



**Pandemic Influenza Preparedness
Joint Self-Assessment Report
Sweden**

Dates: 16th to 19th April 2007

Purpose: Influenza Preparedness Assessment Visit

Background*: Series of visits 2005-7 to all European Union Countries

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Summary including specific recommendations for work and development (a work plan)

Purpose of mission – Specific Objectives

1. To support national Swedish authorities in jointly evaluating and improving the status of pandemic influenza preparedness in Sweden, including the interoperability of its plans with other countries in Europe
2. To determine the current level of influenza preparedness

In particular

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.

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.

Summary Conclusion

The state of preparedness revealed by this national self assessment indicated that good progress had been made by Sweden in preparing for the next pandemic of influenza. Indeed the external members of the team noted many important and innovative developments, a number of which deserved drawing to the attention of other countries in the European Union-European Economic Area. However as is consistent with much of the rest of Europe and the fact that it takes at least five years of intense work to prepare a country there remains much that needs to be done before Swedish Citizens would have the level of protection that they would reasonably expect. Therefore there are many recommendations for work in the coming two to three years. These are especially in the fields of cross-sectoral work, work outside the health care sector, surveillance, local preparedness and business continuity planning. There are also a number of areas of work which the European Centre for Disease Prevention and Control needs to do to support the work in Sweden.

Seasonal Influenza

Surveillance

Recommendations 1

- 1.1 Make explicit the objectives of the surveillance and what public health actions they would lead to
- 1.2 Particularly make explicit the objectives and links to action of the new population based, real-time system for influenza monitoring and new modelling algorithms for prediction of spread and effects of preventive measures that is under development before that development proceeds much further
- 1.3 Consider the feasibility of extending seasonal surveillance to include some sentinel hospital data inputs
- 1.4 Assess the likely robustness from automated death surveillance systems in a pandemic and ensure liaison with the developments being made by the Danish SSI investigating the likely robustness and timeliness of the current surveillance systems in a pandemic.

Seasonal Influenza Immunisation

Recommendations 2.

- 2.1 Monitoring of coverage should essentially be through management system with telephone monitoring only undertaken as a validation and to answer specific questions (e.g. why do people not get immunised).
- 2.2 Uptake promotion should be followed by considerations of other measures to mitigate the annual epidemics.
- 2.3 A particular area of uncertainty is the varying vaccine coverage in risk groups in different counties. Efforts may usefully be directed at assessing uptake in different important groups in each county and taking action to increase vaccination as necessary.

Seasonal influenza laboratory capacity

Recommendation 3

- More formalised adoption of triggers for plans e.g. When to switch off and on influenza testing in a pandemic

Pandemic Influenza

Planning and Coordination

Recommendation 4.

- 4.1 In the health plans there should be more formalised adoption of triggers for plans e.g. When to switch off and on influenza testing in a pandemic.

- 4.2 Build on annual immunisation with seasonal flu for the process for mass vaccination with a specific pandemic vaccine
- 4.3 Develop Business Continuity Planning for hospital functions in a pandemic (manpower issues)
- 4.4 Either the NBHW survey should, with agreement of the relevant parties, contain non-health items or other mechanisms should be used for achieving this aim such as the current letter to local authorities.
- 4.5 The exercise in 2009 (SAMO) provides an important focus for future planning on pandemic preparedness, However, this should not delay urgently needed local and more specialist exercises.
- 4.6 There is a need to develop an overall strategy for pandemic exercises including allowing time for assimilation in order to maximize the effectiveness of outputs while avoiding exercise fatigue.

Pandemic Surveillance, Situation Monitoring and Assessment

Recommendation 5

- 5.1 ECDC should share its initial notes and paper on Surveillance in a Pandemic with the authorities in Sweden, and to use to assist in the development a national plan for surveillance during a pandemic. **ECDC Assistance**
- 5.2 It should be made explicit clear who will undertake situation monitoring in a pandemic, and develop coordination between this monitoring system and a surveillance system.
- 5.3 The authorities might usefully look at the situation monitoring documents developed by the Civil Contingencies Secretariat in the UK. **ECDC Assistance.**

National Influenza Centre

Recommendation 6 There should be consideration of having a formal plan for what would happen at the NIC in a pandemic – when the system would move from testing all specimens to testing only a sample

Outbreak investigation capacity, general and during a pandemic

Recommendation 7

- 7.1 Once a Strategy for Phase 6 surveillance is developed by the ECDC led-group the NBHW should see how the field epidemiology elements of that would be implemented in Sweden
- 7.2 On national level
 - To develop protocols for national assistance in major outbreaks including protocols for unusual types of outbreaks such as a pandemic
 - To test such procedures together with the county medical officers
- 7.3 On county level
 - To develop protocols for activities at county level during nationally coordinated outbreaks.

