



Negative Pressure Isolation Room Procedure

Effective: 13 May 2015

1. GUIDING PRINCIPLES

Airborne transmission occurs when either airborne droplet nuclei or dust particles disseminate infectious agents. Air currents can widely disperse such microorganisms, which a susceptible host (near or quite far from the source patient) can then inhale. Control of environmental factors is necessary to limit airborne transmission of microorganisms such as measles, chicken pox and Mycobacterium tuberculosis (TB).

Pressure Gradients

[Australian Standard \(AS/NZ\) ISO 14644.5:2006](#) determines the minimum differential pressure between the isolation room and adjacent ambient pressure areas are to be 30 pascals (Pa) if the room has an ante room or airlock and 15Pa if the room does not have an airlock. The gradient between successive pressure areas is not to be less than 15Pa.

Anteroom or airlocks have three (3) distinct functions, they provide:

- 1.1 A barrier against loss of pressurization and entry or exit of contaminated air into or out of the isolation room when the door to the airlock is opened
- 1.2 A controlled environment in which protective garments can be donned, without contamination, prior to entry into the isolation room
- 1.3 A controlled environment in which equipment, supplies and the like can be managed to enable transfer to or from the isolation room without contaminating the surrounding areas.

2. PROCEDURE

Busselton Health Campus (BHC) has three (3) negative pressure rooms.

A negative pressure room is a single room with an ensuite and an anteroom.

Negative Pressure Room location:

- Bed 58 Ward 1
 - Bed 06 Ward 2
 - Bed 17 Emergency Department
- 2.1 Patients are identified by medical/nursing staff as needing admission to a room negative pressure due to patient having a confirmed or probable communicable disease transmitted by airborne route as defined in Australian Commission on Safety and Quality in Health Care — National Infection Control Guidelines.
 - 2.2 For inpatient admission to ward bed the Hospital Coordinator informs ward shift coordinator of requirement for negative pressure room, and allocates room.
 - 2.3 Ward Shift Coordinator arranges intra hospital transfer. If no negative pressure rooms are available or a pressure failure occurs in or all of the negative pressure rooms -see contingency plan room pressure failure - section 4.

- 2.4 Nurse caring for patient checks that isolation switch is on, all doors are closed and pressure is — 30 pascals (or air changes = 145 litres per second).
- 2.5 If pressure is not correct, submit an [EWAMS](#), report fault to hospital coordinator and follow contingency plan room pressure failure -section 4.
- 2.6 Explain and reassure patient why the additional transmission precautions are necessary for the patient, patients relatives and staff
- 2.7 Nursing care plans must state that transmission precautions are in place and utilisation of a negative pressure room.
- 2.8 Each negative pressure room has a panel (see [Appendix 1](#)), that continuously monitors the pressure within the room and has an alarm system.
- 2.9 Negative pressure rooms are to remain off until required for an infective patient. Key to activate negative pressure rooms is to be kept with ED and WARD shift coordinators and the Hospital Coordinator.
- 2.10 On the control outside each negative pressure room the circular gauge and digital display identify patient room pressure; the optimal range is negative 30 Pascals. Please note there will be a drop when doors are open and closed.
- 2.11 In code red if fire is in the local area/fire zone of the negative pressure room then negative pressure room must be turned off/shutdown immediately. Key to deactivate negative pressure rooms is to be kept with ED and WARD shift coordinators and the Hospital Coordinator.

3. DEFINITIONS

<p>Negative Pressure Isolation Rooms (type 5)</p>	<p>A single room with a shower/toilet ensuite and self-closing door that has a negative pressure/flow lower than adjacent areas, which keeps air from flowing out of the room and into adjacent room's areas.</p> <p>This is particularly important for reducing the risk of microorganisms being spread by airborne transmission from a source patient (suspected or known to have an airborne infection) to susceptible patients and other persons in the hospital.</p>
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4. ROLES AND RESPONSIBILITIES

Monitoring

The Negative pressure rooms have a warning light panel with three alarms. A red light of the affect alarm will flash on the control panel outside the room. If this light flashes nursing staff are to notify engineering during office hours and Hospital Coordinator out of hours. The negative pressure system is also continuously monitored through the BMS system. Any faults or alerts are to be brought to the attention of engineering department via paging and telephone systems 24 hours a day.

Contingency plan room pressure failure

If the room's negative pressure is not functioning the contingency plan is:

- If the patient requires airborne precautions move them to another available negative pressure room. If another negative pressure is not available commence precautions in a single room set up with the requirements for airborne precautions. (this can be the negative pressure room they are already in).
- If the patient requires contact or droplet precautions the patient can remain in the negative pressure room without the pressure and precaution requirements in place.

Testing of negative flow/pressure room

Testing six (6) monthly or after a repair of room, performed and registered by maintenance staff.

- In patients room hold non-irritating smoke test tube near the bottom and approximately two inches in front of the door.
- Move the smoke test tube along the bottom of the door ensure the room is under negative pressure, by observing the smoke travelling up into the room.
- If the room is not under negative pressure, the smoke will be blown under the door or remain stationary.

Cleaning of negative flow/pressure room

Upon discharge of patient from the negative flow/pressure room the appropriate Patient Service Assistant (PSA) is to attend to the cleaning duties as [WACHS Environmental Cleaning Policy](#) and [WACHS Environmental Cleaning – Detergent and Disinfectant Agents and chlorine Dilutions Procedure](#).

5. COMPLIANCE

Monitoring of the negative pressure system is through the BMS monitoring. The planned maintenance schedule is to have a minimum of a 13-week cycle and include checking such items as:

- air change rate
- supply air and exhaust quantities
- terminal filters
- exhaust registers
- room pressure gauges
- damage to the room interior
- supply and exhaust fans
- room seals and door closer
- building automation system connections where fitted.

6. EVALUATION

Annual report from Maintenance Department to Regional Infection Control Committee

7. REFERENCES

- [Australian Standard AS/NZ ISO 14644.5:2006](#) Cleanrooms and associated controlled environments - Part 5: Operations.
- [Australian Standard AS 1668.2-2012](#) Use of ventilation and air-conditioning in buildings.
- Business briefing: hospital engineering and facilities management 2004 Design of Hospital Isolation Rooms by Kevin Moon
<http://www.readbag.com/touchbriefings-pdf-747-hosp041-moon>
- Operating and Maintenance Manual. 2006. Rockingham hospital – Phase One, Building Management and Control System.
- Victorian Isolation Room Guidelines. 2007. Guidelines for the classification and design of isolation rooms in health care facilities. Victorian Advisory Committee on Infection Control

8. RELATED DOCUMENTS

- [Appendix 1](#) : Negative pressure room panel

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Appendix 1: Negative Pressure Room Panel

