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INFLUENZA PANDEMIC PREPAREDNESS

IN NORWAY

JOINT ASSESSMENT REPORT

2008

Travel to: Norway

Dates: October 7-11th 2007

Purpose: Influenza Preparedness Assessment Visit

Background: Series of visits 2005-7 to all European Union and European Economic Area Countries

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Annexes of Report (Separate Document)

1. Summary

The report represents the outcome from a three month standard national pandemic preparedness self-assessment process. It draws particularly on an intensive visit (October 8-11th) by an external ECDC-led team working with an internal Norwegian Team. Similar exercises have taken place in all European Union (EU) and European Economic Area (EEA) countries.

There was a request from the Norwegian authorities to especially focus on three topics: *Inter-Sectoral work, Local Preparedness* and *Communications* and the activities during the visit focused on that. However the assessment was more comprehensive through application of the standard ECDC set of indicators and assessment tool and procedure and further information gathered after the assessment.

Norway has made good progress in strengthening its preparedness against pandemic influenza since the first version of the plan was issued in January 2001. Notably the health service sector, led by the Ministry of Health and the Directorate for Health and Social Affairs has taken the issues of pandemic planning very seriously. There is a national expert committee (the Pandemic Committee) providing health sector advice. A national expert committee providing health advice is also a strength in this system. Another strength is the recently updated (2006) National Influenza Pandemic Preparedness Plan which details roles of the Ministry, other central health bodies and regional and municipality responsibilities.

During a pandemic a pre-existing cross-government committee – *the Government Crisis Council* will meet frequently and report to Government. The Committee consists of senior staff from key Ministries and would be chaired by the Ministry of Health for this health crisis. Other Ministries are invited as appropriate. This group would feed information via the official channels to the counties, regions and municipalities and the field would seek guidance and instruction from the Centre. These arrangements seem sensible and robust.

The Communicable diseases act provides clear provisions on responsibility and gives wide powers to health authorities on local (municipalities) and national level (i.e. the Directorate for Health and Social Affairs) to make necessary decisions needed in all aspects of society to contain a communicable disease.

Norway has a strong national public health institute which is the nation's institute for communicable disease control. It has a central role in the field of vaccine supply and preparedness. The Institute is legally mandated to give support, advice, guidance and information to municipal, county and national institutions, health care personnel, and the public on communicable diseases and their control and the choice of measures to control them. There is a strong laboratory element and the Norwegian National Influenza Centre (NIC) based in the Institute which allows for a well integrated virological and epidemiological service.

Norway also has an impressive and well organised set of arrangements for food safety in general. The arrangements for avian influenza are more than adequate with surveillance in both domestic poultry and in wild birds. Though there has been no challenge as yet in Norway the arrangements are robust and well exercised.

As a consequence of these and other positive developments Norway is, as many EU-countries, half way prepared for the next pandemic. However, that is not enough. More still needs to be done.

It was noted however that in common with other counties in general Norway would not pass the local *'Acid tests'* posed by ECDC. This means reaching a level of preparedness where they can be confident that when the pandemic comes:

- primary health care systems will be able to deliver treatments like antivirals and antibiotics to most of those who need them as quickly as necessary;
- hospital systems will be ready and able to deliver acute care to severely ill influenza patients as well as continuing to provide essential treatment for non-influenza-related conditions (trauma care, obstetric services, emergency services, etc) despite having up to 20 % of staff sick or having to care for relatives;
- business continuity planning has been undertaken to ensure that essential services like power, food and fuel supplies will continue to function at the local level;
- pandemic vaccine will start to arrive in hands of primary care services within six months of the start of the pandemic and be available for all who can benefit in subsequent years when annual epidemics will be more virulent.

For Norway to obtain the necessary level of preparedness the team recommends that the government now focuses on the following work:

1. **Integrated planning across different sectors.** A pandemic will impact on the whole of government and society. While Norway has a well-developed health sector plan, it remains to complete the transition to make it multi-sectoral.
2. **Making plans operational at the local level.** This is probably the least developed area, and includes the preparation of local primary care and hospital services and all other core local services, both public and private. In particular it is recommended that the Norwegian authorities consider how they can overcome the issues that arise from the many smaller municipalities for the issue of pandemic preparedness in terms of the quality, capacity and consistency of response.
3. **Ensuring the cooperation between the municipalities and the local hospitals.** The County Governor's role as coordinator and facilitator between hospitals and municipalities in influenza preparedness should be strengthened. Municipalities' 'health network' between similar municipalities to share experiences and empower their planning capacities should be encouraged.
4. **Business continuity planning.** Public as well as private sector need to plan how to maintain essential public or private services outside the health sector during the sustained stress of a pandemic (e.g. transport, utilities, private businesses, police, etc.)
5. **Stepping up prevention efforts against seasonal influenza.** Immunization and a number of other public health measures planned for use against pandemic influenza can also be used against seasonal influenza. The more effective Norway is in preventing seasonal influenza (such as using influenza vaccines), the better is the country prepared to deal with the pandemic.

The report gives in all 28 specific recommendations to the Norwegian government. There are also a number of areas of work which the ECDC needs to do to support the work in Norway.

2. The purposes of the process were:

1. *To support national authorities in jointly evaluating and improving the status of pandemic influenza preparedness in Norway, including the interoperability of its plans with other countries in Europe*
2. *To determine the current level of influenza preparedness*
3. *To identify strengths of pandemic influenza preparedness and areas where further work is needed*
4. *To identify specific steps for improvement and areas where support from the European Centre for Disease Prevention and Control (ECDC) and other organizations may be requested.*

There was a request from the Norwegian authorities to especially focus on three topics: *Inter-Sectoral work, Local Preparedness* and *Communications* and the activities during the visit focused on that. However the assessment was more comprehensive through application of the standard ECDC set of indicators and assessment tool and procedure and further information gathered after the assessment.

The end product is an agreed recommended action list for improvement and a follow-up programme which also clarifies the further support needed from the ECDC.

3. Background

Evaluating the readiness of the European Union and European Economic Area and their Member States for influenza (specifically pandemic preparedness) are integral components of the overall process of improving pandemic preparedness and health security in Europe.[1] Early in 2007 and following an approach from ECDC Norway agreed to take part in this process of evaluation.

