

Hospital study finds substantial proportion of patients and healthcare workers shed flu virus before symptoms appear

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New research examining influenza transmission in a tertiary hospital finds that a substantial proportion of patients and healthcare workers shed the flu virus before the appearance of clinical symptoms. The findings, being presented at this year's European Congress of Clinical Microbiology & Infectious Diseases (ECCMID) in Amsterdam, Netherlands (13-16 April), raise the possibility that current influenza infection control measures may not be enough to protect healthcare workers and patients during routine care in hospitals.

The discovery came after Swiss researchers tracked almost 700 [healthcare](#) workers and inpatients over two consecutive [influenza](#) seasons at the University Hospital in Zurich. They uncovered several [transmission](#) clusters that were undetected by routine surveillance.

These results are consistent with previous research which suggests influenza may be spread to others by just breathing, and that coughing or sneezing are not required for transmission.

Knowing whether people are infectious in the absence of symptoms is a major concern for infection control in hospitals. While hospital acquired infection from asymptomatic individuals may occur, no prospective studies have investigated the transmission of influenza in the absence of symptoms in acute care.

To provide more evidence, Dr. Stefan Kuster from the University Hospital and University of Zurich in Switzerland and colleagues conducted a prospective study of influenza virus transmission trajectories in 542 patients on medical wards and 152 acute care healthcare workers working on the same wards during the 2015/2016 and 2016/2017 influenza seasons.

The team tracked flu infection through nasal swabs collected daily, and performed diagnostic multiplex real-time PCR and RNA sequencing on specimens. Contacts between participants were traced, and participants were asked to complete daily diaries of any illnesses.

During the study, 16 (11%) healthcare workers and 19 (4%) inpatients tested were diagnosed with an influenza infection. Most of these 35 participants experienced influenza symptoms, particularly respiratory symptoms, when their tests were positive. However, several remained asymptomatic despite testing positive for influenza infection (2/16; 13% healthcare workers and 2/19; 11% inpatients).

Importantly, 17% (12/71) of influenza-positive swabs from healthcare workers and 8% (3/38) from patients were collected on days that they did not report flu symptoms.

Furthermore, among symptomatic individuals, 14% (2/14) of healthcare workers (but none of the 17 symptomatic inpatients) had a positive influenza test before symptoms developed.

Further analyses based on local and temporal proximity of healthcare workers and inpatients revealed at least seven clusters of potential transmission events among healthcare workers, among inpatients, or between healthcare workers and inpatients. However, evidence based on local and temporal proximity for one possible transmission from an asymptomatic healthcare [worker](#) to an inpatient was not supported by

[genetic analysis](#).

"Our findings suggest that influenza infection in acute care is common and a significant proportion of individuals appear to shed influenza virus without harbouring any symptoms, making the spread of flu very difficult to control even with self-diagnoses and current [infection](#) control practices", says Dr. Kuster. "Influenza vaccination is not perfect but remains the best tool we have to protect [healthcare workers](#) and their patients from severe illness."

The authors note that more research on how influenza is transmitted in hospitals is needed before it can be firmly established whether people with no clinical symptoms may be contributing to the spread of the virus without realising.

The authors note several limitations including that the study was conducted in a single institution, and the total number of influenza events was moderate. They also note that because participating wards were alerted to the influenza problem, they may have paid more attention to prevention measures, and it is possible that transmission rates may generally be higher than seen in the study.

Provided by European Society of Clinical Microbiology and Infectious Diseases

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