Reducing the transmission of infectious diseases in transport hubs

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Transport plays a major role in the spread of transmissible diseases. PANDHUB, a project coordinated by VTT Technical Research Centre of Finland Ltd, develops ways of reducing the risk of pandemics and managing other high-threat pathogen incidents in transport hubs.

Globalisation and the growing popularity of air travel increase the risk of the spread of transmissible diseases. There were approximately 3.3 billion flights around the world in 2014, of which 44% were long-distance flights. The number of airline passengers is forecast to double in the next 15 years.

The objective of the international PANDHUB project is to assess threats, to forecast, and to model and develop preparedness and ways to limit the spread of serious high-threat infections in transport hubs, such as airports and underground and train stations. The project also involves testing and developing tools, such as modern, fast mobile tools, for dealing with pandemic threats.

The project began by identifying hotspots where the risk for transmission of microbes is at least periodically increased due to favourable conditions or human behaviour. The project seeks to establish the potential routes by which infections are transmitted, passenger flows, and the special characteristics of transport hubs. Microbes can be transmitted through breathing, sneezing or touching.

The risk of transmission of infectious diseases depends on many factors,

such as the route of transmission, the virulence of the microbe, and the susceptibility of the exposed passenger. In normal circumstances, the risk of transmission on public transport is low and requires no special measures apart from normal hygiene, but locations and situations in which there is an increased risk need to be identified so as to prepare for epidemics.

The outcomes of the project will be helpful in analysing risks, preparing for emergencies, and planning responses. The project will also produce instructions for effectively cutting off different routes of transmission and for protecting, cleaning and decontaminating people and facilities. The project's deliverables will be available towards the end of 2017, and they will benefit health, emergency response and safety authorities as well as parties such as the European Centre for Disease Prevention and Control, WHO, transport hub operators and, indirectly, through improved safety, passengers.

VTT's role in the project is to develop risk analyses, protection and decontamination techniques. Finnish businesses will be able to make use of the project's outcomes in developing ventilation, filtering and pathogen reduction solutions.

Provided by VTT Technical Research Centre of Finland