The starting point for improving pandemic preparedness in Europe as a whole was a workshop on preparedness planning organized jointly by the European Commission (EC) and WHO European Region (EURO) in Luxembourg, March 2005. A second workshop convened by WHO took place in Copenhagen in October 2005 after the activation of ECDC (in May 2005) which then became the third partner in the process. A third workshop was convened by ECDC in May 2006. A fourth workshop took place most recently in Luxembourg in September 2007.[2]

However between May and October 2005 a process for countries' assessing their pandemic preparedness was developed by ECDC with piloting in Sweden and involvement of the EC and EURO. Key to this was an assessment tool and procedure which then began to be used by Member States and ECDC. The procedure and tool derives from the contents of WHO planning documents and an EU Communication on pandemic planning. This procedure has developed steadily over time, based on experience and events, to become a much more sophisticated tool and set of documents in 2007 than it was in 2005 [3,4,5.] Specifically the approach has:

[1] WHO The world health report 2007 - A safer future: global public health security in the 21st century. The Global Health Report 2007 WHO, Geneva Full Report at http://www.who.int/whr/2007/whr07_en.pdf

[2] EC-ECDC-WHO-Euro 4th European Pandemic Preparedness Workshop – Luxembourg September 2007 http://ec.europa.eu/health/ph_threats/com/Influenza/ev_20070925_en.htm

[3] WHO Global Influenza Preparedness Plan 2005 http://www.who.int/csr/resources/publications/influenza/GIP_2005_5Eweb.pdf

- become more joint between an internal (national) and external members of the Assessment team
- the process is usually agreed to be integrated into the business planning of the member states
- there is more emphasis on the process which stretches over a number of months and less on the short central visit with more preparation by the internal team and a period after the visit when the internal team make sure there is 'buy-in' from the national authorities
- there has been steadily increasing emphasis on interoperability and non-health sector contributions,
- specialists from other countries have been increasingly been used
- more emphasis has been made on dealing with seasonal influenza and, since the autumn of 2005, the response to highly pathogenic avian influenza.[6]

The third European workshop in Uppsala in May 2006 reviewed progress since March 2005[7] and concluded that although major progress had been achieved a number of ongoing needs remained which included:

- political commitment for preparedness planning
- increased resources (human and financial)
- more research
- the resolution of complex legal and ethical issues
- need to develop common solutions and cross-border co-operation (interoperability)
- more and better use of antivirals
- development of preparedness in the primary care and hospital sectors
- preparation for avian influenza.

This was reaffirmed at the Fourth Workshop in Luxembourg[8] where EU and EEA Member State Representatives considered a revised EU Preparedness Status Report on pandemic preparedness requested by Commissioner Kyprianou building on the earlier one[9]. That report gave many policy options but especially focused on the need to work in the coming two to three years in the following:

- integrated planning across governments
- making plans operational at the local level
- interoperability at the national and regional level
- stepping up prevention efforts against seasonal influenza
- extending influenza research

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[4] WHO Checklist for Pandemic Preparedness Planning 2005
http://www.who.int/csr/resources/publications/influenza/FluCheck6web.pdf
[5] ECDC Pandemic Preparedness Assessment tool Version March 2007
http://www.ecdc.europa.eu/pdf/Assessment%20tool.pdf
[6] WHO Responding to the avian influenza pandemic threat: Recommended Strategic Actions 2005
http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_05_8-EN.pdf
[7] 3rd Joint EC/ECDC/WHO Workshop on Pandemic Influenza Preparedness in Uppsala Castle, Sweden, 15-17 May 2006. http://www.ecdc.eu.int/documents/Uppsala060516/index.html
[8] IVth Joint EC/ECDC/WHO Workshop on Pandemic Influenza Preparedness,
Luxembourg, 25-27 September 2007
http://ec.europa.eu/health/ph_threats/com/Influenza/ev_20070925_en.htm
[9] European Centre for disease Prevention and Control. Pandemic Influenza Preparedness in the European Union Status Report as of Autumn 2006 ECDC January 2007
http://www.ecdc.eu.int/pdf/Pandemic_preparedness.pdf

In 2007 further assessment visits took place in all the remaining EU countries (none have declined the visit) and the EEA non-EU countries started to be done in the autumn.

In this context from October 7th to 11th 2007 a four-person group from ECDC (led by Angus Nicoll and including two external experts) visited Norway to join a national group of eleven (led by Karl-Olaf Wathne) from relevant Government departments to form an overall Team (Annex 1) to undertake an assessment with the above objectives). This was the 28th assessment visit undertaken by ECDC in an EU/EEA country.

4. Methods. Organization of the Visit and Application of the Assessment Tool

The Assessment Team (Annex 1) met with a number of individuals from a range of institutions over the five days of the visit. This included representatives from other (non-health Ministries), as national technical agencies, academic and service bodies (Annexes 2 and 3).

The external team members especially wished it be recorded that they are very grateful for the time and work that the many people they met generously provided and the care and attention afforded them by their hosts in what was an intensive visit for all concerned. High quality presentations were made to the team and strong family of documents were supplied (see Annex 4).

Results were based to varying degrees of the completed Assessment Tool (Annex 5) the presentations and background documentation, systematic questions, site visits and less structured discussions held within the limited time frame available with the persons listed in Annex 2. We are aware that a visit to one county and two hospitals only makes it difficult to draw general conclusions for the whole country. However, we have reasons to believe that some generalizations nevertheless can be made. The final document has been further improved by a process of iteration within Norway and between the internal and external team leaders.

5. General Information

A description of the how health services and specifically the public health services are organized in Norway were provided in presentations and documentation. What is striking is the importance of the small municipality in Norway with 431 municipalities each independently accountable locally, and size of populations from at the extremes around 500 000 to as little as 200. There are the nineteen counties and eighteen County Governors. But the autonomy of the municipality is guarded, and outside of major crises municipalities are only accountable to parliament and their local populations which can be problematic for preparedness planning.

Of late the hospital services have become more centrally organised geographically with what was five and is now four regional health authorities. This followed the take over of the hospitals from the counties in 2002 under a central body. This means some challenges of organising primary, secondary and public health services so that they work together in a crisis like a pandemic. The County Governors have a role in ensuring cooperation between the hospitals and the municipalities.

The geography and demography of the country are important factors in organising the public health response with population concentrated in the South East but a strong culture of equity and patient rights and the belief that citizens in the further parts of the country should not be disadvantaged.

Norway has been fortunate of late to have a strong source of revenue from oil. This resource is carefully managed but it does mean that if a strong case if made, it can be provided.

6. Norwegian general preparedness planning

Norwegian general preparedness planning is based on three principles:
Responsibility: The organisation with the responsibility for a service or an issue in a normal situation has the responsibility for preparedness planning and handling of extraordinary situations
Proximity: A crisis is to be handled at the lowest possible operative level
Similarity: The organisation which is established under a crisis shall be as similar as possible to the original organisation.

