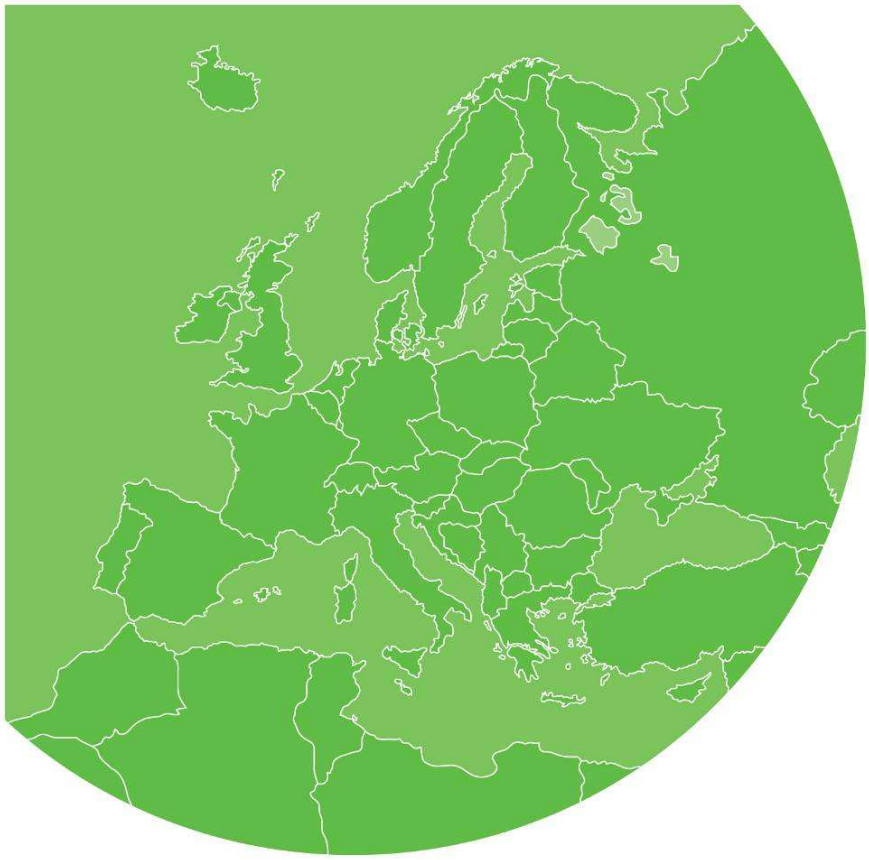

EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

MEETING REPORT

Third joint EC/ECDC/WHO Workshop on Pandemic Influenza Preparedness Uppsala, 15 – 17 May 2006

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TABLE OF CONTENTS

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The Third European Workshop on Pandemic Preparedness attracted representatives from 48 European countries (25 from within the European Union (EU) and 23 from the rest of WHO's European Region) as well as participants from many international organisations and observers from a number of other national bodies. The prime objective of these workshops is to review the state of preparedness for an influenza pandemic in the European region, including identifying areas in need of further strengthening. However, the workshop also responded to the new threat from highly pathogenic avian influenza type A/H5N1 ('bird flu') and representatives were updated on the situation concerning this, what needed to be done to protect the public and what lessons could be learnt from the outbreaks involving human cases.

It was concluded that Europe was on its way to being a well prepared region and there has been considerable progress even since the Second Workshop in Copenhagen (October 2005), especially in the field of avian influenza (bird flu). However, there is no scope for complacency; achieving desired levels of preparedness for a pandemic will require a sustained effort in every country for some years to come. In addition, it was noted that some recommendations from the First and Second Workshops are still to be implemented and that there were particular vulnerabilities in the EURO, non-EU Member States where preparedness was not progressing at as fast a pace as within the EU.

Developments since the last workshop

Notable developments since October included the publication of the 'European Commission Communication on Pandemic Influenza' (the 'EU Pandemic Plan'), the EU-wide pandemic exercise 'Common Ground', the Global Pledging Meeting in Beijing in January 2006, the increase-ing activity of the office of the United Nations Systems Influenza Coordinator and the outbreaks of bird flu that Europe experienced in the autumn and winter of 2005 and the spring of 2006.

Avian influenza H5N1 in Europe

A/H5N1 virus infection has been detected in wild birds in 13 EU MS and another 19 countries in EURO non-EU MS with human cases occurring in Turkey and Azerbaijan as well as neighbouring countries Iraq and Egypt. Invaluable experience has been gained from these outbreaks and to date the results have been positive, especially in the EU where the regional structures and policies at EU and Member States levels have meant that there have been few outbreaks in poultry and to date no human cases. Equally the numbers of human cases in the other countries have been kept manageable and outbreaks have been rapidly controlled with international support led by WHO and the UNDP from ECDC, the European Commission, OIE, UNICEF, FAO and Member States. The main people at risk are those who keep domestic birds, while those working with, or culling, poultry run a lower but theoretical risk.

Importation of infected birds through trade in the non-EU countries has raised concern over biosecurity and control measures in less well resourced settings. H5N1 carried by migrating

birds probably remains an enduring threat to Europe and a seasonal pattern for H5N1 introduction may develop depending on bird movements and the weather. This experience resulted in an intensification of avian flu preparedness planning; a raft of specific guidance was produced by the Commission, ECDC, WHO and MS; a specific avian influenza component was incorporated into ECDC's joint national assessment; and the veterinary – public health human – animal interface and surveillance for zoonoses were strengthened. There has been improved networking of the animal and human laboratories and for the first time in the joint meetings of EU Chief Medical and Veterinary Officers.

However, to keep avian influenza in perspective, all the data available indicate that H5N1 viruses remain poorly adapted to humans. With a high enough viral challenge and perhaps some genetic host susceptibility the viruses can infect humans, and they are then often lethally pathogenic but there is little transmission on to other humans.

H5N1 in Africa

The workshop heard from WHO African Region on the disturbing situation in Africa where eight countries experienced H5N1 outbreaks in birds (two with human cases). This is especially worrying because of the limited resources and capacity in Africa, especially in the veterinary field and the many other pressing public health priorities. Surveillance is so weak that the situation may be worse than it appears. Migratory birds may have played a role in Africa, though as in South East Asia trade from affected countries and internally is thought to be the main contributor to the extension of the epizootic. This evolving situation has an impact on the risk assessment for Europe as it means that many more people are possibly being exposed to H5N1 worldwide.

Pandemic preparedness in Europe

The expanding risk of bird flu resulted in an acceleration of awareness, the commitment of decision makers and further development of preparedness plans, along with considerable confusion between the risks from pandemic and avian influenza in the media and the minds of the public.

All 52 WHO EURO MS now have national pandemic plans and some level of preparedness albeit in different stages of development. The Common Ground exercise in November 2005 showed a number of gaps and opportunities in the EU which now need to be addressed. In addition, national and more local exercises have taken place in a number of MS. Further joint national assessments of national plans and preparedness have taken place to a common template and these have been useful opportunities to strengthen preparedness.

All EU MS are considering national stockpiling as part of their preparedness plans but some EURO (non-EU) MS are experiencing financial or logistical difficulties in accessing antivirals. There are projects financed by the Commission designed to strengthen development of influenza vaccines and some EU MS are making advanced purchase agreements for pandemic vaccines, with a few considering stockpiling human H5N1 vaccines. Some MS did attempt to increase the uptake of seasonal influenza vaccine during the last flu season but few reported reaching the WHO Executive Board target for 2005.

Working group: pandemic preparedness indicators

Under an initiative undertaken by WHO and supported by the Commission and with ECDC, an expert working group has been established which prepared a working document for discussion during the workshop. It concluded that though there were no fundamental objections to the use of national indicators for summarising a situation and monitoring progress, further work was needed to refine the indicators and avoid them becoming too numerous and complex. The topic of interoperability was so complex that indicators may not in fact be the best approach for its assessment.

Working group: surveillance in a pandemic

An expert group has met under ECDC leadership and with their help ECDC has developed surveillance objectives and identified pre-existing candidate systems to capture data. At the workshop a second group considered this work and concluded that the surveillance objectives during a pandemic needed to be further defined. Suggestions were made for additional surveillance systems.

Scientific developments

Developments presented at the workshop included evidence-based guidance prepared for WHO on the pharmaceutical management of human H5N1 cases, and licensing applications received by the European Medicines Agency (EMEA) for mock-up vaccines. A presentation on the more recent developments on modelling potential pandemics highlighted the fact that pandemics are not standard, that there is a need to look for validation at what has happened in previous pandemics and to consider what will happen locally where epidemics can be more severe than appear at the national level. It was emphasised that strategies for control should include combinations of different pharmaceutical and non-pharmaceutical measures. Lastly, a set of recommendations were delivered by an ECDC-convened scientific panel in response to questions from MS.

Recommendations

Avian influenza

Europe will have to adapt and be prepared for the occasional introduction of H5N1 in wild birds and poultry. Humans who work or live closely with domestic poultry will therefore be at some risk. Hence it is necessary for WHO, ECDC and the Commission to continue close monitoring of the avian influenza epidemiological situation both in animals and humans.

ECDC and WHO should complete their investigative toolkit and training package for dealing with avian influenza in humans and there is a need to further strengthen joint approaches of public health officials and veterinarians at national and European levels with continuation of the joint CMO & CVO meetings.