Planning Assumptions

Recommendation 8 To determine how the outputs of the software compare with other European models and how much used they are. **ECDC Assistance**

Antivirals and other supplies

Recommendation 9

- 9.1 ECDC to finalise and send the revised versions of its background documents on antiviral resistance and antivirals as these become available. **ECDC Assistance**
- 9.2 The authorities should continue to work to develop practical plans for antiviral distribution and for monitoring their use and effect. There is also a need to test these elements.
- 9.3 ECDC should nominate this as a topic at the next EU Pandemic Preparedness Workshop and also try to get more information on other approaches used. **ECDC Assistance**
- 9.4 There is also a need to develop more general solutions for the mass distribution of medicines following the laws and regulations in place.

Non-Pharmacological Public Health Measures

Recommendation 10

- 10.1 The authorities should look at the UK ‘Planning Presumptions’ model.
- 10.2 ECDC should finalise its menu on public health measures and distribute that to assist in such discussions. **ECDC Assistance**

Pandemic Vaccines

Recommendation 11

- 11.1 It would be beneficial for Sweden to continue to pursue its ambitions to ensure a safer supply of vaccines via in the short term securing supplies from abroad, and in the longer term developing production capacity within the Country.
- 11.2 In parallel to securing supplies, detailed plans should be drawn up as to how, the pandemic vaccine will be delivered to the population. This includes the planning of the logistics for mass vaccination, and also some advanced thinking on planning on prioritisation within populations (including ethical considerations).

Simulation Exercises

Recommendations 12:

- 12.1 All those who would contribute to pandemic preparedness and response should build up to the 2009 SAMO on pandemic preparedness, but not putting off local and more specialist exercises needed before them

- 12.2 Develop a strategy for pandemic exercises including allowing time for assimilation.
- 12.3 Consideration given by national authorities to the development of an exercise toolkit for use at regional level including basic scenarios etc.

Maintenance of Basic Services

Recommendations 13:

- 13.1 The guidelines developed by SEMA should be developed and shared with the municipalities to encourage and guide the development of plans in the country as a whole. If they have not yet been assessed by the ‘customer’ that should be done to determine if they are ‘fit for purpose’.
- 13.2 ECDC to supply its list of multisectoral planning issues which is available on the Internet at <http://www.ecdc.eu.int/pdf/Multi-sectoral%20planning%20table.pdf> **ECDC Action**
- 13.3 Examples of Guidelines of business continuity in the private sector were not discussed though the guidelines from SEMA are intended to be used by both the public and private sector; it may also be useful to consider guidelines produced

Interoperability Issues

Recommendation 14:

- 14.1 ECDC and the Swedish authorities to approach the Commission to repeat calls for a clearer focus for policy work on pandemic preparedness in the European Union such as an influenza sub-group under the Health Security Committee.
- 14.2 ECDC and others make formal efforts to ensure there is cross-linking between the technical and communications group at the EU and National level. **ECDC**

Regional and Local Health Services

Recommendation 15

- 15.1 There is a need to model and test robustness of plans for health care provisions at local level, taking into account high levels of usage and negative impacts of staff absenteeism etc
- 15.2 The initiative to develop a mechanism for assessing and supporting local preparedness should be continued drawing on examples from other EU countries such as that in the Netherlands. **ECDC Assistance**
- 15.3 The proposed mechanisms for primary care and especially delivery of antivirals in a pandemic should be tested and exercised in small focal studies
- 15.4 Develop Business Continuity Planning for hospital functions (manpower issues) needs further development.