6.1. In 'Peace time' (outside of a pandemic or other public health crisis)

Each *Ministry* is required to produce a general contingency plan, which is supervised by the Directorate for Emergency Planning (DEP) and Civil Defense of the Ministry of Justice. The Critical National Infrastructure (CNI) sectors complete risk and vulnerability assessments and meet regularly with the relevant 'home' Ministry. Otherwise each Ministry is responsible for their own contingency and preparedness ('responsibility' and 'equivalence').

There is a requirement under The Act on Health and Social Preparedness for contingency planning at all levels. The comprehensive *National Health and Social Preparedness Plan* sets out the roles, responsibilities and lines of report of all the bodies of the health sector in a crises situation.

The *municipalities* are encouraged to produce a *general contingency plan*, but are required by the law only to prepare their own detailed *Health and Social Preparedness Plans* as well as *a plan for communicable diseases.* In Vestfold (the locality visited, see Annex 2) also included a pandemic plan covering mobilisation of personnel, storage and handling of antivirals, arrangements for visiting those sick at home, community care, and co-ordination.

Each *County Governor* is responsible for co-ordination of contingency planning in his/her county, as are the hospital trusts. The County Governor's contingency plans are also reviewed by the DEP. The County Governors review the contingency plans of the municipalities though often this seems to simply mean that it is checked that there are plans, not the content and whether they conform to each other.

In addition, the *National Board of Health Supervision* supervises the contingency plans of regions and municipalities regarding health and social affairs.

In 'peace' time [10]an advisory *Pandemic Committee* (of health and veterinary experts) appointed by the Ministry of Health (MoH) advises the MoH before, during and following a pandemic.

[10] 'Peace time' meaning when there is no crisis. In the context of this report the time outside of a pandemic.

Likewise there is a recent (2006) *National Influenza Pandemic Preparedness Plan* which details roles of specific key Ministries, other central health bodies and regional and municipality responsibilities

Comments

The health service sector, led by the Ministry of Health and the Directorate for Health and Social Affairs is taking the issues of pandemic planning very seriously. A national stockpile of antivirals has been acquired that would be equivalent of a course for 30% of the population. There is a national expert committee (the Pandemic Committee) providing health sector advice. A national expert committee providing health advice is a strength in this system though a weakness is that it's confined to the health and veterinary sector alone. It can, however, also give advice to other sectors. The recently updated (2006) National Influenza Pandemic Preparedness Plan which details roles of the Ministry, other central health bodies and regional and municipality responsibilities is another strength.

More generally there is a requirement under the Act on Health and Social Preparedness for contingency planning at all levels. The Comprehensive National Health and Social Preparedness Plan sets out these requirements and each Ministry is required to produce a general contingency plan, which is supervised by the Directorate for Emergency Planning (DEP) and Civil Defence of the Ministry of Justice. The critical national infrastructure (CNI) sectors complete risk and vulnerability assessments and meet regularly with the relevant 'home' Ministry. The eighteen County Governors´ risk and vulnerability plans are also supervised by the DEP and the 431 municipalities are each required by the Act to produce their own detailed Health and Social Preparedness Plans, but are also requested to produce a general contingency plan.

In addition, the National Board of Health Supervision supervises the contingency plans of regions and municipalities. All national, county and municipality plans appear to be subject to regular supervision and exercise, either from or assisted by DEP, the National Board of Health Supervision or at County Governor level. Though it was noted that the term 'supervises' seems often only to mean checking that plans exist without necessarily any checks on content, quality or interoperability (whether a plan will work with those of neighbouring areas).

A pandemic tabletop exercise was planned for November 2007[11], along with a suggestion for a full national pandemic contingency cross-sectoral exercise in 2009, the first of its kind since the early 90's. A further positive point is that the DEP 2008 annual National Risk and Vulnerability report will focus on pandemic 'flu.

There is also much strength in the current system of local services which has to deliver to people in extremely diverse circumstances living in one of the largest, longest and least populated countries in Europe. For example there is a sound a series of under-pinning legislation supporting pandemic planning and preparedness including in the area of communicable disease prevention and control. There is an ability and responsibility to act locally authorised by law (at the municipality level) and it was reported that the national pandemic plan is well known at local level[12].All municipalities were reported to have plans for pandemic preparedness for the pandemic based on the national plan published in February 2006 with the influenza plan a part of general all crisis-infectious diseases contingency plan.

[11] The exercise took place on 22. November 2007

[12] This was evident in the one local visit but of course could not be confirmed more broadly over a visit lasting only a few days.

Generally, there appears to be good informal co-operation and collaboration at national and local levels which supplements the formal systems. A cultural factor was noted that of wishing to not to plan but to improvise when a threat comes. This is admirable. However the team noted that for a pandemic not to plan and prepare will simply limit the options for improvisation, especially when there will be limited availability of mutual aid as is inevitably the case in a pandemic when much of a country is affected at roughly the same time.

Pandemics bring unique challenges, essentially a health crisis that also have implications for and will affect other sectors. Equally other sectors are essential to mounting a response. Improved cross-sectoral co-ordination at all levels would help pandemic planning. There is no equivalent body to the Government Crisis Council operating prior to the pandemic and undertaking planning. Consequently it is not clear what the nature of planning is in the non-health sectors and there is no forum for inter-sectoral planning – for example concerning school closures, mass gatherings etc. Improved cross-sectoral co-ordination at all levels could help pandemic planning by ensuring all issues are fully considered by relevant Ministries, aiding buy-in to decisions.

Recommendation 1: To establish adequate mechanisms to ensure that the full range of cross-government issues are addressed. This should help ensure completeness and improved co-ordination in planning. Mechanisms could include a committee under the Government's Crisis Council which would be consistent with the Norwegian principle of *Similarity*[13] for managing a crisis. It would be the peace-time equivalent preparing the ground for the Government Crisis Council during the pandemic itself, though then it might undertake the essential *forward look function*[14]. Key decisions affecting more than one Ministry (e.g. if/when to close schools and the implications of such for health care and business absenteeism) would be taken and then put to Government if appropriate.

Though there is a good national Norwegian plan it is essentially addressing the health sector, while what is now recommended by ECDC and the United Nations Systems Influenza Coordinator (UNSIC) is for countries to develop multi-sectoral plans.[15,16] Detailed sector guidance for the agencies and county, regional and local levels could underpin the outline or framework in such a plan. This would have the advantage of bringing the contingency arrangements of the various Ministries and CNI together, as well as focusing their responses pandemic-specific. Such a plan could provide a checklist for municipality plans (building on the checklist at Annex J of the current National Pandemic Plan) which would also benefit from being pandemic-specific and cross-sectoral.