Seasonal influenza

Microbiological and epidemiological surveillance for seasonal influenza should be strengthened and extended to include aspects of more severe disease (hospital cases and mortality) along with an estimate of the incidence of seasonal influenza in Europe. MS should develop methods for measuring vaccine uptake at national and EU level and strive to achieve the WHO target for vaccine uptake across all Europe.

Pandemic preparedness

The Joint Assessment visits should be completed for all EU MS and EURO. Non-EU MS should consider asking WHO for assessment visits using the same methodology. Follow-up visits should continue following initial assessment and there should be more quantifiable SMART indicators which will need to develop continuously so that they lead preparations. The emphasis of the assessments can now focus more on operationalisation of preparedness plans. Exercises should be carried out at all levels with sharing of best practice developed in MS (a MS to MS approach) for local and national activities. A plan for surveillance during a pandemic should be developed by ECDC with MS, with an element on how countries should collect relevant data about the disease epidemiology including estimates of the effectiveness of antivirals and available vaccine. There should also be a portfolio of influenza-related documents for seasonal and pandemic influenza like that of ECDC's H5N1 portfolio. There should be more focus on the interoperability of national preparedness plans. Wherever possible, preparedness should take a generic perspective while at the same time recognising the unique aspects of influenza.

There now needs to be more intersectoral work so that the good work in the health and veterinary sectors is not let down by lack of preparedness in other areas. Work on antivirals should now start to include protocols for timely local distribution and usage, both before and during a pandemic. Public-private partnerships to produce potential pandemic vaccines should be encouraged as a model for national initiatives. Uptake of seasonal vaccine should be increased both for its own sake and as a way to strengthen European influenza vaccine production capacity that could then be mobilised in a pandemic. National initiatives on vaccination should be more coordinated and there should be greater investments in vaccine research and development. International links need to be strengthened, in particular with Africa through the WHO regional office and the WHO multi-disease surveillance centre in Burkina Faso.

International Health Regulations

The workshop supported the WHO Executive Board recommendation for early voluntary implementation of IHR and hoped this would be supported during the 2006 World Health Assembly.

Next meeting

It was agreed that there should continue to be European region joint EC/ECDC/WHO/MS meetings, now at a yearly interval with the intent to share experience, protocols, guidelines, strategies and tools; discuss mitigation strategies related to antivirals, vaccine uptake, non-

medical measures; coordinate plans on border issues, cross-border health care, and citizens abroad. However, it was recognised that there is a need for sub-regional workshops in between these workshops to address specific operational issues, local sectoral plans, communication packages, specific guidelines and help prepare the next plenary meeting in or about May 2007.

Acknowledgements

The organisers of the workshop wish to record the excellent collaboration between Member States, the European Commission, WHO European Region and ECDC that made this workshop such a success. Particular thanks should be extended to the presenters, the chairs and facilitators of the plenary sessions and workshops. The core administrative support for this workshop came from many ECDC staff but special thanks must be given to the administration of Uppsala Castle for being so helpful and making available such a pleasant and historic venue for the workshop.

INTRODUCTION

All European countries have been working intensively on preparation for the next influenza pandemic. Since March 2005, a series of three joint EC/WHO/ECDC meetings have been held to review the state of preparedness in the WHO European region and coordinate European efforts. The rationale for these workshops was that much can be done to reduce the impact of a pandemic by adopting a systematic, multisectoral, coordinated public health approach.

The general purposes of these workshops were to assist those responsible for national influenza and pandemic planning, together with those in international bodies, to further develop their planning for, and management of, seasonal and avian influenza, and any future influenza pandemic, by reducing transmission of the virus, improving the implementation of medical and non-medical interventions, treating patients early, improving the use of seasonal vaccine, strengthening infection control, and reducing the socio-economic impact of a pandemic and maintaining essential services.

Since the workshop in Copenhagen (October 2005) work has been given additional impetus and focus by the spread of the highly pathogenic avian influenza (HPAI) A/H5N1 from birds in East and South-East Asia to many European countries and West Africa, resulting in human infections in Turkey, Iraq and Azerbaijan.

Objectives of the workshop

The three key objectives of the third workshop were:

- to update on the avian influenza epidemiological situation and to learn lessons from the successful joint support missions in Turkey, Iraq and Azerbaijan;
- to review what more needs to be done to protect the public from avian influenza;
- to further review the state of preparedness for a pandemic in the European region and identify areas for further strengthening.

The Workshop also updated the participants on other important developments, including:

- The outcome from major strategic meetings such as Beijing and the WHO World Health Assembly;
- The increasing multisectoral and cross-governmental approach to influenza preparedness;
- The results of the national preparedness assessments being undertaken by countries with support from ECDC, WHO and the European Commission;
- The results of international and national exercises to test preparedness;
- The operationalisation of the 'stamping-out strategy' in pandemic phase 4/5 as described in the Copenhagen workshop;
- Important scientific developments in modelling and the role of vaccines and antivirals;
- Protocols and tools for surveillance developed by ECDC and WHO for use in the run up to and during a pandemic and indicators of preparedness.

DAY 1 – MONDAY, 15 MAY

Opening session

Zsuzsanna Jakab, Director, European Centre for Disease Prevention and Control (ECDC), Stockholm; **Marc Danzon**, Director, World Health Organization Regional Office for Europe, Copenhagen; and **Bernard Merkel**, Acting Director, Directorate C, DG SANCO, European Commission, Luxembourg.

After a presentation of the Chair table to the participants, the meeting was opened by Zsuzsanna Jakab.

Session 1: Key note speeches

1.1 Hubert Hrabcik, Ministry of Health, Austrian Presidency of the European Union, Vienna

Early in 1997, an outbreak in Hong Kong of A(H5N1) gave the first indication of the pandemic capabilities of this influenza virus. In 2002, the EU and WHO called for all countries to plan for pandemic preparedness. As of today, nearly all European countries have developed their preparedness plans to some extent, but it is not clear that all are operational and efficient. There are still a number of uncertainties, one of the most relevant being the unequal distribution of medical supplies. Planners face problems such as developing immunisation strategies without a commercially available vaccine, for which the production technology is not fully developed. Antiviral drugs are in short supply and it is not known how resistance will develop.

On the operational side, a complex issue is the realisation of public health interventions in large cities, as there is almost no experience of a world-wide outbreak in the context of modern travel connections. The list of tasks for countries includes research into antivirals and vaccines in a worldwide coordinated way; an update of national plans to take account of potential problems with a pandemic vaccine; the creation of standards for the quality of preparedness; and the ongoing evaluation of preparedness plans.

Regional and international solidarity is essential. Additionally, the role of the mass media cannot be overlooked in preparedness planning, as a communication strategy will be key to maintaining trust in the authorities. Surveillance networks need to be strengthened to deal with the veterinary and public health aspects of influenza worldwide, with strong cooperation between veterinarians and doctors. A strategic reserve of antivirals in the EU should be considered.

Seasonal influenza must not be forgotten. Half a million people die every year and most countries still have low vaccination rates. Hygiene measures are often overlooked, yet they remain one of the pillars of prevention. It seems that the better a country is prepared for seasonal influenza the stronger its preparation for pandemic influenza.

In conclusion, private-public partnership is crucial, as is the provision of timely information to the population. Transparent communication is essential for building and maintaining the trust necessary to implement the planned actions.

1.2 Bernard Merkel, Acting Director, Directorate C, DG SANCO, European Commission, Brussels

Pandemic influenza is currently one of the most serious health threats worldwide, with potentially enormous impact and social disruption. The last century saw three pandemics. Now we have clear warning signs that the next pandemic may be imminent: avian flu from south-east Asia has spread to Europe and Africa, occasionally breaching the avian-human species barrier. Preparedness planning has been developing and there is now a need to assess those plans. This is being done through country visits by ECDC with WHO. Plans do exist but there is yet work to do to ensure they are realisable in genuine situations.

In November last year, the Commission ran a simulation exercise in Europe in order to test communication and coordination. One of the main objectives of simulations and exercises is to look beyond the plan and identify gaps. Communication will be key and when pandemics happen this must function not only between authorities but also with the population.

Indicators need to be developed for constant monitoring of the progress made towards preparedness and the Commission has been involved in a series of activities in this regard.

Two key documents defining the parameters for national plans have been made available on the internet. Simulation exercises have also been conducted, including an internal simulation to test the Commission's own procedures.

Concerning influenza vaccines, a policy document for a public-private partnership has to be set with the aim of delivering vaccines in as timely a manner as possible. A consortium of public health institutes is preparing a library of seed stock for a vaccine, and EU solidarity funds have been made available to support advance orders from MS. However, the question of whether or not to create a community stockpile to contribute to first containment efforts remains a political decision to be taken among MS.

The Commission is also taking concrete steps to bring together national animal and human health authorities through regular meetings of Chief Medical Officers and Chief Veterinarian Officers.

It is recognised that the public perception of a crises can itself become the real crisis. Hence media spokesmen are being involved in coordination initiatives.

On a global level, the EU-IPAPI pledging conference in Beijing was a major success but now those pledges need to be converted into operational funds. This meeting in Uppsala is an important step, welcomed by the Commission. Although we can not know whether or not we will face an H5N1 pandemic, we have to be prepared for the possibility and that responsibility lies with the health authorities.

