

# All pumped up to detect airborne viruses

Duke-NUS Medical School studying infectious respiratory diseases on MRT trains

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Researchers at Duke-NUS Medical School have successfully detected common airborne viruses on board MRT trains, including influenza, adenovirus and respiratory syncytial virus (RSV), which cause flu and flu-like symptoms.

For a year, researchers carrying backpacks with sampling devices attached to air pumps rode East-West and North-East line trains during morning and evening peak hours.

This was to simulate commuters' regular exposure to potential viruses, they said. The devices can also be used in fixed locations.

A total of 89 air samples were collected between January last year and this year. Laboratory analysis found one or more common respiratory viruses in 14 of the samples.

The first of its kind study on MRT trains was led by Dr Kristen Coleman, a research fellow at the Emerging Infectious Diseases (EID) programme at Duke-NUS.

The method can potentially detect viruses in a population much faster than screening patients seeking medical care at clinics or hospitals, which can take several days.

If similar samplers are deployed at airport checkpoints or other high-risk crowded places, potential biological threats such as Sars or the H7N9 strain of bird flu could be detected in eight hours or less,



(Left) Dr Kristen Coleman wearing the apparatus used to collect air samples on MRT trains. (Above) The equipment is capable of separating larger and smaller particles into different tubes. TNP PHOTOS: REI KUROHI

Dr Coleman told media yesterday.

"A lot of the time, once we know that a pandemic is present, it is often too late and it can spiral out of control. If we can detect it earlier, we can start controlling it right away," she added.

Viruses can be spread when a person carrying them coughs or sneezes. Depending on the size, droplets containing the viruses can travel up to 90cm before settling.

The device used to collect samples is able to separate larger and smaller particles.

Larger particles, measuring more than 4 micrometres, are referred to as "inhalable" particles and usually affect the upper respiratory tract.

Smaller particles are referred

to as "respirable" and can be absorbed deeper into the lungs, causing more serious respiratory problems.

Before the technique can be applied practically to safeguard public health, more research is needed to determine the optimal conditions for monitoring specific types of viruses, said Dr Coleman.

Dr Gregory Gray, a professor of the EID research programme and a senior author of the study, said: "MRT riders may be at a higher risk of exposure to respiratory viruses. We hope this study will motivate scientists around the globe to collaborate on similar field studies to unveil the true risk of exposure while using public transportation."

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