FAQ-WHAT'S INSIDE?

1. NEGATIVE AIRFLOW AND RISK OF SSI

Proper ventilation, humidity and temperature control in the operating room is important for the comfort of surgical personnel and patients, but also in preventing environmental conditions that encourage growth and transmission of microorganisms. Intra-operative contamination leading to a postoperative SSI can occur by a variety of mechanisms, including dispersion of microbial aerosols within the vicinity of the surgical wound during the intra-operative period (exacerbated by excessive room traffic, which can disrupt microbes, contaminated OR air, alteration in OR air differential, reduced velocity, or excessive humidity) 2. Operating rooms should be maintained at positive pressure with respect to corridors and adjacent areas. Detailed ventilation parameters for operating rooms have been published by the American Institute of Architects in collaboration with the U.S. Department of Health and Human Services.

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4.9. Design the OR to have a positive pressure gradient to all surrounding areas including supply storage areas (eg, sterile core, central core) that are directly accessible to the OR.13,14 Keeping the OR at a positive pressure is supported by a case report that describes an investigation following a polymicrobial outbreak that caused 22 sternal surgical site infections. The investigation identified a negative pressure gradient to the substerile room as an environmental component that was not within the recommended settings and was thought to be a causative factors in the outbreak.5

4.9.1.When the storage room (eg, sterile core, central core) is directly accessible to the OR, the storage room should be pressured negative to the OR; but positive to the semi-restricted corridor and other directly accessible areas. 5

2.6. Design the HVAC system to meet the requirements associated with the intended use of the space. The HVAC system assists with decreasing airborne microorganisms by filtering supplied air, diluting the contaminated air in the OR, and preventing entry of contaminated air from the areas outside the OR.6 The pressure differentials between areas assists in preventing back-flow of air from contaminated areas within the suite or the facility.6 The rate of air changes per hour (ACH) in an OR is supported in a descriptive study by Gormley and Wagner.7 The researchers measured the number of airborne particles in 30 simulated surgeries at 15 ACH, 20 ACH, and 25 ACH at the patient location, on the back table, and by an air return vent. The researchers found there were fewer particles at 20 ACH than at 15 ACH, and there was not an appreciable difference between 20 ACH and 25 ACH. The researchers recommended that the air change rate be 20 ACH. Wan et al8 conducted a nonexperimental study in which they sampled the particulate matter in the air 33 times in each of five different types of ORs. The ORs had either 20 ACH or 15 ACH. The researchers found a lower level of particulate matter in the ORs with the 20 ACH and recommended that this rate be used.

NEGATIVE AIRFLOW AND RISK OF SSI-CONTINUED

1. CDC Environment Infection Control in Healthcare Facilities Guidelines (2003) and from the CDC Guide for Prevention of SSI (1999, Updated 2017) https://www.cdc.gov/infectioncontrol/guidelines/environmental/background/air.html#c5c
2. (2) Edmiston CE et al. Molecular epidemiology of microbial contamination in the operating room environment: is there a risk for infections? Surgery 2005;138:572-588
3. https://www.cdc.gov/infectioncontrol/guidelines/environmental/background/air.html#c5c
4. https://aornguidelines.org/guidelines/content?sectionid=173721980&view=book#229131276
5. Nguyen DB, Gupta N, Abou-Daoud A et al. A polymicrobial outbreak of surgical site infections following cardiac surgery at a community hospital in Florida, 2011-2012. Am J Infect Control. 2014;42(4):432–435. [VB] [PubMed: 24679572]
6. Hoffman PN, Williams J, Stacey A et al. Microbiological commissioning and monitoring of operating theatre suites. J Hosp Infect. 2002;52 (1):1–28. [IVB] [PubMed: 12372322]
7. Gormley T, Wagner J. Studying airflow in the OR: measuring the environmental quality indicators in a dynamic hospital operating room setting. Health Facil Manage. January 9 , 2018. https://www.hfmmagazine.com/articles/3246-studying-airflow-in-the-or?utm_medium=email&utm_source=newsletter&utm_campaign=hfminsider&utm_content=20180116&eid=333111138&bid=1972574. Accessed June 6, 2018. [IIIC]
8. Wan G, Chung F, Tang C. Long-term surveillance of air quality in medical center operating rooms. Am J Infect Control. 2011;39(4):302–308. [IIIB] [PubMed: 21256628]
9. Facility Guidelines Institute, US Department of Health and Human Services, American Society for Healthcare Engineering. Guidelines for Design and Construction of Hospitals. Chicago, IL: American Society for Healthcare Engineering of the American Hospital Association; 2018. [IVC]
10. Facility Guidelines Institute, US Department of Health and Human Services, American Society for Healthcare Engineering. Guidelines for Design and Construction of Outpatient Facilities. Chicago, IL: American Society for Healthcare Engineering of the American Hospital Association; 2018. [IVC]

RETESTING WITHIN 90 DAYS

Recovered persons can continue to shed detectable SARS-CoV-2 RNA in upper respiratory specimens for up to 3 months after illness onset, albeit at concentrations considerably lower than during illness, in ranges where replication-competent virus has not been reliably recovered and infectiousness is unlikely. Accumulating evidence supports ending isolation and precautions for persons with COVID-19 using a symptom-based strategy, not a test based strategy. Studies have not found evidence that clinically recovered persons with persistence of viral RNA have transmitted SARS-CoV-2 to others. Reinfection with SARS-CoV-2 has not yet been definitively confirmed in any recovered persons to date. Thus, for persons recovered from SARS-CoV-2 infection, a positive PCR during the 90 days after illness onset more likely represents persistent shedding of viral RNA than reinfection.

If such a person remains asymptomatic during this 90-day period, then any re-testing is unlikely to yield useful information, even if the person had close contact with an infected person.

If such a person becomes symptomatic during this 90-day period then the person may warrant evaluation for SARS-CoV-2 reinfection in consultation with an infectious disease or infection control expert. Isolation may be warranted during this evaluation, particularly if symptoms developed after close contact with an infected person.

1. https://www.cdc.gov/coronavirus/2019-ncov/hcp/duration-isolation.html

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