Novel ventilation strategy for reducing the risk of airborne cross infection in hospital rooms

Novel ventilation method comprising a mobile unit attachable to a hospital bed was used to improve the protection of occupants from exposure to airborne cross-infection initiated by a sick patient in hospital environment. Full-scale measurements were performed in a climate chamber set up as a two-bed hospital room, ventilated at 3 h⁻¹ by mixing air distribution. The air temperature was kept 22 °C. Two breathing thermal manikins were used: sick patient (lying on one side in one bed) and doctor. The doctor stood 0.55 m facing the sick patient. Tracer gas was mixed with the air exhaled by the sick patient (exhalation mouth, inhalation nose). The evacuation efficiency (ratio of tracer gas concentration at exhaust without unit to the tracer gas concentration at measured location with or without the unit) at the breathing zone of the doctor increased from 0.23 with mixing ventilation alone to 39 with the unit installed.

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