French Republic

PARLIAMENTARY OFFICE FOR SCIENTIFIC AND TECHNOLOGICAL ASSESSMENT

" FACED WITH A(H1N1) FLU AND THE MUTATION OF VIRUSES, WHAT RESPONSES CAN RESEARCHERS AND THE PUBLIC AUTHORITIES GIVE ? "

Public Hearing 1st december 2009

Within the framework of their report on the mutation of viruses and the management of pandemics, Mr Jean-Pierre Door, a deputy, and Mrs Marie-Christine Blandin, a senator, organised on Tuesday 1 December 2009 a public hearing at the Parliamentary Office for Scientific and Technological Assessment (OPECST) on the topic: 'Faced with A(H1N1) flu and the mutation of viruses, what responses can researchers and the public authorities give?'

This public hearing allowed two questions to be addressed: 'How can the spread of viruses be slowed down? How can the right choices be ensured in combating potentially dangerous viruses?'

Highly valuable debates allowed dialogue between parliamentarians, professors of medicine, researchers, networks of doctors, and trade unions and representatives of the health authorities: Ministry of Health, Institut de veille sanitaire (Health Surveillance Agency), Sanitaires (Health Emergencies Preparedness and Response Establishment). These speakers were confronted with several intersecting perspectives from the field.

M. Jean-Pierre Door, senator, M. Claude Birraux, deputy, chairman of the OPECST and Mrs Marie-Christine Blandin, senator

CAN THE SPREAD OF FLU VIRUSES BE SLOWED DOWN ?

A. State of scientific knowledge

The structure of viruses is known. But their mutation is unpredictable.

Flu viruses are classified in three classes: A, B and C. They are composed of hemagglutinin (H) and neuraminidase (N). They can be very different as there are 16 known forms of H and 9 of N.

The present pandemic virus is a A(H1N1) type virus. For the moment it is tending to dominate the two other flu viruses circulating this season: a conventional H1N1 and an H3N2.

This pandemic virus was first detected in Mexico and combines RNA strands from three different sources: avian, human and also swine. This is why it was first called swine flu or Mexican flu.

Scientists are unanimous about the virulence of A(H1N1).

This virus is not as dangerous as H5N1 (the avian flu virus). However, it is more contagious.

It can cause serious forms of acute respiratory infections which remain unexplained and can be fatal. The deaths are not like those caused by a seasonal flu. Half of them concern populations having no specific risk. Youths are therefore particularly affected. The way the virus transmits

remains unknown: members of the same family will not all be affected or affected the same way.

In the event of infection, antivirals are generally effective, but under certain conditions.

The only antiviral really used is effective only if taken within 48 hours following the appearance of the first symptoms. That's why some doctors are sometimes reluctant to prescribe this relatively recent treatment Le médicament anti-viral idéal n'est pas encore trouvé.

The ideal antiviral drug has not yet been found.

The WHO knows how to select the virus to be combated, each year, as a priority.

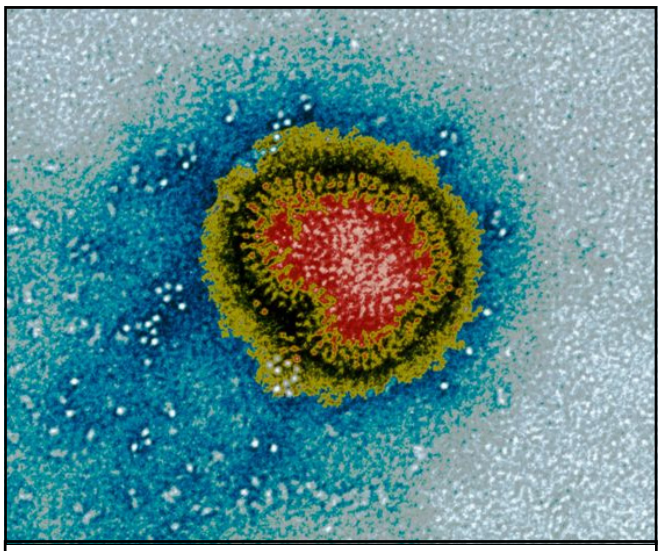
After blood samples have been taken from contaminated patients, and after identification of the virus by reference centres (CMR – Committees against Respiratory Diseases), the WHO obtains selected strains.

The WHO chooses the 'vaccine candidate virus' and provides vaccine seeds to pharmaceutical companies working on embryonated eggs.

One laboratory works on cells with the inactivated whole virus, obtained directly from the wild-type virus.

All the new vaccines are prepared in a few months during which they are submitted to clinical tests and to the marketing authorisation procedures. The techniques are known. They consist in particular in using model vaccines or pre-pandemic vaccines.

Different vaccines are then produced by various laboratories. These differences are listed and concern in particular: the production technique of vaccines; preservatives (like thiomersal); excipients; and the use of adjuvants (generally aluminium, mercury and squalene) in order to increase the quantities produced and broaden their effects.



Virus A/H1N1 © Institut Pasteur

B. The scientific debate on vaccination

For most virologists, vaccination is the best and the only solution to combat the spread of the pandemic.

It is ***the*** effective measure providing clearly superior protection to conventional hygiene measures.

It is the means of decreasing the intensity of the pandemic peak ahead of us, and decreasing the length of time during which contagion is highest.

Its effects have been quantified on pathologies eradicated worldwide (smallpox).

An assessment can be made of what happens in the event of vaccination, or what would happen if the population were not vaccinated.