Large Cities Pandemic Preparedness

Recommendation 16

- 16.1 The Microbiological Department of the Karolinska Hospital should share the detailed preparedness plans as an example best practise.
- 16.2 Need for attention to national and local surge capacity in some areas such as hospital preparedness for all departments.
- 16.3 Develop training courses and materials for health staff for use in a pandemic.
- 16.4 Stockholm's work on the potential impact of pandemic on transport system is innovative and interesting, and can be usefully shared with others.

Local Public Health Services

Recommendation 17 To assist and follow-up that all counties develop plans to ensure that the function of the County Medical Officer will be sustained in a pandemic.

Hospital Preparedness

Recommendation 18

- 18.1 Expand Business Continuity Planning for hospital functions to include pandemic provisions. ECDC should ensure that the Swedish authorities are kept in touch with other groups working on this. **ECDC Assistance**
- 18.2 Develop monitoring mechanisms for utilisation of hospital services (pressure on hospitals) including maintaining flows of hospital supplies

Communications

Recommendations 19

1. A co-ordinated National Communications Plan needs to be completed detailing communications methods, messages and target audiences at different phases of the pandemic.
2. Development of a one channel information source for flu pandemic i.e. development of a web portal - following on from the positive avian flu response.
3. Communications channels i.e. web and phone lines to be load tested to ensure capacity is available to handle numbers of information requests that will emanate during a pandemic.
4. Response mechanisms that are not people dependent (as many staff will be ill during pandemic) e.g. use of voice recognition technology in terms of phone line response should be investigated.
5. Research to be undertaken to see if the UK advertisement is suitable for Sweden. If positive this would be in line with consistent messaging across Europe.
6. Press conference to be linked with any new information available (e.g. the publication of the communications plan detailing all messages and forecasting numbers that will fall ill, hospitalisations and deaths or announcement of money to be spent by Government to fund vaccines).
7. Spokespeople need to be identified nationally and locally on all potential issues.

8. Development of training courses and materials for health staff for use in preparation for a pandemic would be beneficial.
9. The lessons learnt in the pilot in Linköping should be incorporated and rolled out across the country.
10. National authorities and those undertaking the study on public attitudes link up with people doing similar work on other countries and with ECDC. ECDC Assistance
11. There should be formal mechanisms for ensuring the communicators and technical groups dealing with influenza link up, **ECDC Assistance**

Avian Influenza

Recommendation 20 The veterinary and medical authorities to consider how they might extend the veterinary system to capture human information. The authorities should consider how they would respond to LPAI and other highly pathogenic avian influenzas (apart from H5N1 which is exceptionally difficult) in a proportionate manner. This should be done in consultation with ECDC and with the other countries having discussions on this aspect (Denmark, Netherlands and the UK). **ECDC Assistance.**

Specific Country Issues – Central Capacity

Recommendation 21 Given the scale of the tasks and the fact that it is estimated that it takes five years or more of intense effort to prepare a country for a pandemic the central investment should be sustained and perhaps increased on a project basis.

Response to Disasters Abroad

Recommendation 22 Realistic options for what will happen to Swedes abroad in a pandemic should be communicated to decision makers, perhaps using the paper developed by ECDC for the Friends of the Presidency Group. **ECDC Assistance**

Specific “Institute” Issues - Research

Recommendation 23

- 23.1 ECDC raise the issue of potential research on use of immune modulators with DG Research **ECDC Action**
- 23.2 Work continue on developing a common web-site for pandemic influenza that would function in a pandemic as the single site for Sweden.

Ethical Issues

Recommendation 24 The authorities should review if there are now new issues which the NBHW Ethics Group should consider. Also they may need to consider how this group would be contacted quickly in a pandemic. ECDC should direct the authorities to other countries (e.g. UK and Finland) that had developed such mechanisms. **ECDC Assistance**

Relationship between scientific community and MOHC / HSE

Recommendation 26 When there is a relevant exercise the ‘acute’ role for scientific advice should be tested for feasibility and utility. The relevant authorities should explore how other Advisory Groups function e.g. that of the UK function in ‘peace time’ and ‘war time’ (during a pandemic).

