Health & Social Services Committee

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Date: 8 March 2006
Venue: Committee rooms 3 &4, Assembly Offices, National Assembly for Wales
Title: Preparation for flu pandemic, including action being taken in Europe

Purpose

At the 23 November 2005 HSSC meeting, I agreed to provide a paper to note on the preparations for a flu pandemic covering also the European dimension. This paper highlights the comprehensive and complementary UK and international strategies to prepare for a pandemic.

Summary

Infectious disease experts identify three pre-requisites for pandemic flu. These are the emergence of a new virus for which humans lack immunity; a virus capable of replication and causing disease in humans; and a type that is easily transmitted from person to person. The current outbreak of H5N1 avian flu (AI) has met the first two.

The impact of a pandemic cannot be predicted as much depends on the virulence of the emerging virus, how rapidly it spreads, the availability of antivirals (supported by antibiotics for bacterial complications e.g. pneumonia) and vaccines, and the effectiveness of medical and non-medical containment measures. However, we can expect that health and other services are likely to be under pressure from the outset.

The 2003 SARS epidemic demonstrated how quickly human respiratory viruses can spread, especially in a world of international air travel. Disease spread is likely to be even faster during a flu pandemic because a typical flu virus has a shorter incubation period (typically 1 – 3 days), is more easily transmitted from person to person and sufferers are infectious even before symptoms begin.

SARS also demonstrated that countries acting in isolation have limited capacity to address the international spread of disease. All countries have an interest to ensure optimal disease prevention and control measures outside their national borders – particularly at the source of infection.

Much work has been undertaken nationally and internationally, under the auspices of the European Commission and the World Health Organization (WHO), to identify the key elements and actions of the EU and national response plans. Implementation issues are being worked through and will be guided by

international discussions, scientific developments and a better understanding about human and animal flu virus changes.

Close co-operation between human and animal health authorities and experts at national and EU level continues. Preparing and responding to a pandemic presents a formidable challenge and requires increased efforts by member states and the Commission. This is being tackled through a more generalised approach to public health emergencies in order to use scarce resources effectively and to keep procedures and functions as manageable as possible. The European Centre for Disease Prevention and Control (ECDC) provides a structured and systematic approach to the surveillance and control of flu. They can mobilise and significantly reinforce the synergies between the national centres for disease control.

Background

The world may now be closer to another pandemic that at any time since 1968, when the last of the previous century's three pandemics began. Neither the timing or severity of the next pandemic can be predicted but previous experience suggests that worldwide there could be millions of deaths. Once a fully contagious virus emerges, its global spread is considered inevitable. The pandemics of the previous century encircled the glob in 6 – 9 months even though international travel was less significant. Given the speed and volume of international air travel today, the spread is likely to be more rapid – possibly reaching all continents in less than 3 months.

The UK plan and modelling assumptions suggest that in Wales it is likely that about:

- 1.5 million people will meet the virus (50% of the population);
- 750,000 people will be asymptomatic but still infectious to a degree (25%);
- 750,000 people will develop clinical symptoms (25%);
- 75,000 will want to see their GP;
- 38,000 will present at hospital A & E departments;
- 4,000 will develop complications and need hospitalisation; and
- 2,800 excess deaths will occur.

The UK Pandemic Influenza Contingency Plan, revised in October 2005, provides a fulsome top-level account of the health response. It outlines the key elements of the four-countries' approach, in collaboration with expert bodies such as the Health Protection Agency and National Public Health Service in Wales (NPHS), to preparedness arrangements. It covers, for example, leadership, organisation

and co-ordination (the chain of command), communications, surveillance and risk assessment, public health response measures, and civil contingency response measures to reduce societal disruption.

In Wales, these preparations have been strengthened and supported by a suite of guidelines to help and improve NHS and partners preparedness at a local level:

- the Framework for Managing Major Infectious Disease Emergencies (issued October 2005);
- guidance for pandemic flu infection control in hospitals and primary care settings (being finalised shortly) to supplement broader guidelines developed by the Health Protection Agency; and
- NPHS Operational Plan, including a template for LHBs, to ensure a co-ordinated approach to monitoring and limiting spread of infection; managing cases, distributing antivirals; and maintaining services (being finalised shortly).

