

Managing and reducing uncertainty in the emerging influenza pandemic

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The presented paper describes the current situation of the novel influenza A (H1N1) epidemic and presents several alternatives for managing the yet uncertain development of this disease. The combination of urgency, uncertainty and high costs makes the effort to control infectious diseases especially difficult.

The influenza pandemic needs a graded series of interventions, from very limited to stringent measures, such as closing public venues and using antiviral drugs for treatment and prophylaxis. Mild measures are used for strains of seasonal influenza (fatality ratio around 0.1%), while stringent measures are important in severe pandemics (fatality ratio around 2%, deaths concentrated in the middle age group).

Regarding the novel H1N1 epidemic, decisions were made before definitive information on the severity, transmissibility and natural history of the virus was available. At the end of May, the United States reported already 11 deaths and 7927 confirmed cases (fatality ratio of 0.14%).

There are several factors which make it difficult to assess the severity of the epidemic accurately. The proportion of severe cases is overestimated in places where many mild cases are not tested, while severity estimates are under

evaluated when calculated as simple ratios of number of deaths to number of cases, because there is a delay between the onset of illness and death, induced by modern therapies.

The virus tends to infect younger people and caused a high hospitalization rate in the US. The much higher proportion of people likely to be infected in a pandemic (limited immunity to the new strain) will mean higher levels of severe outcomes. The illness will take a more severe form in less wealthy countries. While the Northern Hemisphere may see a decline in transmission over summer, the Southern Hemisphere is entering influenza season now. The current strain may become more severe or transmissible in the coming months.

The low specificity of clinical symptoms and signs makes the interpretation of incidence trends complicated. Without reliable incidence measures the epidemic's growth rate is impossible to track, estimates of severity remain uncertain and the effectiveness of control measures are difficult to assess.

Serologic studies and serologic survey during summer will permit estimation of the extent of spread and will provide baseline information about population immunity that will aid to vaccine targeting and interpretation of the patterns of illness in the autumn.

Clinical survey, combined with routine H1N1 testing of a systematic sample of patients would allow health organizations to estimate the proportion of mild and moderate infections, how they vary with age and other risk factors and would elucidate transmission dynamics. To extend the range of surveillance nontraditional approaches may be used (such as web based or phone based surveys, or tracking daily school absences).

International cooperation is crucial in growing the capacity of surveillance and for monitoring changes in antigenicity, severity, transmissibility and antiviral resistance. Public communication of risk is mandatory. The global extent of the pandemic should be described objectively and should be just one of many factors in public health decisions. □



Comment on the paper:

M. Lipsitch, S. Riley, S. Cauchemez et al – Managing and Reducing Uncertainty in an Emerging Influenza Pandemic. *N Engl J Med* 2009; vol. 360, no 22; downloaded from www.nejm.org