1.3 Marc Danzon, Director of the World Health Organization Regional Office for Europe, Copenhagen

The recent avian influenza outbreaks in Europe have provided opportunities for learning how collaboration should work. Two real cases tested WHO's preparedness and showed that

cooperation worked and the teams in Turkey and Azerbaijan demonstrated high levels of coordination. Good transparency and support from the international community played major roles, with input from EU institutions and OIE as well as UN agencies. A meeting in Turkey at the end of April demonstrated the importance of debriefing. All the neighbouring countries were present to review the activities in the Region. This meeting noted that within WHO's European region nine people have died from H5N1 and 27 countries have had avian flu outbreaks.

As with polio eradication programmes, activities must continue even when there are no human cases: countries must remain vigilant. Rapid mobilisation and correct communication are essential when H5N1 outbreaks occur. The role of the press is problematic when simple messages are difficult to put across. Therefore, a long-term relationship between public health authorities and the media has to be established, based on mutual trust.

Research has to improve and there particularly needs to be a better understanding of the outbreaks in Turkey. The collaboration of all parties involved should continue to improve preparedness. Preparedness indicators to monitor the progress are important but these are difficult to develop and apply consistently. However, the World Health Assembly next week will address the avian flu crisis and propose a resolution to implement IHR earlier with voluntary commitment of MS.

1.4 David Nabarro, Senior United Nations System Coordinator for Avian and Human Influenza, New York

The international effort is to build a movement of actors with a common cause: strategies must be based on science and the action should be focused locally but led globally, involving political leaders, government services, professional bodies and civil societies. The challenge is to engage key figures, institutions, systems and technical networks for the long term, sustaining and institutionalising focus on health security and mobilising funds. The pandemic potential is high and past events have shown how local outbreaks can have a global impact. The SARS outbreak is a prime example with less than 1000 people dead but an economic impact estimated at around $50 billion. Clearly a pandemic response needs to go far beyond the health sector alone. Should a pandemic strike, in addition to a significant loss of life and temporary high sickness rates, the world could face disrupted essential services and supplies with markets closed, access reduced, unreliable utilities, shortages of cash, telecom outages and perhaps significant threats to rule of law and security.

A strategy was agreed in the UN family and with other international players in November 2005, with two major strands: first, stop influenza in animals by stamping out the disease at the place where the infection starts; second, prevent the emergence of a pandemic by limiting human exposure. Although $1.9 billion were pledged in Beijing, this is not sufficient. The emphasis has to be on coordination. The only way to respond effectively is if national and international agencies work together within, and between, countries.

1.5 Marc Sprenger, Chair of the ECDC Management Board

Although all countries care for the wellbeing of their citizens, many of them have not implemented seasonal flu vaccination as needed. Countries should start today to increase vaccination uptake. H5N1 is a new threat but older enemies such as TB, HIV and the other

STIs are still here and should not be disregarded when the pressure is on to stockpile antivirals. Efforts need to be balanced according to need.

Concerning the development of pandemic vaccines, EMEA is giving clear guidance, and the EU has financed projects to help in this direction. A recommendation is that ECDC provides advice on a research agenda on vaccine issues.

Antiviral stockpiling is appropriate for some countries that can afford them but a more sustainable initiative involves investment in a multi-purpose infrastructure and collaboration between health care and public health.

Decisions should be made at national level where resources are limited and there are competing priorities: national authorities should show leadership and start action, keeping in mind that people need to see a benefit today from the preparation for tomorrow.

1.5 Zsuzsanna Jakab, Director, ECDC, Stockholm

Pandemic influenza has been a priority for the work of ECDC from day one. Despite the work done so far by the international community, there are still some areas of controversy that require resolution.

Regarding antivirals and vaccines, some questions remain unanswered, of which some cannot be satisfactorily answered until the pandemic appears. For instance, are antivirals other than oseltamivir effective against H5N1? Which antivirals will be effective against the next pandemic virus? How can antivirals best be used to contain influenza? What role will a pre-pandemic H5-based vaccine play?

Political and organisational issues are central to effective preparedness, and preparing for pandemics is not just a health issue. Preparedness needs to be truly multisectoral, focusing on local level and frontline staff. Countries need to show solidarity, especially in Europe where progress has been made but with many cross-border aspects yet to be tackled.

Session 2: Update on the influenza epidemiological situation
Chair: Gudjon Magnusson, WHO EURO, Copenhagen

2.1 Influenza in the world, Guenael Rodier, WHO EURO, Copenhagen

Looking at the worldwide situation, avian influenza is spreading globally (with the exception of the Americas) and an increasing number of humans are being affected. Most of the wild birds found positive to date have been in Europe, though this is probably due to the strong surveillance in wild birds in that area.

Global influenza surveillance is one of the weakest areas in combating avian influenza. Seasonal surveillance is a lab-based activity which monitors circulating viruses and provides indications for vaccine composition. A WHO global surveillance system based on 115 national reference centres monitors influenza affecting humans. A network for animal flu under the coordination of OIE/FAO works in collaboration with the human influenza network. Seasonal surveillance is efficient within the EU but less so in other areas like Africa. The spreading outbreaks of avian influenza have given rise to a number of unanswered

questions relating to the migratory species implicated as vectors of the virus and the exact role of wild resident birds.

The film producer, **Hildebrand**, documented the HIV epidemic with the Karolinska Institute and UNAIDS. From this, a digital archive was developed for public use. In October 2005 a proposal was made to document the avian flu epidemic and pandemic preparedness. The documentary was started in Sweden, but could now be expanded to EU level. Forty hours of interviews have been recorded. It is planned to continue over the next ten years and monitor developments.

2.2 Avian influenza situation in Africa, Adamou Yada, WHO AFRO, Brazzaville

The introduction of the H5N1 virus to the African continent is of great concern due to several factors, among them weak health systems and services; inadequate human resources for managing health crises; insufficiently developed early warning systems; and lack of general preparedness to respond to a pandemic. Other factors include an inadequate transport and communication infrastructure with poor logistics support systems and widespread poverty. The traditional practice of home slaughtering of poultry, de-feathering, butchering, and preparation for cooking increase the risk of infection.

This all makes Africa highly vulnerable to an influenza pandemic, which would have an enormous impact, both directly and indirectly. Economic loss as a result of culling domestic birds, together with travel and trade restrictions, is a considerable outcome. Plus the nutritional impact of culling domestic birds further deteriorates the health of the population, especially that of children.

The 56th WHA urged Member States to draw up and implement national preparedness plans and requested that the Director General continue to provide leadership in pandemic preparedness. The 55th session of the WHO Regional Committee for Africa, concerned about the potential impact of the pandemic, proposed setting up a technical advisory group.

As of 13 May 2006, eight countries had confirmed H5N1 infection in domestic birds and/or wild birds in Africa. Only Egypt and Djibouti had confirmed human infections.

The number of migratory birds arriving in Sub-Saharan Africa is estimated at 3.8 billion per year, about one million of which are water birds. More than 80% of Africa's land mass is receiving the migratory birds.

Of course the virus also moves through trade. In Nigeria farmers were transporting chickens to neighbouring countries to sell them as the control measures were being implemented. This is linked with failure in compensation policies. Even within Nigeria the enforcement of a ban on trading between states had not been effective.

There are several constraints on effective pandemic preparedness in Africa. Under-budgeted health systems often operate in sub-optimal hygiene conditions. Skilled human resources are often in short supply and ill-prepared to deal with the increased workload. There are insufficient laboratories with the capacity to confirm avian influenza in the region and all this is compounded by weak administrative and logistics support systems, a high rate of illiteracy and widespread poverty.

The challenges are many. Not the least of which are how to minimise the economic losses; how to increase antiviral drug production capacity and reduce the prices to make it more accessible; how to ensure early detection of human infection for prompt containment; how to improve collaboration, cooperation and coordination within and across the various sectors; how to ensure timely sharing of information and facilitate transportation of laboratory specimens.

However, the emergent avian influenza problem has also opened up some opportunities. For example, political commitment of governments has increased towards public health planning, influenza surveillance and response has been built within the IDSR framework, and collaboration has improved between human and veterinary public health services. A legal basis for these initiatives has been provided by the IHR (2005). There is a possibility that the polio surveillance infrastructure can be used to conduct influenza surveillance, and any increased availability of effective antiviral drugs and technology to develop influenza vaccines would be a desirable outcome.

The WHO Regional Office for Africa has been working to improve preparedness. Activities include the establishment of an ad hoc panel of experts (October 2005); the provision of technical support, guidelines and tools to Member States (November 2005 to date); the development of a Regional Pandemic Preparedness and Response Plan (finalised January 2006); the organisation with other UN agencies of a regional meeting on avian influenza in Libreville, Gabon, where 45 Member States signed the 'Libreville declaration' (March 2006). In addition, a regional influenza laboratory network for diagnosis of human influenza has been put in place (March 2006); training modules on avian/human Influenza for district health workers are under development (to be ready mid-2006).

In conclusion, with the detection of A/H5N1 in the region, the risk of the emergence of pandemic influenza in Africa is high. The occurrence of human cases would create enormous new challenges for the already overburdened health systems and services. Strong government leadership for timely implementation of national preparedness and response plans is required. Government responses should be within a well coordinated, well resourced action plan and based on the principle of equity and global partnership.

2.3 Overview of the outbreak investigations in Turkey, Iraq and Azerbaijan, Caroline Brown, WHO EURO, Copenhagen

The recent outbreaks of human cases affected by A/H5N1 that occurred outside of Asia were investigated by WHO-led teams.