Where will the threat of a pandemic come from?

Theoretically, many different flu viruses (human and animal) have the potential to evolve into a pandemic virus. However, the H5N1 AI is causing most concern as outbreaks in poultry populations that began in Asia in 2003 are now being seen in parts of Europe. AI itself will not cause the pandemic but there is a possibility that it could interact with a human virus and generate a new strain against which we have no natural defence. If this new strain is highly pathogenic and contagious, a pandemic is likely. However, the species barrier remains considerable and human cases to date have occurred only following very close contact with infected live birds.

Preparedness planning

Recommendations made by the World Health Organization (WHO) serve as the basis for planning by European Union (EU) and other countries. In November 2005, the WHO updated its global plan to assist countries develop their own national plans. The new global plan addresses the possibility of a prolonged existence of a flu virus of pandemic potential such as H5N1 and provides for the possibility of simultaneous events with pandemic potential with different threat levels in different countries as was the case in 2004 with H5N1 in Asia and H7N3 in Canada.

Two WHO recommended strategies have been implemented to address the current AI situation and to reduce the related pandemic threat:

- steps to reduce opportunities for a pandemic to emerge. This consists of efforts to contain outbreaks of H5N1 in poultry to prevent the spread of disease to other countries and risk of human infections occurring. Also the strengthening of the surveillance early warning system worldwide; and in tandem

- action to intensify world preparedness to manage a pandemic. This includes the formulation of national plans, access to antiviral drugs (that may shorten illness by 1 day and hospitalisations by about 50%), development of vaccines once the virus has been identified, use of non-medical countermeasures e.g. good personal hygiene and improved communication with health professionals and the public.

The WHO is developing a protocol for a third complementary strategy in which international resources are co-ordinated and focused on rapidly detecting and potentially stopping or containing an emerging pandemic. The protocol will facilitate assessment of potential signals that the virus is improving its transmissibility and guide implementation of response interventions in the initial zone. Containment at source has never been attempted before because the world has never before received advanced warning that a pandemic is imminent.

Even if early worldwide efforts fail to contain the new virus, they could slow the initial spread to buy us time. Each day gained allows:

- health services to adapt routine care;
- the WHO to gather evidence to predict likely patterns of further spread; and
- the production of 5 million doses of a pandemic vaccine.

Recent EU measures against AI

The commission has undertaken a number of actions to protect against the introduction of AI. All suspected cases must be investigated and appropriate measures taken in case of confirmation of high pathogenicity. To limit the spread of the virus, infected poultry must be killed in a humane way and disposed of safely. Foods, contaminated equipment and manure must be destroyed or treated in order to inactivate the virus. Veterinary authorities are required to implement immediate movement restrictions on the affected holdings and on all farms in a radius of at least 10 kilometres (the surveillance zone).

Member States are required to have AI contingency plans in place to ensure that the most appropriate measures are immediately implemented. At farm level, preventative hygienic measures such as disinfection are crucial. Disease awareness amongst farmers and co-operation by all people in the poultry sector must ensure that the strictest bio-security measures are applied to prevent disease spread.

Import bans have been placed on live birds and risky poultry products, such as fresh meat and untreated feathers, from all countries or regions with outbreaks. Preventative, surveillance and control methods have been stepped up and these include the banning of collections of birds at markets, shows and cultural events and allowing zoo birds to be vaccinated. Requirements for wild bird surveillance have also been extended due to the strongly suspected link between the spread of AI and migratory birds. Wild bird, hunting and other organisations are now obliged to immediately notify national authorities of

any abnormal mortality or significant disease outbreaks. EU experts have drawn up guidelines on testing wild birds.

Public health response

The UK is working closely with international partners to enhance global preparedness for a pandemic – however it emerges - and to refine domestic arrangements in light of new developments or evidence.

Immunisation is the most effective medical countermeasure we have but a vaccine cannot be manufactured until the circulating virus is known and is therefore unlikely to be available in the early stages of a pandemic. When available, vaccines will be in limited quantities and groups for immunisation will need to be prioritised as supplies come on stream. Provisional priorities are contained in the UK plan. The EU has developed a fast-track regulatory process to allow authorisation for use quickly. The Department of Health, as lead health department, is establishing 'sleeping' contracts with manufacturers to ensure early access to the 120 million doses needed for the UK.

