

# PROCEDURE

**Title:** Freezer Alarm Policy

**Procedure #:** 2015BLOODBANK70

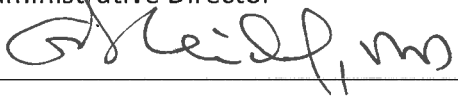
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Date: 6/12/2015

Title: Laboratory Administrative Director

Accepted by:  Date: 6/12/15

Title: Laboratory Medical Director

Date Patient Testing Implemented: 6/12/2015

Review of procedure every two years

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

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Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

Discontinued testing date: \_\_\_\_\_

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**Policy Title: Freezer Alarm Monitoring Policy**

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**Audience: Laboratory Staff**

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**References and Citations: AABB Technical Manual CURRENT Edition, Standards CURRENT Edition**

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I. POLICY

The quality of blood products is ensured by keeping them stored at the proper temperature.

- A. There must be a system to continuously monitor the temperature of the freezer.
- B. The thermometer and alarm should be checked periodically to ensure they are functioning properly.
- C. In the event of an emergency (power failure, freezer failure, etc.) an approved plan for the storage of the products in an alternate freezer will be initiated.
- D. Daily checks
  - 1. Read and record temperature of internal thermometer
  - 2. Read and record temperature of LCD display
  - 3. Comparing the temperature in #1 and #2 with the "automatic recorder" on exterior of the freezer
  - 4. Check audible alarm
- E. Quarterly checks
  - 1. Check high/low activation temperatures

II. PROCEDURE

A. **EMERGENCY ACTIONS**

- 1. When the alarm sounds
  - a. Press the "□" button to silence the audible alarm
  - b. Check temperature of freezer
  - c. Check if door is ajar
    - 1) If door is ajar
      - a) Close door
      - b) Monitor temperature, is it returning to normal?
        - i. Yes, proceed to step g
        - ii. No, proceed to step d
    - 2) If door is not ajar
      - a) Proceed to step d
  - d. Call Maintenance Department for a "STAT" evaluation and/or repair
  - e. Move contents of freezer to the chemistry freezer (-18°C) if the temperature can not be returned to -18°C or lower quickly
  - f. Monitor and record the temperature of Chemistry Freezer every 4 hours while components are stored there (See example log following procedure)
  - g. Press "Δ" and "∇" buttons simultaneously, hold for 5 seconds to reset alarm
  - i. Document all temperature fluctuations
    - 1) Record on freezer log
    - 2) Record on chart

**NOTE: If temperature of freezer is within limits and the problem is with the internal thermometer/probe, components may remain in the freezer but the temperature must be monitored/recorded every 4 hours until problem is resolved**

2. Alarm Malfunctions
  - a. Check units in freezer
    - 1) Have the units started to thaw
  - b. Move units immediately to Chemistry's freezer
    - 1) Monitor Chemistry freezer every 4 hours
  - c. Contact the Pathologist and Supervisor immediately
    - 1) Medical Director will decide final disposition of the units
    - 2) Medical Director/Supervisor will decide if and when One Blood needs to be contacted
  - d. Contact Maintenance department for a "STAT" evaluation and/or repair

**B. PERIODIC TESTING**

1. Daily
  - a. Read and record temperature using the thermometer
    - 1) Acceptable range  $< -18^{\circ}\text{C}$
    - 2) Notify supervisor if temperature is out of range
  - b. Read and record temperature of the LCD display
  - c. Read and record temperature of the chart recorder
    - 1) Readings must compare  $\pm 1^{\circ}\text{C}$ 
      - a) If not compare both the thermometer and the recording thermometer against a NIST thermometer
      - b) Contact Maintenance if the recording thermometer is the problem
      - c) Discard the thermometer if it is the source of the problem
    - 2) Document any adjustments on log
    - 3) Notify supervisor
  - d. Check audible alarm
    - 1) Press " $\Delta$ " and " $\square$ " buttons simultaneously, hold for 5 seconds
      - a) Alarm will sound
      - b) If alarm does not sound notify Maintenance Department for a "STAT" evaluation and/or repair
      - c) Notify supervisor
      - d) Chart recorded chart is changed every Monday morning
    - 1) Remove old chart - date and initial
    - 2) Stamp new chart with "Brandywine Hospital and Trauma Center" stamp
    - 3) Date and initial new chart
    - 4) Place new chart on recorder, lining up pen on correct day and time
2. Quarterly
  - a. Reagents and special supplies
    - 1) Reagents
      - a) Ethylene glycol (anti freeze)
    - 2) Thermometer that will read between  $-30^{\circ}\text{C}$  to  $-14^{\circ}\text{C}$
    - 3) Container for anti-freeze
  - b. Procedure
    - 1) Record on maintenance log
      - a) Initial temperature of the internal thermometer

- b) Temperature displayed on the chart recorder
    - 2) Fill the container ½ way full with anti-freeze
      - a) Keep a small amount of anti-freeze at room temperature
    - 3) Place the half full container into the freezer
    - 4) Allow temperature of anti-freeze to equilibrate to the freezer temperature
    - 5) Use an NIST certified or traceable thermometer for testing
    - 6) Place the thermocoupler and the thermometer (from step 5) into the anti- freeze container
    - 7) Slowly add small amounts of the room temperature anti- freeze to the "cold" container
    - 8) Gently agitate container, this will warm the cold anti-freeze slowly
    - 9) Continue to add small amounts of the room temperature anti-freeze until the alarm sounds
    - 10) Record the temperature at which the alarm sounds on the log - Acceptable  $\leq -18^{\circ}\text{C}$
    - 11) Complete log, include:
      - a) Date
      - b) Initials of person doing the test
    - 12) Return the freezer and alarm system to their normal conditions
    - 13) Take appropriate corrective actions if:
      - a) Alarm sounds to high ( $> -18^{\circ}\text{C}$ )
        - 1) Call Maintenance
        - 2) Record any corrections made
        - 3) Notify supervisor
  - c. Clean exterior with a mild disinfectant
  - d. Record on Maintenance Log
3. Yearly
- a. Clean condenser
    - 1) Maintenance department schedules and performs this preventive maintenance

C. PROCEDURE NOTES

1. Freezer malfunctions - common causes
  - a. Freezer door not properly shut
  - b. Low level of refrigerant
  - c. Compressor failure
  - d. Dirty heat exchanger
  - e. Loss of electrical power
2. When using an alternate freezer for back up, the temperature of this freezer **MUST** be recorded every 3-4 hours. **Monitoring times may NOT EXCEED 4 hours between readings!**
3. Use of and all maintenance performed is in compliance with the manufacturer's specifications.
4. Equipment will need to be revalidated after any repair.
5. Follow-up review of any evaluation and/or repair is done by the supervisor and is reported to the Pathologist and at the QA meetings.