There was no identification of asymptomatic infections in any of the outbreaks. Clinical specimens were taken in Turkey from 18 household contacts on 21 March and there was no detection of H5N1 in the throat swabs. A specimen from a mother in close contact with two patients was also negative. One case that received three days of Tamiflu treatment was confirmed retrospectively. In Turkey and Iraq there was clear contact with sick backyard poultry and documented risk behaviour of cases such as slaughtering sick chickens, and preparation of slaughtered or dead chickens for consumption. Poultry had been brought indoors due to cold weather (in Turkey) and children were particularly exposed.

In Azerbaijan the nature of exposure was to wild birds. In particular, dead wild swans which were de-feathered for sale. The age of cases was probably behaviour-related (mainly teenagers were responsible for slaughtering sick poultry) though a higher susceptibility of this group could not be excluded. Family clusters were seen in all three countries, which were most likely due to sharing of a common exposure, although human-to-human transmission could not be excluded.

2.4 Lessons learnt from outbreak investigations in Turkey, Iraq and Azerbaijan, Denis Coulombier, ECDC, Stockholm

Important lessons have been learned from the investigation of the three outbreaks. Human cases are often signals of animal outbreaks and this shows the limitations of animal surveillance in those countries. Openness of health authorities about the outbreak is key to the success of any response.

Clinical management of cases performed well in general, with swift evaluation of patients and sharing of clinical experience. Antivirals were generally available at peripheral level. Reference documents were also translated and available in national languages. Medical monitoring was implemented for health care staff as well as proper handling of their fears. Case detection and investigation was an area where experience sharing from previously affected countries (forms, tools, case definitions) was essential and highlighted the importance of local active surveillance to detect cases and clusters. Detection of human-to-human transmission would be jeopardised if the case definition includes bird exposure. Exposures could be over or under recognised.

With regards to surveillance, experience suggests that the case definition should be derived from the standard existing one and adapted to local specificity. Training is needed in applying case definitions. There is also need to define a strategy for dealing with contacts, as there are major difficulties with the implementation of contact tracing.

Issues related to laboratories, social mobilisation and communication are all also fundamental aspects of an effective investigation and containment of outbreaks.

In conclusion, the importance of preparedness and sharing material and experience from other outbreaks must be stressed. A toolkit on influenza has been prepared by ECDC in collaboration with WHO which is a summary of all documents used in the field and also contains examples of protocols.

Session 3: Avian influenza in Europe and risks for human health – activities since October 2005
Chair: Stefan Schreck, European Commission, Luxembourg

3.1 Measures implemented by the European Commission, Alberto Laddomada, SANCO-D, Brussels

The EU animal health response to avian influenza H5N1 rests on several pillars. EU legislation has harmonised regulations for animal health and food safety: concerning disease prevention, surveillance, reporting and control; on trade in live birds and their products; and indications

for compensation of farmers in case of disease outbreaks. The legislation also describes how the laboratory network is co-ordinated by the Community Reference Laboratory, and the rapid communication and roles of decision-making bodies. The EU measures (Council Directive 92/40/EEC) are based on scientific opinions of the European Food Safety Authority (EFSA) and, since September 2005, in collaboration with ECDC. The scope of Community measures on AI is now extended also to low pathogenic avian influenza. Some measures are now under review, while some have just been revised: these include provisions for vaccination and the use of DIVA strategy (differentiation of infected from vaccinated animals). Today still less than 0.1% of EU poultry are vaccinated.

In conclusion, major efforts have been made to prevent, detect early, and contain HPAI H5N1 in the EU. The measures taken have so far successfully reduced to a minimum the impact of the disease on animal (and therefore public) health. The system in place in the EU has been able to effectively coordinate Member States' animal health measures and adapt them to the evolving situation. Given that it is still difficult to predict the evolution of the disease, a question remains as to whether the measures in place are sustainable in the long term.

3.2 Strengthening national preparedness and response to avian flu, Bernardus Ganter, WHO EURO, Copenhagen

These recent months have been a period with very high media coverage and intense pressure for 'breaking news'. The Global Outbreak Alert and Response Network was very effective in rapidly identifying experts, epidemiologists, laboratory specialists, infection control, communication, and logisticians. WHO organised daily conference calls with its outbreak teams and with partners from EC, ECDC, OIE, FAO, and UNICEF.

Certain common problems characterised the outbreaks. In general, some areas were considered as high risk (migrating birds, backyard farming, open markets, pockets of poverty), though the public was not fully informed of the risks and the surveillance systems were relatively passive and not adapted to the unknown. Laboratories were not prepared to scale-up, and lacked diagnostic tests for H5N1 and had insufficient bio-safety levels; there was also a lack of resources for hospital infection control (PPE, ventilation), and poor resources for case management (eg protocols, AV drugs).

WHO has been working on some strategic areas to improve prevention and preparedness with the aim of reducing human exposure to the H5N1 virus by strengthening the early warning and response system, intensifying rapid containment operations, building up capacity to cope with a pandemic, and coordinating global scientific research and development.

In relation to the national preparedness planning, WHO EURO has been working on different areas of activity such as developing sets of indicators to measure progress, communication guidelines, vaccine development strategies, checklists for hospital managers and, in collaboration with WHO HQ, guidelines on clinical management of avian influenza cases. The upcoming World Health Assembly will present a resolution to accelerate the voluntary implementation of International Health Regulations, in particular to better respond to the increasing risk of avian influenza outbreaks.

For the immediate future, H5N1 is most likely to persist. Thus there is a need to maintain a high level of (political) commitment within MS and international partners and foster inter-

country information sharing and collaboration across borders. Other objectives are to further strengthen epidemiological and virological surveillance systems and international sharing of information, continue to assess and monitor operationalisation of national plans, and seek opportunities to accelerate the implementation of IHR and strengthen core capacities of surveillance systems.

3.3 Animal health aspects of EFSA's work on avian influenza, Jorge Serratosa, EFSA, Parma

Work on avian influenza was based on a series of scientific reports and opinions, starting in January 2004 with a statement on AI of the Animal Health and Welfare panel. In September 2005 a scientific report and opinion was issued on the animal health and welfare aspects of AI. In April 2006 EFSA published a scientific statement on migratory birds. Finally on 12 May 2006 there was a report and opinion on migratory birds and their possible role in the spread of highly pathogenic AI-Asian lineage and includes a list of wild birds involved and presents different assessment conclusions.

According to the release assessment, migratory birds become infected with H5N1 HPAIV at mixing concentration areas and from there they reach the EU. In terms of exposure, the assessment discusses the probability that Asian lineage H5N1 HPAIV will become endemic in non-migratory EU wild birds. H5N1 HPAIV is being transmitted to poultry in the EU in holdings and indoor production with high biosecurity from wild birds. H5N1 HPAIV is also being transmitted from wild birds to poultry without high biosecurity measures or free-range or backyard poultry, depending on its proximity to wetlands. The report also makes recommendations on biosecurity measures developed in contingency plans for AI outbreaks. There is also a general view from the avian health perspective of the impact on public health. EFSA is now revising the opinion on the role of migratory birds in the light of the last report of DG ENV, and evaluating the risks associated with the import of wild birds other than poultry into the EU (exotic/pet birds).

3.4 Food safety aspects of EFSA's work on avian influenza, Marta Hugas, EFSA, Parma

EFSA has nine scientific panels. The panel on biological hazards deals with questions on biological hazards relating to food safety and food-borne diseases and all outcomes (opinions, reports, etc) are published on the EFSA website (www.efsa.eu.int). The panel developed a report on 'Food as a possible source of infection with HPAI viruses for humans and other mammals' which is a comprehensive background document on HPAI (mainly H5N1) in avian species and the possible transfer to other species, including humans, via the food chain. The report discusses in detail the possible risk considerations linked to viral transmission through food, and sets out what is missing in order to achieve scientific certainty on the role of food.

3.5 Risk assessment and a portfolio for human health in Europe, Angus Nicoll, ECDC, Stockholm

ECDC had issued a first risk assessment on H5N1 in Europe which was then revised in January 2006. The assessment considers the disease as another emerging zoonosis which to date is poorly adapted to humans, not very infectious for humans, though highly pathogenic in those few humans it does infect. Generally there has not been evidence of secondary

transmissions. The virus has evolved and changed its behaviour significantly in birds, though so far seemingly not in humans.

There are two groups that are considered at risk of H5N1 in Europe: one at low but real risk, that is people living with or coming into direct contact with domestic poultry; and a second group, theoretically at risk, which includes potentially any person worldwide and where precautions are required according to the specific exposure risk. This second group comprises health care workers caring for patients with H5N1, people who may come into close contact with infected wild birds, veterinarians and those controlling poultry infection (culling teams), people in the poultry industry, and people working with sewage that may be contaminated. For the majority of people who have no close contact with domestic or wild birds, the risk of acquiring H5N1 is almost non-existent.

The updated assessment provided no indication of a significant change of behaviour of H5N1 viruses in humans to whom it remains poorly adapted. Human to human transmission remains as rare as ever and there is no indication that such transmission has become more efficient. There is no risk from prepared foods. The presence of a virus does not necessarily mean a risk of human infection. A few human cases have been detected in most countries where outbreaks in domestic poultry have occurred. There is no change for the groups at risk in Europe.

Nevertheless, the recent review of the assessment highlighted some new aspects. With H5N1 infections in wild birds in Europe the risk will inevitably seem closer to home. Since January 2006 new factors have had to be considered: a strain of the H5N1 virus was able to affect a wide range of bird species and has adapted well to certain migratory birds, being carried by them and thus dramatically extending its geographical range (across Asia, Europe and Africa).