Supporters and opponents of A/H1N1 vaccination continue to disagree.

Some arguments can be taken deeper.

Vaccination is continuing to be the subject of scientific debates.

These debates already existed at the time of Pasteur, which raises the question of comparing the benefits and risks of vaccination. The question of the day now concerns the implementation of the precautionary and prevention principles.

For the moment, research does not provide absolute answers to the questions some raise on the assessment of the 'barrier' efficacy of vaccines at the societal level, on their secondary effects and on their optimal production method.

The link between vaccination and the Guillain-Barré syndrome is giving rise to contradictory appreciations, especially as flu can cause this syndrome.

HOW CAN THE RIGHT CHOICES BE

Mrs Marie-Christine Blandin and Mr Jean-Claude Etienne

ENSURED IN COMBATING POTENTIALLY DANGEROUS VIRUSES ?

A. Action by the public authorities and by those managing pandemics

The choices of the health authorities were not kept confidential, unlike what happened at the time of the H5N1 virus outbreaks.

This represents progress in comparison with the situation that prevailed at the time of the avian flu outbreaks. The health authorities published the list of measures they planned to take.

These measures are an implementation of the 'Pandémie grippale' national plan to prevent and combat the flu pandemic, which was elaborated in reaction to a flu as dangerous as that caused by the H5N1 virus

Their logic is clear: the measures are essentially aimed at lopping off the expected flu peak so as to avoid the multiplication of serious cases, swamping of the health system and disorganisation of our society.

On the other hand, the choice of vaccines and their purchase have not been debated.

The move to the maximum phase 6 measures, which was the WHO recommendation, has not been taken. This presents the great advantage of adapting to the actual seriousness of the pandemic, and avoids taking, too soon, measures restricting personal freedoms, which are planned only in an extreme situation.

Health surveillance and monitoring are effective.

They are based on measures coordinated by the Institut de veille sanitaire, in accordance with the remarks by the Sentinel networks, the GROG (groupements régionaux d'observation de la grippe - regional groups monitoring the flu), SOS médecins and the Oscour network (Organisation de la surveillance coordonnée des urgences – organisation for the coordinated monitoring of emergencies).

The methods used by these various specific and non specific networks are different, but the results obtained are coherent and complementary for specialists trained in statistics and probability methods. These results are disconcerting for patients and even some doctors who consider that only biological analysis is proof.

The fact that the GROG and Sentinel networks have come closer together will be an interesting consequence of this pandemic flu.

The choices made by the health authorities have resulted from consultations at the top level but not from broad concertation. There is no consensus in society.

This is the cause of many criticisms in a context where the situation is less serious than expected.

The high number of players involved in managing this pandemic sometimes makes it difficult to get the message across to the public. The roles of the Ministry of Health and of the Ministry of the Interior should be clarified.

B. Remarks of field players, practitioners and citizens

The vaccination campaign is criticised from several viewpoints: relevance, organisation, cost, method of calling or not on professionals.

Some of the measures set in place to organise

the campaign are disputed by health professionals who have not been associated in their definition and implementation.

Doctors, for instance, wish to be able to volunteer to vaccinate their patients themselves. Some doctors feel that this would have facilitated the vaccination campaign, and at-risk patients would have been better identified.

Its organisation does not always allow the desired

efficacy.

Vaccination in centres dedicated to this purpose has often led to long waiting queues.

The vaccines were still not, on 1 December, available in a sufficient quantity to vaccinate non-priority persons.

The decision to inject only one dose of vaccine rather than two for those over nine years of age nevertheless reduced the vaccines needed.

The requisitioning of doctors and of housemen is giving rise to controversies.

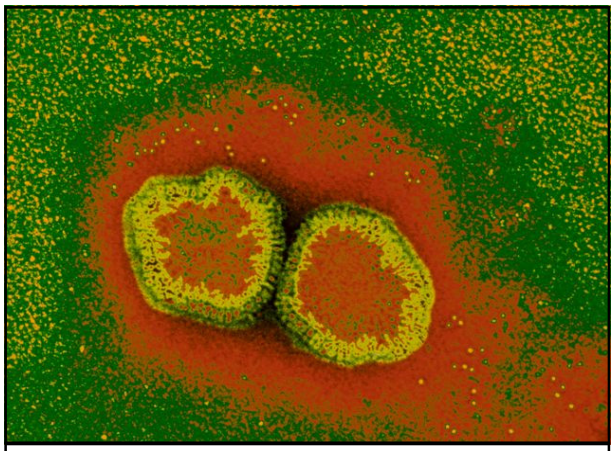
Public communication has not created confidence.

The information given is sometimes contradictory. Some elected representatives are complaining about this.

Some health professionals would like to receive more information from the public authorities. They regret learning on television or in newspapers about information that would help them to better advise their patients. They remark that they have not received any training similar to that given to them at the time of the avian flu outbreaks.

Public communication must be rethought in the light of the development of the Internet and the multiplication of blogs. Information is no longer sufficient to obtain uptake.

Information on the vaccines remains insufficient for many observers.



Virus A/H1N1 © Institut Pasteur

Perhaps the contracts between the State and laboratories should have been publicly and spontaneously disclosed.

This shortage of information should be remedied, as it is a source of rumours.

For want of reliable data, research on the secondary effects of vaccines and adjuvants must be promoted. Research in social and human sciences should be developed to analyse and understand the hesitations of the population.

An optional vaccine like this one must be accepted by the population if it is considered that vaccination remains the best means of preventing the serious effects of this pandemic flu.