

Short communication

## Behavior of Adult Influenza Patients during the 2009 Pandemic after Outpatient Clinic Presentations at a Hospital in Tokyo, Japan

Daisuke Nonaka<sup>1,2\*</sup>, Hirohisa Morikawa<sup>3</sup>, Hiroko Arioka<sup>3</sup>, Jun Kobayashi<sup>4,5</sup>, Ryosuke Shoda<sup>6</sup> and Tetsuya Mizoue<sup>2</sup>

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**Abstract:** The 2009 pandemic of novel swine-origin influenza A (H1N1) highlighted the importance of community mitigation measures such as voluntary isolation. During the pandemic, we investigated the voluntary isolation behavior of patients with influenza during the 7-day period after they visited an outpatient clinic at a hospital in Tokyo, Japan. A questionnaire-based survey was conducted on patients diagnosed with influenza. Of a total of 14 patients, 13 (93%) visited a workplace, school or other potentially crowded setting at least once in the 7-day period after presentation. Five patients (36%) visited a potentially crowded setting either with a fever or on the day after having a fever. The voluntary isolation behavior of Japanese people with influenza did not necessarily adhere to the Japanese government recommendation that people with influenza-like illness stay home for 7 days following the onset of symptoms.

**Key words:** influenza, disease outbreaks, behavior, patient, health policy

### INTRODUCTION

In Japan, the 2009 pandemic of novel swine-origin influenza A (H1N1) started in May and resulted in a total of 13,784 hospitalized cases by December [1]. Intensive transmission was observed before the vaccine became widely available, highlighting the importance of community mitigation measures.

Little is known about the behavior of people with influenza in view of community mitigation measures such as voluntary isolation. Previous studies conducted in the United States and Australia assessed the public response to recommendations to stay home for a week [2–4]. However, these studies were conducted in hypothetical settings. The actual behavior of people suffering from pandemic influenza is yet to be documented. During the 2009 pandemic, we investigated the voluntary isolation behavior of patients with influenza during the 7-day period after they visited an outpatient clinic in Japan.

### MATERIALS AND METHODS

A questionnaire-based survey was conducted at the National Center for Global Health and Medicine, a 700-bed hospital in Tokyo. Patients aged 16 or over, who appeared at the hospital's General Internal Medicine outpatient clinic during consultation hours between December 17, 2009 and March 2, 2010, and who were diagnosed with influenza either by rapid immuno-chromatography test (ESPLINE® Influenza A&B-N, FUJIREBIO Tokyo) or by assessment of clinical symptoms, were included in the study. Those who did not return the questionnaire were excluded.

After consultation with every patient who met the inclusion criteria, physicians briefly explained the study and conducted a questionnaire. The questionnaire included a diary-based reporting form in which patients were asked to record daily medications, fever and cough symptoms, and places that they visited during the 7-day period after visiting the outpatient clinic. When recording fever, patients were

<sup>1</sup> Department of Parasitology and International Health, Graduate School of Medicine, University of the Ryukyus, 207 Uehara, Nishihara-cho, Okinawa 903-0215, Japan

<sup>2</sup> Department of Epidemiology and International Health, International Clinical Research Center, National Center for Global Health and Medicine, 1-21-1 Toyama, Shinjuku, Tokyo 162-8655, Japan

<sup>3</sup> Department of General Internal Medicine, National Center for Global Health and Medicine, 1-21-1 Toyama, Shinjuku, Tokyo 162-8655, Japan

<sup>4</sup> Department of International Medical Cooperation, National Center for Global Health and Medicine, 1-21-1 Toyama, Shinjuku, Tokyo 162-8655, Japan

<sup>5</sup> Graduate School of International Health Development, Nagasaki University, 1-12-4 Sakamoto, Nagasaki-city, Nagasaki 852-8523, Japan

<sup>6</sup> Department of Internal Medicine, National Higashi-Saitama Hospital, 4147 Kurohama, Hasuda, Saitama 349-0196, Japan

\*Corresponding author:

Tel: +81-98-895-1129

Fax: +81-98-895-1409

E-mail: laodaisuke@hotmail.co.jp

asked to measure body temperature with a thermometer that was distributed with the questionnaire. Patients were not given any specific instructions about voluntary isolation.

