PROCEDURE
Corewell Health East - Manual Temperature Monitoring - Blood Bank

This Procedure is Applicable to the following Corewell Health sites:
Corewell Health Beaumont Grosse Pointe Hospital, Corewell Health Beaumont Troy Hospital, Corewell Health Dearborn Hospital, Corewell Health Farmington Hills Hospital, Corewell Health Taylor Hospital, Corewell Health Trenton Hospital, Corewell Health Wayne Hospital, Corewell Health William Beaumont University Hospital (Royal Oak)

Applicability Limited to: N/A

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Functional Area: Clinical Operations, Laboratory

Lab Department Area: Lab - Blood Bank

1. Principle

A. Under normal operations, the temperatures of storage devices (e.g. refrigerators, freezers, and platelet incubators) are recorded continuously by temperature recording charts and/or a wired or wireless continuous monitoring system (i.e. REES, Temp Trak). However, in some cases, the temperatures must be recorded manually.

B. All blood and blood components must be stored at an appropriate temperature to maintain viability and function.

C. The appropriate temperature ranges for all Blood Bank storage devices are defined in the Quality Control section of Transfusion Medicine policy**,** *Corewell Health East - Response to an Alarm Condition - Blood Bank***,** for your specific site**.** For Wayne and Canton refer to Laboratory policy, *CHE Laboratory Equipment*.

D. Initiation of Manual Temperature Monitoring:
   1. Temperatures must be monitored manually every 4 hours if the storage device unit is functional (internal temperatures are within acceptable range), but the temperature monitoring device/charts or alarm systems are faulty/not operational.
   2. Temperatures must be monitored manually every 4 hours whenever blood products/reagents are moved to an unmonitored storage device.
   3. A Variance should be written whenever manual temperature monitoring is initiated due to chart/alarm failures.

E. Royal Oak only:
   Initiation of Manual Temperature and/or LN_2 Level Monitoring:
   Temperatures and/or LN_2 levels must be monitored manually every 4 hours in the following situations:
   1. If the Rees is not operating. In this case, manual temperature monitoring of all Blood Bank storage devices is required.
   2. If the Rees has been alarming due to abnormal temperature readings of a storage device for more than 1 hour, it may be necessary to initiate manual temperature monitoring of the

storage device if so directed in Transfusion Medicine policy, Corewell Health East - Response to an Alarm Condition - Blood Bank - Royal Oak.

3. If the liquid nitrogen storage device alarm is activated, and manual LN2 level and temperature monitoring is indicated as directed in Corewell Health East - Response to an Alarm Condition - Blood Bank - Royal Oak.
4. A variance should be submitted if manual temperature and/or LN2 level monitoring is required.

F. Taking the Temperature / LN_2 level of a Storage Device:
   1. Once the determination is made to initiate manual temperature monitoring:
      a. The initial temperature will be taken using the internal thermometer(s) stored inside the device.
      b. All subsequent temperatures will be observed from the storage device's external temperature display.
      c. If the device does not have an external display, then the internal temperature will be taken using the internal thermometer(s) stored inside the device.
   2. Royal Oak only:
      a. **Checking the LN_2 Level and Temperature of the Liquid Nitrogen Storage Device:** The Custom Biogenic System 2200 LN_2 Controller (Series 2200) is used to monitor the varied characteristics of liquid nitrogen storage. While Rees monitors the temperature of the Dewar, the controller panel monitors both the temperature of the unit and the lid, as well as the level of LN_2 within the Dewar walls. Whether the LN_2 is at 1 inch or 20 inches, the temperature of the unit will change very little. Once the LN_2 is gone, the temperature of the unit will drop rapidly. Therefore, LN_2 levels are equally as important as temperature readings.

