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## Border Restrictions: Not an Effective Means of Preventing the Spread of Swine Flu

By Jennifer Nuzzo, SM

There have been several news reports that nations have begun to employ thermal fever screens at the border to limit the importation of swine flu. Although this may appear to be a reasonable step for countries to take to try to protect their citizens, experiences during past outbreaks have shown otherwise. (Most recently, the 2003 experience with SARS demonstrated the futility of such measures.)

Following advice from an expert panel, the World Health Organization (WHO) has recommended that nations DO NOT close borders or restrict international travel to control swine flu. [1]

### Historically, Border Closures & Travel Restrictions Not Effective

Historically, closing airports and screening travelers at borders have not been effective in preventing the importation of disease. In its historical analysis of previous influenza pandemics, the WHO concluded that “screening and quarantining entering travelers at international borders did not substantially delay virus introduction in past pandemics . . . and will likely be even less effective in the modern era.” [2]

Similar conclusions were reached by public health authorities involved in the international efforts to control SARS. Canadian health authorities reported that “available screening measures for SARS were limited in their effectiveness in detecting SARS among inbound or outbound passengers from SARS-affected areas.” [3] In China, 14 million people were screened for fever at the airport, train stations, and roadside checkpoints, but only 12 were found to have probable SARS.[4] Singapore reported that after screening nearly 500,000 air passengers, none were found to have SARS.[5]

In light of these experiences, a WHO Writing Group on SARS also concluded that “entry screening of travelers through health declarations or thermal scanning at international borders had little documented effect on detecting SARS cases.” [4]

### No Reliable Methods Available for Rapid Screening

There is no reliable way to rapidly determine if someone has swine flu at the borders or anywhere else. At the present time, the symptoms of swine flu are not easily distinguishable from other much more common diseases, such as seasonal flu and other respiratory infections. [6] There are currently no rapid clinical tests that can conclusively determine on-site if an individual has swine flu. In fact, at this point, confirmation of swine flu requires sophisticated analyses beyond general screening for influenza or influenza-like illness. [7]

## No Evidence to Support Use of Thermal Screens

In particular, there is little empirical evidence that thermal screens, which rapidly measure a person's temperatures, will be effective. They have been proposed (and in some locations are in use) as the method for rapid screening to identify infected individuals in airports and hospital entries. There are questions about the accuracy of any technology that attempts to assess fever by measuring skin temperature (including "sophisticated imaging" techniques, such as the large thermal scanners that are deployed in some international airports).

In one published [study](#), infrared thermal devices, which measure the temperature of an individual's skin, were shown to be poor predictors of whether an individual actually has a fever. [8] According to the study, the infrared tool correctly ruled out fever among 99% of individuals who did not have fever, based on measurement of core-temperature, but it correctly identified fever in only 10% of patients. The accuracy of the skin-temperature-based devices also varies with regard to the degree of an individual's age and fever and the outdoor temperature. Consequently, the authors concluded that measuring a patient's skin temperature with an infrared device does not reliably detect fever. [8]

There are also biological reasons why rapid methods of screening for fever are not a reliable way to detect if an individual is infectious:

1. Most rapid fever screeners measure skin temperature, which has been found to be a poor predictor of actual body temperature.
2. Fever is not a constant phenomenon during an infection.
3. Medications commonly taken by sick individuals may reduce fever. [8]

## Passive Surveillance Measures Can Be Effective in Controlling Disease Spread

Although closing borders or routinely screening travelers at borders are not likely to be effective methods for controlling the spread of disease, passive surveillance methods (in which symptomatic individuals report illness) can be important tools in that effort. For example, informing travelers about the risks and symptoms of swine flu and what to do if they experience symptoms that start after their arrival in a country is of greater importance than scanning every traveler in an effort to contain a disease. During the SARS outbreak, active screening for illness at borders was not effective. However, a probable SARS case who entered Canada free of symptoms did follow the instructions of a health notice when he subsequently developed symptoms consistent with SARS. He was ultimately reported as a probable case of SARS, but he did not transmit the disease to others. [8]

## WHO Encourages Prudence

At this time, the WHO considers the following to be "prudent" measures for limiting the spread of swine flu among countries:

1. People who are ill should delay international travel.
2. Those who develop symptoms following international travel should seek medical attention. [1]

## References

1. World Health Organization. Statement by WHO Director General Dr. Margaret Chan—Swine influenza. April 27, 2009. [http://www.who.int/mediacentre/news/statements/2009/h1n1\\_20090427/en/index.html](http://www.who.int/mediacentre/news/statements/2009/h1n1_20090427/en/index.html). Accessed April 28, 2009
2. World Health Organization Writing Group. Nonpharmaceutical public health interventions for pandemic influenza, national and community measures. *Emerg Infect Dis* 2006;12:88-94. <http://www.cdc.gov/ncidod/eid/vol12no01/05-1371.htm>. Accessed April 28, 2009.
3. St. John RK, King A, de Jong D, Bodie-Collins M, Squires SG, Tam TWS. Border screening for SARS. *Emerg Infect Dis* 2005;11(1):6-10. <http://www.cdc.gov/ncidod/EID/vol11no01/04-0835.htm>. Accessed April 28, 2009.
4. Bell DM, World Health Organization Working Group on Prevention of International and Community Transmission of SARS. Public health interventions and SARS spread, 2003. *Emerg Infect Dis* 2004;10(11):1900-1906. <http://www.cdc.gov/ncidod/EID/vol10no11/04-0729.htm>. Accessed April 28, 2006.
5. Wilder-Smith A, Goh KT, Paton NI. Experience of severe acute respiratory syndrome in Singapore: importation of cases and defense strategies at the airport. *J Travel Med* 2003;10:259-262.
6. CDC. Swine Influenza and You. [http://www.cdc.gov/swineflu/swineflu\\_you.htm](http://www.cdc.gov/swineflu/swineflu_you.htm). Accessed April 28, 2009.
7. Adalja A. Swine Flu Update: April 28. *Emergency Physicians Monthly* April 28, 2009. [http://www.epmonthly.com/index.php?option=com\\_content&task=view&id=476&Itemid=28](http://www.epmonthly.com/index.php?option=com_content&task=view&id=476&Itemid=28). Accessed April 28, 2009.
8. Hausfater P, Zhao Y, Defrenne S, Bonnet P, Riou B. Cutaneous infrared thermometry for detecting febrile patients. *Emerg Infect Dis* 2008;14(8):1255-1258. <http://www.cdc.gov/eid/content/14/8/pdfs/08-0059.pdf>. Accessed April 28, 2009.
9. Samaan G, Patel M, Spencer J, Roberts L. Border screening for SARS in Australia: what has been learnt? *Med J Aust* 2004;180(5):220-223. [http://www.mja.com.au/public/issues/180\\_05\\_010304/sam10829\\_fm.html#i1083115](http://www.mja.com.au/public/issues/180_05_010304/sam10829_fm.html#i1083115). Accessed April 28, 2009.

Press Contact

**Molly D'Esopo**

443-573-3307

Mdesopo@upmc-biosecurity.org