

Bites and Bytes : digital surveillance of illness in travellers using the ITIT app

Nadja Hedrich¹, Thibault Lovey¹, Grobusch Martin², Bernhard Julian³, Patricia Schlägenhauf^{1,4}

¹ University of Zürich, Epidemiology, Biostatistics and Prevention Institute, ² Center for Tropical Medicine and Travel Medicine, Department of Infectious Diseases, Amsterdam UMC, location University of Amsterdam, ³ Charité-Universitätsmedizin Berlin, Charité Center for Global Health, Institute of International Health, ⁴ WHO Collaborating Centre for Travellers' Health, Department of Global and Public Health, MilMedBiol Competence Centre

Background:

Travellers are considered sentinels for disease and outbreak detection. Current surveillance of illnesses in travellers is often slow and cumbersome. A new method, utilizing real-time, symptom reporting via a mobile app: ITIT (Illness Tracking in Travellers), may supplement existing surveillance systems.

Materials and Methods:

This study uses daily symptom questionnaires, connected to demographic, climate, and location information, and supplemented with a post-travel questionnaire to examine travel-related illness. Persons over 18 years of age who cross an international border can participate.

Results:

Over 1000 travellers were recruited and provided symptom information. Of these, 55% were female, 83% were nonsmokers, and the mean age was 38 years. The average trip duration was 29 days, and most travellers were leisure/tourist travellers, followed by those visiting friends and relatives (VFR) and business travel. Every continent was visited and the entire range of symptoms and symptom types were reported. Post-travel questionnaires were filled by 246 travellers, over 70 of which self-treated - 23 travellers for diarrhea, 15 for respiratory symptoms, and 9 for vomiting. Ten travellers were diagnosed with an infection after their trip. Infections included amoebiasis, giardia, campylobacter, borreliosis and COVID-19. Almost a fifth of travellers reported experiencing some symptoms after returning from their trip.

Conclusion:

Real-time, self-reported symptom tracking using ITIT is key to sentinel surveillance. The study's findings underscore the diverse nature of infections experienced during and after trips and the prevalence of self-treatment among travellers. Bottom-up data from travellers is key for timely detection of alerts and potential outbreaks.