These viruses have shown considerable stability over time. If this stability is maintained, Europe will have to acknowledge A/H5N1 influenza as one of its endemic or occasionally appearing zoonotic infections. Recent events have shown that a few other animal species, notably cats, can become infected. Further, they can occasionally transmit the infection to other cats in artificial conditions, but there have been no cat-to-human infections.

Worldwide, many more people are possibly going to come into contact with H5N1. This is much less so in the Europe Union than elsewhere because poultry are mostly segregated from humans with generally high levels of biosecurity. This does not mean any change in the pandemic potential of H5N1, but if such potential exists it must now be more likely to emerge sooner rather than later with serious Implications for policy makers.

A strategy is being developed for the protection of EU citizens against H5N1. It is one of a number of zoonoses in animals in EU countries and beyond. Application of the principles for protecting people against zoonoses in general will also protect them against H5N1. Most of the ways that we protect against zoonoses and H5N1 in its current form are simply by applying pre-existing rules of good hygiene.

The challenges for European countries are many, and they include how to manage a potential human H5N1 case without an overreaction; how to focus the multisectoral forces locally to manage a poultry or a human outbreak. Plans should be tested with simulation exercises.

Finally, public health planners and authorities should remember that H5N1 can distract from wider pandemic preparations and seasonal influenza.

Session 4: Activities since October 2005 – pandemic preparedness
Chair: Denis Coulombier, ECDC, Stockholm

4.1 Coordination of measures in EU Member States, European Commission, Franz Karcher, DG-SANCO, Luxembourg

The Commission Communication on pandemic influenza preparedness and response planning in the European Community was adopted by the Commission on 28 November 2005. The Communication builds on the Community preparedness plan adopted as a Commission working paper in March 2004. The review was necessary for two reasons: WHO had reviewed the description of pandemic phases early in 2005, and ECDC became operational in May 2005. The Community plan is in line with WHO recommendations but specific provision had to be made for certain circumstances and conditions peculiar to the EU. The plan includes a series of measures to be considered at EU level which are described for each phase, to be applied in its specific epidemiological context.

The plan should be looked at within a framework of the additional activities of the Commission: assessing national preparedness together with ECDC and WHO EURO through assessment visits, workshops and questionnaires; running scenario exercises to test national plans; improving collaboration between public health and animal health sectors through regular meetings of CVOs and CMOs; engaging in dialogue with pharmaceutical companies to improve the supply of pandemic vaccines and antivirals; monitoring Member States' activities with regard to advance purchase agreements for pandemic vaccines and stockpiles of antivirals; and initiating a strategy for a Community stockpile of antivirals.

The plan describes for each pandemic phase the objectives, role and main tasks for the Member States, Commission and Community agencies. They are based on the identification of key topics such as planning and coordination, monitoring and assessment, prevention and containment, health system response, and risk communication.

Important elements for the implementation of the Communication are the improvement of the interoperability of preparedness plans and coordination of countermeasures, and ongoing collaboration with WHO EURO and ECDC on assessments of national preparedness and exchange of best practice.

A list of public health measures and immediate steps for each level of pandemic needs to be discussed with MS in order to make the EU plan more operational. It is also intended to launch a comitology procedure for enhanced coordination procedures and to enable the Commission to declare a public health emergency.

At the Commission current work is addressing cross cutting issues and improving crisis management. In collaboration with ECDC there are plans to improve EWRS to relieve the burden of surveillance information on the system. SANCO is also establishing a fully equipped Health Emergency Operation Facility to ensure internal SANCO preparedness and link to ARGUS. A document (non-paper) on a strategic EU stockpile of antivirals is under discussion.

The aim is to help MS with the management of stockpiles of antivirals and advance purchase agreements for pandemic vaccines. The Commission is also involved in implementing the concept of PPP (private-public partnership). In addition, work continues with MS on signalling estimated needs of seasonal vaccines and working towards a harmonised vaccination policy.

4.2 Follow up European pandemic preparedness exercise November 2005, John Simpson, Health Protection Agency, London

An EU-wide exercise was commissioned by the European Commission with the overarching objective of evaluating the ability and capabilities of Member States to respond to an influenza pandemic. The exercise was conducted on behalf of the Commission, by the UK's Health Protection Agency (HPA) as a Command Post Exercise over a two-day period on 23 and 24 November 2005. The specific objectives of the exercise were to test the execution of the national plans of the Member States; to improve the compatibility and interoperability of the national plans of Member States; to examine the role and availability of countermeasures; to determine the availability and suitability of containment measures; and to examine the role of the Commission during an influenza pandemic. The scenario outline used for the exercise considered the person-to-person spread of an influenza pandemic strain in a country outside the EU (SE Asia) simultaneously arriving in most major populations of the EU. The scenario included two pandemic waves with an overall clinical attack rate of about 25%, 1.5% mortality and no vaccine available until the second wave. The players were all 25 Member States, and Iceland, Norway (EEA), and Switzerland, the European Medicines Evaluation Agency (EMEA), the European Influenza Surveillance System (EISS), the European Centre for Disease Prevention and Control (ECDC), the European Vaccine Manufacturers (EVM) which played as one big company from Brussels, with antiviral drug manufacturers playing as separate entities. The exercise was also played by WHO Influenza Section (Geneva) and WHO European Office.

The exercise was designed to evaluate the systems, procedures, planning and coordination capabilities of decision makers and their supporting staff. It included elements on the international dimensions of national plans, travel restrictions, quarantine, and cross-border movements. Additionally, the processes for mass vaccination, surveillance across the EU and the existing communication facilities (EOCs) were tested. The exercise was evaluated through a series of meetings involving all players and lessons were drawn and discussed in a document made available to all involved partners. The exercise was in general considered a success with a huge amount of experience gained: the Commission and some Member States have already taken action as a result of the exercise; hundreds of government and industry players took part and many health ministers took part or observed. A critical success factor was the involvement of 'industry'. Many of the delegates from the Member States, EEA States and Switzerland expressed the view that these types of exercise should be repeated on an annual basis but that the preparation and conduct of them are very demanding.

4.3 National pandemic preparedness exercises – France, Didier Houssin, Direction Générale de la Santé, Paris

The fight against avian influenza in France is the responsibility of the President of the Republic. A national plan was prepared by the General Secretariat for National Defence, made public in 2005 and then updated in 2006. To test its capacity different exercises were played

in France, from desktop exercises to improve inter-ministerial coordination, to field exercises to test the organisation of a hospital in a pandemic situation. France also participated in international exercises such as the EU 'Common Ground' and developed specific exercises for testing the response to avian flu outbreaks, and the management of patients arriving by air. In April 2006 France conducted a national desktop command post exercise to test the new national plan, in particular the transition from phase 5 to phase 6.

Exercises are indispensable complements to plans but need clear objectives and good preparation, followed by comprehensive debriefing and evaluation.

4.4 Follow up on country visits 2005 – Poland, Anna Światecka, Chief Sanitary Inspectorate, Warsaw

An assessment of influenza preparedness in Poland was carried out in October 2005 during a joint visit of experts from ECDC, WHO and the European Commission. Major recommendations included strengthening infection control, upgrading the national influenza reference laboratory, improving surveillance for seasonal influenza, and developing a pandemic-specific communication strategy.

Since October last year there have been some new developments. Poland experienced its first cases of H5N1 in wild birds (in total 63 birds tested positive). The financial law for 2006 introduced an amendment to allow the purchase of pandemic influenza vaccine. In February 2006 the preparedness plan was updated in line with the recommendations of the Commission and WHO. A follow up visit to the first assessment (ECDC, WHO, Commission) was then received to review progress. Poland's participation in the Common Ground exercise prompted the organisation of national and local tests in cooperation with other sectors.

4.5 Follow up on country visits 2005 – Greece, Agoritsa Baka, Hellenic Centre for Disease Control and Prevention, Athens

A first on-site visit of experts from the Commission, ECDC and WHO was paid in September 2005. Greece also participated in a number of international activities related to pandemic preparedness planning. In March 2005 a first national influenza preparedness plan was approved by Ministry of Health and Social Solidarity and the national influenza pandemic committee had its first meeting in July 2005. The existing plan was not made public as it is not common practice, given the current public attitude, to publish national preparedness plans.

The assessment reviewed many aspects of the plan and the overall conclusions were not completely positive as far as its completeness. In particular, there were indications that surveillance systems need to be improved, the plan adapted in line with WHO new phases, and collaboration with veterinary public health and other authorities strengthened.

A follow up visit in February 2006 reviewed the many achievements and the significant improvements to the national plan. A number of activities are ongoing such as improving hospital preparedness, developing guidance on preparedness plans, running small exercises for hospitals, and developing pandemic surveillance systems.

In conclusion, in the influenza pandemic preparedness process, the health sector has the necessary experience, can heighten awareness and give advice and guidance but it cannot

bring the whole pandemic management plan into action single-handed. More government sectors at national and international levels need to be involved. In this new era of health threats countries definitely need strong multi-purpose public health systems.

4.6 Country visits February – April 2006, Reinhard Kaiser, ECDC, Stockholm

ECDC has been working actively since its creation on strengthening EU preparedness by coordinating the surveillance of seasonal, avian and pandemic influenza, monitoring scientific developments, providing scientific opinions, promoting scientific issues, supporting Member States' investigation and response capacity, and coordinating risk assessment activities.

