cooler. When not deployed, the loaded blood cooler shall be stored inside the approved blood refrigerator.
    c. If additional blood products are temporarily supplied or maintained, those units shall be stored directly inside the approved blood refrigerator and shall not be placed in the blood cooler unless needed to replace an administered, expired, quarantined, returned, or otherwise removed unit.
    d. Blood product bags shall only be removed from the approved cooler or refrigerator for visual inspection, inventory verification, transfer to approved storage, removal from service, or immediate administration. Visual checks shall be limited to two (2) minutes or less whenever possible.

Equipment	Approved Use
Credo ProMed Series 4 Cooler/Transport Device	Transport and operational storage of the standard blood product inventory
Helmer Scientific iBR105-GX Blood Refrigerator	Station storage of the loaded blood cooler and any additional blood products

LabRepCo L2X-3-FM Freezer	Freezing and storage of TIC panels at -18°C or colder
Temp Stick PRO, NIST Certified	Continuous temperature monitoring, alarm notification, and documentation

2. Temperature Requirements and Monitoring

a. Blood products shall be maintained between one (1) and six (6) degrees Celsius during storage and transport unless otherwise directed by Hoxworth Blood Center.

b. Blood products shall be subject to at least two forms of temperature monitoring. Approved monitoring may include the manufacturer digital temperature display, Temp Stick remote monitoring, analog chart recorder, digital thermometer, Safe-T-Vue or other approved blood bag temperature indicator, and other Hoxworth-approved devices.

c. The Blood Product Daily Check form shall be used to document routine temperature monitoring. This form shall be completed at the beginning of each shift, during scheduled TIC panel rotations, and any time required by this SOG.

d. The approved blood refrigerator, freezer, and blood cooler shall be monitored using the Temp Stick application. Each HFPD paramedic assigned to the blood program shall have access to the Temp Stick application. The application shall also be accessible on the Squad 43 ambulance phone, Battalion Chief phone, and Division Chief of EMS phone.

e. Temp Stick high-temperature, low-temperature, and signal-related alerts shall be configured to send mobile push notifications to the Squad 43 ambulance phone, Battalion Chief phone, Division Chief of EMS phone, and other approved personnel as assigned.

f. For the blood product cooler and refrigerator, the Temp Stick low-temperature alarm setpoint shall be 1.5 degrees Celsius and the warm-temperature alarm setpoint shall be 5.5 degrees Celsius. For the freezer, the warm-temperature alarm setpoint shall be -19 degrees Celsius.

g. On-duty personnel receiving a Temp Stick alert shall promptly notify the assigned Squad 43 paramedic, on-duty company officer, Battalion Chief, or Division Chief of EMS as appropriate. The assigned personnel shall assess the affected storage device or cooler, verify the current temperature using available monitoring devices, and review available temperature history.

    i. If the temperature is within acceptable range and no product integrity concern is identified, the event shall be documented as an “alarm only” using the Temperature Excursion / Alarm Investigation Form.

    ii. If a confirmed or suspected temperature excursion, unknown temperature history, power failure, equipment malfunction, or other product integrity concern exists, affected blood products shall be removed from active inventory, placed in quarantine, clearly marked “Do Not Use,” and the Temperature Excursion / Alarm Investigation Form shall be completed.

h. The Division Chief of EMS or approved designee shall review temperature monitoring records, daily check forms, alarm investigations, and corrective actions as part of the blood program quality assurance process.

i. Temperature monitoring records, including Temp Stick data, analog chart records, daily check forms, alarm notifications, and alarm investigation forms, shall be retained according to the records retention section of this SOG.

j. The paramedic assigned to Squad 43 is responsible for confirming that blood products remain within the acceptable temperature range during the shift. If two paramedics are assigned, both share responsibility.

k. The Division Chief of EMS or their designee will review all electronic and analog temperature monitoring records for quality assurance on a weekly basis as part of ongoing quality assurance. If a Temperature Excursion / Alarm Investigation Form is submitted, this will be investigated within 24 business hours.

3. Equipment Qualification, Validation, and Temperature Records

a. All refrigerators, coolers/transport devices, temperature monitoring devices, storage locations, transport configurations, and backup equipment used for blood products shall be qualified/validated before initial use. Blood products shall not be stored or transported in any equipment that has not been validated, has failed validation, or has been removed from service due to malfunction, damage, or unresolved temperature concerns.

b. Initial qualification/validation shall demonstrate that the equipment and actual HFPD workflow can maintain blood products between one (1) and six (6) degrees Celsius under expected operating conditions. This includes the loaded blood cooler stored inside the refrigerator, any refrigerator location used for additional units, primary and backup coolers, backup TIC panels, and any backup storage or transport equipment.

c. Before the program is placed into service, HFPD shall maintain at least two (2) weeks of acceptable storage and/or transport temperature records for all equipment used to store or transport blood products, including backup equipment. This requirement shall be completed after the applicable equipment is received and installed.

