High levels of respiratory pathogens present in the air of nurseries, schools, nursing homes during winter

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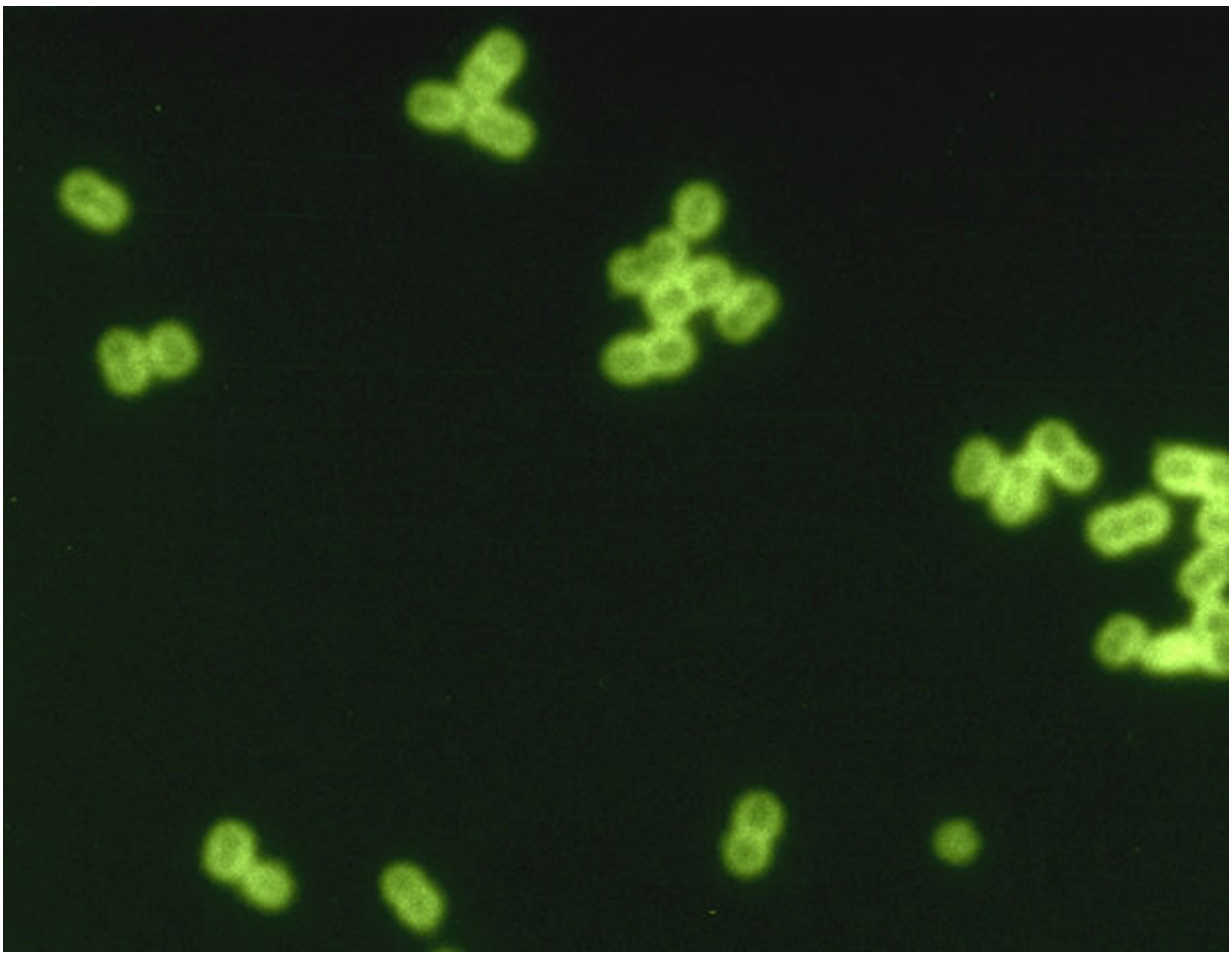

Streptococcus pneumoniae. Credit: CDC/Dr. M.S. Mitchell

High levels of respiratory pathogens are present in the air of nurseries, schools, nursing homes and other indoor settings during winter, according to new research being presented at this year's European Congress of Clinical Microbiology & Infectious Diseases (ECCMID) in Lisbon, Portugal, (23-26 April).

Airborne respiratory infections can cause outbreaks in group settings such as nurseries, schools and nursing homes. Patients typically have mild, non-specific symptoms but some outbreaks can be serious, depending on the pathogen involved and the setting.

It is important to know in which settings infections are most likely to circulate if outbreaks are to be controlled and prevented.

Ms Lore Budts, Department of Laboratory Medicine, UZ Leuven, Leuven, Belgium, and colleagues collected air samples from six group settings in Leuven catering to different age groups from October 2021-February 2022.

The locations were: nursery (age group 0-3y), kindergarten (3-6y), primary school (6-12y), secondary school (12-18y), university (18+) and nursing homes (65+).

The air was sampled up to four times a week for at least two hours at a time. 248 samples were collected in total and tested for 29 different pathogens (see abstract, link below, for full list of pathogens tested for).

Eighteen of the 29 pathogens were detected at least once, the other 11 were never detected. The highest number of pathogens found together at one time was eight, in a sample taken at the nursery.

The nursery children were exposed to both the greatest variety of pathogens and the highest concentrations.

The four most frequently identified pathogens in the nursery school were *Streptococcus pneumoniae*, human bocavirus, human cytomegalovirus and entero-/rhinovirus.

S. pneumoniae causes bacterial infections, mostly in the lungs (pneumonia). Bocavirus can cause respiratory symptoms and gastrointestinal symptoms. Cytomegalovirus is usually asymptomatic in healthy people but can be dangerous for pregnant women. Entero-/rhinovirus normally causes a common cold.

SARS-CoV-2, which causes COVID-19, and RSV (which can cause bronchiolitis in very young children) were intermittently detected in all age groups, in line with their circulation nationally.

Other common human coronaviruses which typically cause the common cold (HCoV-229E, HCoV-OC43 and HCoV-HKU-1) were detected sporadically.

Ms Budts says: "While it is difficult to directly compare the different settings, it was striking to find such a huge number and concentration of pathogens in such a wide range of indoor environments.

"Our observations support the need to increase air quality in settings most exposed to airborne pathogens (nurseries) or particularly vulnerable to some of these diseases (nursing homes), although a balance must be found between preventing exposure and the build-up of immunity which follows infection.

"Such interventions, if shown effective, could prevent part of the medical, economic and social burden associated with respiratory diseases."

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