

The use of PIU during the SARS crisis had a number of positive effects in Taiwan. It enabled the safe transport of SARS patients between hospitals by air and road and decreased the risk of cross-infecting transport personnel. The anxiety of transport personnel was decreased, as was the fear felt by the population of the outer islands. In addition, the credibility of the local health authorities was improved among the general population in Taiwan.

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Psychosocial Impact of SARS

To the Editor: An outbreak of severe acute respiratory syndrome (SARS) occurred from February to May 2003 in Hong Kong, China, Singapore, and Canada. According to the World Health Organization, 1,755 people were infected in Hong Kong; 386 of these were healthcare workers. A total of 300 persons died from SARS, constituting a death rate of 17% (1).

Evidence suggests that persons infected with SARS recovered physically, but SARS is associated with social and psychological problems poorly understood by the scientific community. A survey in a convalescent hospital in Hong Kong showed that approximately 50% of recovered SARS patients showed anxiety (2), and approximately 20% were fearful (2). Approximately 20% of the rehabilitated patients showed some negative psychological effects (3), which included insomnia and depression. Some patients with serious cases could not rid themselves of the memories of fighting SARS, and these memories disrupted their daily activities. These psychosocial problems may be due to the complications of

SARS medications, such as ribavirin and corticosteroid. Persons who took these drugs had hair loss, major memory loss, impaired concentration, and depression. A medical practitioner in Hong Kong who recovered from SARS attempted suicide because complications from drugs made him unable to earn his living (4).

In addition to SARS patients themselves, an estimated 50% of family members of SARS patients had psychological problems, including feelings of depression or stigmatization (5). They had difficulties sleeping, and some children who had lost parents cried continuously. Some children also felt embarrassed to be a member of a SARS family (6). The spouse of one healthcare worker who died from SARS attempted suicide at her workplace (7). The loss of parents who were SARS patients also impaired the growth of their children (7). A study conducted in China (8) reported that negative SARS-related information increased persons' perception of their risk and led to irrational nervousness or fear.

Although data from systematic studies of SARS do not exist, evidence suggests that this disease has psychosocial consequences for SARS patients, their families, and society. While biomedical scientists must continue their efforts to clarify the genetic makeup of the SARS coronavirus, look for new medications, and develop vaccines (9–13), the social and psychological aspects of SARS should not be overlooked. Since nearly all resources are devoted to biomedical research and medical treatment, psychosocial problems of SARS patients and their families are largely ignored. Our review of the literature using the ISI Web of Knowledge on January 17, 2004, substantiated this observation. To date, no systematic study examining psychosocial consequences of SARS has been published in scientific journals. A systematic exploration of how SARS negatively affects patients'

mental health is needed so that appropriate interventions may be implemented at individual, family, and societal levels.

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Highly Pathogenic Avian Flu, Japan

To the Editor: More than 15,000 chickens on an egg farm in Yamaguchi Prefecture (Chugoku area) have died since the end of 2003. A highly pathogenic avian influenza virus, which had not appeared in Japan for 79 years, was detected in the dead chickens. Of the 34,600 chickens on the farm, dozens to hundreds have died daily since December 28. Moreover, the deaths have increased during 2004. The Ministry of Agriculture, Forestry, and Fisheries ascertained that the same H5N1 avian influenza virus had caused the bird flu epidemic that started in 1997 in East Asia, including Hong Kong, Vietnam, and South Korea. The H5N1 type is a virulent pathogen that can also infect humans as demonstrated by the >20 deaths in Hong Kong, Vietnam, and Thailand. After the influenza infection was confirmed, the ministry immediately ordered the hennery to recall all

eggs that had been shipped. The hennery was then disinfected, and non-workers were restricted from entering. Yamaguchi Prefecture also restricted transfer of the chickens and eggs within a 30-km radius of the infected hennery. The hennery was the first facility infected in Japan. Since mid-February, an additional three outbreaks have occurred (one in Ohita Prefecture in Kyushu Island and two in Kyoto Prefecture in the Kansai Area). In a big poultry farm in Kyoto, 40,000 deaths of chickens, caused by H5N1, were confirmed. The H5N1 virus was also detected by polymerase chain reaction in crows found dead near the chickens in Kyoto. All four sites with infected chickens are in western Japan.

Modern stock raising that involves breeding a large number of domestic animals and fowl in high density has become a risk factor for large-scale outbreaks. The globalization of the marketplace and easy mobility of people and goods have facilitated the spread of many pathogens. Avirulent pathogens that mutate easily may acquire stronger infectious and toxic properties as confirmed in the influenza pandemic of 1918 (1).

Several possibilities exist for the appearance of avian influenza virus in Japan. First, migratory birds from disease-epidemic areas might be the primary vectors of the virus. Yamaguchi Prefecture is located 200 km south-east of South Cholla Province, South Korea, where avian influenza is epidemic. The two areas are close enough for wild birds to cross the Korean Strait. Ito et al. reported that avirulent viruses found in wild waterfowl and bearing the consensus avirulence type sequence R-E-T-R have the potential to become pathogenic when present in chickens (2). Thus, migratory birds that are asymptomatic carriers may cross the Korean Strait harboring the H5N1-type virulent viruses generated in Korea. Alternatively, people, cars, and feed grains instead