    i. Validation documentation shall include, at minimum:
    ii. Equipment make, model, serial number or asset number;
    iii. Date and time validation started and ended;
    iv. Person performing validation;
    v. Temperature monitoring device used;
    vi. Storage location or pack-out configuration tested;
    vii. Temperature data reviewed;
    viii. Pass/fail result;
    ix. Deviations and corrective actions, if applicable;
    x. Approval by the Division Chief of EMS or approved designee.

d. The blood refrigerator shall be revalidated after relocation, repair or service affecting temperature control, repeated or unexplained temperature excursions, change in

storage configuration, or as directed by Hoxworth Blood Center, the Medical Director, or the Division Chief of EMS.

i. The blood refrigerator will be considered successfully validated if it can maintain its target temperature between one and a half (1.5) and five and a half (5.5) degrees Celsius for a period of 24 hours, as evidenced by internal temperature monitoring logs, and secondary temperature monitoring logs via Temp Stick.

e. The blood cooler/transport device shall be revalidated after damage, repair, annual inspection or recertification, temperature excursion, replacement of TIC panels, change in TIC panel freezing or staging process, change in pack-out process, change in product load, change in temperature monitoring device, or as directed by Hoxworth Blood Center, the Medical Director, or the Division Chief of EMS.

i. The blood cooler/transport device will be considered successfully validated if it can maintain its target temperature between one and a half (1.5) and five and a half (5.5) degrees Celsius with a simulated payload for a period of 24 hours utilizing one set of six Thermal Insulation Chamber panels. See "Credo ProMed Cooler Certification Form."

f. A cooler, refrigerator, freezer, thermometer, probe, or monitoring device that fails validation or is suspected to be unreliable shall be removed from service and clearly marked "Do Not Use for Blood Products" until successfully corrected and revalidated.

4. Equipment Maintenance, Calibration, and Alarm Testing

a. Blood product storage and transport equipment shall be maintained according to manufacturer instructions, Hoxworth Blood Center requirements, and HFPD procedures. Maintenance, alarm testing, thermometer/probe calibration, annual inspection, and recertification records shall be retained for all primary and backup blood product storage or transport equipment.

b. Alarm testing shall be performed and documented as follows:

Equipment/Alarm	Frequency	Procedure
Blood refrigerator **high** & **low** temperature alarms	Monthly	Follow attached service manual instructions
Refrigerator Temp Stick **high** alarm	Monthly	Expose device to ambient conditions until push notification is received
Refrigerator Temp Stick **low** alarm	Monthly	Place device in freezer until push notification is received
Blood cooler Temp Stick **high** alarm	Weekly	Expose device to ambient conditions until push notification is received
Blood cooler Temp Stick	Weekly	Place device in freezer

low alarm		until push notification is received
Freezer Temp Stick high alarm	Monthly	Expose device to ambient conditions until push notification is received

c. Alarm test results shall be documented in the Alarm Test Log. Alarm test failures shall be reported immediately to the Division Chief of EMS for further investigation.
d. Thermometers, probes, and temperature monitoring devices used for blood product storage or transport shall be calibrated, verified, or replaced according to manufacturer recommendations and Hoxworth Blood Center requirements. Calibration or verification records shall identify the device, date, result, and person completing or reviewing the record.
    i. NIST-Certified Temp Stick's shall be recalibrated annually by the manufacturer or their designee.

5. Alarm Investigation and Temperature Excursion Procedure

a. A temperature excursion is any actual or suspected temperature outside of the required one (1) to six (6) degrees Celsius range for blood products, or any condition that creates uncertainty about the temperature history or suitability of a blood product.
b. All temperature alarms, alarm test failures, unexplained alarm notifications, temperature monitoring failures, or suspected excursions shall be investigated and documented on the Temperature Excursion/Alarm Investigation Form.
c. Upon discovery of a temperature alarm or suspected excursion, personnel shall:
    i. Verify the current temperature using available approved monitoring devices.
    ii. Inspect each affected blood product for Safe-T-Vue or approved indicator status, appearance, expiration, leakage, damage, or other concerns.
    iii. Keep affected blood products under appropriate temperature-controlled conditions when possible.
    iv. Place questionable or affected products into quarantine and clearly mark "Do Not Use."
    v. Notify the Division Chief of EMS immediately.
    vi. Contact Hoxworth Blood Center for guidance when product suitability or final disposition is uncertain.
    vii. Complete the Temperature Excursion/Alarm Investigation Form and attach available temperature records, alarm logs, and corrective action documentation.
d. Quarantined blood products shall not be returned to active service unless released by Hoxworth Blood Center. Disposal shall only occur after the Division Chief of EMS or

approved designee determines final disposition in consultation with Hoxworth Blood Center when needed.

