In this study, computational fluid dynamics (CFD) techniques are used to evaluate the efficiency of operating room HVAC systems in minimizing the risk of postoperative infection. Seven different design configurations of operating room HVAC systems have been compared numerically to assess their agreement with international standards of operating room ventilation and airflow pattern requirements. The ventilation systems designs considered are built-in using different air outlet devices, usual, laminar, non-aspirating, and slot diffuser types. The airflow pattern of each configuration has been analyzed in terms of airflow vectors, velocities, and turbulent intensity, and pollutant concentration distribution. It was concluded that unidirectional airflow with curtain airflow configuration is the most versatile and energy efficient.

Keywords
HVAC , CFD , Operating room