In close cooperation with the Commission and WHO, ECDC has been working on strengthening country preparedness through country visits: nine EU countries have been visited so far. The objectives of the visits were to evaluate the capacity and assist each country in pandemic influenza preparedness, with a major focus on interoperability of national plans; to determine baseline status or to compare with a previous baseline evaluation; to describe weaknesses and strengths of preparedness; and to identify and agree steps for improvement. The visits were conducted by teams of three or four international experts with a duration of three to four days. The assessments were conducted using an assessment protocol developed by ECDC in collaboration with WHO EURO and the Commission. The work was mainly carried out through interviews with key players at central and peripheral level, using a set of qualitative indicators. The visits have identified a number of strengths. In general, pandemic influenza preparedness is advancing with strong high-level political involvement; the people involved in planning are aware of the threat, are highly motivated and dedicated; preparedness has strengthened networks between institutions, and more plans are now being tested with simulation exercises. Countries are now moving into expanding preparedness to all levels of the administration and across sectors.

The assessments also identified areas where more efforts were needed. The recent appearance of avian influenza in Europe has stimulated a high level of awareness among decision makers but, as containment becomes successful, there is a need for long term sustained political commitment, including human and financial resources, to ensure preparedness is maintained. Continuous testing of plans and training of staff at all levels is needed, as well as an improvement in communication strategies. The country visits will be completed by July 2007 and all EU Member States will assess the interoperability of their plans through regional meetings to be organised in autumn 2006. The results of this exercise will be presented to the Commission to be put before the Council of health ministers by end of this year.

DAY 2 – TUESDAY, 16 MAY

Session 5: Introduction to working groups
Chairs: Bernardus Ganter, WHO EURO, Copenhagen; Andrea Ammon ECDC, Stockholm

5.1 Pandemic surveillance presentation, Andrea Ammon, ECDC, Stockholm

Surveillance of influenza during a pandemic may be expected to deliver reports that have not previously been collected, are far more timely and precise and deliver parameters outside the scope of classical surveillance. But the ability to deliver data during a pandemic may be decreased by overload of work and staff illness. A developmental approach should be undertaken by first improving the existing seasonal surveillance systems, and then by including additional surveillance tasks during a pandemic.

In February 2006, a working group of ECDC, EISS and experts from EU Member States and other countries gathered to define surveillance objectives and needs in a pandemic situation. A number of recommendations were developed to define the objectives of surveillance during a pandemic covering the main areas of planning such as coordination, monitoring, prevention and containment, health system response and risk communication.

For the remainder of the workshop the working group on pandemic surveillance would discuss the proposed objectives giving an opinion on their appropriateness, and also discuss the proposed surveillance systems, giving their view on the most useful ones. The summary of this working group discussion would be presented at the final session of the workshop.

5.2 Indicator presentation 1, Richard Coker, London School of Hygiene and Tropical Medicine, London

A survey was conducted with the aim of evaluating pandemic influenza preparedness in the EU. The study reviewed publicly available plans, using an analytical grid based on the WHO checklist for influenza preparedness. Methods used in similar surveys conducted recently were compared, and elements of the national plans assessed were checked against them. The analysis used 169 criteria to assess the completeness of plans and 47 criteria with additional weighting to evaluate the quality. The study had some limitations due to the flexible nature of preparedness plans and the fact that assessing the operationalisation of a plan is a complex and subjective exercise and would require close evaluation of how resources are used. Twenty-one national plans were included in the survey, being those published at the time of the review.

The study concluded that Europe was moderately well prepared, but more coherence was needed on public health interventions, including travel restrictions, antivirals and vaccine provision. Gaps remained at individual country level but the potential to learn from each other is substantial. Evaluating and monitoring preparedness would need good indicators but the validity of their measures might be questionable as they only measure the completeness and quality of published plans, not the actual preparedness of a country. However, they remain useful to revisit over time to measure for coherence and gaps.

The survey will probably be repeated to monitor changes. One option would be to expand the audit to the other countries of the European Region of WHO.

5.3 Indicator presentation 2, Jane Leese, UK Department of Health, London

Work has been initiated by WHO to develop indicators for measuring preparedness. Indicators can be generally defined as measures of progress in ongoing activities, as planned, towards a defined goal. They are usually confined to a few key areas thought to be most important in achieving that goal. Several documents have already been published on the development and assessment of national plans. It is now time to move on to more detailed work on readiness in order to activate plans which are 'fit for purpose'.

Indicators must be able to measure progress in absolute terms and quantitatively, must be highly relevant to the ultimate goal, and the measurement must not overburden and deflect from other important activities. Different types of indicators serve to measure inputs, activities, processes, outputs and outcomes. They should be used to assist planning by helping to identify constraints and weaknesses to inform objectives and work plans. They also serve to make comparisons over time to monitor progress within a country and inform the development of objectives and work plans for the next period, for example by indicating where resources should best be used. More difficult is to use them to make comparisons across countries or regions.

The disadvantage of using indicators is that they can detract attention from other areas or the overall picture and, as time goes by, may not be the best measure. In addition, they may be used to make inappropriate comparisons.

The objective of the afternoon working groups would be to agree on the role of indicators in pandemic planning in Europe, considering the proposed set of key indicators and the proposed second tier indicators for health services, outbreak communication, and interoperability of national plans. Feedback from groups would inform further development of the consultation paper as a working document, and identify additional indicators to be developed in the other key areas such as situation monitoring and assessment, and prevention and containment.

Session 6: Working groups on pandemic surveillance

Participants were divided into groups with the task of outlining priorities for future development of influenza surveillance in a pandemic. In particular, the groups were asked to discuss the proposed objectives and give an opinion on their appropriateness, and to discuss the proposed surveillance systems and give opinion on the most useful ones. The outcome of the working groups would be presented in plenary in session 9.

Session 7: Plenary session

7.1 Avian influenza situation in Europe, Alejandro Thiermann, OIE, Paris

The objectives of the OIE are to ensure the accurate collection, and transparent reporting, of the animal health situation throughout the world and, within its mandate under the SPS

Agreement, establish standards on animal health and zoonoses for international trade in animals and animal products.

Avian influenza is a known disease. Highly pathogenic avian influenza can cause devastating losses in poultry, and wildlife can carry avian influenza without showing any signs of disease. The known measures for fighting the disease remain the same.

What is new about the current situation is the virulence of the current H5N1 'Asian strain', with potential worldwide consequences, including the rapid spread across different continents, the role played by migratory waterfowl and the difficulty of managing disease in countries unable to rapidly detect and control H5N1. The pandemic potential derives from the link between high virus loads circulating in poultry and potentially dangerous re-assortment and/or mutation. There is a need to be sure that all countries worldwide are able to prevent, detect early, and quickly control the virus in poultry through veterinary services and partners. Control strategies must be tailored to the conditions and culture of each country. The goal is to minimise the threat at source through rapid reduction of virus load and circulation in poultry. Success very much depends on continuing global coordination between FAO, OIE, WHO, and Word Bank, as well as regional coordination using GF-TAD and GLEWS, OFFLU and WHO's influenza working group. The role of industry is crucial and it must be transparent and participate in all aspects of prevention and control. OIE/FAO have issued recommendations on the prevention, control and eradication of HPAI, focused on targeted risk-based active surveillance, stamping out, biosecurity, movement control, vaccination and compensation schemes. Vaccination is an important tool, but should be meeting OIE Standards, using inactivated vaccines with post-vaccination monitoring. The DIVA approach is an effective strategy, and an exit strategy should also be spelled out.

The significance and implications of emerging zoonoses are rapidly increasing in scope, scale, and importance. The convergence reinforces the concept of 'One Medicine', as animal health is inextricably interwoven with the public's health and wellbeing. There is a need for new partnerships and collaborations between public and animal health officials. Veterinary services must play an important leadership role in the detection and control of emerging diseases.

Regarding the role of wildlife, it is clear that migratory waterfowl do play a role in transmission, but this requires further research. OIE requires notification of HPAI detection in wildlife, however, without trade impact. Once H5N1 is introduced into a country or zone, action needs to focus on poultry rather than wildlife.

In conclusion, HPAI (H5N1) is a very contagious pathogen and must be controlled at source. Control of the situation in poultry is possible but needs adequate investment and strong commitment. The risk of a pandemic can be minimised or postponed if action is taken quickly to reduce the virus load. It is becoming evident that a timely response in 2004 would have reduced the pandemic risk and limited the financial impact.

7.2 Swedish views on pandemic preparedness, Morgan Johansson, Swedish Minister of Public Health

European health ministers have discussed preparedness in Brussels on many occasions. Despite the recent extensive and fast spread of the disease in birds, there is no evidence that we are any closer to a pandemic. A major message that found agreement at Council was that

communication to the public should be coherent throughout the EU, but remains a complex matter, from both political and scientific points of view.

Avian flu touched Sweden in wild birds but restrictions are now relaxed and media interest has died down. The public took a rational view with no panicked reaction. The media was much more worried when it arrived in Turkey, with some confusion between avian and human flu. When arrived in Rugen, Germany, the reactions were less hysterical, and when Sweden was affected, the reaction of the media was even milder. Media coverage has generally been balanced, with the exception of some tabloid newspapers. During the outbreak a lot of questions were directed at the Government. A call centre and a website were created to respond quickly and fully to the many calls from citizens.

Availability of antivirals and vaccines is a priority issue. They cannot stop the pandemic alone – they are not a magic cure – though early treatment is the main use. The question for policy makers is how much to buy, and governments are looking to WHO for answers. Solutions are left to countries but this leads to competing strategies for stockpiling.