6. Receipt, Issue, and Return of Blood Products

a. Receipt of Blood Products

i. Blood products shall only be received from Hoxworth Blood Center by the Division Chief of EMS or an approved designee trained in blood product receipt, inspection, documentation, and storage procedures.

ii. Upon receipt, the receiving HFPD representative shall verify the shipment against the accompanying blood product documentation. Verification shall include product type, number of units received, unit identification number, ABO/Rh type if applicable, expiration date/time, product condition, transport container condition, temperature documentation or transport indicator status if provided, and Safe-T-Vue or other approved indicator status if applied.

iii. Each unit shall be visually inspected for evidence of damage, leakage, contamination, discoloration, clotting, hemolysis, broken seals, expired dating, missing labels, missing or removed segment, or any other abnormal appearance. The receiving representative shall verify that any tamper-proof seal is present and unbroken, that the segment remains properly attached, and that available temperature documentation supports acceptable storage/transport conditions. Any unit with abnormal color or physical appearance, any indication or suspicion of microbial contamination, compromised container integrity, broken or missing seal, missing or removed segment, unresolved temperature concern, or otherwise questionable integrity shall not be placed into service.

iv. Acceptable units shall be documented in the Blood Bank module within NarcoticTrack or other approved tracking system. Documentation shall include date and time received, product type, unit identification number, expiration date/time, storage location, receiving representative, and confirmation that the unit passed visual inspection, the tamper-proof seal was intact, and a properly attached segment was present.

v. The standard operational inventory shall be placed into the approved blood cooler and the loaded cooler shall be stored inside the approved blood refrigerator when not deployed. Additional units, if supplied, shall be stored directly in the approved refrigerator.

vi. Any discrepancy, unacceptable condition, missing documentation, missing or removed segment, broken or questionable seal, abnormal visual inspection finding, or suspected temperature excursion identified at receipt shall result in quarantine of the affected unit or shipment. The Division Chief of EMS shall be notified, Hoxworth Blood Center shall be contacted for direction, and the discrepancy/final disposition shall be documented.

b. Issue of Blood Products

i. For this SOG, “issue” means placing blood products into HFPD operational

EMS inventory for field availability, transport, and administration. Blood products are considered issued when they have been received, inspected, documented, placed into the approved blood cooler, and assigned to Squad 43/Blood 43 for field response.

ii. The issued blood products shall remain in the approved blood cooler at all times unless being inspected, inventoried, immediately administered, removed from service, returned to Hoxworth, or exchanged with another unit under approved direction.

iii. At the beginning of each shift, the Squad 43 paramedic shall verify the issued blood product inventory, including number of units present, product type, unit identification number, expiration date/time, Safe-T-Vue or approved indicator status, cooler temperature, general appearance, and confirmation that the physical inventory matches NarcoticTrack. The beginning-of-shift inventory shall be documented utilizing the "Blood Product Daily Check" form.

iv. Movement of any additional refrigerated unit into the blood cooler shall be documented as an inventory change.

c. Return of Blood Products

i. For this SOG, "return" means movement of unused blood products back to approved storage, back to Hoxworth Blood Center, or out of active operational inventory. Because HFPD's standard operational inventory remains in the approved cooler, routine return to storage generally means returning the loaded cooler to the approved blood refrigerator after deployment or daily use.

ii. After any deployment where the blood cooler is opened and blood products are not administered, the Squad 43 paramedic shall verify that the cooler remained between one (1) and six (6) degrees Celsius, review available temperature monitoring, inspect Safe-T-Vue or approved indicators, inspect product appearance, confirm each unit remains sealed/intact/unexpired/unspiked, and confirm that inventory matches NarcoticTrack.

1. If all units remain acceptable, the loaded blood cooler shall be returned to the approved refrigerator and remain available for continued operational use. The inventory shall be documented utilizing the "Blood Product Daily Check" form. Any unit that does not meet return criteria shall be quarantined, clearly marked "Do Not Use," and held under appropriate conditions until final disposition is determined.

iii. Blood products shall not be returned to Hoxworth Blood Center unless specifically authorized by Hoxworth Blood Center. When return to Hoxworth is authorized, the Division Chief of EMS or approved designee shall coordinate the return and ensure required documentation accompanies the product.

7. Quarantine and Return Criteria for Continued Use

a. Unused blood products may remain in, or be returned to, active operational inventory only if all of the following criteria are met:
    i. The unit remained under approved temperature monitoring and between one (1) and six (6) degrees Celsius;
    ii. The Safe-T-Vue or approved temperature indicator remains acceptable;
    iii. The unit has not expired;
    iv. The unit has not been spiked, entered, or partially transfused;
    v. The unit shows no evidence of leakage, contamination, discoloration, clotting, hemolysis, damage, or compromised integrity;
    vi. The unit identification number matches the active inventory record;
    vii. There is no unresolved temperature excursion, documentation discrepancy, or chain-of-custody concern.
b. Blood products shall be immediately quarantined and removed from active operational inventory for temperature excursion or suspected excursion; failed or activated temperature indicator; unknown or undocumented temperature history; damage to the bag, tubing, ports, seals, or label; leakage or suspected contamination; abnormal color, clotting, hemolysis, or unusual appearance; expiration; missing or conflicting documentation; discrepancy between physical and electronic inventory; spiked/entered/partially transfused product; or any concern regarding product integrity, chain of custody, or suitability for transfusion.

