

Isolation Rooms in Health Care Facilities. What Do the AIA Guidelines Say?

Application Note LC-124

Introduction

Pressurization of isolation rooms to help prevent the spread of airborne infection has been an issue facing the health-care community for years, as evidenced by the 1994 US Centers for Disease Control and Prevention publication "Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis in Health-Care Facilities." Other organizations such as the American Institute of Architects (AIA) have published guidelines to refine the CDC's guidelines. In April of 2001, AIA called for more stringent practices by publishing a new revision to their "Guidelines for Design and Construction of Hospital and Health-Care Facilities."

Where are isolation rooms required?

The 2001 AIA guidelines require isolation rooms for a number of areas in the health-care facility, including medical and surgical nursing units, critical care units, pediatric care units, newborn intensive care units, emergency service areas, and nurseries. The guidelines require that an Infection Control Risk Assessment (ICRA) be completed to determine the number of isolation rooms for these areas, and also if other areas, such as renal dialysis, require isolation rooms.

What are the requirements for an isolation room?

An airborne infection isolation room is constructed to minimize the migration of air from the isolation room to other areas of the health-care facility. As such, the ceiling, floor, and all perimeter walls, including penetrations, must be tightly sealed. Exit doors must have a self-closing device.

To ensure that aerosols are contained within the isolation room, the corridor pressure must be at least 0.01 inches of H₂O greater than the pressure of the isolation room.



What about protective environment rooms?

Protective environment rooms are also needed as determined by the ICRA. Protective environment rooms are constructed to eliminate the infiltration of air from the health-care facility to the patient room. As with isolation rooms, the ceiling, floor, and all perimeter walls must be tightly sealed. Similarly, access doors must be equipped with a self-closing device.

Protective environment rooms are also required to be at least 0.01 inches of H₂O pressure greater than adjoining areas.

What instrumentation is required in my airborne isolation and protective environment rooms?

A permanently installed visual monitor is now required for airborne isolation and protective environment rooms. This monitor must continuously indicate the pressure direction of the room when it is occupied. Alarms on these monitors must minimize nuisance alarms caused by routine entry into the airborne isolation or protective environment room.

TSI's PRESSURA™ line of controls continuously monitors the pressure differential of your airborne isolation and protective environment rooms. The PRESSURA™ monitor features audible, visual, and remote alarms to warn the nursing and maintenance staff of unsafe conditions. An adjustable time delay eliminates nuisance alarms when the door is momentarily opened. Controller versions are designed to adjust the exhaust airflow, correcting pressurization changes before alarms occur.

Do protective environment and airborne isolation rooms require greater supply airflows than standard patient rooms?

Yes. The AIA guidelines require that protective environment and airborne infection isolation rooms maintain a minimum of 12 air changes per hour, with a minimum of 2 air changes per hour of outdoor air. More air must be supplied if needed to maintain room conditions such as temperature or humidity.

The PRESSURA™ room pressure monitors and controllers can measure the supply or exhaust airflow, independently verifying the ventilation rate in your critical spaces.

It sounds like protective environment and airborne isolation rooms are almost identical. Can I use one room for both purposes?

No. A single room cannot be switched between airborne isolation and protective environment functions. Airborne isolation rooms can, however, be utilized for the care of non-infectious patients.

TSI's PRESSURA™ monitor controls accept a keyswitch input to change your room pressure differential from negative or positive to no isolation mode, deactivating all alarms when the critical pressure differential is not required.

What facilities are needed for an immunosuppressed patient with an airborne infectious disease?

In this special case, the patient must be placed in a protective environment room with an anteroom. Airflows can be either into or out of the anteroom. If air flows out of the anteroom to the patient room and corridor, then the health-care staff will be protected from the patient while they are in the anteroom.

Two pressure sensors can be used with the PRESSURA™ monitor, ensuring safe isolation and protection for both the patient room and anteroom.

Does this cover everything in the guidelines?

No, this application note only answers questions relating to pressurization of protective environment and airborne isolation rooms. Refer to the AIA guidelines themselves for a full understanding of all the requirements facing your critical environments.

How do I get a copy of the guidelines?

Contact the American Institute of Architects directly at 800-242-3837, 202-626-7300, or go to their website at www.aia.org.

How do I obtain information about TSI room pressure controls?

TSI has a network of experienced local representatives to help with your critical environments. Contact your nearest representative or call TSI at (651) 490-2811 or (800) 874-2811 for additional information.

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