

NIOSH Stakeholder Meeting

Werner Bischoff, MD PhD

Title: Exposure to Influenza Aerosols during Routine Patient Care

Abstract:

Background: Defining influenza aerosol dispersal is essential for the development of prevention measures.

Methods: During the 2010/11 influenza season subjects with influenza like illness were enrolled in an ED and throughout a tertiary care hospital, nasopharyngeal swabs obtained, and symptom severity, treatment and medical history recorded. Quantitative impaction air samples were taken within 1ft, at 3ft, and 6ft of the patient's head during routine care. Influenza was detected by rapid test, and PCR.

Results: Sixty-one (65%) of 94 subjects tested influenza positive. Twenty-six (43%) released influenza into room air, with five patients (19%) emitting up to 32times more virus than others. Emitters surpassed the influenza airborne human infectious dosage 50 at all sample locations. Healthcare providers (HCPs) were exposed to mainly small influenza particles (<4.7 μm diameter), concentrations decreasing with distance from the patient's head ($p<0.05$). Influenza release was associated with high viral loads in nasopharyngeal samples (shedding), coughing, and sneezing ($p<0.05$). Patients that reported severe illness, and major interference with daily life also emitted more influenza ($p<0.05$).

Conclusions: HCPs could be exposed to infectious dosages of influenza primarily in small particle aerosols, up to 6ft from patients, questioning the current paradigm of localized droplet transmission during non-aerosol generating procedures.