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Automated Chemistry Refrigerator/Freezer Backup Procedures - Royal Oak

Document Type: Procedure

I. PURPOSE AND OBJECTIVE:

Should a refrigerator or freezer fail, temperature may exceed acceptable limits for storage of reagents, calibrators, quality control materials, patient samples, or other supplies. This procedure outlines steps to be taken to preserve these materials if possible, determine the extent of adverse effects, and document evaluation of contents before use in patient testing.

II. EQUIPMENT:

A. Automated Chemistry Core Lab Walk-in, Tag # M163168
B. Automated Chemistry Stat Lab Walk-in, Tag # 213452
C. Glass, double door urinalysis refrigerator, Tag # 116561
D. White urinalysis refrigerator, Tag # 1038445
E. CAP freezer, Tag # W077093
F. Silver 2-door storage room freezer, Tag # 351721
G. White storage room freezer, Tag # 1038629
H. Large silver Stat Lab freezer, Tag # 388509
I. Small Stat Lab freezer, Tag # 381929

III. STAND-ALONE EQUIPMENT:

If temperatures exceed acceptable limits, transfer contents to a functional refrigerator or freezer as

appropriate. Contact Facilities x16300 to initiate service request, providing location and property tag number. As described below, contact the Manager or Medical Technologist (MT) lead and technical director, who will determine extent of risk and steps to evaluate contents of the refrigerator/freezer for adverse effects before use.

IV. CORE LAB WALK-IN REFRIGERATOR PROCEDURE:

A. The Core Lab walk-in refrigerator is maintained between 2-8°C. The current temperature is displayed to the right of the walk-in door. The walk-in refrigerator is connected wirelessly to the hospital TempTrak system. The TempTrak system monitors the temperature every 5 minutes and records the temperature via website every 15 minutes. Temperature can be seen online at the TempTrak website.
    1. RO campus
    2. Username: CHEM
    3. Password: 18064

B. There is a main system and a back-up system, both of which are connected to emergency power. Although there is no audible alarm, should the main system fail, hospital security is automatically notified. They in turn notify Facilities. Facilities will notify the department by paging the pager located in Urinalysis. The backup system automatically activates when the refrigerator temperature reaches 8°C. Should the back-up system fail, there will be no lights inside the walk-in refrigerator. Facilities checks the backup system every 6 months.

C. Should the system fail:
    1. Temperature reaches 8°C as evidenced by a spike in the temperature chart and a yellow indicator light on the right side of the electrical panel.
    2. The back-up system will automatically turn on.
    3. Security is automatically notified when the temperature rises to 8°C. Security calls Facilities. Facilities will page the pager in the Urinalysis department. This sequence of calls will take place as soon as the main system fails and may happen without laboratory notification.
    4. Should the back-up system fail, call Facilities at x16300 to report problem and initiate service request. The service request is STAT. Facilities may already be notified or on site due to the primary refrigeration failure.
    5. Notify the other department's appropriate supervisor or staff of our need for temporary storage.
    6. Only if the back-up system fails should contents of the refrigerator be moved. Move all reagents, calibrators, quality controls, patient samples, etc. to any of the following walk-in refrigerators that are maintained between 2-8°C:
        a. 2nd floor Microbiology: # 21G0330
        b. 2nd floor Special Testing: #21G0090
        c. 4th floor off main hallway labeled "Cold Room": # 41G0220

7. Clearly label materials in walk-in refrigerators with any contact information should there be a problem.
8. If acceptable temperature ranges of the Core Lab Walk-in refrigerator are exceeded and the contents must be moved, see a supervisor, medical director or technical director. Contents must be evaluated for possible adverse effects, with documentation of results (see below). Send an email to the department manager and all Lead Medical Technologists (MT).
9. Move all materials back to the correct location once refrigerator is repaired.