Requests/issues for input from ECDC

- 5.1 ECDC should share its initial notes and paper on Surveillance in a Pandemic with the authorities in Sweden, and to use to assist in the development a national plan for surveillance during a pandemic. **ECDC Assistance**
- 5.3 The authorities might usefully look at the situation monitoring documents developed by the Civil Contingencies Secretariat in the UK. **ECDC Assistance.**
- 8 To determine how the outputs of the software compare with other European models and how much used they are. **ECDC Assistance**
- 9.1 ECDC to finalise and send the revised versions of its background documents on antiviral resistance and antivirals as these become available. **ECDC Assistance**
- 9.3 ECDC should nominate this as a topic at the next EU Pandemic Preparedness Workshop and also try to get more information on other approaches used. **ECDC Assistance**
- 10.2 ECDC should finalise its menu on public health measures and distribute that to assist in such discussions. **ECDC Assistance**
- 13.2 ECDC to supply its list of multisectoral planning issues which is available on the Internet at <http://www.ecdc.eu.int/pdf/Multi-sectoral%20planning%20table.pdf> **ECDC Action**
- 14.2 CDC and others make formal efforts to ensure there is cross-linking between the technical and communications group at the EU and National level. **ECDC Assistance**
- 15.2 The initiative to develop a mechanism for assessing and supporting local preparedness should be continued drawing on examples from other EU countries such as that in the Netherlands. **ECDC Assistance**
- 18.1 Expand Business Continuity Planning for hospital functions to include pandemic provisions. ECDC should ensure that the Swedish authorities are kept in touch with other groups working on this. **ECDC Assistance**
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- 20. The veterinary and medical authorities to consider how they might extend the veterinary system to capture human information. The authorities should consider

how they would respond to LPAI and other highly pathogenic avian influenzas (apart from H5N1 which is exceptionally difficult) in a proportionate manner. This should be done in consultation with ECDC and with the other countries having discussions on this aspect (Denmark, Netherlands and the UK). **ECDC Assistance.**

21. Realistic options for what will happen to Swedes abroad in a pandemic should be communicated to decision makers, perhaps using the paper developed by ECDC for the Friends of the Presidency Group. **ECDC Assistance**
- 23.1 ECDC raise the issue of potential research on use of immune modulators with DG Research **ECDC Action**

Notable Swedish Strengths and Achievements relating to Influenza and Pandemic Preparedness

1. Sweden has a strong tradition of multisectoral planning at the Municipal level.
2. Historical concept of Total Defense understood by the population.
3. Interministerial working group for pandemic preparedness addressing cross-sectorial issues
4. Tradition of an apolitical technical and operational response to threats and challenges in the social sector.
5. Activation of County Administrative Boards for Pandemic Planning from government (January 2007); in particular identifying essential services.
6. Pilots started by Swedish Emergency Management Agency (SEMA) for County and Municipal Planning for Pandemic Preparedness.
7. Good and tested experience between the human and animal veterinary authorities following the Spring of 2006 underpinned by previous planning for responding to zoonosis.
8. Computerised health services that have considerable functionality.
9. Good experience with a national call centre and national web site during avian influenza run jointly by a number of different authorities.
10. Call networks for patient handling potentially becoming a national network of networks which might be useful in a pandemic.
11. Established nurse limited prescribing which extends to routine immunisation following national programs.
12. A new law implementing the 2005 International Health Regulations.
13. High standard national influenza reference laboratory.
14. A system of county laboratories that delivers surveillance data for planning for a pandemic.
15. Standardised planning assumptions using a tool developed in Sweden **Deserving European Attention.**
16. Unique business continuity planning combined with use of antivirals for prophylaxis **Deserving European Attention.**
17. Experience of a large multi-sectoral exercise (SAMO) each year (pandemic flu planned for 2009).
18. Capital city has exercised potential impact of pandemic on transport system **Deserving European Attention.**

19. Relatively stable population based local public health manpower based in the 'County Medical Officers System'.
20. Sensible pragmatic approach to infection control, masks and respirators in health care settings.
21. County level infectious disease departments (n = 30).
22. From other emergencies experience Posam Groups for responding to bereavement in emergencies.
23. Good start to the logistics of distribution of antivirals.
24. NBHW has committed manpower for pandemic planning.
25. Financial commitment for investment in pandemic vaccines.
26. Exercises at Government level and with Government Offices in 2006 and 2007.
27. Number of regional and Agency level exercises.
28. Good uptake of seasonal influenza (62% in elderly).
29. Focus group work on attitudes concerning pandemics in different groups (public and professionals).