8. Blood Cooler Procedure

a. The approved blood cooler is the Credo ProMed Series 4 with a Thermal Insulation Chamber (TIC) system comprised of six frozen panels surrounding the bottom, sides, and top of the cooler. One backup Credo ProMed Series 4 cooler shall be maintained for use in the event of refrigerator failure, cooler damage, or other approved need.
b. The blood cooler shall be packed using an HFPD-approved and validated conditioning process. Approved processes include rotational conditioning and standard conditioning. Personnel shall not alter the validated conditioning time, loading configuration, product load, or temperature monitoring setup unless the revised process has been validated and approved.
c. Rotational conditioning shall be the preferred routine process for daily operations. TIC panels used for rotational conditioning shall be frozen at -18 degrees Celsius or colder for at least twenty-four (24) hours, then moved to the approved blood refrigerator for twenty-four (24) hours of refrigerated conditioning before being placed into the blood cooler.
    i. During rotational conditioning, TIC panel sets shall follow the sequence of freezer to refrigerator, refrigerator to cooler, and cooler to freezer. TIC panels shall be changed twice daily at 0800 and 2000 hours. At each scheduled panel change, personnel shall place the appropriately conditioned AM or PM panel set into the cooler, move the panel set removed from the cooler back to the freezer, and move a fully frozen panel set into the appropriate AM or PM refrigerator conditioning section for the next scheduled change.

d. Standard conditioning may be used when rotational conditioning is not in use, when replacing panels outside the normal AM/PM rotation, during training or validation, or when otherwise directed. For standard conditioning, TIC panels shall be kept in a freezer that is -18 degrees Celsius or colder for at least twenty-four (24) hours. Panels must lie flat while freezing. Before use, personnel shall verify that the panels are fully frozen solid by shaking them to confirm no liquid is heard.
    i. After TIC panels are frozen solid, they may be removed for standard pack-out staging. Unless revised by validated procedure, the panels shall be staged at room temperature for twenty (20) minutes. The validated staging time, panel loading process, product load, and monitoring configuration shall not be changed unless revalidated and approved.
e. To load TIC panels, insert one panel into the cooler base with the logo embossment facing up. Add four panels to the left, right, front, and back sides with logo embossment facing in. Place the final panel over the blood products with the logo embossment facing down, ensuring the panel lies flat and level without force. Force should not be required to close the cooler.
f. TIC panel conditioning, rotation, and cooler pack-out shall be documented on the approved daily check or validation form. Documentation shall include the conditioning method used, panel set placed into the cooler, panel set removed from the cooler if applicable, freezer/refrigerator/cooler temperatures, and any discrepancy or corrective action.
g. TIC panels may be cleaned with soap and warm water and disinfected using a 70/30 alcohol/water mix. Other parts of the blood cooler may be cleaned with a damp towel and isopropyl alcohol, unless manufacturer instructions require otherwise.

9. Equipment Failure

a. Station 43 Power Failure
    i. In the event of station power loss, the Engine 43 company officer or designee shall verify that the station generator has activated and that the blood refrigerator and freezer have power. If station generator power is unavailable, the refrigerator and freezer shall be powered by a portable generator if available and safe to use. Battalion 41 and Chief 45 shall be notified.
    ii. Temperatures shall be continuously monitored. Any temperature alarm, suspected excursion, or loss of temperature history shall be handled according to the Alarm Investigation and Temperature Excursion Procedure.
b. Blood Refrigerator Malfunction
    i. If the blood refrigerator is unable to maintain one (1) to six (6) degrees Celsius, blood products shall be maintained in the approved blood cooler or backup validated storage equipment when possible. The Division Chief of EMS shall be notified immediately, and Hoxworth Blood Center shall be contacted for direction if product suitability is uncertain.
    ii. If extended use of coolers is required, products shall be managed according to validated cooler procedures and continuously monitored. Products shall not

remain in equipment with an unresolved failure or unknown temperature history.

10. Tracking and Traceability

a. Each unit of blood product shall be tracked from receipt through final disposition using the Blood Bank module within NarcoticTrack or another approved HFPD tracking system. Records shall permit traceability of each unit to receipt, storage location, issue status, return status, administration, quarantine, transfer, expiration, disposal, or return to Hoxworth.

b. At minimum, tracking documentation shall include product type, unit identification number, expiration date/time, date/time received, current storage location, movement into or out of the cooler, administration details if used, final disposition, disposal bin or box number if discarded, and the person responsible for each transaction.

c. If a unit is administered, the EMS patient care report shall include the unit identification number, product type, date/time of administration, volume administered if applicable, receiving hospital, patient response, and any suspected transfusion reaction or adverse event. NarcoticTrack shall include the patient care report number and disposition of the unit.