Recommendation 2: There should be a national whole government pandemic preparedness framework or plan. This should ideally include the full national response to a pandemic, including not only the health and social care arrangements, but also how the wider essential

[13] The institution that is responsible for a professional area in a normal situation also has the responsibility of handling extraordinary circumstances.
[14] A recommended function of looking forward and anticipating cross-sectoral issues and threats that will probably arise in a few weeks time in a pandemic.
[15] European Centre for Disease Prevention and Control. Policymakers report. Pandemic preparedness in the European Union Autumn 2007.
http://ecdc.europa.eu/pdf/2007_12_05_Pandemic%20preparedness%20for%20policymakers.pdf
[16] United Nations System Influenza Coordinator and World Bank Responses to Avian Influenza and Pandemic Preparedness. Third Global Progress Report, December 2007
http://www.undg.org/docs/8097/UN-WB%20AHI%20Progress%20Report%20final%20PRINT.pdf

services will cope, and what special arrangements might be needed there, arrangements for extended sick or home care leave, advice to business etc.

Currently a number of cross sectoral issues are yet to be tackled these include the *public health measures*[17] which may potentially reduce transmission in a pandemic, but which however require careful thought and preparation. Examples would be what are called the 'Public Health Measures', school closures and border measures. Though many of them appear for discussion in an annex to the current pandemic plan they have yet to be worked through across the different Ministries.

Recommendation 3: To strengthen the mechanisms addressing cross-sectoral issues arising from a pandemic including the 'Public Health Measures'.[18]

National exercises are considered important focal points and goals to aim for in planning and preparation. The 2009 exercise could test the arrangements from the centre to the municipality and hospital and serve as a focus and goal for the period 2008-9 when interest is most likely to be waning.

Recommendation 4: The proposed National Pandemic Exercise (2009) should be planned for and carried out and include all appropriate sectors and as far down the chain of command as possible.

The amount of detailed guidance to be given to people in the field is currently limited. Indeed there is a laudable Norwegian culture, codified legally that encourages making decisions when needs arise and that these are context specific decision down to the level of the Municipality. However, in a pandemic when high numbers of key personnel are also likely to be affected, clear prepared guidance to individuals often not acquainted with emergencies let alone pandemics will be invaluable for key topics. This applies both in the area of multi-sectoral work and the health sector. Many of them appear for discussion in the current pandemic plan such as:

- if and when (what triggers) schools, higher education and child care settings would close, and the resulting implications for health and social care, CNI and business
- if mass gatherings should be cancelled and triggers for when this might happen, or if advice should given for cancelling/not attending
- whether borders would be closed, and screening or quarantine likely to be implemented[19]

[17] European Centre for Disease Prevention and Control Influenza Pandemics and Severe Influenza Epidemics Interim Guide to Public Health Measures to Reduce the Impact of Influenza Pandemics During Phase 6 - *'The ECDC Menu'* ECDC October 2007. http://www.ecdc.eu.int/Health_topics/Pandemic_Influenza/phm%20.html

[18] European Centre for Disease Prevention and Control Influenza Pandemics and Severe Influenza Epidemics Interim Guide to Public Health Measures to Reduce the Impact of Influenza Pandemics During Phase 6 - *'The ECDC Menu'* ECDC October 2007. http://www.ecdc.eu.int/Health_topics/Pandemic_Influenza/phm%20.html

- internal travel restrictions – expected closures/advice not to use, and the resulting implications
- clear advice to private and public sector employers on business continuity (this was an area that the team agreed to progress nationally and in Vestfold municipality during the visit)
- guidance to employers on infection control and protection of employees
- a cross-sectoral communications strategy, including to the field, (inclusive of infection control guidance and promotion – e.g. hand and cough hygiene and mask wearing)
- travel advice outside Norway, and the resulting implications
- dealing with a high number of deaths
- treatment of nationals abroad and foreign visitors to Norway (this will have international implications), and
- ensuring all key Ministries have their own business continuity plan.

Such areas should be examined by policy officials; the more policy decisions taken now as opposed to when the pandemic arises lessen the opportunity for confusion, unhelpful actions and possible panic. A number of decision will need to be taken when the nature of the pandemic is known, e.g. if the virus is particularly transmitting in children, the estimated case fatality rate etc., but the more courses of action for various scenarios considered and documented now can only be helpful. Guidance from the ECDC (e.g. the Public Health Measures Menu Document) and other countries' evidence base and actions should help inform Norway in considering these issues.

The amount of pre-prepared detailed guidance to be given to the field needs consideration. However, in a pandemic when high numbers of key personnel are also likely to be affected, clear guidance to individuals often not acquainted with emergency, let alone a pandemic, preparations could be invaluable.

Recommendation 5: Detailed guidance on key multi-sector and health sector specific issues should continue to be developed nationally and then worked though with those in the field. This guidance could be commissioned and received by the current pandemic committee or a new cross-sectoral mechanism.

It was noted that in general Norway would not pass the local 'Acid Tests' posed by ECDC.[20] This is no different from all other EU/EEA countries visited and reflects the difficulties and time it takes to move from national plans to practical local preparedness.

Recommendation 6: There should be a commitment to achieve reasonable local as well as national preparedness

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The very many Municipalities, their independence and their small size bring some special issues. There are advantages given the geography of Norway to have locally accountable services. However,

[19] Neither ECDC nor WHO recommend this in a full pandemic but its important for individual States to consider the eventuality ahead of time so that decisions in a crisis can be based on careful prior considerations of the 'pros' and 'cons'

[20] ECDC Some Suggested 'Acid Tests' for helping assess, strengthen local preparedness for moderate or severe pandemics. February 2007 http://www.ecdc.eu.int/Health_topics/Pandemic_Influenza/tests.htm

at the same time, it brings problems for public health and health protection because of the lack of local expertise and the difficulties of quality control and ensuring a degree of consistency of response. There are three issues here:

1. The public health capacity and expertise available to the smaller communities

2. There is a need for some standardisation in the response across the countries. While total standardisation is not desirable or necessary it will be difficult if completely conflicting policies are being applied across Norway. Within this topic is the issue of how to regulate and assure compliance with national recommendations in the private network of private GP and specialists (outside of hospital).

