**Purpose**

To provide instructions on the appropriate usage of the Credo Coolers. This includes preconditioning the coolers, packing the appropriate blood products, activating the temperature recorder, and cooler return processing.

**Policy**

The Credo coolers are used for storing blood products that require storage at 1oC to 6oC. They must be appropriately preconditioned before use and can hold a maximum of four red blood cell and/or plasma units or 2 Whole Blood units. When a cooler is packed, a temperature recorder will also be placed in the cooler to record temperatures allowing assessment of blood product return to inventory or discard.

**Equipment**

* Credo Series 4 EMT Coolers
* Temperature recorder placed in a sealable, watertight plastic bag
* Credo Cooler Log

**Procedure**

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| **Step** | **Action** | **Related Documents** |
| **Credo Specifications** |
| 1 | **Credo Cooler System consists of 3 parts*** TIC System: internal base and lid which are “preconditioned” prior to blood storage and transport
* VIP System: **V**acuum **I**nsulation **P**anel base with hinged lid
* Outer bag with zipper closure lid

**Overview*** Light weight pack designed for use by emergency medical staff
* Holds blood and other chilled medical supplies for 24+ hours even in harsh ambient conditions.
* Reusable, iceless medical container has removable two-liter TIC Insert that is preconditioned in a <-18ºC freezer.

**Ensuring Performance*** All components are clean and not damaged
* Avoid opening container unnecessarily
* Bag has not been torn or damaged during use
* Both TIC and VIP lids are secure before sealing for transport
* Avoid removing VIP base from the outer bag unless replacement or cleaning are required
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| **Conditioning the Credo Series 4 EMT Cooler** |
| **Step** | **Action** | **Related Documents** |
| 1 | **Prepare a Credo Cooler Log.*** Record cooler number
* Record Tech ID, date and time on the Cooler Log as indicated.
* Comments section available throughout process for documentation.
 | Credo Cooler Log |
| 2 | **Inspect Credo Cooler:*** Verify VIP is not expired
* Inspect for punctures, scratches, bends, tears and/or dents
* Ensure zipper is functioning and closes securely

**Condition the cooler:*** Remove the black, inner container from cooler (Box and Lid)
* Place it in a minimum -18°C freezer
* Place lid flat under the base to ensure proper gel insulant distribution
* Leave in freezer for at least 8 hours (no maximum time)
* Record Tech ID, Date/Time on Cooler Log under “Conditioned” for time placed in freezer.
* Clip cooler log to the door of the freezer.

**Prepare cooler for loading**:* Select products following the steps below before removing cooler from freezer
* Verify cooler has been in freezer for >8 hours
* Record ALNW/Medic One location on the top of the Credo Cooler Log
* Remove the black container base from the freezer
* Record Tech ID, Date/Time removed from freezer on cooler log.
* Leave base at room temperature for 10 minutes
* After 10 minutes, remove cooler lid from the freezer and leave both the base and the lid at room temperature for an additional 10 minutes
* Cooler should be packed within 25 minutes from freezer removal.
 | Credo Cooler LogMedic One |
| **Loading Credo Series 4 EMT Cooler**  |
| 1 | Select products per policy. All blood products must have different unit #s. Do not place products from same donor in one cooler.* Prepare and attach UNXM sticker on cellular components and Transfusion Record.
* Prepare and attach ALNW or Medic One Unit Record
* Record unit number on the form using a sticker and aliquot designation
* Check product type box: RBC, Plasma, or Whole Blood
	+ LTP: add Low Titer Plasma sticker
	+ LTWB: add Low Titer Whole Blood sticker
* Record tech number for preparer and reviewer.
* **NOTE: the above steps are to be done in advance so there are always units prepared**
* Transfer products to appropriate location and cooler in LIS
* Ensure products are at or below 4ºC prior to loading cooler.
* Cooler log: Attach sticker and aliquot, if applicable
 | Changing Blood Product Location in SQStock Trauma Pack MaintenanceAirlift Northwest (ALNW)Medic OneUsing TAG for Emergency Release of Blood Products Credo Cooler Log |