11. Blood Administration and Blood Center Notification

a. Blood product administration shall follow Southwest Ohio Protocol T700: Blood and Blood Product Administration, HFPD medical director requirements, and Hoxworth Blood Center requirements.

b. The Division Chief of EMS and Medical Director shall review all blood product administrations for quality assurance.

c. Any suspected transfusion reaction shall be treated according to protocol. The transfusion shall be stopped as clinically indicated, the patient shall be reassessed, the receiving hospital shall be notified, and all product/unit information shall be preserved for investigation.

d. Suspected transfusion reactions shall be documented on the Report of Adverse Transfusion Reaction to Blood Suppliers form or other Hoxworth-approved form and submitted to the Division Chief of EMS. The Division Chief of EMS or approved designee shall notify the Medical Director and Hoxworth Blood Center as soon as practical and shall provide the EMS patient care report, blood product administration documentation, unit identification information, and any additional requested records.

e. If HFPD receives notification from Hoxworth Blood Center of abnormal donor testing, transfusion-transmitted disease concern, product recall, or other post-distribution product concern, the Division Chief of EMS or approved designee shall immediately identify the affected unit by unit identification number, determine whether the unit remains in inventory or was administered, quarantine any in-inventory affected product, notify the Medical Director, notify the receiving hospital EMS Coordinator or

other appropriate receiving facility representative if the product was administered, and document all notifications and follow-up actions.

12. Ordering and Product Replacement

a. The Division Chief of EMS or approved designee shall be responsible for ordering, receiving, replacing, and placing blood products into service. Product ordering and rotation shall be coordinated with Hoxworth Blood Center.

b. Blood products are expected to be supplied on the following cycle unless modified by Hoxworth Blood Center or operational needs: PRBCs on a five (5) week cycle and liquid plasma on a three (3) week cycle.

13. Disposal of Blood Products

a. Blood products identified for disposal shall be quarantined before disposal and shall be disposed of according to medical/biohazardous waste standards and Hoxworth Blood Center direction when applicable.

b. Disposal shall be completed by the Division Chief of EMS or approved designee. The Blood Product Disposal Form or approved disposition record shall be completed and retained for quality assurance and traceability.

14. Records Retention

a. Blood product records shall be retained according to applicable AABB standards, Hoxworth Blood Center requirements, HFPD policy, and Kentucky EMS record retention requirements. Records shall be available for review by HFPD leadership, the Medical Director, Hoxworth Blood Center, and other authorized reviewers as applicable.

b. Personnel-related records listed under AABB Standards 6.2.9A shall be retained for five (5) years unless a longer period is required. These include job descriptions, qualifications of personnel performing critical tasks, training records, evaluations of competence, personnel records following conclusion of employment, and continuing education records.

c. Patient care records shall be retained according to Kentucky EMS requirements: five (5) years for adults and, for minors, until five (5) years beyond the age of majority.

d. Blood product operational records shall include, as applicable: receipt, issue, return, administration, quarantine, disposal, temperature monitoring, two-week initial validation records, validation/revalidation records, alarm testing records, alarm investigation records, temperature excursion forms, maintenance records, calibration/verification records, transfusion reaction reports, transfusion-transmitted disease notifications, donor testing notifications, and corrective actions.

HEBRON FIRE PROTECTION DISTRICT

PREHOSPITAL BLOOD TRANSFUSION PROGRAM TRAINING OUTLINE

Document Type	Training Plan / Curriculum Outline	**Effective Date**	07/2026
Reviewed / Revised	05/2026	**Program Sponsor**	Division Chief of EMS
Applicable Personnel	Personnel authorized to receive, handle, store, transport, monitor, administer, document, quarantine, return, or dispose of blood products	**Blood Supplier**	Hoxworth Blood Center

Purpose

Hebron Fire Protection District (HFPD) will maintain a structured training program to ensure authorized personnel are trained and competent in the safe receipt, issue, storage, transport, monitoring, inspection, administration support, documentation, quarantine, return, and final disposition of blood products used in the pre-hospital setting. The training program is based on the HFPD Blood Products Operating Guideline, Hoxworth Blood Center requirements, applicable blood banking standards, and relevant FDA blood product requirements.

Scope and Authorization

This training applies to HFPD personnel assigned or authorized to perform blood product tasks. Personnel shall not independently receive, inspect, issue, store, transport, monitor, administer, quarantine, return, or dispose of blood products unless they have completed initial training and competency verification for the assigned function.

- Role-specific training may be used for limited functions, but independent blood product decisions require full operational competency.
- The Division Chief of EMS or approved designee maintains training records, competency records, and authorization status.