3. There is the special circumstance of a pandemic when unlike a more focal crisis it will not be possible for the centre (e.g. the Norwegian Institute of Public Health) or the counties to support the many municipalities. As described above under legislation all municipalities are required to have emergency plans. This includes for pandemics and the Centre in Norway 'supervises' these. However this process primarily checks that the plans exist. There is limited check on content, whether the plans reflect preparedness and whether there is the local capacity and supplies to enact the plans. All these issues run well beyond the remit of this Assessment but they cannot be ignored for an assessment of pandemic preparedness. One partial solution would be to stimulate further the municipalities' "health network" between similar municipalities to share experiences, difficulties to empower their planning capacity. However it was appreciated that this is not made easy by the division of the country into 431 municipalities which are very uneven in size, staff, population and planning needs (to put it most starkly Oslo population around 500,000 vs. the 200 of Utsira) but each of which are responsible for providing primary health services through public services and private GPs.

Recommendation 7: That the Norwegian authorities consider how they can overcome the issues that arise from the many smaller municipalities for the issue of pandemic preparedness in terms of the quality, capacity and consistency of response.

ECDC should draw to the attention of the authorities' examples of good practice on service monitoring.

6.2. During a pandemic

The plan is that a cross-government committee – the Government Crisis Council would meet frequently and report to Government. The Committee consists of senior staff from key Ministries and would be chaired by the Secretary General of the Ministry of Health. Other Ministries are invited as appropriate. This group would feed information via the official channels to the counties, regions and municipalities while those in the field would seek guidance and instruction from the national health authorities.

During a crisis, such as a pandemic, the Ministry of Health will have power over Regional Health Authorities and municipalities. Municipalities are responsible for their local primary and public health services. The Communicable Diseases Act provides clear provisions on responsibility and gives wide powers to health authorities on local (municipalities) and national level (i.e. the Directorate for Health and Social Affairs) to make necessary decisions needed in all aspects of society to contain a communicable disease.

Local Preparedness has a strong legal base and there is a history of planning and exercising for unwanted events. By law every municipality has to have local plans for the health sector and there is a medical officer in every municipality and every county with public health responsibilities. There are potentially financial resources to meet unwanted events and an ability to act locally authorised by law (at the municipality level). A national communication system on communicable diseases (MSIS) reaches down to local level; and a national laboratory system for influenza diagnosis has countrywide coverage.

Comment

The smaller units have only part time staff that is likely to be inexperienced when it comes to public health issues. This brings special challenges for public health in terms of quality control, command and control in a crisis. The external team were concerned at this arrangement and noted that though this was not a problem unique to Norway in Europe it did potentially weaken the public health process. However the number of municipalities without a strong intermediary tier is unusual and produces special challenges.

The dual lines of responsibilities for Hospital and Primary Health Care Services (Decisions Financing, Reporting, Communication and Information systems) can make the coordination between the two functions more difficult which would be important in a pandemic when there would be pressure on both to provide care. In the one area that was visited this was being achieved, though partially by having the team visit and it was agreed that there was more work needed to be done.

Recommendation 8: There should be joint local planning and preparedness for pandemics to at the lowest practical operational level. Endeavour to further improve cooperation between all relevant sectors and at all levels (e.g. municipalities and health trusts; municipalities intra and inter-counties) through the active use of agreements with regard to roles, communication and information and patients flow in a pandemic.

There are a variety of models and tool being developed in European countries for responding to a crisis. ECDC should direct the authorities in Norway to some of these good practices such as in France and the UK.

It was reported that hospitals have plans for pandemic preparedness as part of their general contingency plans. However in the two hospitals seen these were based on managing a limited number of cases. The hospitals had not worked through the complexities and detail of what would be needed for a moderate or severe pandemic to deal with the triple challenge of identifying and maintaining core services, coping with a surge of people needing care with moderate or severe respiratory disease and managing despite having 20% of more staff off sick.

Recommendation 9: Further work on the difficult task of preparing modern hospitals for a pandemic is needed. ECDC would link up the Norwegian authorities with those in other countries in the EU and beyond who are also working on this.

A cautious but confident “Wait and see” philosophy was by some described as a cultural feature in Norway – “decisions will be taken when time comes!” This raises the issue of at what level of detail

planning should be done. It was agreed by the team that not to plan for some topics is also effectively making a decision. There is no need for absolute standardization but there are some of these which do need to be worked through and agreed, e.g. not planning and practicing how you will distribute antivirals, who will get them, how supplies will be adjusted if it's likely that supplies will run out, means that the option of delivering antivirals in the short window that is available is effectively being ruled out for most people.

There are a number of key topics which are especially liable to different local interpretation such as how to face shortage of staff due to disease, and assistance to relatives or fear.
Norwegian authorities provided the following list:

- what hospital activities can be postponed
- identify surge capacity - beds, ICU, ventilators
- home care assumptions (scenarios) for patient care needs and staff absenteeism, as a basis for further detailed planning resources and surge capacity at local level
- the use of PPE (personal protective equipment) to avoid blurred boundaries on who should wear what (considering the two approaches: public health and hospital with the need confidence of the staff)
- prioritizing health care workers (HCW) for prophylaxis (antivirals) and pandemic vaccine (which will not be available for all HCW at the same time)
- stockpiling at central and local level (e.g.: antivirals, antibiotics, PPE, spare parts for ventilators, syringes, needles etc)
- logistics, distribution and register systems for antivirals,
- criteria for hospital admission and discharge, ICU, etc.
- a specific issue – advice related to the option of Norwegians retreating to "cabins up in the mountain."

Although the legal framework for the decisions exists, the discussions in preparations for the more difficult interventions have not yet been done (e.g. the impact of closing schools on shortage of staff).

Recommendation 10: Identify areas for more detailed planning and to undertake this for areas where 'not to plan' would exclude options for action. This should be done with the local levels (Municipalities and Counties) using the municipalities' "health network" between similar municipalities to share experiences, difficulties and empower their planning capacity.

It was reported during the local visit that some or all hospital pharmacies were not under hospital administration and were working with "just in time delivery" regimes. This is efficient during normal circumstances but will pose problems during a pandemic with key supplies such as antibiotics.

Recommendation 11: To ensure that there would be sufficient key medical supplies for a pandemic and that there were robust arrangements for distribution to the local level.

Business continuity planning is not generally developed at the local level especially outside the health care sector.

Recommendation 12: To endeavour to develop business continuity planning at the local level and stimulate this across all sectors from a national drive. ECDC should direct the Norwegian authorities to successful examples of this process in other countries.

Recommendations for ECDC:

1. To link Norwegian specialists with those in other countries working on detailed planning of hospital services in a pandemic.

2. To direct Norwegian specialists to examples in other countries where there has been successful examples of campaigns to stimulate the development of business continuity planning outside the health sector, in the business sector and civil society.