A national preparedness plan was developed in Sweden by the national board for health. Local planning has advanced and all counties have plans in place. Exercises at local level are taking place as well as the identification of essential services.

Vaccine production is a global issue and there are two approaches. The first is to increase seasonal coverage thus creating industrial capacity, and the second is for states to build up national capacity within the public sector. Sweden is doing both and will start production by negotiating a public-private partnership. This could cover the needs of the Nordic and Baltic States if there is enough interest. The finances have also been identified. International cooperation is crucial and priority should be given to countries with the least resources. The EU is raising money for this purpose and Sweden has contributed to those efforts.

In the EU context, the interoperability generally of national plans is very important.

Session 8: Working groups on indicators to measure preparedness

Delegates split into groups to discuss indicators to measure preparedness with regard to health services, outbreak communicaton and interoperability.

Session 9: Feed back discussion and conclusions from working groups

Health services

It was agreed that indicators are useful and should be used primarily at national level. Ideally they should be quantitative in order to set clear targets, measure progress and enable ECDC to set future minimum requirements. A second tier of indicators, which would not need to be quantitative, was thought to be constructive for use at a local level. These should concentrate on operational issues, focusing on contacts and structures. Examples of indicators in both the first and second tiers were given.

Outbreak communication

Due to the limited competencies in this field within the group, a general wish was expressed of having the document circulated for specialist comment. It was agreed that the sub-indicators need to be made smarter and should be in the form of a checklist. The group noted that there is only one key indicator in this area but the subject's importance warranted another.

Interoperability

The group welcomed the development of some practical, quantitative indicators, although they may not be the best way to measure interoperability. For that, the group suggested close collaboration at ministerial level.

Surveillance in a pandemic

The group considered the earlier work that had been undertaken by a specialist group convened by ECDC at the request of its Advisory Forum. Limited progress was made because of the complexity of the subject and the differing experience of the group. It was suggested that more background work should be undertaken.

DAY 3 – WEDNESDAY, 17 MAY

Session 10: Scientific developments – effectiveness of measures/operational research
Chair: Johan Giesecke, ECDC, Stockholm

10.1 Scientific advice on risks from avian influenza from the ECDC panel, Albert Osterhaus, Erasmus University, Rotterdam

The remit, the source of the questions, and the composition of ECDC's first scientific panel were described and the main conclusions on issues including emergence of antiviral resistant strains of H5N1; of cross-protection-based immunity based on previous exposure of adult populations to H1 antigen; the risks of bathing and drinking water that may have been contaminated with H5N1; and also the survival of the virus in the environment were summarised. The background and current status of the development of a European task force on influenza (EITF) in cooperation with ECDC was presented. This task force will provide well structured collaboration between human and animal health, other interdisciplinary activities, and help to identify gaps in our knowledge, translating science into policy.

10.2 The containment strategy for an emerging virus and follow-up of WHO March meeting, Stephen Martin, WHO HQ, Geneva

An update was provided on rapid containment strategies. In particular the new developments since the March 2006 workshop and the implications of the IHR. Containment is not a new concept in public health in order to slow down or stop the spread of infection. However, the concept of 'rapid containment' and the associated 'rapid response stockpile (RRS)', supported by a WHO/Roche agreement for stockpiling three million doses of oseltamivir, is unprecedented.

The issues raised were the considerations that have to be taken into account when establishing criteria for the deployment of the RRS, and more critically the logistics of the operation, including the practicalities of storage and transport capacity.

10.3 The evidence and recommendations regarding prophylactic and therapeutic use of antivirals, Holger Schünemann, Italian National Cancer Institute Regina Elena, Rome, and University at Buffalo, NY, USA

Pandemic planning highlights the need for rapid advice for clinical practices, a procedure that normally takes more than two years and requires a large investment of human resources. The process and the problems involved in developing rapid guidance on the pharmaceutical management of H5N1 were presented, highlighting the use of 'grading methods' for the evidence compiled. The published recommendations were to be made available by the end of May 2006 and a preview of the main results for oseltamivir and zanamivir was delivered in this presentation. It was evident that there is a gap in our knowledge on a number of scientific issues that can only be resolved by well-designed research initiatives.

10.4 Pandemic vaccines, pre-pandemic vaccines, post-licensure vaccine effectiveness and studies and adverse event monitoring, Xavier Kurz, EMEA, London

Where are we now with vaccines? Xavier Kurz explained the issues behind the development of, and approval process for, pre-pandemic and pandemic vaccines including the concepts and procedures and outlined the current status for 'mock-up vaccines' and fast-track approval.

10.5 Practical modelling – what models tell us a pandemic could and would be like and what will be the effect of interventions? Daniel Wood, UK Department of Health, London

The way people and processes are brought together to produce models and the strategies for feeding the results of models into policy were explained. A base model of national versus local epidemics using data from the 1918 influenza pandemic was described. Some of the complexities in defining pandemic waves and the length of a pandemic were discussed and work looking at pharmaceutical and non-pharmaceutical interventions was presented, particularly with regard to national travel restrictions and school closures, timing of antiviral treatment and vaccination application, and new aspects of combination strategies. The outcomes were stated in terms of suggestions for policy. It was concluded that modelling must consider the dynamics at the local level and include strategies for combinations of pharmaceutical and non-pharmaceutical measures.

FINAL CONCLUSIONS AND CLOSURE

Preamble

- Organising institutions wish to acknowledge the meeting participation and constructive work of the groups.
- Europe is on its way to being a well prepared region.
- No room for complacency as full preparedness will need sustained efforts.
- A lot of progress has been made since the last meeting in Copenhagen in October 2005.
- Some recommendations from the previous joint meetings need to be fully implemented.

Developments since October 2005

Avian flu in animals

- A/H5N1 detected in wild birds 13 EU MS and a total of 32 EURO MS overall.
- Outbreaks in poultry farms in many EURO MS and three EU countries, rapidly controlled by applying strict measures.
- Some infected carnivores found in Europe.
- Wide-spread vaccination in poultry initiated in some EURO states and as pilot in three EU MS.
- Movements and importation of infected birds raised concerns over biosecurity and control measures.
- Migrating birds remain an important cause of H5N1 introduction in Europe.
- A seasonal pattern for H5N1 introduction may be seen.

Avian flu in humans

- The H5N1 has demonstrated a particular capacity for mutations but has not acquired a competence for effectively infecting humans.
- Two EURO MS have experienced a total of 20 human cases (with 10 deaths).
- Human outbreaks were rapidly controlled with international support (WHO, ECDC, Commission, OIE, FAO).
- It resulted in all EURO MS in an intensification of:
  - avian flu preparedness planning;
  - strengthening of the human animal interface;
  - surveillance system strengthening;
  - infection control activities;
  - laboratory networking.
- Intensive work was carried-out:
  - providing guidance for risk assessment;
  - preparing technical documents (ECDC, WHO, Countries);
  - providing country support and conducting assessment visits;
  - holding inter-country meetings to share experience and draw lessons learned.

Situation in Africa

- Eight countries experienced outbreaks in birds and the continent saw two human cases.
- Realisation of the extent of the situation related to limited resources and capacity.
- Migratory birds may have played a role, though trade from affected countries and internally is thought to be the main contributor to the extension of the epizooty.
- The evolving situation in Africa has an impact on risk assessment for Europe.

Pandemic preparedness in Europe

- The expanding risk of avian flu resulted in the acceleration of:
  - awareness and commitment of decision makers;
  - development of preparedness plans;
  - collaboration between public health and veterinary services, though there is still much to be done.
- All 52 EURO MS now have a national plan, albeit in different stages of development.
- The EU exercise in November 2005 showed gaps and opportunities which are now being taken into consideration to improve national preparedness.
- National and local exercises took place in some EURO MS.
- Six assessments of national plans took place during country visits within the EU.
- Visits have been recognised as a useful opportunity to strengthen preparedness.

Antivirals

- All EURO MS have considered stockpiling as part of their preparedness plans.
- Some EURO MS are experiencing financial or logistical difficulties in accessing antivirals.
- The Commission, at the request of MS, will present options for an EU stockpile for rapid containment under the principle of solidarity.

Vaccines

- Advanced purchase agreements for pandemic vaccines are taking place in many MS.
- Pre-pandemic vaccines are being stockpiled in some MS.
- Projects are being financed by the Commission for vaccine development.
- Many MS increased the uptake of seasonal influenza vaccine during the last flu season.
- Most MS have not yet reached WHO objectives.

Working groups

Indicators

- Initiative undertaken in collaboration with the Commission, WHO and ECDC.
- An expert working group has been established and prepared a working document.
- No objections were made to the principle of indicators to summarise a situation and monitor progress.
- Further work needs to be done to refine the indicators.
- Indicators may not be the best approach to assess interoperability.

Pandemic surveillance

- This had been identified in a previous workshop as one area that needs to be stronger.
- An expert group has been established (ECDC, WHO, EISS) and has developed surveillance objectives and systems to capture data.
- Surveillance objectives during pandemic need to be further defined.
- Suggestions for an additional surveillance system were made.
- As the next step, the group should continue its work and circulate an amended document.

Scientific issues

- EMEA has received two applications for licensing mock-up vaccines.
- Modelling of pandemic influenza needs to consider the dynamics at local level.
- Strategies for control should consider combinations of different pharmaceutical and non-pharmaceutical measures.
- The first set of ECDC recommendations was delivered by an ECDC scientific panel.