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| **Loading Credo Series 4 EMT Cooler (continued)** |
| **Step** | **Action** | **Related Documents** |
| 2 | **Whole Blood and Red Blood Cells:*** Label one segment with unit number, including aliquot designation.
* Place in a glass 12x75 tube
* Store in the corresponding ALNW or Medic One location of the RBC segment rack in TSL.
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| 3 | **Temperature recorder:*** Prepare per SOP
* Record temperature recorder number on Cooler Log with Tech ID and Date/Time
 | Using the Marathon MicroDL Temperature Data Loggers |
| 4 | **2nd tech reviews ALNW or Medic One “pack”:*** Unit numbers match between face labels, unit cards, and Credo Cooler log.
* Verify LIS location transfer, Transfusion Record and unit record.
* Temperature recorder displays **REC**
* Cooler expiration is 7 days from prepared date or 2 days prior to expiration of shortest date product, whichever is sooner.
* Record review on Credo Cooler Log and ALNW or Medic One unit cards
 | Credo Cooler LogALNW Unit RecordMedic One Unit Record |
| 5 | Load Credo Cooler:* Verify unit numbers and data logger number to be loaded against the Credo Cooler Log
* 2 RBC and 2 Plasma:
* Units lay on a side with ports alternating pointing right and left.
* Plasma units are placed on the outside with their paperwork touching the cooler side while the RBCs are placed in the middle. The RBC paperwork is facing the plasma unit so that the data logger is not being insulated.
* Do NOT lay units flat, stacking from the bottom
* Place data logger between middle units.
* 2 Whole Blood:
* Pack with paperwork touching the cooler.
* Place data logger between the units. Place additional temperature monitor supplied by medics between the units (if requested).
 | Using the Marathon MicroDL Temperature Data LoggersCredo Cooler Log |
| 6 | Package cooler* Place the lid of the black, inner container onto the base.
* Place the inner black cooler into the outer VIP.
* Close the white lid, ensuring it sits flush on the base
* Secure it using the Velcro strap.
* Create loop in the end of the strap for easy opening
* Zip shut the cooler.
* Attach a tie strip to the zipper handles to secure the closure.
* Place a piece of tape on top of outer cooler bag with the date cooler needs to be returned
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| 7 | Record issue/release information on the Cooler Log.* Post Cooler Log in TSL.
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| **Step** | **Action** | **Related Documents** |
| **Monitoring Issued/Released Coolers** |
| 1 | Credo coolers will return to TSL:* + If cooler has remained in refrigerated storage:
		- 7 days from cooler prepared date **OR**
		- With 2 days remaining on products (whichever is shortest).
		- On pre-scheduled days
	+ If refrigerated storage is unavailable the cooler must be returned after being out of storage for 24 hours.
	+ If Credo cooler is opened
 | Credo Cooler Transport Schedule |
| 2 | Daily:* + TSL staff will examine Credo Cooler Log(s) for expiration date
	+ See Schedule for Cooler Exchange.
	+ Outside weekly scheduled exchange:
		- Contact facility to schedule return and replacement prior to expiration.
		- Record on cooler log.
 | Credo Cooler Transport Schedule |
| **Returned Coolers** |
| 1 | When the cooler is returned: * Record the time and date of return and determine if the cooler has been opened by examining the tie strip.
* Note OPENED or NOT OPENED on the Cooler Log.
* If cooler was opened and products were transfused, make sure all documents were filled out correctly. Document Flight # or Run # if patient was not admitted to HMC.
* Remove tie strip, if present, and take internal temperature using Fluke Thermometer or another calibrated thermometer
* Place wire of fluke thermometer between the units
* Re-cover the cooler and wait for temperature on display to settle
* Document temperature on log in “comments” section
* Unpack the cooler
* Note Recorder status as Alarm or No Alarm
* Notify staff trained in downloading data when data logger is ready for download
 | Credo Cooler Log |
| 2 | Reconcile cooler inventory:* Compare product to Credo Cooler Log.
* Record “In Cooler?” Yes (Y) or No (N)
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| **Returned Blood Products** |
| 3 | Using Blood Status Update:* Quarantine all units pending review using appropriate return code
* Transfer location to “H” in Sunquest
* Place temperature recorder in Quarantine with components.
* Discard Transfusion Records and **blank** Unit Cards if units are close to expiration, otherwise save intact for future cooler exchanges
* Remove segments from rack, attach to unit for future use.
* Record “Quarantine” Yes, Tech ID and date on the cooler log.
 | Changing Blood Product Location in SQQuarantine of Blood ProductsSQ Blood Status Update |
| 4 | Staff trained in downloading of temperature recorder data and Credo Cooler Log:* Review data
* Approve the release of acceptable products from Quarantine and store in stock inventory.
* Any staff member can remove units from quarantine and return to inventory once data has been reviewed
* Record “Data Downloaded and Reviewed: Tech ID/Date/Time”
* Investigate any paperwork discrepancies
	+ *Example: Unit card completed but unit in cooler*
* Complete QIM for units found to be unacceptable.
* Discard units or return to inventory after consultation with TSL Manager and/or Medical Director
 | Blood Product Storage Policy Using the Marathon MicroDL temperature data loggersQP: Management of Nonconforming Events |
| **Step** | **Action** | **Related Documents** |
| **Transfused Blood Products** |
| 5 | Process transfused blood products from unit cards, Transfusion Records and Credo Cooler Log:* Cooler Log: Answer “Transfused at another facility” question
* Yes if patient **not** admitted to HMC
* No if patient admitted to HMC
* Apply EPIC/Sunquest sticker or hand write patient information in bottom right hand corner of cooler log
* Perform allocation. Issue location = ALNW or Medic One sites
* Staple Unit Cards to the Credo Cooler Log
* Staple temperature data to Credo Cooler Log
* HMC Patients: Send original transfusion records and post Transfusion Records to Enterprise Records and Health Information (ERHI)

