



KEY POINT SUMMARY

OBJECTIVES

To determine the impact of LAF isolation on outbreak of Invasive Pulmonary Aspergillosis (IPA)

DESIGN IMPLICATIONS

Use of an air filtration system such as LAF can reduce airborne fungal infection.

Construction work associated with such installations can INCREASE presence of fungal spores and result in nosocomial outbreaks. Authors refer to the work by other researchers who suggest that applying copper-8-quinolinolate to walls and air vents, or erecting airtight plastic barriers, can avoid this.

Control of an Outbreak of Nosocomial Aspergillosis by Laminar Air-Flow Isolation

Barnes, RA, Rogers, TR
1989 | *Journal of Hospital Infections*
Volume 14, Issue 2, Pages 89094

Key Concepts/Context

Laminar air flow is a system for circulating filtered air in healthcare facilities. It is very relevant to the issue of Indoor Air Quality and the impact on potential spread of infections. This paper focuses on understanding how using Laminar Air Flow (LAF) can reduce the spread of hospital acquired infections in the context of Bone Marrow Transplant (BMT) patients. Infection can be a common occurrence during chemotherapy for cancer patients, particularly leukemia and BMT patients. Additionally, BMT patients are at higher risk for infection due to the use of T-cell depleted marrows and being subjected to high dose corticosteroids. A prime risk factor is inhalation of airborne fungal spores which may cause Pulmonary Aspergillosis. In this particular study the Westminster Children's Hospital consisted of seven single cubicles in a naturally ventilated ward. One section was upgraded to install a five-bedded LAF unit incorporating HEPA filters. The study compares the impact on children undergoing transplantation before and after the installation.

Methods

Total of 38 children undergoing BMT were studied- 19 who had undergone transplantation in the 14 month prior to the opening of the LAF unit, and 19 transplanted in the 18 months following the installation. Risk factors for the development of Invasive Pulmonary Aspergillosis (IPA) were identified, and other transplant related risk factors were noted. Post-transplant complications were documented. Over an 18 month period airborne fungal spores were collected from each room in the BMT unit, and a control ward on a different floor of the hospital. Samples of outside air were also taken.



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Findings

32% of children undergoing BMT died of IPA in the pre-LAF group and accounted for all infection-related deaths. The patients' stay coincided with the period of high fungal exposure. No documented cases of IPA were found in the children nursed in the LAF units.

Results of the study indicate that an appropriate air filtration system such as LAF can offer effective protection against airborne fungal infection.

Limitations

The author of the study does not discuss any limitations. In the opinion of the reviewer, the study is old and the sample size is small. A similar study conducted longitudinally over a period of a few years would be more compelling. Air sampling is not synced completely with the patient outcomes. Also, the increase of asperigillus spores recovered during construction serves as a warning for how building work can cause nosocomial break. More detailed information on this would have been helpful.