V. STAT LAB WALK-IN REFRIGERATOR PROCEDURE:

A. The Stat Lab walk-in refrigerator is maintained between 2-8°C. The current temperature is displayed to the right of the walk-in door. The walk-in refrigerator is connected wirelessly to the hospital TempTrak system. The TempTrak system monitors the temperature every 5 minutes and records the temperature via website every 15 minutes. Temperature can be seen online on the TempTrak website.
    1. RO campus
    2. Username: CHEM
    3. Password: 18064

B. When the temperature is outside the assigned ranges, a page will be sent to the Facilities service engineers and they are required to respond. If the Facilities personnel do not respond within 30 minutes, an automatic page is sent to the Lead MT overseeing the stat lab. Facilities will be paged is the temperature falls below 1.9°C or rises above 8°C. The display will audibly alarm if the temperature falls below 1.7°C or rises above 10°C. The horn is initiated after a time delay of 60 minutes. There is also an indicator light for the walk-in, which displays current conditions. A green light indicates a safe system. A blinking red light indicates an abnormal condition and time delay activation. A solid red light indicates an alarm condition where the horn will sound.

C. Should the system fail:
    1. Reset the alarm and release the relay by moving the Alarm Control Switch toward the red light. The red light will remain on to indicate an alarm condition.
    2. Call Facilities at x16300 to report the problem and initiate a STAT service request. Facilities is available 24/7 to respond and fix refrigeration problems. (Stat Lab information for Facilities: 3 Central Room 32B0060, RC#73106, Div 01, Stat Lab Walk-in refrigerator property tag 213452) Write down the reference/work order number from Facilites and affix to glass door.
    3. Alert the Blood Bank supervisor or staff that you will need to share their refrigerator.
    4. All items in the refrigerator need to be moved. All items: reagents, calibrators, Quality Control (QC) materials, patient samples (from at least the past 3 days), phlebotomy tubes, etc. should be moved to the Blood Bank walk-in refrigerator or other refrigerator as directed. Take caution to record locations of refrigerators that are

being used as back up.

5. If acceptable temperature ranges of the Stat Lab Walk-in refrigerator are exceeded and the contents must be moved, see a supervisor, medical director or technical director. Email the department manager and all Lead MTs. Contents must be evaluated for possible adverse effects, with documentation of results (see below).
6. After Facilities has resolved the problem and the temperature is stable within the specified range (2-8°C), return all items to the Stat Lab Walk-In.

VI. EVALUATION OF CONTENTS OF FAILED REFRIGERATORS AND FREEZERS FOR ADVERSE EFFECTS:

A. The Chemistry Manager, Lead MTs, and medical and technical directors determine the risk to patient testing when temperatures have exceeded acceptable limits for reagents, calibrators, controls, supplies, patient samples, and other supplies. Considering such factors as how long the contents experienced unacceptable temperatures, and by how much acceptable temperature limits were exceeded, supervisors and directors will initiate evaluation of contents of failed equipment before use in patient testing as follows, and the results of this evaluation are documented using the backside of the temperature log.

B. After equipment is functional and items are returned, each lot/shipment must be clearly tagged immediately to indicate that QC testing must be performed on the next pack/bottle of reagent or control material removed from refrigerator/freezer storage prior to patient testing.

C. Once QC is documented acceptable for the first pack/bottle in a particular lot, the remainder which experienced the temperature failure can be deemed to be acceptable, and warning tags are removed for the other lots/shipments of that item that experienced excessive temperatures.

D. Calibrators used on automated equipment must pass manufacturer's calibration criteria.

E. Where temperature failure involved stored patient samples, these will be disposed of according to stability guidelines in the Lab Test Directory.

Approval Signatures

Step Description	Approver	Date
Medical Director	Ann Marie Blenc: System Med Dir, Hematopath	5/18/2023
Lab Chemistry Best Practice Committee	Caitlin Schein: Staff Physician	5/17/2023

Policy and Forms Steering Committee Approval (if needed)	Colette Kessler: Mgr, Division Laboratory	5/11/2023
Lab Chemistry Best Practice Committee	Qian Sun: Tech Dir, Clin Chemistry, Path	5/9/2023
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