Letter to the Editor

SARS-CoV-2 rapid antigen testing for departing passengers at Vancouver International Airport

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Air travel is thought to be a major route of spread of severe acute respiratory coronavirus-2 (SARS-CoV-2),1 the virus responsible for coronavirus disease-2019 (COVID-19), across the world.2 Accordingly, airports have instituted strict screening measures to reduce the risk of transmission on flights. Here, we describe the experience of using a point-of-care lateral flow device for COVID-19 screening in airports.

We invited passengers between the ages of 19 and 80 years, who were boarding on a same-day domestic flight on WestJet at the Vancouver International Airport (YVR) between 23 November 2020 and 28 February 2021 to participate (Supplementary Figure S1 available as Supplementary data at JTM online). In February, we added four international flights, travelling from YVR to Amsterdam, the Netherlands (operated by KLM Royal Dutch Airlines). All international passengers had received polymerase chain reaction (PCR) testing for COVID-19 within 3 days prior to departure; by contrast, none of the domestic passengers had been previously tested for COVID-19. The study was approved by the University of British Columbia/Providence Research Ethics Board (#H20-03225) and was registered at ClinicalTrials.gov (NCT04665193).

We collected nasopharyngeal (NP) swabs from study participants in the departure area of YVR and performed rapid antigen testing using the Panbio COVID-19 Ag Rapid Test Device (Abbott®)3 according to the manufacturer’s instructions. We also performed PCR on all remnant NP swab samples according to standard protocols. Continuous variables are reported as mean ± standard deviation (SD), and categorical variables are reported as % of total.

In total, 627 travellers (405 WestJet and 187 KLM) were approached; 592 (94.4%) met the eligibility criteria and consented. All of the refusals (n = 35) occurred on WestJet flights. The most common reason for refusal was the possibility of being denied boarding with a positive test (n = 10; 28.6%), which was followed by the possibility of receiving a false-positive result (n = 6; 17.1%), fear of NP swabs (n = 6; 17.1%) and a preference for PCR testing (n = 5; 14.3%); eight travellers (22.9%) did not meet the study’s eligibility criteria. The demographic characteristics are summarized in Table 1. The swab-to-test-result time was less than 20 min. All NP swabs tested negative on Panbio with no invalid results and were confirmed to be negative on PCR (at a cycle threshold >40). Based on a Bayesian hierarchical model with 10 000 simulations in WinBUGS software and assuming a Beta prior with an exponential hyperprior and hyperparameter 1, the median prevalence of COVID-19 in our setting was 1.2 cases per 1000 tested individuals with a 95% credible interval of 4 × 10⁻⁵ – 6 × 10⁻³ (Supplementary Figure S2 available as Supplementary data at JTM online), which is consistent with a previous finding.4

Here, we demonstrated that COVID-19 screening using a lateral flow device is feasible in passengers departing on same-day flights. All passengers tested negative both on Panbio and PCR, indicating no false negatives. There were limitations to the study. Participants were volunteers and as such selection bias...
Table 1. Demographic and clinical characteristics of participants (N = 592).

| Characteristic                      | Value         |
|------------------------------------|---------------|
| Age, years                         | 40.32 ± 15.62 |
| Sex, females                       | 47.8%         |
| Ethnicity/race                     |               |
| White                              | 67.9%         |
| Asian                              | 13.5%         |
| Hispanic                           | 1.7%          |
| First Nations                      | 2.6%          |
| Others                             | 14.4%         |
| Body mass index, kg/m²             | 25.45 ± 5.33  |
| Vaccination status                 |               |
| Influenza (flu shot)               | 43.9%         |
| Pneumococcal                       | 10.6%         |
| COVID-19                           | 0.3%          |
| Nicotine smoking status            |               |
| Current                            | 10.1%         |
| Former                             | 17.8%         |
| Never                              | 72.1%         |
| Cannabis smoking status*           |               |
| Current                            | 8.4%          |
| Former                             | 12.0%         |
| Never                              | 79.6%         |
| Vaper (nicotine/cannabis)          | 5.6%          |
| Symptoms                           |               |
| Cough                              | 0.18%         |
| Sore throat                        | 0.91%         |
| Runny nose                         | 2.6%          |
| Muscle aches                       | 0.55%         |
| Phlegm                             | 1.1%          |
| Night sweats                       | 0.74%         |
| Co-morbidities                     |               |
| Lung disease                       | 5.2%          |
| Heart disease                      | 4.5%          |
| Diabetes                           | 4.7%          |

*denotes N = 167

Supplementary data

Supplementary data are available at JTM online.

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Conflict of interest

JD is an employee of the Vancouver Airport Authority. All the others declare no conflict of interest.

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