In the absence of vaccines, antiviral drugs supported by antibiotics (for complications such as pneumonia) are likely to be the only medical countermeasures we can utilise. At the end of February 2006, Wales will have received 280,000 courses out of 730,000 courses and is on schedule to receive all supplies by the end of September 2006. Supplies received to date – that are ring-fenced for use in Wales - are being held at a depot in England and arrangements are being made for a bulk interim delivery in the Spring. The UK decision to purchase oseltamivir (Tamiflu), and the amount to be purchased, was based on the best available national and international advice. The UK does not presently have a stockpile of other antivirals such as zanamivir (Relenza) or ammantadine (Symmetrel) but the intention is to review and update plans in the light of new and emerging evidence and expert advice.

Manufacturers' production constraints mean that supplies have to be used in the most effective way. Antivirals are effective against seasonal flu when treatment is started within 48 hours of symptoms and could be expected to shorten effects of pandemic flu by about one day and possibly reduce the severity of symptoms. Early treatment appears therefore a more efficient use of limited resources. They might also be used during the early pandemic in limited attempts to contain small disease clusters and potential slow the spread.

The importance of non-medical countermeasures designed to contain and limit the spread of disease cannot be under-estimated. We all need to broaden appreciation that medical countermeasures alone will not be the solution. The Cabinet Office Civil Contingency Secretariat and other government departments are developing policies in a number of areas (voluntary quarantine of the ill and close contacts, reducing unnecessary travel, and health screening at ports) and all recognise that advice for the general public and industry needs to come out ahead of the pandemic.

Business continuity planning considerations

The Civil Contingencies Act 2004 placed statutory duties on the NHS and other local responders to undertake business continuity planning. Guidance has been issued to the local responders to assist them in developing their arrangements.

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Minister for Health & Social Services

Annex A

Q & A

Q What is the difference between low pathogenic and highly pathogenic AI?

A Most AI is of low pathogenicity – meaning they do not cause serious disease in birds. Wild birds (ducks, geese, gulls) often carry viruses without showing symptoms and are considered to be the main reservoir in nature. From these birds, low pathogenic may spread to domestic poultry. Some low pathogenic viruses (notably H5 and H7) can mutate into highly pathogenic ones after transmission from wild birds to domestic flocks – causing very serious disease. H5N1 viruses causing outbreaks now is highly pathogenic in birds. Both types may cause infection occasionally in humans e.g. in the Netherlands the H7N7 low pathogenic virus caused one human death and conjunctivitis in other people closely involved in managing the outbreak.

Q Why are poultry not vaccinated as a precaution?

A Vaccinating individual birds reduces clinical signs of disease and mortality but it does not necessarily stop them from being infectious or prevent further spread of disease. Immunisation can be used in a targeted way, for example with zoo animals or rare species of birds, to prevent them from being culled. It is being used in certain categories of birds in specific areas of Italy where low pathogenic AI viruses frequently occur. However vaccination requires the adoption of particular surveillance and controls to prevent possible persistence of disease. These activities would not be possible in the case of generalised vaccination of billions of poultry that are kept for farming purposes in the EU.

Q Can AI viruses cause disease in humans?

A Yes, this may occur on very rare occasions. However, the vast majority of AI viruses do not cause disease in humans. Moreover, only some of the viruses that are highly pathogenic for poultry are also capable of infecting humans and when this happens they often cause only mild disease (conjunctivitis, flu-like symptoms).

Q What about human infection with the H5N1 virus?

A All the cases in Asia and Europe have been in areas where infected birds and poultry live in close contact with people and/or following handling of carcasses of infected birds in poor hygienic conditions. It should be remembered that the 174 human cases (as at 1 March 2006) have occurred in a very wide geographical area inhabited by about 2 billion people.

Q Could AI result in a pandemic?

A AI viruses will not themselves generate a human pandemic. However, an AI virus could change form when it infects and replicates itself in humans often when interacting with the milder human virus (the one that causes seasonal flu) to produce a better adapted mutant virus that is rapidly and efficiently transmissible from human to human. If it is highly contagious a pandemic could ensue. To prevent such interactions, considerable efforts are being made worldwide to eradicate AI in birds.

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