3. There are a variety of models and tool being developed in European countries for responding to a crisis and monitoring the situation across the health sector. **ECDC** should direct the authorities in Norway to some of these good practices such as in France and the UK.

7. Communications Issues

The Norwegian National Influenza Pandemic Preparedness Plan (NIPPP) includes a chapter dedicated to communications (Chapter 6) explaining target groups, responsible organizations, principles and proposed communication measures. In the Annex planning table (Chapter 7) detailed communication aims, measures and responsibilities for each phase of pandemic alert are presented, taking into account two scenarios: whether Norway is or is not directly experiencing a pandemic situation.

Different measures are in place to ensure coordination of communication strategies among the governmental health and agricultural sector organizations. For example there are regular meetings where communication aspects are discussed, joint media training activities for high level officials and common exercises.

To build trust with media and raise awareness among media and general public on pandemic flu, regular communication activities have been performed. This includes press conferences on issues like the release of the pandemic preparedness plan, avian influenza and pandemic influenza and mass vaccination. Additionally, WHO's 'Handbook for Journalists on Influenza Pandemic' has been translated into Norwegian and distributed among editors.

In order to gather information on the public attitudes towards avian influenza and a pandemic, the Directorate for Health and Social Affairs has conducted three surveys of the public. Those spoken to reported these could be easily adapted and performed rapidly if a pandemic occurred, in order to monitor perceptions and concerns, adapt messages to the public, assess measures and clarify

misconceptions accordingly. The Norwegian health authorities consider that information on public attitudes in other European countries could be of interest, and therefore would like to know if other countries have performed similar surveys. In this regard, it is suggested that the ECDC asks members of the EU/EEA Flu Communicators Network if their countries have performed similar surveys.

The use of diverse communication channels during a pandemic is foreseen by the Norwegian health authorities. A pandemic website is already available (www.pandemi.no). At the moment it has static information and provides content from the health and agricultural authorities, and links to other relevant websites. It is ready for upgrade from WHO phase 4 of a pandemic onwards to serve as the main source of information for the public and for health care workers, as well as posting regular updates for the press, to ensure the presentation of consistent information throughout all institutions involved.

To deal with increased information demands from media and the public, call centres for the public are foreseen to be needed and people who potentially will work in this area have received training. A media phone with 24/7 availability already exists at the Directorate of Health and shifts and this has been tested during exercises.

There is a legal mechanism that will assist in the rapid release of important information to the public as the Act Relating to Control of Communicable Diseases allows the government to instruct the mass media to include messages for the general public at short notice.

Some materials are prepared for release to educate the public and to disseminate relevant information. A brochure on pandemic influenza with public health information is available on the Pandemic website alive in English and in other languages to address specific population groups (Sami and Urdu speaking). This brochure is planned to be distributed at the municipal level. The country has translated into Norwegian and adapted to local recommendations the “falling dominos” film produced by the UK. As for the production of messages, draft materials already produced by the EU and by WHO are foreseen as guidance for the production of press releases.

With regard to coordination of messages throughout a pandemic with neighbouring countries, aside from being a member of the EU/EEA network of Flu Communicators, Norway also participates in a network of communicators from the Nordic countries to exchange information. After a first meeting in Copenhagen in 2006 a meeting with Nordic Flu Communicators Network and medical and preparedness officers is planned for early 2008 with the inclusion of medical officers, in order to gather scientific input and exchange information on public health measures, so that eventual differences in approaches are known beforehand and can successfully be addressed during a pandemic. The external members of the Team emphasised the importance of this linking.

The Ministry of Health and Care Services has the overall responsibility for handling a pandemic, including the communication work, though working in close cooperation with other ministries dealing with related issues (food, transport, security, foreign affairs). This poses a challenge when addressing media during a pandemic. The NIPPP addresses the involvement of the different health sector organizations in the communication activities during a pandemic, but other authorities will also be issuing messages and appointed spokespersons might be requested to give information on issues not directly related to their specific responsibilities

Three surveys have been performed of public attitudes towards avian flu and pandemics with a possibility to adapt and reuse these quickly should new needs arise in the run up to and during a pandemic.

Recommendation 13: In the run up to and during a pandemic those dealing with communication should work collectively to keep coordinate messages and agree on common lines to take. In a pandemic this would need to work rapidly and that should be emphasised in preparation.

Another important issue is the timely delivery of information, avoiding delays due to long consultation processes. Therefore, public health and other related authorities must be aware of the importance of rapid consultation and fast release of information to the media and the public; so as to counteract other sources releasing potentially confusing information or spreading rumours.

The planned pandemic tabletop exercise in November 2007 can serve as an opportunity to further test all the aforementioned aspects. During the media training sessions organised for the health authorities, officials from other non-health related ministries and directorates should also be invited to participate in order to prepare for these situations.

The structure of the Norwegian health care system and the decentralization of primary care pose special communication challenges where specialized care is provided by the health trusts (hospitals) under the regional health authorities and primary care is provided at the municipal level.

Recommendation 14: As local health authorities have an independent responsibility for communication within their local environment, coordination of messages at the different levels (national/regional/local) and a system for 'warning' on planned information releases needs to be ensured to avoid contradicting information or discrepancy in recommended measures. This could be done with the development of further communication guidelines, educational materials and toolkits with templates ready to use and adapt by municipalities and hospitals. These should be developed and made available well before a pandemic.

It is important to maintain the public's awareness on the importance of basic hygiene measures and the simpler recommended public health measures. This continuous education will ensure that as a pandemic evolves the public is already familiarized with a number of the recommended measures.

For this aim, the development of further communication guidelines, educational materials and toolkits with templates ready to use and adapt by municipalities and hospitals will serve as useful resource. This kind of material could include information on how to address the media and statements for different phases. To maintain an homogeneous level of information, the materials should also include general advice for the public on basic hygiene measures and information on this addressed specially at healthcare workers, as well as information on public health measures, mass vaccination and antiviral use. These should be developed and made available well before a pandemic.

Recommendation 15: Further information campaigns are suggested as an integral part of general hygiene campaigns and annual campaigns to reduce influenza transmission. This continuous education will ensure that as a pandemic evolves the public is already familiarized with a number of the recommended measures.

Even though shifts for communication personnel during a crisis situation have already been tested by the Directorate for Health and Social Affairs during exercises, the increased demand for information from public and media will pose a challenge to the different organisations of the health sector.

Recommendation 16: There is a need to develop surge capacity for communications in a pandemic for example through maintaining lists of available replacement personnel with 'sleeping contracts' or other arrangements to reinforce the communication staff and cover for those who become ill.