Background

Evaluating the readiness of the European Union and its Member States for influenza are integral components of the overall process of improving overall pandemic preparedness in Europe. A starting point for improving pandemic preparedness was a workshop on preparedness planning organized jointly by the European Commission (EC) and WHO 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 and a third workshop was convened by ECDC in Uppsala, Sweden in May 2006. Between May and October 2005 a process for countries' assessing their pandemic preparedness was developed by ECDC with the other two partners. Key to which was an assessment tool which then began to be used by Member States and the partners.* In 2005, country visits were started conducted by the ECDC~Commission~WHO~EURO partnership in a number of EU and non-EU European countries with a view to completing all countries by the end of 2007. The assessment tool derives from WHO documents and an EU Communication on pandemic planning and has developed steadily over time based on experience and events.^{†,‡,§,**} For example the approach has become more joint between an internal and external members of an Assessment team and there has been steadily increasing emphasis on interoperability, non-health sector contributions, more emphasis on dealing with seasonal influenza and since the autumn of 2005 the response to highly pathogenic avian influenza (HPAI), specifically influenza A/H5N1.^{††}

* ECDC Pandemic Influenza – Assessment Tool

http://www.ecdc.eu.int/Health_topics/Pandemic_Influenza/Assessment_tool.html

† WHO Global Influenza Preparedness Plan 2005

http://www.who.int/csr/resources/publications/influenza/GIP_2005_5Eweb.pdf

‡ WHO Checklist for Pandemic Preparedness Planning 2005

<http://www.who.int/csr/resources/publications/influenza/FluCheck6web.pdf>

§ Assessment tool Version September 2006

http://www.ecdc.eu.int/documents/pdf/AssessmentToolPandemicInfluenzaPreparedness_13_9_2006.pdf

** ECDC Pandemic Influenza – Assessment Tool March 2007

<http://www.ecdc.europa.eu/pdf/Assessment%20tool.pdf>

†† 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

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The third European workshop in Uppsala in May 2006 reviewed progress since March 2005 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)
- use of antivirals,
- development of preparedness in the primary care and hospital sectors,
- preparation for avian influenza.

In 2006, further assessment visits took place in Belgium, France, Germany, Italy, Lithuania, Portugal, Slovakia, Spain, Latvia and Austria. Visits are continuing in 2007, with Sweden being the third following Ireland and Belgium.

Regional and focused meetings were undertaken partially to help prepare a *Status Report*^{##} on pandemic preparedness requested by Commissioner Kyprianou and also to focus on the issues of Communications, Interoperability, Use of Antivirals and Hospital Preparedness.

The report identified many policy options but especially focused on the need to work in the coming two to three years in the following five areas

- 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

Organization of the Visit and Application of the Assessment Tool (Questionnaire)

The approach of ECDC was through the National Board of Health and Welfare (NBHW) in Stockholm who organised the time table of the visit. Prior to the visit a detailed questionnaire was kindly completed by a number of key informants in Sweden. The completed questionnaire forms Appendix One to this report. From April 16th to 19th 2007 a four-person group visited Stockholm and Sundsvall (Västernorrland County) for an intense (4 day) joint assessment joining a group from NBHW forming an overall joint Assessment Team.

ECDC

- Prof Angus Nicoll – Influenza Coordinator (overall lead)
- Dr Andrew Amato – Deputy Head, Surveillance & Coordination Unit
- Dr Peter Kreidl – Deputy Influenza Coordinator
- Mr Howard Needham – Influenza Project Officer
- Mr John O’Toole - External Relations and Partnership
- Ms Lisa Clancy – Communications Specialist

^{##} 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

Sweden

- Dr. Anders Tegnell – Director, M.D., Ph.D., M.Sc. (Swedish lead)
- Mrs. Hanna Lobosco – Public Health Analyst
- Mrs. Anita Lundin – Public Health Analyst (Logistics)
- Mrs. Christina Hedström Ebbersten – communications officer
- Dr. Martin Holmberg – M.D

This team worked with staff from NBHW and other relevant Government agencies to achieve the four specific objectives detailed above. Details of the schedule of the visit, the persons met and the background documentation are contained in Appendices [add details later] respectively. The detailed presentations and the background documentation is archived in ECDC.

Professor Nicoll and Dr Tegnell were the joint coordinators of the Assessment Mission and this Report.

