

A description of ventilation system design in public hospitals: Health provider perspective

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ABSTRACT

Introduction: Ventilation system serves as one of the methods for infection control within patient treatment areas amongst patients and staff. The High infectivity in confined areas raised concerns for patients and staff safety especially during the COVID-19 pandemic. **Objective:** To describe the ventilation system design approach applied in patient areas of a public hospital. **Materials and methods:** Four (4) patient-related areas in a 76 bed non-specialist hospital was assessed. The variables included are the airflow, supply air, return air and air filtration. **Results and conclusion:** The airborne infection isolation room has air flow from the staff area to the patient area. The air inlet provides 100% non-circulating fresh air with 12 air change rate per hour (ACH) located at entrance. The outlet is located on the lower left side of the patient's head. High-efficiency particulate air (HEPA) filter placed at the outlet with negative room pressure. The air conditioned multi bed area has air inlet at the entry point and outlet located farther away from patients and staff. While, the clinical examination room air inlet was placed near the staff area and outlet above the patient treatment area. Both the common multi-bed inpatient and clinical examination rooms have normal pressure. The ventilation system is served from central Air Handling Unit (AHU) and recirculated, however, MERV 13 grade filter is employed as recommended by American Standard Heating and Refrigeration Engineer (ASHRAE) in both multi-bed inpatient area and clinical examination room. Finally, the operation room was provided with laminar air flow from above the patient towards the lower four corners of the room. The room pressure would be relatively positive compared to the surrounding rooms. The HEPA filter is placed at the inlet. The ventilation system design approach in the public hospital assessed caters for airborne-related infectious diseases control. However, further assessment of its effectiveness is required particularly in the operation theater where the room pressure is relatively positive.