

ORIGINAL RESEARCH

On the 2-Row Rule for Infectious Disease Transmission on Aircraft



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Abstract

BACKGROUND With over two billion airline passengers annually, in-flight transmission of infectious diseases is an important global health concern. Many instances of in-flight transmission have been documented, but the relative influence of the many factors (see below) affecting in-flight transmission has not been quantified. Long-standing guidance by public health agencies is that the primary transmission risk associated with air travel for most respiratory infectious diseases is associated with sitting within two rows of an infectious passenger. The effect of proximity may be one of these factors.

OBJECTIVE The aim of this study was to determine the risk of infection within and beyond the 2-row rule given by public health guidance.

METHODS We searched the literature for reports of in-flight transmission of infection which included seat maps indicating where the infectious and infected passengers were seated.

FINDINGS There is a ~ 6% risk to passengers seated within the 2-rows of infected individual(s) and there is ~ 2% risk to passengers seated beyond 2-rows from the infectious individual.

DISCUSSION Contact tracing limited to passengers within 2-rows of the infectious individual(s) could fail to detect other cases of infections. This has important consequences for assessing the spread of infectious diseases.

CONCLUSIONS Infection at a distance from the index case indicates other factors, such as airflow, movement of passenger/crew members, fomites and contacts between passengers in the departure gate before boarding, or after deplaning, are involved.

KEY WORDS Airplane cabin, infectious disease transmission, disease risk, SARS, influenza

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BACKGROUND

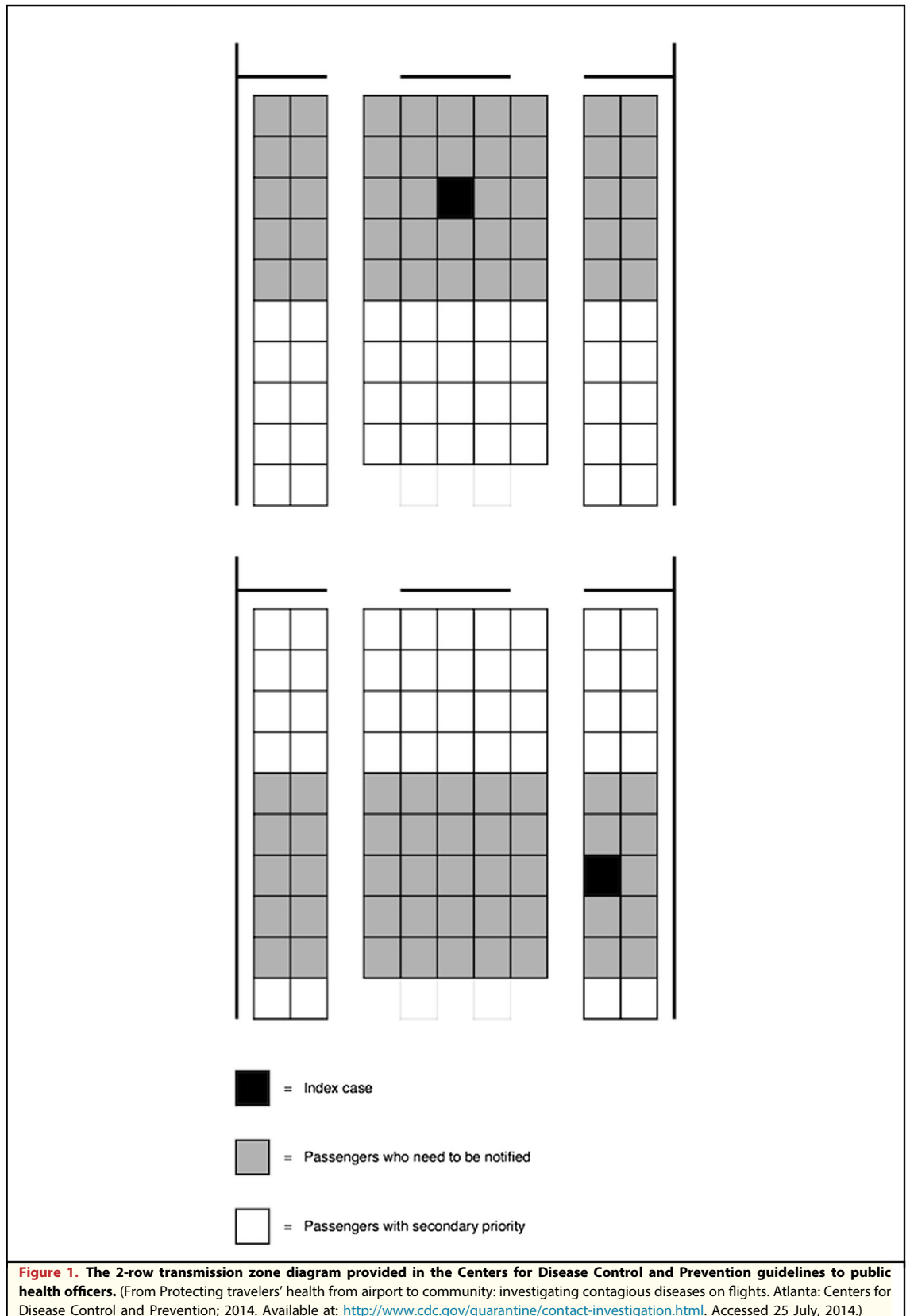
With more than 2 billion airline passengers annually, in-flight transmission of infectious diseases is an important global health concern.^{1,2} Many instances of in-flight transmission have been documented, including cases of cholera,³ influenza,⁴⁻⁸ measles,^{9,10}

meningococcal infections,¹¹ norovirus,¹² severe acute respiratory syndrome (SARS),^{13,14} shigellosis,¹⁵ and tuberculosis.¹⁶⁻¹⁸ However, the risks of in-flight transmission are largely unknown.¹⁴

Cabin transmission of infectious diseases can occur through several routes. In this paper we concentrate on droplet transmission, which occurs via

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