

Public Health Tools



Vaccines, Antivirals and Other Interventions

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✓ **Contingency planning.** Preparation will mitigate the direct medical and economic effects of an influenza pandemic by ensuring that adequate measures are taken and implemented before the outbreak. Preparing will also provide benefits now, as improvement in public health infrastructures can have immediate and lasting benefits and can mitigate the effects of other infectious disease epidemics.

✓ **Pandemic vaccine: A calculated bet on H5N1.** Because the pandemic strain has not yet emerged, no vaccine is available yet. As a pandemic vaccine needs to be a close match to the actual virus, commercial production cannot begin prior to the emergence and characterization of the pandemic virus. WHO, through its network of specialized laboratories, has constantly monitored the evolution of the H5N1 since its initial human infection in 1997 in Hong Kong. These laboratories prepare the prototype vaccine strain provided to the industry as the "seed" for vaccine development. Several companies have begun work on a potential vaccine, using the WHO "seed" stock that is based on the H5N1 strain circulating in Viet Nam.

United States researchers in August 2005 announced preliminary results from an experimental pandemic vaccine that provoked a strong immune response in humans in a clinical trial. This development should cut the lead time needed to produce a vaccine to two to three months. The vaccine would only be effective if it is ultimately the H5N1 strain that provokes the pandemic and the strain has not significantly changed from that used to develop the vaccine. If the pandemic is caused by another avian influenza subtype, it is unlikely that the vaccine would offer much protection. Once the pandemic strain is identified, it would likely take at least six months to produce any significant quantities of the vaccine. WHO is urging the international community to find ways to increase manufacturing capacity and ensure that developing countries have access to an effective vaccine at an affordable price. Based on current trends, however, most developing countries will have no access to a vaccine during the first wave of a pandemic and perhaps throughout its duration.

✓ **Antivirals: Buying time before the vaccine is available.** There is currently only one class of antiviral that has been shown to be effective against all H5N1 human isolates from Asia: oseltamivir, known as Tamiflu, produced by Roche; and zanamivir, known as Relenza, which must be inhaled orally, by GlaxoSmithKline. In the event of a pandemic caused by an adopted version of H5N1, oseltamivir could potentially help slow its spread. WHO recommends that countries with the resources consider stockpiling antivirals. Roche has offered to provide WHO with an international stockpile of oseltamivir, which would treat people in greatest need at the site of an emerging pandemic in order to contain it. However, the strategy's success depends on several assumptions about the early behaviour of the pandemic virus and on the sensitive surveillance and logistics capacity in the initially affected areas, combined with an ability to regulate the movement of people in and out of the area.

✓ **Non-medical health interventions: Other potential ways to stop the pandemic.** At the start of a pandemic, all countries will face inadequate supplies of vaccines and antiviral drugs. Whether or not quarantine, isolation or travel recommendations will be useful depends largely on the characteristics of the virus, i.e. attack rate, virulence, age groups affected and modes of transmission.

✓ **Social distancing: Reducing opportunities for exposure.** This involves school and workplace closures, as well as avoiding mass gatherings at large conferences, public events and congregations, which may be necessary in helping to slow the pandemic's spread.

✓ **Personal hygiene intervention measures.** The role of personal hygiene may be important in reducing the spread of the disease during a pandemic. Populations should repeatedly be informed about the need for frequent hand-washing with soap and water, covering their mouth when coughing or sneezing, and careful disposal of used tissues. Mask-wearing may not have an appreciable impact on slowing transmission, but should be permitted as this is likely to occur spontaneously.

✓ **Delaying the pandemic's arrival.** Slowing the pandemic's arrival in other countries will be vital, as it would buy time to produce an effective vaccine and introduce other measures. Antivirals used intensively in an area where a pandemic is emerging, combined with other measures, such as quarantine and isolation, could help delay its spread. Countries will implement different measures while a vaccine is being produced. Although many of these measures will eventually fail, they may still have some public health impact in allowing time for countries to reinforce their response capacities and vaccinate certain target groups. □

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