Influenza is preventable

by Yuri Ghendon

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Influenza—flu—is for most people an unpleasant illness that sends them to bed for a few days and leaves them feeling weak. But it is also a potential killer.

In the United States alone for example, in 1957, the Asian strain of influenza virus caused an estimated 70,000 deaths; the Hong Kong strain that appeared in 1968 caused about 30,000 deaths in the same country. Even in years not associated with antigenic shift in the virus, many people die as a result of influenza infection. In fact, 10,000 or more excess deaths have been documented in the USA during each of 18 different epidemics from 1957 to 1985.

Some 80 to 90 per cent of the excess deaths attributed to pneumonia and influenza during epidemics have occurred among persons of 65 years of age or more, although flu-associated deaths among children or previously healthy adults under 65 years of age are reported during major epidemics. This excess mortality is not only a direct result of pneumonia, but also of cardio-pulmonary or the chronic diseases that are exacerbated during influenza infection. In addition, the days lost from school and work, and the hospital care required for complications, result in a very high cost of influenza to society.

Three types of human influenza viruses, A, B and C, were discovered in 1933, 1940 and 1947 respectively. Only type A is associated with pandemics.
Manufacturing influenza vaccines in Switzerland. But doubts still linger about their efficacy.

Photo Swiss Serum and Vaccine Institute ©

Below: For most people, 'flu means a bout of sneezing and a few days in bed. But it is a potential killer.

Photo WHO/D. Henrioud

These viruses are variable and can change the antigenic specificity of their envelope proteins—haemagglutinin and neuraminidase. They thus escape the neutralising antibodies that we have developed through previous infections or vaccinations and that ought to protect us. That is why the strains of viruses used for the production of influenza vaccines have to be changed every one or two years.

WHO’s influenza programme essentially consists of rapidly isolating and characterising all new strains in order to make available for production laboratories those that show substantial variation from the current strains. WHO Collaborating Centres for influenza in London and in Atlanta, USA, together with 110 national institutions for influenza in 79 countries all carry out surveillance activities. Each year, towards the end of February, WHO holds a consultation to draw up recommendations for the composition of influenza vaccines for the forthcoming season. It is now possible to recombine the new antigenic variant with a strain that has been trained to grow rapidly in chick embryos, or with the cold-adapted attenuated master strain, and this reduces the time needed to get into large-scale vaccine production.

Two sorts of vaccines are now available: those that are inactivated, concentrated and purified for administration by injection and live, attenuated, cold-adapted vaccines destined for instillation or pulverisation into the upper respiratory passages.

Even though this disease is a widespread problem in many countries, the existing 'flu vaccines are among the least used vaccines available. The need for annual revaccination, misconceptions about the capabilities of the vaccines—many recipients expect them to prevent all respiratory infections—and questions about their efficacy have led many physicians to conclude that vaccination against influenza is not worth the effort.

In fact there is plenty of evidence to show that influenza vaccines can protect individuals and indeed, if used properly, may protect 70 to 80 per cent of vaccinees in the community as a whole.

Vaccination strategies have two main objectives: to protect individuals who are at particular risk from disease (the elderly, the chronically sick, people living in institutions under crowded conditions and so on); and to protect other defined sectors of the population (such as schoolchildren, or factory workers). In the last case, vaccination may have direct benefit for the individuals involved and for the community as a whole. But it should be noted that in closed or semi-closed settings, maximum benefit from immunization is likely to be achieved when more than about 75 per cent of the population are vaccinated, so as to exploit the advantages of “herd immunity.”

Besides vaccines, there are good antiviral preparations against the disease. Amantadine and rimantadine have proved in many controlled trials to be effective against influenza A infections, both prophylactically and therapeutically (administered between 24 and 48 hours after the onset of symptoms). In prophylactic use, a 70 to 90 per cent reduction in infection has been achieved. It is unfortunate that these drugs have been so little used to protect against influenza A infections.

On the other hand, chemoprophylaxis with these drugs is not a substitute for vaccination, because there is no protection against the B virus, and also because patients may fail to take the drug for the full 6 to 12 weeks of an epidemic period. Aerosolised ribavirin has been recommended against influenza B, but its usefulness would possibly be restricted to patients confined in hospital.

Influenza is not a trivial disease. It kills many thousands of patients every year and the cost of its deprivations to any country’s economy is enormous. But influenza is preventable. By means of the vaccines and antivirals now available it is possible to protect individuals both in the high-risk groups and in defined sectors of the population.