Regulatory and Program References

- HFPD Blood Products Operating Guideline, current approved version.
- Hoxworth Blood Center instructions, product-specific guidance, forms, and direction.
- Southwest Ohio Protocol T700: Blood and Blood Product Administration, and HFPD Medical Director requirements.
- 21 CFR 640.2(c), reissue concepts: unbroken tamper-proof seal, properly attached segment, continuous storage at 1 to 6 C, shipment between 1 and 10 C, and significant inspection before reissue.
- 21 CFR 640.5(e), visual inspection concepts: abnormal color, abnormal physical appearance, or indication/suspicion of microbial contamination.
- 21 CFR 640.11(b), red blood cell inspection concepts: inspection during storage and at issue; do not issue products with abnormal color/physical appearance or indication of microbial contamination.

Training Objectives

- Explain HFPD's blood product workflow from receipt through final disposition.
- Identify blood products carried by HFPD and approved storage/transport equipment.
- Demonstrate PRBC and plasma inspection at receipt, routine storage checks, prior to transfusion, and before return/reissue or continued use.
- Identify unacceptable findings: abnormal color/appearance, suspected microbial contamination, damaged container, broken/missing seal, missing/removed segment, activated indicator, expiration, or unknown temperature history.
- Use the Temp Stick application, complete daily temperature documentation, respond to alarms, and document alarm investigations.
- Describe storage and transport requirements, TIC panel conditioning, cooler handling, and temperature excursion response.
- Quarantine questionable products and complete required notifications and documentation.
- Accurately complete required forms and maintain product traceability.
- Recognize suspected transfusion reactions or transfusion-transmitted disease concerns and complete required reporting.

Initial Training Curriculum

Module 1 - Program Overview and Personnel Responsibilities

- Purpose of the Blood 43 Program and relationship with Hoxworth Blood Center.
- Personnel roles and limitations; personnel only perform blood product tasks after training and approval.
- Standard operational inventory: two units PRBCs and two units plasma; additional units stored directly in the approved refrigerator unless needed to replace a unit.

Module 2 - Blood Product Types and Required Identification

- Product types carried by HFPD: PRBCs and plasma.
- Verify product type, unit identification number, ABO/Rh type when applicable, expiration date/time, and label information.
- Maintain traceability from receipt through administration, return, quarantine, disposal, or return to Hoxworth.
- Document transactions in NarcoticTrack or other approved tracking system.

Module 3 - Blood Product Inspection Requirements

- Inspection occurs upon receipt, during routine storage/daily checks, prior to transfusion, prior to return/reissue or continued use, and before final disposition or return to Hoxworth.
- Verify container integrity, label readability, expiration, product type, unit ID, ABO/Rh if applicable, Safe-T-Vue or approved indicator status, tamper-proof seal status, and attached segment status.
- Inspect for damage, leakage, contamination, discoloration, clotting, hemolysis, broken ports, broken seals, missing labels, missing/removed segment, gas, swelling, particulates, fibrin strands, or any abnormal appearance.
- PRBC inspection: deep red to maroon cells may be acceptable; quarantine for pink/bright-red supernatant, brown/purple/black discoloration, clots, particles, hemolysis, gas, swelling, or suspected contamination.
- Plasma inspection: clear to slightly hazy pale yellow/straw to amber may be acceptable; quarantine for red/pink discoloration, marked abnormal color, particulate matter, fibrin clots, gas, swelling, leakage, or contamination concern.
- Questionable units are quarantined, marked Do Not Use, and escalated according to the SOG.

Module 4 - FDA Reissue and Inspection Concepts Applied to HFPD Operations

- HFPD personnel do not independently clear questionable products for reissue; Hoxworth direction is required when suitability is uncertain.
- Reissue/continued-use concepts include unbroken tamper-proof seal, properly attached segment that has not been removed, acceptable documented temperature history, and significant visual inspection.
- Units lacking a properly attached segment are not acceptable for routine use or return/reissue unless specifically directed by Hoxworth under emergency instructions.
- Preserve product, segment, tubing, labels, and documentation when a product is quarantined, returned to Hoxworth, or involved in a transfusion reaction.

Module 5 - Storage and Transport Requirements

- Maintain blood products between 1 and 6 C during storage and transport.
- Use only qualified/validated HFPD and Hoxworth-approved equipment.
- Normal configuration: loaded Credo ProMed cooler stored inside the Helmer blood refrigerator when not deployed.
- Remove blood products from approved storage only for inspection, inventory, transfer, removal from service, or immediate administration; limit visual checks to two minutes or less when possible.
- Understand ambulance handling, cooler placement, cold-chain protection, and when additional inspection or documentation is required.

Module 6 - Temperature Monitoring and Temp Stick Application

- Complete the Blood Product Daily Check form at required times to document freezer, refrigerator, and cooler temperatures, unit IDs, expiration dates, location, visual inspection, and Safe-T-Vue/indicator status.
- Use the Temp Stick application for the refrigerator, freezer, and cooler. Access is provided to assigned blood program paramedics and to the Squad 43 ambulance phone, Battalion Chief phone, and Division Chief of EMS phone.
- High-temperature, low-temperature, and signal-related alerts send push notifications to approved devices.
- Personnel receiving an alert notify the assigned Squad 43 paramedic, company officer, Battalion Chief, or Division Chief of EMS as appropriate, verify current temperature, review temperature history, and determine whether the event is alarm-only or a suspected/confirmed excursion.

