PEDIATRIC BLOOD AND MARROW TRANSPLANT PROGRAM

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Environmental Standards - Air Handling System

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PBMT-GEN-065
ENVIRONMENTAL STANDARDS: AIR HANDLING SYSTEM

1 PURPOSE

1.1 To outline the procedure for the use and maintenance of the Air Handling System on the Pediatric Transplant and Cellular Therapy Inpatient Unit.

2 INTRODUCTION

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

2.2 Stem cell transplant recipients are at a higher risk of developing respiratory tract infections from airborne pathogens. HEPA filtration removes sub-micron particles from the air, reducing the risk of exposure to airborne microbes.

3 SCOPE AND RESPONSIBILITIES

3.1 Multidisciplinary – Hospital Engineering and Operations (E&O) and Nursing.

3.2 Maintenance:

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

3.3 Nursing Responsibilities:

3.3.1 Educate patients and visitors regarding the infection control practices on the unit.

3.3.2 Limit all entrance to unit through the front doors.

3.3.3 Keep doors to patient rooms closed at all times.

3.3.4 Maintain sealed windows in all rooms.

3.3.5 Keep all exit doors closed unless required for emergencies.

3.3.6 Minimize clutter in patient rooms to allow for adequate daily cleaning.

3.3.7 Notify Engineering and Operations if there is any disruption in the airflow system.

4 DEFINITIONS/ACRONYMS

4.1	E&O	Engineering and Operations
4.2	HEPA	High Efficiency Particulate Air
4.3	HUC	Health Unit Coordinator

5 MATERIALS

5.1 N/A

6 EQUIPMENT

6.1 N/A

7 SAFETY

7.1 N/A

8 PROCEDURE

8.1 The entire inpatient unit is HEPA filtered, allowing the corridors to act as anterooms. Positive air pressure occurs through a system of fans. 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. The positive pressure gradient of the unit's corridors and the unit's anteroom to the hospital corridors is monitored via a Serta monitoring device that monitors pressure continuously – 24 hours a day, 7 days a week and can be trended. A user interface is located at the entrance to each patient room.

8.2 All patient rooms will remain positive pressure aside from one room. This one patient room is set to negative pressure and is equipped with an anteroom set to positive pressure.

8.3 Patient rooms are positively pressurized with respect to the bathrooms and corridors. Corridors, nurse's stations, clean utility rooms, offices, and entry corridor are positively pressurized. 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. Dirty utility room, staff lockers, housekeeping closet, and galley are all located off the unit.

8.4 There are HEPA filters in each patient room (total of 4 per room) - 3 fan filter units supplying HEPA filtered air to the room and an inline fan with another HEPA filtered diffuser for the recirculation system. Particulate testing of the unit's HEPA-filtered air handling system is performed biannually. Each room is positively pressurized and will provide 12 air changes from the air handler, and an additional 6 air changes from the recirculation system in the room per hour.

8.5 The anteroom has a balanced pressurized system with respect to the hospital corridor. HEPA filtered air will be delivered to the patient room by two air handlers in the basement for supply and return.

9 RELATED DOCUMENTS/FORMS

9.1 N/A

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

11 REVISION HISTORY

Revision No.	Author	Description of Change(s)
06	MC Owner: Sally McCollum SMEs: Paul Martin, Tim Driscoll, Whitney Hawkins	Section 8.3 updated to remove staff bathrooms Section 8.5 updated to make wording easier to follow for the reader

Signature Manifest

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