

# Better use of seasonal flu vaccines is essential for pandemic preparedness

Better use of seasonal influenza vaccines would increase global vaccine production capacity in preparation for a pandemic. Graeme Smith reports from a World Congress of Pharmacy session organised by the International Pharmaceutical Federation's Military and Emergency Pharmacy section

If seasonal influenza vaccines were used better, it would reduce death and disease and, in a natural way, would bring up production capacity for influenza vaccines, which is currently lacking in pandemic preparedness, said Bram Palache, global scientific communications and public affairs director at Solvay Pharmaceuticals, the Netherlands. Quoting the World Health Organization, he said: "You can't ask for production during an emergency if there is no production capacity during peacetime."

He told the session that it is generally assumed that, at the onset of an influenza pandemic, there would be no vaccines available to immunise and protect the population and that governments would have to rely on stockpiled antiviral agents. However, recent research efforts suggested that there are possible strategies to be less empty-handed at the onset of a pandemic than assumed so far.

Mathematical models and animal studies indicate that a pre-pandemic stockpiled influenza vaccines may offer adequate levels of immunity and protection to dampen the consequences of an avian influenza pandemic.

Dr Palache said that no one knows if a pandemic will occur, but ignoring the problem will not make it go away. There is an urgent need to be prepared because of the disastrous consequences, should a pandemic happen.

## Pandemic paradox

Dr Palache described what he called the pandemic paradox. Worldwide, seasonal influenza is preventable but, generally, is not being prevented. Currently, available influenza vaccines are underused, he said, resulting in around half a million unnecessary deaths each year. The vaccine for seasonal flu fails to reach many elderly people and other people at risk who suffer from chronic diseases. However, fear of future deaths during an avian influenza pandemic is driving people's interest and the need for countries to be prepared.

The paradox lies in the fact that, because countries are not using the available seasonal vaccines, industry's capacity to produce vac-

cines is being held in check. Once the WHO declares a pandemic and releases seed vaccines, governments will want to have vaccines that can be administered to be available as quickly as possible. But the industrial capacity to do this effectively simply does not exist.

The industry, said Dr Palache, currently produces vaccines in response to the demands of the market and not necessarily its needs. It is clear that shortfalls in vaccines can lead to a public health crisis but, on the other hand, production of more vaccines than demanded means an economic loss. So, if currently available seasonal vaccines were used more appropriately, demand for them would increase and, therefore, production capacity would increase. There is no point in increasing capacity to produce vaccines that are not used. Therefore, the industry's capability to produce vaccines in a pandemic depends largely on how seasonal influenza vaccines are used now, Dr Palache declared.

He went on to tell the meeting that the current manufacturing capacity of trivalent flu vaccines stands at 300 million doses in 10 months, with a production lead time of two to four months. In unprimed populations, a single dose of such a vaccine would not be sufficient to provide adequate protection. Recent research has suggested that at least two doses of four times the normal strength would be required. Therefore the need for a high-dose pandemic vaccine compromises global production capacity, said Dr Palache. By lowering the effective dose required, more doses of vaccine could be produced using existing production capacity. So the challenge for the industry and for research organisations, in order to fulfil global pandemic vaccination objectives, is urgently to develop effective low-dose vaccines. That research is currently being carried out all over the world, with 70 per cent of it happening in Europe.

He outlined global vaccine supply estimates based on different pandemic vaccination strategies. With capacity the way it is, the available global trivalent vaccine production capacity is 300 million 15µg doses. In a pandemic situation, where one 15µg monovalent dose may be required, 900 million people



**Bram Palache: primary goal is to prevent death, not necessarily infection**

could be vaccinated, but if two doses were required (ie, a booster) the supply is effectively halved and only 450 million people could be vaccinated. If the dose could be reduced to 7.5µg and a booster were required, 900 million people could be protected.

Dr Palache said that Glaxo had recently presented data which showed that two doses of 3.8µg could be effective as a pandemic strategy. If this could be translated to all vaccine manufacturing companies worldwide, then overall pro-

duction could amount to 1.69 billion doses using existing manufacturing capacity. Such a move could not be made today, he said, but the fact that it might be possible is a major step forward in preparations for a pandemic. He stressed the need for careful planning.

He went on to describe some preparedness scenarios. One was to stockpile H5N1 vaccines, but there were supply issues here and possible mismatches with any pandemic strain. Some countries may make advance purchase agreements and reserve vaccine production capacity, he said; in such a case, after one year it would be unlikely that there would be any vaccines available for other parties so, again, careful planning is essential.

## Primary goal

The primary goal of a pandemic influenza vaccine must be to prevent death and not necessarily to prevent infection. He referred to a mathematical model which suggested that available vaccines, even if poorly matched to circulating strains, could significantly slow disease spread. Animal studies have confirmed that mathematical model. So, it could be concluded that a strategy of stockpiling pandemic vaccines for administration to groups at high risk does indeed offer promise.

Concluding, Dr Palache said that the emergence of a pandemic of H5N1 or any other influenza cannot be ruled out and so preparedness on a global, regional and national scale is justified. Pandemic vaccines are the most realistic tools to minimise the potentially devastating effects. The stockpiling, therefore, of prototype pandemic vaccines may be a justifiable and prudent cautionary measure which should be seriously considered.

## Details

The World Congress of Pharmacy and Pharmaceutical Sciences took place in Salvador, Brazil, from 25–31 August. Further extended reports will appear in a special *PJ* supplement. Copies can be requested from Emma Kerby-Evans (tel 020 7572 2414, e-mail emma.kerby-evans@pharmj.org.uk)