COVID-19, protective measures and air travel

Source: Emerging Science Group of the Public Health Agency of Canada. Evidence Brief of the Evidence on the Risk of COVID-19 Transmission in Flight, Update 2; May 2021. Full report available from: phac.ocsoevidence-bcscdonneesprobantes.aspc@canada.ca

Background: Many changes have been implemented by airlines during the pandemic to reduce the risk of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission during air travel. This evidence brief is an update on in-flight transmission of SARS-CoV-2 and the strategies developed to mitigate transmission during boarding, flight and disembarkation.

Methods: Twenty databases and key websites were searched for relevant reviews, peer-reviewed publications and pre-prints up to April 26, 2021. These articles were screened, potentially relevant citations were examined, and relevant data were extracted into evidence tables.

Results: Sixty-four studies were identified in total including 29 studies published between October 2020 and April 26, 2021.

- Most in-flight transmission events occurred on flights early in the pandemic when mandatory use of face masks in flights was not yet in place. Those seated within two rows of an index case were at higher risk of contracting coronavirus disease 2019 (COVID-19). Increasing the duration of a trip increased infection transmission risk. This increased transmission may be partially due to travellers removing their masks during meal service on longer flights.
- Combining multiple interventions was the most effective strategy for reducing transmission risk. Enhanced protective measures included the following: enhanced cleaning; universal use of face masks; hand hygiene; reduced flight capacity; physical distancing on embarkation and disembarkation; designated crew only areas; and quarantine areas for unwell passengers and crew.
- The risk of transmission in simulation models was higher on flights near capacity compared with those with empty middle seats that allowed for more physical distancing.
- Symptom checks were not always effective due to lack of compliance.
- Airplane ventilation systems quickly refresh cabin air, reducing opportunities for transmission. Environmental studies estimated that in-flight airborne particle numbers and mass were lower than those of other forms of transportation and of retail/grocery stores, restaurants, office spaces and homes.

Conclusion: Effective ventilation and layered interventions, in combination with enhanced protective measures, were shown to reduce the risk of COVID-19 transmission during air travel across the 64 studies included in this review. Future research needs to assess both the effects of the new variants on transmissibility risk and the vaccine status of both travellers and airline staff in mitigating risk.