Estimating the actual importation risk of dengue virus infection among Japanese travelers

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Japan has experienced an increasing number of imported case notifications of dengue virus (DENV) infection, mostly arising from Japanese travelers visiting South and Southeast Asian countries[1]. The present study aimed to infer the risk of DENV infection among Japanese travelers to Asian countries, thereby obtaining an actual estimate of the number of DENV infections among travelers.

For eight destination countries (Indonesia, Philippines, Thailand, India, Malaysia, Vietnam, Sri Lanka, and Singapore), we collected age-dependent seroepidemiological data. We also retrieved the number of imported cases, who were notified to the Japanese government, as well as the total number of travelers to each destination. Using a mathematical model, we estimated the force of infection in each destination country while jointly inferring the reporting coverage of DENV infections among Japanese travelers from datasets of imported cases and travelers. Assuming that travelers had a risk of infection that was identical to that of the local population during travel, the reporting coverage of dengue appeared to range from 0.6% to 4.3%. The risk of infection per journey ranged from 0.02% to 0.44%.

We found that the actual number of imported cases of DENV infection among Japanese travelers could be more than 20 times the notified number of imported cases.

References

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