*Note: Transfusion Records for transfused products will be returned to TSL with the unit cards but TSL will forward the transfusion record to ERHI after verifying record is complete with date/time, signatures, and has patient information via label or handwritten across the top. ALNW and Medic One have a separate record of transfusion.** Non-HMC Patients: Staple all Transfusion Records to Credo Cooler Log and Unit Cards
 | Compatibility ProcessAirlift NorthwestMedic OneSQ Blood Order Processing Test Result Guide |
| **All Returned Coolers** |
| 6 | Obtain 2nd tech review of log:* Verify segments have been pulled from Blood Location Rack
* Verify unit location of H if in inventory and unit is in “Available” status.
* Verify unit issued if transfused
* Verify all boxes have date/time and tech ID
* Verify “transfused at another facility” has correct answer circled
* If transfused at outside facility, ensure flight or run number is listed
* Verify back of unit card is completed on units that were issued
* Verify Physician name is listed on unit card on units that were issued
* Verify patient information on bottom of cooler log if units were issued
 | SQ Blood Order ProcessingSQ Using Blood Bank InquiryUsing the Marathon Micro DL Temperature Data Loggers |
| 7 | File cooler log:* in the Trauma Log Notebook if units have been issued
* in the Credo Cooler Notebook if units have **not** been issued
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| **Storage and Cleaning Credo Components** |
| 1 | Upon return: Inspect and clean Credo Cooler |  |
| 2 | **Inspection:**Examine all components of the Credo Cooler to ensure integrity:* Tears
* Crush damage
* Zipper not functioning
* Loose or broken straps
* Lids fit securely

Quarantine coolers that fail inspection and document on a QIM. |  |
| **Step** | **Action** | **Related Documents** |
| **Storage and Cleaning Credo Components (continued)** |
| 3 | **Cleaning:**Lid and Base:* Clean using warm water and soap or alcohol. Disinfect with gray wipes
* Do NOT use abrasive cleaners, acetone, or extreme heat

Outer bag and liner:* Damp rag with soap or alcohol
* Use bleach solution or gray wipes if excessively bloody
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| 4 | **Storage and Rotation:**Lid and Base: Store in a -18°C or colder freezerOuter Bag and Liner: Store at Room Temperature |  |

**References**

Credo Cooler Reference Manual

Standards for Blood Banks and Transfusion Services, Current Edition, AABB, Bethesda, MD