The Assessment Team met with a number of individuals from a range of institutions over the four days of the visit. This included representatives from the health Ministry and other Ministries), as national technical agencies, academic and service bodies (Appendix Three). Local visits were undertaken in Västernorrland County (Sundsvall) and Stockholm County.

The results of the Assessment are based to varying degrees of the completed Assessment Tool / Questionnaire (Appendix 1) 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 Appendix Three. Even with all the work undertaken the Assessment can only give a partial view of pandemic preparedness in Sweden. In particular like all these assessments, the team had to focus on the generic national picture and a snap shot of one more local perspective. Also preparedness is rapidly improving in Sweden and so what was the position in April 2007 will in a short while be a dated view. Hence the Team would not wish the Assessment to be taken as a fixed position and would wish to emphasise that the most important objectives were:

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.*

These objectives were achieved.

Finally the external team members wished it be recorded that they are very grateful for the time that the many people they met generously provided and the care and attention afforded them by their Swedish hosts in what was an intensive visit for all concerned taking place at a busy time.

Key indicators

	Goal	KEY INDICATOR	CURRENT STATUS
	SEASONAL INFLUENZA AND VIROLOGY		Y = yes / N = no
1.	An influenza surveillance system in place collecting epidemiological and virological information	1. Surveillance data published during the influenza season for: (a) National Level? (b) Administrative regional level?	a) Yes b) Yes
2.	National laboratory capacity able to provide timely, high quality, validated routine and diagnostic influenza laboratory support with committed budget to facilitate this work	2. National laboratory capacity to perform: (a) Virus isolation? (b) Influenza typing? (c) Influenza subtyping?	a) Yes b) Yes c) Yes
3.	National annual seasonal influenza vaccination programme in place achieving >75% uptake in over 65s and increasing uptake in occupational and clinical risk groups	3. Vaccine uptake figures published annually?	National annual uptake in persons aged >65 available: Yes year 2005/06
	PANDEMIC PLANNING AND COORDINATION		
4.	National planning committee/structure in place that has a coordinating role for pandemic preparedness	4. List of participating bodies/members?	Yes Cross-sectoral: Yes
5.	National pandemic plan consistent with international (WHO and EU) guidance, publicly available	5. National health sector influenza plan?	Yes Last month/year updated: feb/07
6.	National command and control structure in place for managing an influenza pandemic	6. National command and control structure?	Health services command and control structure Yes Cross-sectoral command and control structure Yes

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7.	National contingency plan for maintenance of non-health essential services, such as power supply, food distribution etc, publicly available	7. National contingency plan for maintenance of non-health essential services?	Y/N Under development Last month/year updated: _____
	SITUATION MONITORING AND ASSESSMENT		
8.	Ability to detect initial cases, and to monitor the spread and impact during the different phases of a pandemic	8. Pandemic surveillance and information plan?	Y/N If yes: Under development Last month/year updated: _____
9.	Ability to investigate initial cases of a pandemic influenza strain	9. Outbreak investigation capacity?	Yes
	PREVENTION, MITIGATION AND TREATMENT (includes health system response)		
10.	Public education materials as part of a national strategy on personal non-pharmacological public health measures (personal hygiene, self isolation)	10. Public education materials available?	Material on seasonal influenza published Yes Material on pandemic influenza ready Yes
11.	National strategy for community non-pharmacological public health measures (travel, mass gatherings, school closures etc)	11. Group established to develop such a strategy?	Y/N If yes: month/year of last meeting: Under development
12.	National antiviral strategy developed, including plans for procurement, stockpile and delivery to patients	12. National antiviral strategy developed?	Yes Last month/year updated: feb/07
13.	National pandemic vaccination strategy developed, including procurement, distribution and targeting of pandemic vaccines	13. National pandemic vaccination strategy developed?	Yes Last month/year updated: feb/07
	REGIONAL AND LOCAL ARRANGEMENTS		
14.	Regional/local planning and coordination structure for pandemic preparedness in place	14 Regional/local planning and coordination structure?	Yes Cross-sectoral: Y/N

