Microbiological factors in the design, validation and verification of operating theatre ventilation

One page summary

A hospital's Infection Prevention and Control (IPC) team, as part of a hospital's multidisciplinary Ventilation Safety Group (VSG) or equivalent, should be an integral part of the design of new or upgraded operating theatres and, before first use, validate that they are fit for purpose. The Healthcare Infection Society's guidelines inform IPC professionals how the IPC team can be productively involved in these processes.

Summary of Recommendations and Good Practice Points

Overarching Recommendations

- An IPC representative must be a part of the ventilation safety group (VSG) or its equivalent.
- The IPC representative must be competent in engineering-related discussions, microbiological sampling and the interpretation of the results.
- The VSG needs to ensure compliance with theatre behaviour guidelines.

The Role of the IPC Team

- Ensure VSG members, including the IPC representative, understand the general principles of HTM 03-01 and HBN 26 documents.
- With the VSG, the IPC representative should be involved in assessing theatre facilities before use with sufficient time/resources to do so.

Important Features of the Facility

- Fine filters for conventional theatres are satisfactory; EPA/HEPA grade are not necessary.
- Minimise air ingress from surrounding areas.

Type of Theatre Ventilation

- If using an ultraclean ventilated (UCV) theatre for non-orthopaedic procedures, switch the ventilation to setback/conventional mode.

Design Considerations

- Design for 22 air changes per hour.
- Use self-closing doors between each functional area.
- Ensure the airflow is from the preparation room to the operating theatre to other areas.
- Conventional theatre principles apply for hybrid theatres and interventional radiology.

Validation

- The IPC representative must receive documentation that technical aspects of the theatre meet specifications.
- If undertaken, microbiological air sampling, is a final step. Ensure timelines allow result reporting and possible repeat sampling.

Verification

- Routine microbiological sampling is not necessary for verification or for any cleaning validation.
- The IPC representative must participate in any ventilation-related risk assessments.
- Release-for-use decisions of operating theatres should be made by a multidisciplinary VSG subgroup.

Future Proofing & Contingency

- Discuss new procedures/techniques with the VSG before introduction.

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