Module 7 - Temperature Excursions, Alarm Investigation, and Quarantine

- Temperature excursion includes actual or suspected temperature outside range, unknown temperature history, monitoring failure, or any condition creating uncertainty about product suitability.
- All alarms, alarm test failures, unexplained notifications, monitoring failures, or suspected excursions are investigated and documented on the Temperature Excursion / Alarm Investigation Form.

- Immediate actions: verify temperature, review data, inspect products, maintain temperature control when possible, quarantine affected/questionable products, mark Do Not Use, notify the Division Chief of EMS, and contact Hoxworth when suitability or final disposition is uncertain.
- Document corrective action and administrative review.

Module 8 - Blood Cooler, TIC Panel Conditioning, and Daily Operations

- Approved cooler: Credo ProMed Series 4 with six TIC panels.
- Rotational conditioning: panels frozen at -18 C or colder for at least 24 hours, conditioned in the refrigerator for 24 hours, and changed at 0800 and 2000 hours.
- Standard conditioning: panels frozen at -18 C or colder for at least 24 hours, verified fully frozen, staged according to validated process, and loaded using the approved configuration.
- Document TIC panel rotation, temperatures, panel set used, and discrepancies on the approved daily check or validation form.

Module 9 - Receipt, Initial Issue, Return, and Final Disposition Documentation

- Receipt: use the Blood Product Receipt, Inspection, and Initial Issue Log to document arrival, shipment verification, product inspection, seal/segment status, temperature documentation, initial storage, and issue into the cooler.
- Issue: document placement into HFPD operational EMS inventory and assignment to Squad 43/Blood 43.
- Return/continued use: daily check process for routine cooler return after normal operations; Return/Disposal/Final Disposition form when a product is removed, quarantined, returned to Hoxworth, discarded, or a concern is identified.
- Final disposition: document expiration, quarantine, return to Hoxworth, disposal, bin/box number if discarded, Hoxworth notification when applicable, and review/closure.

Module 10 - Blood Administration, Reactions, and Blood Center Notification

- Blood administration follows SWOP T700, HFPD Medical Director requirements, and Hoxworth requirements.
- Training includes pre-transfusion verification, immediate pre-transfusion inspection, unit identification documentation, patient monitoring, and clinical documentation.
- Personnel recognize suspected transfusion reactions and serious unexpected events temporally associated with transfusion.
- Suspected transfusion reactions or transfusion-transmitted disease concerns are documented on the Report of Adverse Transfusion Reaction to Blood Supplier form and reported according to the SOG.
- Post-distribution notifications, abnormal donor testing, product recall, or transfusion-transmitted disease concerns are escalated for lookback and notification.

Required Hands-On Skills and Demonstrations

Skill Station	Expected Performance	Verified By / Date
Blood Product Visual Inspection	Identify acceptable and unacceptable PRBC/plasma findings, including container integrity, label, expiration, Safe-T-Vue status, tamper-proof seal, attached segment, abnormal color, hemolysis, clots, particles, leakage, gas, swelling, and contamination concerns.	
Receipt and Initial Issue Documentation	Complete the Blood Product Receipt, Inspection, and Initial Issue Log using a sample shipment.	
Daily Check and Temperature Monitoring	Complete the Daily Check form, verify temperatures, check Safe-T-Vue/indicator status, review product location, and reconcile inventory.	
Temp Stick Application Use	Access current readings, review temperature history, interpret high/low/signal alerts, and describe notification/escalation.	
Alarm / Excursion Response	Respond to a simulated alarm or unknown temperature history, quarantine products, mark Do Not Use, complete the Temperature Excursion / Alarm Investigation Form, and identify notifications.	
TIC Panel Rotation and Cooler Pack-Out	Demonstrate rotational or standard conditioning workflow, verify six TIC panels, load the cooler, and document temperatures/panel movement.	
Return / Disposal / Final Disposition	Complete the return/disposal form for expired, quarantined, damaged, or Hoxworth-returned products, including bin/box number if discarded.	
Transfusion Reaction Reporting	Complete a simulated adverse transfusion reaction report and describe clinical actions and required notifications.	

Scenario-Based Evaluation

- Routine Hoxworth shipment received, inspected, documented, and issued into operational inventory.
- Shipment with missing segment, broken seal, abnormal appearance, or unclear temperature documentation.
- Beginning-of-shift daily check with normal temperatures and correct inventory.
- Temp Stick alarm with no confirmed excursion after temperature review.
- Confirmed/suspected temperature excursion requiring quarantine, notification, corrective action, and documentation.
- Cooler opened during deployment but products not administered; return/continued-use inspection documented.
- Blood administration with suspected transfusion reaction requiring product information preservation and supplier notification.

