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Original Article

An Estimation of the Probability of Detecting Imported Cases of Ebola Virus Disease at Airports in Taiwan

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Abstract

As of October 17, 2014, a total of 9,191 cases of Ebola virus disease, including 4,546 deaths, have been reported from the 3 most affected countries in West Africa. The World Health Organization has urged countries with widespread and intense transmission to conduct exit screening at airports and seaports. There should be no international travel for Ebola contacts or cases. To evaluate whether entry fever screening on arrival at airport in Taiwan is capable to detect Ebola cases imported from West Africa, a simple mathematical model has been developed using two variables, incubation period and flight duration. Given the estimated flight durations between 29.8 and 41.7 hours, with 12.8% to 16.9% of Ebola infected passengers may be symptomatic on arrival, thus 10.1% to 13.2% of symptomatic Ebola cases may be detected at airport entry by fever screening. Fever screening at airports, which is a part of public health intervention, is to add a safety line to the Ebola control in Taiwan. Nevertheless, fever screening can detect symptomatic cases on arrival only and the limitation will be more for diseases with longer incubation period. Other strategies are also required, including improving the passengers' self-awareness, educating the general public and training of the health care providers, to stop the spread of Ebola virus.

Keywords: border quarantine, fever screening, Ebola virus disease, imported cases