

Influenza and scientific articles

Influenza e publicações científicas

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Influenza, or flu, is an infectious disease caused by the Influenza virus, which is found the world over and has for centuries been responsible for epidemics among humans.^(1,2) This infection, although typically presenting a benign course, can cause a significant number of deaths in the elderly, in small children and in individuals with chronic disease. In temperate climates (with well-defined winters), mortality rates among individuals infected with the Influenza virus can reach 10%.

Influenza is an RNA virus that, in function of its genetic material, is classified as type A, B or C. Whereas types B and C are exclusively human, variants of type A also cause infection in birds, pigs, horses, whales, etc. The type A virus is also classified into subtypes, based on the presence of glycoprotein antigens (hemagglutinin and neuraminidase) on its surface. Flu epidemics are, as a rule, caused by type A or B viruses. This is because those virus types often undergo mutations in their antigenic composition. Pronounced changes in the antigenic composition of the Influenza A virus can lead to the appearance of new subtypes, such as the recently identified H1N1 subtype, with high pathogenic potential for organisms without prior immunity. Forms presenting antigenic variation can result from contact between humans and domestic birds or between humans and pigs, leading to viral co-infections that facilitate the exchange and incorporation of genetic material among microorganisms, primarily in humans and animals. By all indications, phenomena of this nature were at the root of the great flu pandemics of the 20th century: the Spanish flu (1918-1919); the Asian flu (1957-1958); and the Hong Kong flu (1968-1969).

In mid-March of 2009, cases of flu associated with the new Influenza A subtype (H1N1) appeared in Mexico. The infection spread rapidly. In little time, it was characterized as a nationwide epidemic that threatened to extend to other countries. The initial reports, released by the media, indicated that this new infection

was associated with high mortality. Over the next two months, cases of the then-designated "swine flu" were reported in dozens of countries, including Brazil.

Within this scenario, the popular media and the scientific press both played interesting roles. The prompt reporting of the facts related to the flu epidemic in Mexico was highly useful in educating the populace regarding the threat, as well as regarding the measures that should be taken in order to counter that threat. The use of electronic media, by medical and public health authorities, was fundamental for the dissemination of reliable, responsible, evidence-based information. Despite the fact that there might have been some degree of sensationalism, television, radio and the Internet contributed substantially to educating the public regarding the nature of the problem, as well as regarding the necessary preventives measures.

The worldwide computer network has become a boundless source of information and knowledge. In short order, documents containing vital information, for specialists and laypersons alike, appeared on the official sites of governmental health agencies and medical societies. I do not believe that it is an exaggeration to characterize all means of electronic communication, including the Internet, as playing a fundamental role in containing the epidemic of infection with the virus now known as Influenza A (H1N1).

What can we say regarding the role attributable to traditional scientific journals? In a situation such as this, these publications have an enormous responsibility. Initially, they are responsible for the dissemination of solid medical and epidemiological recommendations, written by specialists and opinion-makers within the field. In addition, new scientific information related to the flu epidemic, generated by cutting-edge researchers active in epidemiological surveillance networks, should rapidly be transformed into reliable scientific articles and promptly be made available to readers. Such tasks are certainly not easily achieved, since they require the collabora-

tion of reviewers willing to evaluate the articles in question within a few hours.

We are happy to relate that the traditional scientific journals have more than aptly met the challenge posed by this latest flu epidemic. A search on PubMed, conducted on 10 May 2009, revealed that no less than 20 articles related to the epidemic had been published within the preceding two months. These articles were made available in renowned journals such as the *New England Journal of Medicine*, *Science*, *Nature*, the *British Medical Journal* and the *Morbidity and Mortality Weekly Report* (MMWR).

The first reference to the current Influenza A epidemic appeared in an article published in the MMWR on 24 April 2009.⁽³⁾ The genetic sequence of the virus in question is now available online, and it has been shown to be composed of swine, avian and human elements.⁽⁴⁾ In fact, variants of the Influenza A virus with such characteristics have been identified in sporadic cases of flu occurring in the United States as early as 1998.⁽⁵⁾ The clinical characteristics of 642 confirmed cases are also available in an article published "ahead of print".⁽⁶⁾ Naturally, the speed at which these data are disseminated is attributable to the existence of the electronic versions of these scientific publications. Owing to its greater flexibility, speed of distribution, lower cost and minimal environmental impact, online dissemination undoubtedly represents the future of scientific publishing.

As part of the international effort to contain the current Influenza A (H1N1) flu epidemic, the *Brazilian Journal of Pulmonology* is publishing, in this issue, a special article that summarizes the currently available knowledge on the topic.⁽⁷⁾ Despite the fact that few cases have been reported in Brazil, the author attempts to provide a theoretical substrate, as well as describing the practical recommendations for clinical pulmonologists. The manuscript was written by invitation, and in record time, by Professor Alcyone Artioli Machado of the University of São Paulo at Ribeirão Preto School of Medicine, to whom we publicly extend our most heartfelt gratitude. In this issue, we also present a review article written by Andrade et al.,⁽⁸⁾ in which the authors address aspects related to H5N1, another variant of the Influenza A virus. The H5N1 subtype, responsible for the "avian flu", has the potential to cause serious

illness in humans, as has been observed in localized epidemics occurring in recent years.

It is estimated that the Spanish flu was responsible for over 50 million deaths between 1918 and 1919. At that time, intercontinental transportation was essentially by ship, and it could take weeks or months for individuals to reach their destination. In this, the jet age, intercontinental voyages are made in a matter of hours, which facilitates the dissemination of lethal viruses. One of the weapons against these risks is the even greater speed of communication. The prompt distribution of information related to such risks and to the prophylactic measures recommended has the potential to limit infectious outbreaks. The development of electronic scientific publications that are more rapidly made available and are in synchrony with public health needs is undoubtedly of fundamental importance for the success of these efforts.

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