Influenza pandemic of novel (H1N1) 2009 virus in Chile. How we dealt with the first wave?

This influenza pandemic that was expected to originate in Asia from the avian population, taught us that nature is enigmatic and unpredictable.

From the first alert about the new influenza virus A (H1N1) at the end of April 2009, that has the capacity of efficient person to person transmission, the scientific community around the world and in Chile has encountered many uncertainties.

Throughout the pandemic the characterization of the severity of this influenza has swung like a pendulum between extremely severe, with mortality of 10% and one which is milder than the usual seasonal influenza. Now with the accumulation of more scientific evidence its severity has been defined as moderate. This definition which appears to be trivial is of high importance because the decisions taken in managing the pandemic is based upon this information.

Available evidence to take decisions in managing the pandemic

From the time epidemic first stared at the end of April in North America until the detection of the first cases in Chile in the middle of May, a lot of information has been gathered but still lots of questions remain. The data from Mexico at the beginning of the outbreak probably demonstrated more reliably the natural evolution of the disease compared to the USA data because it was not modified by the use of antivirals. The situation in the USA was different due to the use of antivirals which didn’t allow the evaluation of the actual severity of the disease, the risk of complications and death.

In Chile, adding to these previous uncertainties was the climate factor. While in North America the epidemic developed during spring, the behavior of this new virus could be different in the southern hemisphere. Here not only the cold weather of winter could affect it, but also the circulation of the virus along with other respiratory viruses, including seasonal influenza viruses. Hence in Chile we faced the pandemic with many uncertainties but on the other hand we had a previously devised pandemic management plan. This enabled us to place our healthcare service on high alert, which in turn allowed us to mobilize our resources quickly, including man power, surveillance network and supply of antivirals. So we could face the storm in the best possible way with the objective of reducing the number of severe cases and deaths. Over the past two months we have gathered relevant information enabling us to adapt our management measures accordingly.

Lessons learnt so far

During the time of the epidemics development, firstly we have learnt that this new virus is highly transmissible, affecting a significant percentage of the population. Weekly incidence rates have been much higher compared with the outbreak of 2004, the biggest circulation of influenza in the past several years. It is no surprise that a large number of people have contracted the virus as the majority of the population is susceptible to this new virus. In addition the climatic conditions of winter facilitate a greater circulation of the virus and a more efficient transmission. Even if the mortality and morbidity rates are not high, the fact of large numbers of people becoming ill, it is still possible to encounter a high number of deaths and severe cases in a short time period.

Secondly, the circulation of the virus has been uneven throughout Chile. In the north the outbreak started later and had a more acute increase in the number of cases compared with the central and southern regions of the country. This leads us to conclude that this epidemic is heterogenic, demonstrating regional variations in its behavior.

The age group with the highest number of cases is between 5 and 19 years. Most cases have been mild and without complications. During the devolvement of the epidemic we have established the groups that are at the highest risk of mortality and severe disease. Besides the risk factors that are already known for seasonal influenza, such as pregnancy and underlying diseases like chronic respiratory illness, new risk groups have been added, these are persons with morbid obesity and even more concerning, healthy individuals between 15 and 50 years of age. Paradoxically the elderly are not a risk factor for this new influenza having low incidence and complication rates.

We have also learnt that in a pandemic quick decisions must be taken to face the threat. Most of these are based on mathematic modeling from what we historically know about previous pandemics, with many uncertainties. However late decisions while waiting to gather scientific data could have negative consequences for the health of the public and also economic and social problems.

One of the strategies implemented and somewhat controversial in the field of medicine was the prescription of antivirals for everyone consulting with an influenza like...
illness. This was adopted based on the following two factors, 50% of those with complications or who died where healthy, young individuals and the period between from the onset of symptoms and hospitalization was 3 days. These facts have also been confirmed in other countries. In this scenario the knowledge that the earlier antivirals are administered the better the efficacy, together with the lack of predictive factors for severity among this healthy population, we took the decision to prescribe antivirals to all those with confirmed influenza or with influenza like illness. Other countries such as United Kingdom and Japan have adopted a similar strategy.

The impact of this measure is under evaluation but we can conclude that the early consultation of people in the emergency units could reduce the morbidity and probably mortality, not only because of the direct effect of the antivirals but also due to appropriate medical attention, enabling the early detection of severe cases. On the other hand it also reduced the natural fear of the population facing a new disease as they knew there was a therapy available to treat this disease. The generalized use of the antivirals probably contributed in the reduction of its transmission as it shortened the period that the individual would be likely to transmit the disease.

A negative impact of this measure was probably the overloading of the health service, in particular the emergency units. However fear among the public can also contribute heavily to the overloading of health services, as occurred in New York city, where they had to prescribe antivirals to everyone presenting influenza like symptoms to reduce the number of people seeking medical care at emergency units. Resistance is another concern due to the mass usage of antivirals because of this virus’s capacity to mutate very easily. Research into resistance is ongoing and as yet none has been detected in Chile.

Data regarding the severity of the epidemic in Chile after 9 weeks indicates that the rate of hospitalization is 4.2/100,000 population, corresponding to 6.3% of confirmed cases. Infants of less than 1 year present the highest rates of hospitalization at 30/100,000 pop. The median age of severe cases is 29 years. Case fatality rate is 0.6% of confirmed cases, the majority being male with a median age of 47 years. Nearly 50% of those that die have underlying diseases, the other 50% of deaths have occurred in young and healthy people.

The debut of the new pandemic virus has practically eliminated the circulation of the seasonal influenza viruses but not other respiratory viruses, in particular RSV.

There are still many questions remaining, research and studies are in progress to answer the final attack rate, risk factors, the proportion of severe cases, case fatality rates and efficacy of the early and mass use of oseltamivir among others.

The time and subsequent evaluation after this first pandemic wave, comparing strategies and outcomes between different countries and communities, will enable us to take decisions based on the knowledge and experience we have acquired if we have to face a second wave.

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