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**Airborne *Aspergillus fumigatus* spore load during demolition of a building on a hospital area**

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**Background:** Invasive aspergillosis have been associated with construction and demolition works in or adjacent to hospitals.

This study was conducted at the University Hospital Essen, Essen, Germany. Between April and August 2016, a building on the hospital grounds was demolished. Immunocompromised patients are being treated in both buildings in the immediate vicinity (Fig. 1).

The aim of this study was to measure the emission of *Aspergillus fumigatus* spores during demolition work. In addition, the number of cases with invasive aspergillosis was recorded using microbiological and clinical data.

**Material/methods:** Before, during and after demolition, air sampling was performed at three positions around the building (Fig. 1), resulting in 200 samples. Additionally, meteorological data was recorded for the day of sampling and visible dust emission was documented and incorporated into the study. Several preventive measures were taken. Water jets were used to suppress dust emission. It was recommended to keep all windows facing the demolition site closed. To prevent dust exposure, a plastic foil was installed at the entrance of the pediatric clinic.

The correlation between concentration of *A. fumigatus* spores and aspergillosis cases in 2015 and 2016 was analyzed using data from microbiological diagnostics (*A. fumigatus* isolates in respiratory secretes, *Aspergillus* galactomannan from serum/BAL), as well as aspergillosis cases documented by clinicians.

**Results:** *A. fumigatus* was found in 178 of the collected samples (89 %). Concentrations of *A. fumigatus* did not differ significantly ( $p = 0,20$ ) between the two periods before (average:  $16.51 \text{ cfu/m}^3$ ) and during demolition (average:  $20.09 \text{ cfu/m}^3$ ). Several peaks were recorded but none correlated with either demolition work or dust emission.

Aspergillosis cases in 2016 did not differ to the previous year, when no demolition took place. Furthermore, there was no difference between the number of positive microbiological results in those two years.

**Conclusions:** The results show no correlation between *A. fumigatus* spore concentration in the air, demolition, visible dust emission and the incidence of invasive infections.

Fig. 1

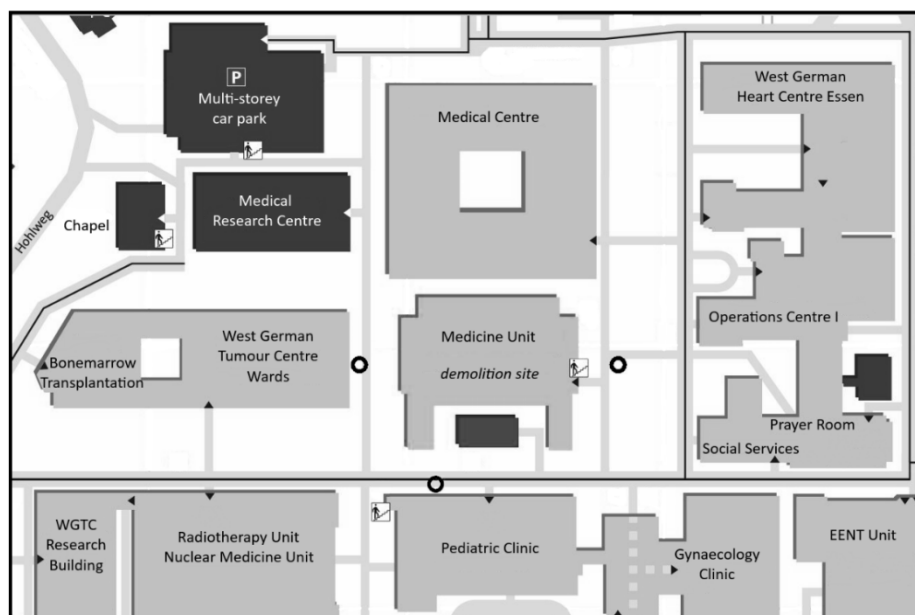


Fig. 1: Map section of University Hospital Essen, Germany

○ Sampling sites East, South, West