The study protocol was approved by the National Center for Global Health and Medicine. Participants knew that their participation would be voluntary and that all data obtained would be confidential. Written consent was obtained from all participants.

## RESULTS

Two of the 22 patients who met the inclusion criteria were excluded because they appeared at the clinic outside regular consultation hours. Of the remaining 20 patients, 6 did not return the questionnaire. Thus, a total of 14 patients participated in the study, with a response rate of 70% (14/20).

About half (43%) of the participants were male, and the median age was 31 years. Most of the participants (11, 79%) were employed. Two of the participants were high school students and one was a housewife. Apart from 2 participants who failed to report the onset of illness, nine of the 12 participants (75%) attended the outpatient clinic no later than the day of onset or the following day. When seeing a doctor, almost all participants (93%) reported both fever and cough symptoms. All participants were tested with the rapid test, and 12 (86%) were positive for influenza A.

Of the 11 employed people, 5 (45%) reported that they returned to the workplace within 7 days of presentation. The two high school students also returned to school by the seventh day. Ten participants (71%) reported visiting a potentially crowded setting other than their workplace, school, or hospital (e.g., downtown, train station, supermarket, or meeting place); overall, 13 (93%) visited a potentially crowded setting at least once. None of the participants visited any other place on the day of presentation to the hospital (Fig. 1). However, the number of participants who visited a potentially crowded setting increased thereafter. Five participants (36%) visited a potentially crowded setting either with a fever or on the day after having a fever.

## DISCUSSION

In this study, which was conducted in one of the most populous areas of Japan, 13 of 14 participants (93%) visited a workplace, school, or other potentially crowded setting at least once during the 7-day period after presentation. These results suggest the existence of a wide gap between patient behavior and the Japanese government recommendation that people with influenza-like illness stay home for 7 days following the onset of symptoms [5].

Recently, the United States Center for Disease Control

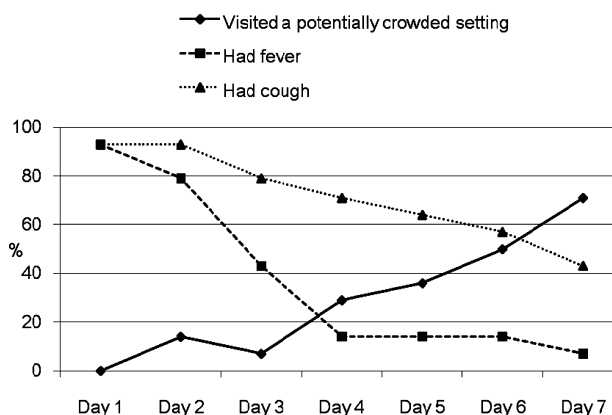


Fig. 1. Changes in reported visits to a crowded place and symptoms in the 7-day period following presentation to the outpatient clinic.

and Prevention has adopted the less stringent recommendation that people with influenza-like illness remain at home until at least 24 hours after they become free of fever [6]. If this were applied to our data, 5 participants (36%) would be considered to have acted against the recommendations.

This gap is due to a number of factors. First, many participants may have been unaware of the recommendations [7]. Second, this study was conducted in the late stage of the pandemic, when mortality turned out to be lower than anticipated. Previous studies reported an association between the perceived severity of the pandemic and protective behavior [4, 8]. Finally, employed people, who are known to be less likely to comply with advice to stay at home, accounted for 79% of the study population [3, 9].

In conclusion, the voluntary isolation behavior of Japanese people with influenza did not necessarily adhere to the Japanese government recommendations. Further efforts are necessary to rectify patient behavior that potentially facilitates the spread of disease.

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