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Experts predict Tamiflu could halve the pandemic influenza death toll versus no intervention

First ever economic analysis shows Tamiflu use in a pandemic could save significant costs to society

BASEL 22nd June 2007 -- Treatment with the oral antiviral Tamiflu (oseltamivir) and prophylaxis for people exposed to infected patients could be one of the most cost-effective strategies for reducing illness and death during an influenza pandemic. According to modelling research presented by Beate Sander, University of Toronto, Canada, a stockpile of Tamiflu sufficient to cover 65% of a country's population could cut deaths by approximately half. This study was announced at the leading influenza conference, Options for the Control of Influenza VI, in Toronto.1

The reality is that country stockpiles of Tamiflu are limited and are targeted at treatment only rather than treatment and prevention.2 However, some governments are now planning for sufficient antiviral stockpiles that will allow them to provide Tamiflu preventatively to close contacts of infected individuals.

The disease modelling research analysed for the first time the cost-effectiveness of strategies to reduce the spread of pandemic influenza using Tamiflu prophylactically. It was predicted that this preventative approach is likely to be more cost-effective than treating symptomatic patients alone and may be an effective and cost-saving measure for reducing the impact of pandemic influenza.1 This research is supported by an earlier analysis that indicates that a prevention strategy using Tamiflu may help contain a pandemic outbreak.3

The study also predicts that if the stockpile is increased so that there is an unlimited supply of Tamiflu for treating symptomatic patients and for preventing infection in people exposed to these patients (household contacts and school/work contacts), illness attack rates and deaths could potentially be reduced by more than half when compared to no intervention. This equates to a cost saving of $70,000 per 1,000 population which would save $21 billion in the US alone

versus no intervention. Adding other strategies such as school closures further reduces the attack and death rate and provides a health benefit at a reasonable cost. The research also showed that pre-pandemic vaccination programmes would play an important role but their effectiveness would be dependent upon how well the vaccine was matched to the virus.1

The World Health Organisation provides a strong recommendation for the use of Tamiflu for the prevention of avian flu in people who have been in contact with someone who is known, or suspected of being infected with the virus,'commented Professor Ira Longini, Professor of Biostatistics and Mathematics at the University of Washington, Seattle, USA. This research suggests that a similar approach may also be an effective strategy in the event of an actual pandemic outbreak, especially as it is unlikely that a vaccine fully matched to the strain will be available in the initial wave of a pandemic.'

Prophylaxis with antivirals or vaccines

Vaccination is the primary means of preventing influenza. However, at the beginning of a pandemic, supplies of vaccines which are fully matched to the pandemic strain will be limited or non-existent. This is because vaccine production can only start once the specific pandemic virus has been determined. The first doses of a matched vaccine are unlikely to become available within the early months of the pandemic, making prophylaxis and treatment with antivirals a crucial part in the efforts to reduce the burden of pandemic influenza.4

'In an environment full of uncertainties, it is best to have a comprehensive plan in place,'said Arnold Monto, professor of epidemiology and influenza expert at the University of Michigan. Tamiflu is active against all types of influenza virus and will be immediately available during a pandemic if stockpiles are adequate. The big question is, should we be stockpiling for treatment only or for both treatment and prophylaxis"'/p>

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Note to editors:

About the study

The objective of the study was to project the potential impact of pandemic influenza mitigation strategies on health outcomes, cost and cost effectiveness from a societal perspective in the US. The population was based on 1,632,000 people of approximate household size distributions from the 2000 US census. The analysis compared no intervention with 16 single and

combination strategies including antiviral post-exposure prophylaxis (PEP) with Tamiflu; treatment with Tamiflu; pre-vaccination before the outbreak of the pandemic with a partially active vaccine; and school closure. It was assumed that Tamiflu stockpiles of varying quantities were available from the start of the pandemic, ranging from covering 25% of the population to unlimited stockpile. The model was based upon assumptions regarding the efficacy of Tamiflu and of vaccines in reducing mortality and morbidity during a pandemic. Illness attack rate was reduced from 500 cases per 1000 population with no intervention to 230 cases per 1000 population in the Tamiflu PEP group. Deaths were reduced from 13 deaths per 1,000 population to 5 deaths per 1,000 population. This study was supported by an unrestricted educational grant from Roche.

About pandemic influenza

An influenza pandemic occurs when a new strain of influenza A virus appears, against which the human population has no immunity resulting in several, simultaneous epidemics worldwide with enormous numbers of deaths and illness. The most severe influenza pandemics to date include: 全panish flu‧A (H1N1): 1918 caused in excess of 30 million deaths worldwide, Asian flu‧A (H2N2): 1958 caused 1 million deaths worldwide, Hong Kong flu‧A (H3N2): 1968 caused 800,000 deaths worldwide in six weeks. The WHO believes that we are as close to the next pandemic as we have been any time in the past 37 years, with two of the three widely-recognised prerequisites for a human pandemic met to date in the avian influenza outbreak in East Asia. Firstly, a new influenza virus strain has emerged (H5N1), and secondly, the virus has spread to humans. The final barrier will be the transmission of the virus from human to human.

About Tamiflu

Tamiflu is designed to be active against all clinically relevant influenza viruses and works by blocking the action of the neuraminidase (NA) enzyme on the surface of the virus. When neuraminidase is inhibited, the spread of the virus to other cells in the body is inhibited. It is licensed for the treatment and prophylaxis of influenza in children aged one year and above and in adults.

Roche and Gilead

Tamiflu was invented by Gilead Sciences and licensed to Roche in 1996. Roche and Gilead partnered on clinical development, with Roche leading efforts to produce, register and bring the product to the markets. Under the terms of the companies‧agreement, amended in November

2005, Gilead participates with Roche in the consideration of sub-licenses for the pandemic supply of Tamiflu in resource-limited countries. To ensure broader access to Tamiflu for all patients in need, Gilead has agreed to waive its right to full royalty payments for product sold under these sub-licenses.

About Roche

Headquartered in Basel, Switzerland, Roche is one of the world's leading research-focused healthcare groups in the fields of pharmaceuticals and diagnostics. As the world's biggest biotech company and an innovator of products and services for the early detection, prevention, diagnosis and treatment of diseases, the Group contributes on a broad range of fronts to improving people's health and quality of life. Roche is the world leader in in-vitro diagnostics and drugs for cancer and transplantation, a market leader in virology and active in other major therapeutic areas such as autoimmune diseases, inflammation, metabolism and central nervous system.

Additional information

- Roche Health Kiosk, Influenza: www.health-kiosk.ch/start_grip.htm
- About Tamiflu: www.roche.com/med_mbtamiflu05e.pdf
- About influenza: www.roche.com/med_mbinfluenza05e.pdf
- WHO: Global influenza programme: www.who.int/csr/disease/influenza/en/
- WHO: Avian flu: www.who.int/mediacentre/factsheets/avian_influenza/en/

References

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2. Public pandemic plans and media reporting
3. Germann TC et al. Mitigation strategies for pandemic influenza in the United States, PNAS 2006; 103:5935-5940
4. Department of Communicable Disease Surveillance and Response, World Health Organisation, WHO Guidelines on the Use of Vaccines and Antivirals during Influenza Pandemics, http://www.who.int/csr/resources/publications/influenza/11_29_01_A.pdf, Accessed 25 May, 2007