Competency Verification

Competency shall be verified before personnel are authorized to perform blood product duties. Verification may include written review, instructor observation, hands-on demonstration, and scenario-based evaluation.

Competency Element	Initial Training	Annual Refresher	Evaluator Initials / Date
Describes blood product workflow from receipt through final disposition	Required	Required	
Identifies inspection times and unacceptable product findings	Required	Required	
Verifies tamper-proof seal and attached segment status	Required	Required	
Uses Temp Stick app and explains notification/escalation	Required	Required	
Completes Daily Check form accurately	Required	Required	
Completes Receipt/Inspection/Initial Issue Log accurately	Required	As assigned	
Responds to alarm/excursion and completes required form	Required	Required	
Demonstrates cooler pack-out and TIC panel rotation	Required	Required	
Explains quarantine, return, disposal, and Hoxworth notification	Required	Required	
Documents administration and suspected transfusion reaction reporting	Required	Required	

Required Forms and Documentation Training

Form / Record	Training Emphasis
Blood Product Receipt, Inspection, and Initial Issue Log	Arrival from Hoxworth, inspection, storage, and issue into operational inventory.
Blood Product Daily Check Form	Beginning of shift, routine checks, and scheduled TIC panel rotations.
Temperature Excursion / Alarm Investigation Form	Alarm investigation, suspected/confirmed excursion, unknown temperature history, malfunction, power failure, or integrity concern.
Blood Product Return, Disposal, and Final Disposition Form	Removed from active inventory, quarantined, returned to Hoxworth, discarded, expired, damaged, or final disposition.
Report of Adverse Transfusion Reaction to Blood Supplier	Suspected transfusion reaction, transfusion-transmitted disease concern, or serious unexpected transfusion-associated event.
Equipment Qualification / Validation / Annual Recertification Records	Initial validation, revalidation, backup equipment, temperature devices, annual cooler recertification, and equipment changes.
Alarm Test / Maintenance / Calibration Logs	Alarm testing, equipment maintenance, probe/thermometer calibration, Temp Stick recalibration/replacement, repairs, and service events.

Ongoing Training, QA, and Program Updates

- Annual refresher training shall be completed by personnel assigned to blood program duties.
- Refresher training shall include inspection, storage/transport, Temp Stick use, daily documentation, alarm investigation, excursion response, quarantine, return/disposal, and reaction reporting.
- Additional training is required after significant SOG revision, Hoxworth requirement change, Medical Director directive, equipment change, recurring documentation issue, repeated alarm/excursion trend, or performance gap.
- The Division Chief of EMS or approved designee reviews training records, competency records, daily checks, temperature records, alarm investigations, corrective actions, receipt/issue/return/disposition records, and reaction reports as part of QA/CQI.
- Training and competency records are retained according to the Blood Products Operating Guideline.

Training Completion Record

Hebron Fire Protection District
Pre-Hospital Blood Transfusion Program

Employee Name	
Rank / Role	
Initial Training Date	
Annual Refresher Date	
Instructor / Evaluator	
Competency Result	Pass / Remediation Required
Authorized Blood Program Functions	

Instructor/Evaluator Signature: _____ Date: _____

Employee Signature: _____ Date: _____

Appendix A - Blood Product Inspection Quick Reference

Inspection shall be performed upon receipt, during routine storage/daily checks, immediately before transfusion, and before return/reissue or continued use when a product has been accessed, removed, quarantined, returned to Hoxworth, or otherwise requires disposition.

Inspection Area	Acceptable / Verify	Do Not Use / Quarantine if Present
Container / ports / seals	Container intact; ports intact; tamper-proof seal present and unbroken when applicable.	Leak, broken port, damaged seal, compromised container, or broken/missing tamper-proof seal.
Segment	Properly attached segment present and not removed.	Missing, removed, detached, cut, leaking, or damaged segment unless specifically directed by Hoxworth under emergency instructions.
Label / ID	Readable label; product type, unit ID, ABO/Rh if applicable, and expiration verified.	Unreadable/missing label, mismatch, expired dating, or unresolved identification discrepancy.
Temperature history	Acceptable documented storage/transport history; Safe-T-Vue or indicator acceptable.	Activated/failed indicator, unknown temperature history, excursion, or unresolved alarm/monitoring concern.
PRBC appearance	Deep red to maroon cells; small clear to amber supernatant may be present.	Pink/bright-red supernatant, brown/purple/black discoloration, clots, particles, hemolysis, gas, swelling, or contamination concern.
Plasma appearance	Clear to slightly hazy; pale yellow/straw to amber color.	Red/pink discoloration, abnormal color, particulate matter, fibrin clots, cloudiness inconsistent with expectations, gas, swelling, or contamination concern.
Final decision	If all criteria acceptable, continue per SOP and document on the appropriate form.	If any concern exists, quarantine, mark Do Not Use, notify per SOP, and document.