

**DukeMedicine****Division of Cellular Therapy****DOCUMENT NUMBER:** ABMT-GEN-003**DOCUMENT TITLE:**

Air Handling System

DOCUMENT NOTES:

28A.301.01

Document Information**Revision:** 04**Vault:** ABMT-General-rel**Status:** Release**Document Type:** General**Date Information****Creation Date:** 22 Apr 2019**Release Date:** 02 May 2019**Effective Date:** 02 May 2019**Expiration Date:****Control Information****Author:** JLF29**Owner:** JLF29**Previous Number:** ABMT-GEN-003 Rev 03**Change Number:** ABMT-CCR-256

ABMT-GEN-003 AIR HANDLING SYSTEM

1 PURPOSE

- 1.1 The specialized High Efficiency Particulate Air Filter (HEPA) system is used to remove fine particles from the air, reducing the risk of infection in the compromised host.

2 INTRODUCTION

- 2.1 Performance: The entire 9200 unit is HEPA filtered, allowing the corridors to act as anterooms. Positive air pressure occurs through a system of fans. Each room is equipped with PresSura, an air pressure alarm system. Room pressure is created when one space (corridor) is at a different pressure than an adjoining space (patient room). When a pressure differential is created between two spaces, air is forced from the higher pressure space to the lower pressure space. When the patient door is opened, the air pressure in the room drops and the flow of air through the HEPA filter is diminished. The PresSura monitoring system provides constant surveillance of room pressure. When a room pressure remains low for more than 90 seconds, i.e. because the door has been left open, a red light located in the corridor outside of each patient room will activate and a "Low Room Pressure" alarm on the nurse call system will activate. Malfunctions of the air-handling system – including a dirty HEPA filter – may also create a low room pressure alarm situation.
- 2.2 9202 through 9216 are positively pressurized with respect to the bathrooms and corridors. Corridors, nurses' stations, clean utility rooms, offices, and entry corridor are positively pressurized with respect to the dirty utility room, staff lockers, staff bathrooms, housekeeping closet, and galley. The entire unit is positively pressurized with respect to the adjacent areas of the hospital in order to minimize the risk of airborne contaminants entering from other areas. There are 2 airlock systems within the unit. The first airlock at the HUC desk limits the traffic to the patient care area behind the second airlock.
- 2.3 Each room (with the exception of 9201) will have one overhead terminal HEPA filter hood with supply diffusers located in the ceiling. The filter hoods include an optional aerosol injection system that allows for a means of conducting filter certification tests without having to access the system from above the ceiling. These supply air filter systems will be located above the head of the bed and diffused in such a way as to minimize drafts on the patients. They will sweep air from the head of the bed toward 2 return registers, one located 12" above the floor on the opposite wall and one located in the ceiling near the door to the corridor. Each room is positively pressurized and will provide 22 air exchanges hourly.
- 2.4 Patient room 9201 is an airborne infectious isolation room and is positively pressurized to the adjacent anteroom. The anteroom has a balanced pressurized system with respect to the corridor. HEPA filtered air will be delivered to the

patient room the same as all other patient rooms, and all air will be exhausted through the building infectious disease exhaust system.

- 2.5 Patient rooms 9211 and 9212 have a shared handicapped bathroom. In order to maintain adequate air exchanges, the bathroom door that leads to each patient room must remain closed. Only one door should be opened at a time.

3 SCOPE AND RESPONSIBILITIES

- 3.1 **Level:** Interdependent – Hospital Engineering and Operations and Nursing.
- 3.2 **Supportive Data:** Stem cell transplant recipients are at a higher risk of developing pulmonary infections from airborne pathogens. HEPA filtration removes sub-micron organisms from the air, reducing the risk of exposure to airborne microbes.

4 DEFINITIONS/ACRONYMS

- 4.1 NA

5 MATERIALS

- 5.1 NA

6 EQUIPMENT

- 6.1 NA

7 SAFETY

- 7.1 NA

8 PROCEDURE

- 8.1 Maintenance

- 8.1.1 Duke University Hospital Engineering and Operations are responsible for the maintenance of the air handling system on the unit.

- 8.2 Nursing Responsibilities

- 8.2.1 Educate patients and visitors regarding the infection control practices on the unit.
- 8.2.2 Limit all entrance to unit through the front doors.
- 8.2.3 Be sure to have one airlock closed before the second one is opened.
- 8.2.4 Keep doors to patient rooms closed at all times.
- 8.2.5 Assure that the pressure alarm system light is green.
- 8.2.6 Maintain sealed windows in all rooms.
- 8.2.7 Keep all exit doors closed unless required for emergency evacuation.
- 8.2.8 Minimize clutter in patient rooms to allow for adequate daily cleaning.

- 8.2.9 Notify Engineering and Operations if there is any disruption in the air flow system.

9 RELATED DOCUMENTS/FORMS

- 9.1 NA

10 REFERENCES

- 10.1 Design Development Report, IES Engineers
- 10.2 Dykewicz, C. Hospital Infection Control in Hematopoietic Stem Cell Transplant Recipients Emerging Infectious Diseases, March-April 2001
- 10.3 Guidelines for Preventing Opportunistic Infections in Stem Cell Transplant Recipients. Recommendations of CDC, the Infectious Disease Society of America and American Society of Blood and Marrow Transplantation October 2000
- 10.4 PresSURA – User basics

11 REVISION HISTORY

Revision No.	Author	Description of Change(s)
04	Jennifer Frith	Updated footer to reflect ABMT-GEN-003 versus incorrect footer of PBMT

Signature Manifest**Document Number:** ABMT-GEN-003**Revision:** 04**Title:** Air Handling System

All dates and times are in Eastern Time.

ABMT-GEN-003 Air Handling System**Author**

Name/Signature	Title	Date	Meaning/Reason
Jennifer Frith (JLF29)		25 Apr 2019, 07:43:14 PM	Approved

Management

Name/Signature	Title	Date	Meaning/Reason
Jennifer Frith (JLF29)		25 Apr 2019, 07:43:26 PM	Approved

Medical Director

Name/Signature	Title	Date	Meaning/Reason
Nelson Chao (CHAO0002)		26 Apr 2019, 10:05:56 AM	Approved

Quality

Name/Signature	Title	Date	Meaning/Reason
Bing Shen (BS76)		26 Apr 2019, 12:55:10 PM	Approved

Document Release

Name/Signature	Title	Date	Meaning/Reason
Betsy Jordan (BJ42)		29 Apr 2019, 07:35:26 AM	Approved