G. Cessation of Manual Temperature and/or LN_2 Level Monitoring: The cessation of manual temperature monitoring is appropriate as described below:

Reason That Manual Temperature and/or LN_2 Level Monitoring was Initiated	**Appropriate Time at Which to Cease Manual Temperature Monitoring**
REES, Temp Trak or temperature recording chart was not operating.	When REES, Temp Trak or temperature recording chart are operating properly.
The storage device was alarming due to abnormal temperature readings for more than 1 hour.	When each of these conditions are met: • The alarm has been enabled. • 2 consecutive manual temperatures are within the appropriate temperature range, so that the appropriate temperature has been maintained for 8 hours. • The Rees, Temp Trak has not alarmed within 8 hours. • If supplies were moved to another location due to abnormal temperature readings, after the above 8 hours of manual readings have passed, the temperature must remain acceptable for at least 24 hours before supplies can be moved back. This can be verified by no alarm by REES or Temp Trak, or by chart recorder.
A REES or Temp Trak alarm was inactivated as described in site specific Transfusion Medicine policy, *Response to an Alarm Condition*	

Royal Oak only: The liquid nitrogen storage device was in alarm and replenishing the LN_2 supply did not resolve it, or the LN_2 is not available.	When each of these conditions are met: • The storage device is hooked up to a sufficient LN_2 source. • The storage device is within the acceptable temperature and LN_2 level range for at least 4 hours (documenting one additional manual temperature and LN_2 level in the process). • The storage device is powered on, and no alarms are activated during the 4 hour period.

2. **Responsibility**
   Personnel who have completed the competency requirements will perform these tasks.

3. **Reagent/Equipment Needed**
   A. Internal thermometers in water or 5% glycerol (refrigerators), 10% glycerol (freezers), sand (ultra-low freezers) or air (ambient temperature).
   B. Digital timer.
   C. Cooper-Atkins TempTrak© system.
   D. Rees Centron Presidio (Royal Oak only).
   E. Custom Biogenic System 2200 LN_2 Controller (Series 2200) (Royal Oak only)

4. **Procedure**
   A. Obtain a copy, or copies of the *Manual Temperature Monitor Form* or *Manual LN_2 Level Temperature Monitor Form*, as appropriate.
      1. In most cases, only 1 copy of the form will be required to record the manual temperatures for the affected storage device. (Royal Oak: If the Rees is not operational, a separate copy will be required for each Blood Bank storage device).
      2. A separate form is required for each storage device being monitored.
   B. Begin to document the top of the *Manual Temperature Monitor Form* or the *Manual LN_2 Level & Temperature Monitor Form* (Royal Oak) with the following information. This information may be obtained from the Quality Control section of Transfusion Medicine policy, *Corewell Health East - Response to an Alarm Condition - Blood Bank*, for your specific site, or for Wayne and Canton the Laboratory policy, *CHE Laboratory Equipment*.
      1. Rees Node/TempTrak Sensor #, if applicable.
      2. Storage device name/Asset tag #.
      3. Items stored.
      4. Acceptable temperature range.
      5. Technologist's initials.
      6. The date and time that manual temperature monitoring is initiated.
   C. Take the temperature of the storage device.
      1. The initial temperature should be taken using the internal thermometer(s) stored inside the device.
      2. All subsequent temperatures should be observed from the storage device's external temperature display.
      3. If the device does not have an external display, then the internal temperature may be taken using the internal thermometer(s) stored inside the device.
      4. Royal Oak: If the liquid nitrogen storage device is being monitored, also check the LN_2 level. The temperature and LN_2 level of the liquid nitrogen storage device is displayed on the Custom Biogenic System 2200 LN_2 Controller.
   D. Record the date, time, and temperature of the storage device in the space provided on the

appropriate form.

E. Set a digital timer for 4 hours. Document the appropriate form with a check mark and your initials to indicate that the timer was set.
F. The digital timer will be placed with the form and should remain at an agreed upon location, so that the alarm will be easily heard when it sounds.
G. When the alarm sounds, repeat steps C to F.
H. Continue to take manual temperatures and/or LN_2 levels until appropriate, as described in the Principle section G – *Cessation of Manual Temperature and/or LN_2 Level Monitoring*.
I. Submit all documents to the Supervisor/ Lead Medical Technologist for review.

5. **Revisions**
Corewell Health reserves the right to alter, amend, modify, or eliminate this document at any time without prior written notice.

6. **Procedures Superseded and Replaced**: This procedure supersedes and replaces the following procedures as of the effective date of this procedure: [33797 Corewell Health East – Manual Temperature Monitoring – Blood Bank – Dearborn, RC.BB.QC.PR.309 Royal Oak paper policy: Manual Temperature Monitor]

7. **References**
A. AABB Technical Manual, current edition.

8. **Procedure Development and Approval**

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9. **Keywords**
Not Set