Recommendations

Avian influenza

- Europe has to adapt to the occasional introduction of H5N1 in wild birds and poultry, and accept that humans will therefore be at risk.
- Complete a toolkit and training package on avian influenza in humans.
- Strengthen joint approaches with veterinarians at national and European level.
- Continue close monitoring of the avian influenza epidemiological situation in both animals and humans.

Seasonal influenza

- Strengthen microbiological and epidemiological surveillance.
- Achieve WHO target for vaccine uptake across the whole of Europe.
- Develop methods for developing uptake at national and European level.

Pandemic preparedness

Assessments

- Visits to be completed by July 2007 in EU MS.
- Non-EU MS are invited to forward invitations to WHO for assessment visits.
- Follow-up of visits should continue.
- Further develop quantifiable SMART indicators.

Focus on operationalisation of preparedness plans

- Carry-out exercises at all levels by sharing best practices (prepare a kit for exercises).
- Pandemic surveillance protocol to be developed.
- Portfolio of influenza documents to be made public.
- Promote preparedness with a generic perspective.
- Develop a model for practical local preparations through sharing best practices.

Focus on interoperability of national preparedness plans

- Across sectors.
- Across borders.

Antivirals

- Develop protocols for their distribution and usage before and during a pandemic.

Vaccines

- Encourage public-private partnership as a model for national initiatives.
- Support vaccine production capacity by raising seasonal uptake.
- Encourage more coordination of national initiatives and investments in vaccine research and development.

International support

- Strengthen international links, in particular with Africa, through the WHO regional office and the WHO multi-disease surveillance centre in Burkina-Faso.

International Health Regulations

- Support the WHO executive board recommendations for early voluntary implementation of IHR during the 2006 world health assembly.

Scientific issues

- Countries should already now plan how to collect data about the disease epidemiology and efficacy of vaccine and antivirals.

Next meeting

It was agreed to continue yearly European region joint EC/ECDC/WHO meetings to:

- share experience, protocols, guidelines, strategies and tools;
- discuss mitigation strategies related to antivirals, vaccine uptake, non-medical measures;
- coordinate plans on border issues, cross-border health care, citizens abroad.

Sub-regional workshops were proposed to be held in between in order to:

- address operational issues, such as:
  - local sectoral plans;
  - communication packages;
  - specific guidelines.
- prepare for the plenary meeting.

ANNEX 1

Programme

Day 1 – Monday, 15 May

8:30–9:00	Registration
09:00–10:30	*Opening* Zsuzsanna Jakab, Director, European Centre for Disease Prevention and Control (ECDC), Stockholm; Marc Danzon, Director of the World Health Organization Regional Office for Europe, Copenhagen; and Bernard Merkel, Acting Director Directorate C, DG SANCO, European Commission, Luxembourg *Session 1: Key note speeches* Hubert Hrabcik, Ministry of Health, Austrian Presidency of the European Union, Vienna Bernard Merkel, Acting Director Directorate C, DG SANCO, European Commission, Luxembourg Marc Danzon, Director of the World Health Organization Regional Office for Europe, Copenhagen David Nabarro, Senior United Nations System Coordinator for Avian and Human Influenza, New York Marc Sprenger, Chair of the ECDC Management Board Zsuzsanna Jakab, Director of the ECDC, Stockholm
11:00–11:30	Coffee break (and press conference)
11:30–13:00	*Session 2: Update on the influenza epidemiological situation* Chair: Gudjon Magnusson, WHO EURO, Copenhagen Influenza in the world: Guenael Rodier, WHO EURO, Copenhagen Avian influenza situation in Africa: Adamou Yada, WHO AFRO, Brazzaville Overview of the outbreak investigations in Turkey, Iraq and Azerbaijan: Caroline Brown, WHO EURO, Copenhagen Lessons learnt from outbreak investigations in Turkey, Iraq and Azerbaijan: Denis Coulombier, ECDC, Stockholm
13:00–14:00	Lunch
14:00–15:30	*Session 3: Avian influenza in Europe and risks for human health - Activities since October 2005* Chair: Stefan Schreck, European Commission, Luxembourg Measures implemented by the European Commission: Alberto Laddomada, SANCO-D, Brussels Strengthening national preparedness and response to avian flu: Bernardus Ganter, WHO EURO, Copenhagen Animal health aspects of EFSA's work on avian influenza: Jorge Serratosa, EFSA, Padua Food safety aspects of EFSA's work on avian influenza: Marta Hugas, EFSA, Padua Risk assessment and a portfolio for human health in Europe: Angus Nicoll, ECDC, Stockholm
15:30–16:00	Coffee break
16:00–18:00	*Session 4: Activities since October 2005 – pandemic preparedness* Chair: Denis Coulombier, ECDC, Stockholm

	Coordination of measures in EU Member States: European Commission, Franz Karcher, DG-SANCO, Luxembourg
	Follow up European pandemic preparedness exercise November 2005: John Simpson, Health Protection Agency, London
	National pandemic preparedness exercises – France: Didier Houssin, Direction Générale de la Santé, Paris
	Follow up on country visits 2005 – Poland: Anna Świątecka, Chief Sanitary Inspectorate, Warsaw
	Follow up on country visits 2005 – Greece: Agoritsa Baka, Hellenic Centre for Disease Control and Prevention, Athens
	Country visits February-April 2006: Reinhard Kaiser, ECDC, Stockholm
18:00	End of day 1

Day 2 – Tuesday, 16 May

09:00–10:00	*Session 5: Introduction to working groups*
	Chairs: Bernardus Ganter, WHO; Andrea Ammon, ECDC
	Pandemic surveillance presentation: Andrea Ammon, ECDC, Stockholm
	Indicator presentation 1: Richard Coker, London School of Hygiene and Tropical Medicine, London
	Indicator presentation 2: Jane Leese, UK Department of Health, London
10:00–10:30	Coffee break
10:30–12:30	*Session 6: Working groups on pandemic surveillance*
12:30–13:30	Lunch
13:30–14:30	*Session 7: Plenary session*
	Avian influenza situation in Europe: Alejandro Thiermann, OIE, Paris
	Swedish views on pandemic preparedness: Morgan Johansson, Swedish Minister of Public Health
14:30–16:30	*Session 8: Working groups on indicators to measure preparedness*
	Subgroup 1: Health services 1
	Subgroup 2: Health services 2
	Subgroup 3: Outbreak communication
	Subgroup 4: Interoperability
16:30–17:00	Coffee break
17:00–18:00	*Session 9: Feedback discussion and conclusions from working groups*
18:00	End of day 2

Day 3 – Wednesday, 17 May

9:00–11:00	Session 10: Scientific Developments – Effectiveness of measures/operational research
	Chair: Johan Giesecke, ECDC
	Scientific advice on risks from avian influenza from the ECDC panel, Albert Osterhaus, Erasmus University, Rotterdam
	The containment strategy for an emerging virus, follow-up of WHO March meeting, Stephen Martin, WHO HQ, Geneva
	The evidence and recommendations regarding prophylactic and therapeutic use of antivirals, Holger Schünemann, Italian National Cancer Institute Regina Elena, Rome, and University at

	Buffalo, NY, USA Pandemic vaccines, pre-pandemic vaccines, post-licensure vaccine effectiveness and studies and adverse event monitoring, Xavier Kurz, EMEA, London Practical modeling – what models tell us a pandemic could and would be like and what will be the effect of interventions? Daniel Wood, UK Department of Health, London
11:00–11:30	Coffee break
11:30–12:30	Final conclusions and closure

ANNEX 2

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ANNEX 3

Abbreviations

A/H5N1	Influenza strain
AI	Avian influenza
ARGUS	The European Commission rapid alert system for management of crises
CMO	Chief Medical Officers
CVO	Chief Veterinary Officer
DG ENV	Directorate General for the Environment
DG SANCO	Directorate General for Health and Consumer Protection
DIVA	Differentiation of Infected from Vaccinated Animals
EC	European Commission
ECDC	European Centre for Disease Prevention and Control
EEA	European Environment Agency
EFSA	European Food Safety Authority
EISS	European Influenza Surveillance Scheme
EMEA	European Medicines Agency
EOC	Emergency Operations Centre
EU	European Union
EVM	European Vaccine Manufacturers
EWRS	Early Warning Response System
FAO	Food and Agriculture Organization
GF-TAD	The Global Frontiers – Trans Animal Boundary Diseases initiative
GLEWS	Global Early Warning System for major Animal Diseases, including Zoonoses
HIV	Human Immunodeficiency Virus
HPA	Health Protection Agency
HPAI	Highly Pathogenic Avian Influenza
HPAIV	Highly Pathogenic Avian Influenza Virus
IDSR	Integrated Disease Surveillance and Response
IHR	International Health Regulations
IPAPI	International Partnership on Avian and Pandemic Influenza
MS	Member State
OFFLU	The OIE/FAO Network of Laboratory Expertise on Avian Influenza
OIE	World Organisation for Animal Health
SARS	Severe Acute Respiratory Syndrome
SPS Agreement	The WTO Agreement on the Application of Sanitary and Phytosanitary Measures
STI	Sexually Transmitted Infection
TB	Tuberculosis
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNICEF	United Nations Children's Fund
WHA	World Health Assembly

WHO	World Health Organization
WHO AFRO	Regional Office for Africa of the World Health Organization
WHO EURO	Regional Office for Europe of the World Health Organization
WHO HQ	Geneva headquarters of the World Health Organization

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