8. Seasonal influenza

Seasonal influenza surveillance

There is a standard combined clinical (primary care) and epidemiological surveillance system based on the EISS model. There is no surveillance for severe disease (hospitalised cases and deaths) though viruses from these cases will enter the virological surveillance system. However there is regular serological surveillance and this is one of the few EU Centres undertaking this. This will be invaluable in a pandemic for estimating case fatality rates rapidly. There is year round laboratory based virological surveillance with intensification in the 'influenza season'.

Recommendation 17: Rather than making attempts to increase coverage of the primary care, surveillance should be extended to capture severe cases and deaths through sentinel surveillance in hospitals. The serological surveillance should be sustained and exploited for example through working more with those with modelling expertise.

Seasonal influenza prevention and vaccination programmes

There is a standard though very well organised system of seasonal immunisation organised under the Norwegian Institute of Public Health (see below).

Comment

There is relatively low coverage of seasonal vaccine in the usual risk groups and especially in health care workers. The estimated coverage in older people (over 65years) and other risk groups in 2006/7 was only about 50% (overall 12% of the population estimated to have been immunized)[21]

Recommendation 18: There should be increased emphasis on improving uptake in the major risk groups in season 2008/9. Consideration should be given to formalizing an Elderly Vaccination Programme (as an equivalent to the Childhood Vaccination Programme)

High standard of general hygiene behaviours in the population will have major impact on preventing a range of infections. Although the hygiene behaviour of the Norwegian population in general is good, there are certain issues with specific importance for spread of diseases, in particular also

[21] The World Health Assembly (which includes Norway) agreed target is 75% by the year 2010.

influenza, like cough hygiene and hand washing routines, that need to be addressed in order to achieve optimal effect.

Recommendation 19: introduce measures to improve general hygiene behaviours in the population

9. The Norwegian Institute of Public Health (NIPH)

This is a strong national institute with a general public health remit extending beyond infections. It is the nation's institute for communicable disease control. It conducts national and international epidemiological surveillance and research in the field of communicable disease control. It has a strong role in the field of vaccine supply and preparedness. The Institute is legally mandated to give support, advice, guidance and information to municipal, county and national institutions, health care personnel, and the public on communicable diseases and their control and the choice of measures to control them. This includes investigation and control of outbreaks of communicable diseases in the community and in health care institutions, work on antimicrobial resistance, laboratory investigations (clinical microbiology**)**, infection immunology and entomology. There are 850 staff overall with 200 principally focusing on infectious diseases. There is a strong laboratory element and the Norwegian National Influenza Centre is based in the Institute which allows for a well integrated virological and epidemiological service.

The Institute gains considerably from the close proximity to the national veterinary institute which adds to critical mass, close communication and means that there are the possibilities for shared facilities such as an emergency operations centre.

Communicable disease surveillance is undertaken through a number of indicator based systems, the reference laboratories and event based surveillance (epidemic intelligence). There is a promising new system (DISS) in development. It involves daily, automated, electronic harvesting of data from general practitioners, and this could be especially valuable during a pandemic.

Recommendation 20: DISS system should be introduced and its usefulness for surveillance under a pandemic explored.

In any infection-related health issue and crisis the Institute acts as professional adviser on infection control and prevention, delivering the State Epidemiologist role though if there are legal implications, the Directorate or Ministry takes on the statutory role

The Institute is especially strong in the area of vaccines and vaccine preventable diseases. It is responsible for the procurement and distribution of all the vaccines for the childhood vaccination programme, the influenza vaccines for the defined risk group and is authorised as a wholesaler for vaccines. As a consequence the Norwegian plan for pandemic vaccine distribution is especially strong. When a pandemic vaccine becomes available it will flow from NIPH to each municipality and hospital trust as described in the Pandemic Preparedness Plan.

More detailed plans are under development for distribution along with storage facilities, cold-chain transport agreements, workforce needed, etc. Plans for surveillance of adverse events and measuring of vaccination coverage, using the same system as the childhood vaccination programme, are also

under development. A strategy document for mass vaccination has been made for the local level (municipalities) and for the hospital trusts

Six regional conferences on mass vaccination were carried out in the autumn 2007 and at those there was a presentation and implementation of strategy document for mass vaccination for the municipalities and for the hospital trusts. Each conference also included a table top exercise on mass vaccination. The target group for the conferences was health personnel from the municipalities and hospitals. One issue the regional conferences revealed was that some municipal representatives while referring to the independent status of the municipalities and their primary health care structures, indicated they would not be following central direction on those first to be offered vaccination.

Comment

It was noted that there was no explicit business continuity plan for the Institute though it was clear that in the event of a crisis everyone would contribute. However that does not remove the need for such an agreed plan for responding to any sustained crisis.

Recommendation 21: There needs to be an explicit business continuity plan for the Institute
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National public health institutes need exceptionally good communications with ministries of health, other bodies, internationally and with other parts of the country. They will need robust emergency operations centres (EOCs) to achieve this. These are also needed for other operations.

Recommendation 22: NIPH should continue with its work on establishing an EOC.

The work on pandemic vaccines is especially advanced and exemplary. It means for example that Norway will be well placed to detect any adverse events and test hypotheses and monitor effectiveness of vaccines.

Recommendation 23: This work should be sustained and ECDC should work with European Medicines Agency (EMEA) to take advantage of these developments at an EU level.

The Institute has particular responsibility for communicating with health care workers in a pandemic. Some basic material is already available on the web site, while other material needs to be developed. Some of it can only be developed during the pandemic when features of the new disease is known and WHO has given advice.

Recommendation 24: More basic guidance material to health care workers needs to be developed.

Like many other public health institutes the Institute is starting to work on the difficult but very important topic of Surveillance in a Pandemic.

Recommendation 25: Further work should be undertaken on surveillance in a pandemic drawing on that led by ECDC.

Of the central functions and capacities that PHIs should have, a weak area for this Institute is modelling and especially the operational modelling required for pandemic planning and preparations. Though there are some possible developments with the University of Oslo.

Recommendation 26: There should be sustained investment in modelling including the less academically attractive area of operational modelling.

The Institute has played a special role in the planning and preparation of pandemic preparedness. Where it has been strongest (vaccine work) Norway is better prepared than most other countries. Given that this work is going to continue for at least another two to three years there will be human resource implications.

Recommendation 27: Consideration needs to be given as to how additional sustained resources can be identified for working in this area.

