

FAQ: Using Temporary In-Corridor “Anteroom” Enclosures And Negative Air Machines Versus In-Room HEPA Systems To Meet Guidelines For Negative-Pressure Isolation (All) Rooms

Q: *Does an in-corridor ‘anteroom’ design that pulls air from the room into the corridor meet all of the recommendations outlined in the 2003 CDC Guidelines for Airborne Infectious Isolation (All) rooms?*

A: Under Key Terms (page 4), CDC defines an All area as: “under negative pressure, such that the direction of the airflow is from the outside adjacent space (e.g., the corridor) into the room.” An in-corridor ‘anteroom’ that uses a negative air machine to pull large volumes of potentially contaminated air out of the isolation room and into the anteroom, and then recirculates the HEPA-filtered exhaust air into the corridor does just the opposite. The guidelines also recommend exit doors with automatic closures into the corridor; i.e., between the anteroom and the corridor (IV A 3, page 12). Facilities will need to decide whether systems that rely on the persons entering or exiting to close a zippered door to the corridor will suffice.

Q: *Are these issues relevant if in-corridor anterooms are used only for short-term emergencies, such as bioterrorism response?*

A: We believe the answer is yes, especially where highly toxic pathogens may be involved. “Short term” emergencies can potentially last for a long time, as happened in Canada during the 2003 SARS crisis. A number of facilities had to keep their “temporary” isolation rooms in use for three to four months.

Q: *Is it true that the 2003 CDC Guidelines indicate a requirement or preference for negative-pressure isolation (All) rooms equipped with an anteroom?*

A: No. Section C 5 (b), (page 36) clearly states: “All rooms can be constructed with (Figure 3) or without (Figure 4) an anteroom.” Anterooms are described as preferable only for rooms used for patients with viral hemorrhagic fever (VHF). However, in-room HEPA filtration is a perfectly acceptable alternative for VHF as well. Per the guideline: “If an anteroom is not available, use portable, industrial-grade HEPA filters in the patient’s room to provide additional ACH equivalents for removing airborne particulates.”

Q: *Is it true that in-corridor systems have an advantage over in-room systems because in-room systems must be exhausted out of the building?*

A: Absolutely not. In-room systems, such as the HEPA-CARE system, are designed to accommodate either outdoor or indoor exhaust. In that regard, paragraph IV.A.5 of the 2003 CDC Guidelines, states: “Direct exhaust air to the outside, away from air-intake and populated areas. If this is not practical, air from the room can be recirculated after passing through a HEPA filter.” Earlier this year HICPAC published new draft recommendations titled *Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings*. Paragraph IV.D.2.d, (iii) states: “Direct exhaust air to the outside. If it is not possible to exhaust the air from an All room directly to the outside, the air may be returned through HEPA filters to the air-handling system serving exclusively the isolation room: There is of course no way of knowing at this time whether or not these recommendations will be adopted as written, but if they are, it would appear to eliminate other recirculation options, including into the corridor.

Q: *In your experience, do the hospitals that use in-room systems presently exhaust HEPA filtered air from All rooms indoors?*

A: No. The vast majority of the 3,000 or so facilities using our equipment have opted to exhaust directly outdoors as an added safeguard. Keep in mind that even the best HEPA filters would provide very little protection against chemical agents.

Q: *Does the ability to use in-corridor anterooms as temporary enclosures for small construction and repair projects, give them an advantage over in-room systems?*

A: We would argue that exactly the opposite is true. HEPA-CARE in-room systems can fulfill a large array of air cleaning and deodorization needs within the hospital. To name just a few, these include providing supplemental air cleaning and ACH in operating rooms, and continuous air cleaning in areas such as waiting rooms or ER. Return on investment is further enhanced by the many, many years of reliable operation these systems are designed to provide. Construction and renovation applications can inflict a real beating on equipment. Having separate equipment for construction and patient isolation ensures that the isolation room equipment remains clean, functional, and ready to use.

Q: *Are there any other potential issues to consider regarding the in-corridor anteroom system when air is pulled toward the corridor?*

A: Among the potential issues we believe should be considered are the following:

- Are the enclosure and the entry/egress doors on the in-corridor anteroom large enough to accommodate moving a non-ambulatory patient out of the room, or equipment into the room, in the event of an emergency?
- What could happen if someone inadvertently forgets to close the zipper, or closes it improperly?
- Is the negative air unit out in the corridor equipped with safety features to prevent tampering with controls or filters?
- How will airborne contaminants be contained during in-corridor filter changes?
- Is the negative air machine used with the enclosure tested and certified for electrical safety by a Nationally Recognized Testing Laboratory (NRTL) per OSHA and CSA requirements?
- What are the potential implications of exhausting into the corridor if the HEPA filter is damaged, if there is bypass leakage around the filter or if chemical agents are involved?
- Will installation of the in-corridor system cause any partial corridor blockage or create fire safety, egress, or noise issues, particularly if the "short term" emergency lasts weeks or months?
- How will the in-corridor system impact worker productivity?
- Will the equipment be usable for patient isolation if the HICPAC recommendations regarding air recirculation are adopted?
- Is sufficient floor space available for an in-corridor system in areas such as ER triage?

Q: *Is it your opinion that in-corridor enclosures should not be used as an anteroom?*

A: No. These types of products can potentially provide supplemental protection when used in conjunction with an in-room HEPA system designed to pull clean air away from the corridor and into the room.

Q: *Doesn't Figure 2 in the June 6, 2003 Morbidity and Mortality Report illustrate a design that pulls air from the corridor and from the room into an anteroom?*

A: Yes. However, all of the designs in Figure II show an anteroom located within the patient room. It appears to be clear that none of these options illustrates an in-corridor anteroom.

* These FAQ include conclusions, opinions and interpretations of CDC guidelines and issues involving in-corridor and in-room systems by the engineering and technical staff of Abatement Technologies, Inc., which have a combined experience of more than 100 years designing and manufacturing HEPA systems for critical environments. Abatement recommends that a final decision regarding the purchase of an in-room or in-corridor system be made only after considering all of the relevant facts and issues.