



INTEGRATED BIOREPOSITORY OF H3AFRICA UGANDA

MAKERERE UNIVERSITY

COLLEGE OF HEALTH SCIENCES

STANDARD OPERATING

TITLE: **EMERGENCY PROCEDURES FOR FREEZER AND REFRIGERATOR FAILURE**

PAGE
1 of 6

SOP #: **IBRH₃AU-SOP-EQT-003.1**

Effective Date: **09/01/2014**

Next Rev: **DEC 2015**

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VALIDATION AND RETIREMENT

| | NAME | DATE |
|---------------|------|------|
| Validated by: | | |
| Retired by: | | |

ACKNOWLEDGEMENT OF READING AND UNDERSTANDING

I have received and understood the training on this SOP. If I have not understood the training I have asked the trainer to retrain me to ensure that I completely understand all the requirements.

| | NAME | SIGNATURE | DATE |
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1. INTRODUCTION

The storage facility (and storage equipment) is a key element in the operation of a biorepository. In the case of freezer or refrigerator failure, appropriate action must be taken to transfer the biospecimens to backup storage facilities/freezers or refrigerators without damage to biospecimen or loss of biospecimen identity and tracking.

2. PURPOSE

Appropriate storage is a core requirement for the operation and success of a biorepository. On occasion equipment may fail. The purpose of this SOP to describe emergency procedures in place to ensure that loss and damage to the collection is avoided or minimized.

3. SCOPE

This standard operating procedure (SOP) outlines processes that are in place when freezers or refrigerators fail and initiation of biospecimen transfer to back-up equipment and/or back up facilities.

4. ROLES AND RESPONSIBILITIES

The SOP applies to all IBRH₃AU personnel that are responsible for storing biospecimens and/or transferring them when storage equipment fails. These include;

| Personnel | Role/Responsibility |
|-----------------------|--|
| Lab technologists | Responding to alarms, determining that equipment failure has occurred, transferring biospecimens to back-up capacity. |
| Biorepository Manager | Responding to alarms, overseeing or transferring material to back-up equipment/facilities, and updating lists and inventories. |



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5. MATERIALS, EQUIPMENT AND FORMS

- 5.1 Back-up storage capacity, freezers and refrigerators
- 5.2 Trolleys or carts to move biospecimens rapidly
- 5.3 Thermometers
- 5.4 Adequate Liquid Nitrogen, ice and dry ice supply
- 5.5 Insulated containers to temporarily hold dry ice and biospecimens
- 5.6 Gloves and safety equipment to handle the frozen boxes and biospecimens
- 5.7 Cryogenic face shield, lab coat and gloves
- 5.8 Alarm systems
- 5.9 Alarm system contact lists

6. PROCEDURE

- 6.1 Make sure that adequate number of biorepository personnel are assigned to emergency response and trained to perform the transfer when required.
- 6.2 A 24-hour contact list for responsible personnel assigned to deal with an emergency situation (including in the evenings/nights or on weekends and holidays) should be maintained.
- 6.3 Train personnel in processes ensuring rapid transfer of biospecimen to back-up units when the need arises.
- 6.4 **Transfer Initiation and Biospecimen Transfer**
 - 6.4.1 Activate and ensure proper functioning of back-up capacity refrigerators and freezers with CO₂ tanks capable of maintaining temperatures for a minimum of 72 hours.
 - 6.4.2 If Ten percent (10%) of the storage capacity maintained at operating temperatures free of biospecimens is not affected transfer biospecimen to this space.
Note: Back-up equipment are identified and marked. These units should be monitored together with the other equipment.
 - 6.4.3 Alert assigned personnel that a biospecimen transfer has to be performed.
 - 6.4.4 Avoid opening the failed freezer too often to avoid large temperature fluctuation to occur before transfer.



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- 6.4.5 If back-up equipment is not situated close by, assemble carts or trolleys to aid in the transfer.
- 6.4.6 Fill insulated containers with dry ice or ice and place them on the carts.
- 6.4.7 Remove biospecimen boxes from the freezers and place them on dry ice for transfer. Essentially do not permit temperature fluctuations for extended periods of time.
- 6.4.8 Rapidly move biospecimens to the back-up equipment.
- 6.4.9 If it is not possible to place biospecimens in the same order as in the failed equipment make sure to maintain a logical or sequential pattern of storage.
- 6.4.10 Record details of back-up storage pattern.
- 6.4.11 Document biospecimen transfer to back-up unit, and track biospecimens to ensure return to correct location when corrective action has been taken.
- 6.4.12 Ensure that alarm systems are operational and monitored on back-up equipment as well.
- 6.4.13 Document reasons for equipment failure and corrective action.

6.5 Transfer to back up facility/Lab

- 6.5.1 Fill transfer boxes with dry ice
- 6.5.2 Place biospecimen boxes into the dry ice boxes
- 6.5.3 Load onto vehicle and transfer to backup lab as soon as possible
- 6.5.4 Offload boxes from vehicle and transfer to freezers following a sequential order for subsequent tracking
- 6.5.5 Document the transfer in biospecimen transfer forms.

7 ATTACHMENTS

- 7.1 Sample transfer form: **IBRH₃AU-FORM-002**



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8 REVISION HISTORY

| Revision No | Effective Date | Description of Changes Made from Preceding Revision | Approved by/ Date |
|-------------|----------------|---|----------------------|
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ANNEX 1: DOCUMENTATION OF SUGGESTED CHANGES TO THIS SOP

| CLAUSE | SUGGESTION | BY | DATE |
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