10. Influenza laboratory capacity – Network of Laboratories and National reference laboratory for influenza / National influenza centre (NIC) at the NIPH

(See also comments above on seasonal influenza surveillance as well as on Norwegian Institute of Public Health)

Norway has 5 regional and 12 county-level microbiological laboratories cooperating in a network**.** All influenza diagnoses are reported routinely to the NIC, which is a part of the Department of Virology at the NIPH. Several laboratories also routinely forward influenza positive materials to the NIC. Norway has a strong energetically led NIC which given limited resources 'punches above its weight'. It is well known internationally and already active in supporting less well resourced countries such as Croatia and Iran. The centre also plays an active role within the European Influenza Surveillance Scheme (EISS) and holds the chair of the European Community Network of Reference Laboratories for Human Influenza(CNRL) Task Group for Molecular Virology.

Comment

The staffing is rather thin and would be vulnerable in a pandemic if some key people were off sick. Like in some other European NICs, staffing in particular has been 'thin at the top'. There is, however, a positive development here as one recently employed medical microbiologist has been added to the group this autumn. Furthermore, one research scientist is presently being recruited, in addition to one laboratory technician. In addition to undertaking monitoring of antiviral resistance as well as strengthening general capacity, this also provides an opportunity to reduce the vulnerability of having critical competence covered by single individuals.

There is a strong laboratory pandemic preparedness plan that has been in place since 2000. It is now undergoing a necessary major revision. The collaboration of the medical microbiology laboratories with the NIC is a significant component of seasonal as well as pandemic influenza surveillance. Collaboration is based on collegial arrangements and few resources are specifically allocated to it. The reporting and virus forwarding activities impose a certain additional burden on the participating laboratories. Compliance to the agreed schemes varies and may also suffer during periods with high workload, e.g. in the epidemic period. Diagnostic practices also vary between regions/counties. Positive control materials have been distributed in the network to validate that molecular tests can

pick up also avian influenza A viruses. Plans exist for rolling out to regional laboratories PCR testing that can identify a new strain if the pandemic threat escalates to phase four and a suitable validated test is available.

There are a number of pieces of work that need finishing off under the new Laboratory Preparedness Plan. Such work would include triggers for changing and amending the test strategy during a pandemic should be formally defined, agreed, and communicated (i.e. at what level efforts would be made to test all those thought to be infected; at which level should tests targeting the new virus be 'rolled out' e.g. to regional laboratories). Plans and arrangements need to be established to ensure rapid diagnostic testing capability at any time during certain preparedness phases.

It is recommended that a more formal arrangement is considered for the laboratory network, with some more resource flowing through it, e.g. to facilitate effective reporting/communication/coordination, for training (see also below), and for quality assurance activities.

Key competence areas where expertise ought to be spread among more individuals should be identified and implemented through structured training and involvement. Initiatives for training laboratory personnel and expand activities to regional laboratories should be supported to allow for up-scaling activities when necessary such as during a pandemic.

Facilities Policies for handling samples from humans with suspected HPAI and initial pandemic cases should be developed further, including training and written SOPs for virus isolation and phenotypic characterisation at higher biosafety level BSL3, which will be necessary during certain phases of pandemic preparedness.

Recommendation 28: The Laboratory Pandemic Preparedness Plan 2007 needs to be completed, agreed and resourced.

11. Avian Influenza (H5N1) and Food Safety Issues

Norway has an impressive and well organised set of arrangements for food safety in general. The arrangements for avian influenza are more than adequate with surveillance in both domestic poultry and in wild birds. Though there has been no challenge as yet in Norway the arrangements are robust and well exercised. The Ministry of Food and Agriculture is the lead Ministry in the Governmental Crisis Council for this. The Ministry of Health and Care Services is also an important member in the Governmental Council. The Norwegian Food Safety Authority (NFSA) is responsible for handling the outbreak, supported by the National Veterinary Institute as risk assessor. There are diagnostic teams from the National Veterinary Institute with epidemiological expertise and teams from the local Norwegian Food Safety Agency (NFSA) which has 62 offices across the country with adequate epidemiological knowledge to perform the appropriate measures. In addition, all regional offices exercised AI as a part of the scenario in Exercise Watergate in 2006. While in 2007, the NFSA Head office and the regional office for Hedmark and Oppland exercised an avian influenza outbreak scenario in June 2007, and the regional office of Buskerud, Vestfold and Telemark is exercising this autumn. Several district offices have exercised killing, destruction and sanitation of poultry flocks. The NFSA has a vaccine agreement for poultry with Merial stating delivery of 2 million doses within 5 days.

There are now 8360 flocks registered in a voluntary register. This includes 6963 flocks (in total 130 000 animals) including pet and ornamental birds, 657 flocks of ducks (in total 5342 animals) and 740 flocks of birds kept outside. Since registration of hobby flocks is voluntary, and it is estimated that only around 1/3 of the flocks are registered, the estimated total number of flocks is about 25 000. That would bring the number of flocks with the most susceptible birds kept outdoors to about 2 000. The flocks are for the large part localised in the same areas as the commercial flocks.

Comment

A potential issue will be how the offices of the NFSA coordinate with the very many individual municipalities. This is a recurring issue of the lack of larger public health infrastructures between the national and municipal levels. This would not be an issue with a single avian influenza outbreak when presumably the national Public Health Institute would provide the support focusing locally. There is no detailed plan for the close interaction that would be required should there be potential human involvement though there are good ways of working and national protocols that would apply. However ECDC should make available to the two bodies its 'Tool Kit' for these outbreaks.

12. Large Cities Pandemic Preparedness – Ullevål University Hospital

As one of its' site visits part of the team visited Ullevål University Hospital **http://www.Ulleval.no/**, the main hospital for Oslo and one of the largest referral hospitals in Europe. The arrangement for all emergencies in the Oslo Region is that Ullevål would take the lead and manage the general hospital facilities in the capital. The presentations made by the hospital staff and the public health officials were impressive, including the disaster plans and the arrangements are especially impressive for the facilities for managing high risk infectious patients.

Comment

Ullevål hospital is able and willing to deal with high risk infectious patients. It is now starting to think how it will cope with the much greater strain that would follow from a moderate or severe pandemic. This would be a very different situation from the handling of a limited number of high risk patients with essentially influenza being everywhere and up to 20% of staff off at the peak. Some reservations were expressed about the robustness of having to rely on Ullevål management to manage the hospital resources of all of Oslo Muncipality when they may be hard pressed with internal issues.

ECDC should put the officials in Ullevål in contact with those grappling with similar problems in other hospitals in Europe, such as those in Spain and the UK, in addition drawing to their attention the preliminary work done by WHO-Euro. http://www.euro.who.int/Document/e89231.pdf