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15.	Regional/local health services able to cope with an influenza pandemic and continue to provide other essential health services	15 Planning document issued to local health services which includes the nationally agreed parameters for which local services should plan (expected range of cases and percentage of staff off sick)?	Yes Last month/year updated: feb/07
COMMUNICATIONS			
16.	National communication strategy developed and published	16 National communication strategy?	Yes If yes: Last month/year updated: Oct/06
INTERNATIONAL INTEROPERABILITY			
17.	Potential impact of measures for neighbouring countries and the EU discussed	17. Joint work undertaken with neighbouring country/s on mutually relevant policy areas?	Yes If yes: Last month/year of joint work: Nov/2006
PANDEMIC EXERCISES			
18.	Pandemic preparedness regularly and systematically tested at all levels and across all sectors, including lessons learnt, report published and fed back into planning.	18 National level health sector exercise?	Yes Last month/year of exercise: Oct/06
AVIAN INFLUENZA			
19.	National system in place for influenza surveillance in animals (including wild birds) which meets EU requirements	19 National system for influenza surveillance in animals?	Yes
20.	National capacity for managing an outbreak of HPAI with human health implications, developed in collaboration between health and veterinary authorities	20. Joint health and veterinary plan or complementary plans?	Yes Last month/year updated: /06

General Information

Description

The Swedish public sector

The Swedish public sector has three levels of government: national, regional and local. At the local level, Sweden is divided into 290 municipalities, each with an elected assembly or council. Municipalities are responsible for facilities and services such as roads, water supply, schools, public assistance, elder care, child care, etc. The municipalities are entitled to levy income taxes on individuals.

The Government governs the country, implements the Riksdag's decisions, initiates new laws and amendments to existing laws and exercises decision – making powers in certain matters. The Government is assisted in its work by the Government Offices and government agencies. At the regional level there are both elected county councils and county administrative boards. The county councils have a responsibility in areas that require coordination across a larger region than the municipalities, most notably health care. County councils are entitled to levy income taxes to cover their costs.

The county administrative boards are the central government's representatives at the regional level. The county administrative boards decide on such issues as land use (for example building permits) and traffic.

The Swedish health care system is government-funded and heavily decentralised. The responsibility for providing health care lies on the 21 county councils.

For further information about Swedish health care, please see Appendix 1 (*Fact sheet: Swedish health care*).

The role of the Government during a crisis

The responsibility of the Government in the event of a crisis is based on the Government's task to govern the country and take strategic decisions and also to take action in order to achieve national co-ordination. During a crisis an important task for the Government Offices is to rapidly inform the Government on what has happened and follow the evolution of the crisis, analyse the situation and prepare decisions which the Government might need to take. However, the operative responsibility for the management of the crisis rests with the central government agencies.

Each Ministry is responsible for ensuring sufficient resources and capacity to deal with a crisis within their area of responsibility.

The area of communicable diseases

There are a number of authorities with different tasks in the area of communicable diseases, but the Swedish Communicable Diseases Act (2004:168) appoints three main bodies with specified tasks:

- The National Board of Health and Welfare (NBHW)

The Unit for Communicable Disease Prevention and Control under NBHW has the overall responsibility for protecting the population against infectious diseases and co-ordinates this work nationally by e.g. preparing strategies, making recommendations based on scientific findings, developing standards (regulations and general advice), exercising supervision on

communicable diseases in the country, and participating in an extensive international co-operation on communicable diseases, with bodies such as the EU and WHO.

- The Swedish Institute for Infectious Disease Control

The Swedish Institute for Infectious Disease Control is the expert authority for the monitoring and analysis of the epidemiological status of infectious diseases amongst humans, in particular the notifiable diseases. The authority informs the NBHW on the epidemiological status and proposes measures for effective communicable disease control.

- The County Councils and its County Medical Officers

The county councils are responsible for implementing necessary measures to prevent communicable diseases within their respective county council. The County Medical Officers form separate authorities and have the operational responsibility for communicable diseases within their county council, including the regional planning for an influenza pandemic. Apart from their own administrative duties, the County Medical Officers also have preventative and supervisory duties.

- Other bodies

Other bodies with duties within communicable diseases include: treating physicians, child health services, environmental health committees, county administrative boards, the Swedish Board of Agriculture, the National Food Administration and many more.

Notable Strengths and Achievements

1. Sweden has a strong tradition of multisectoral planning at the Municipal level.
2. Historical concept of Total Defense understood by the population
3. Interministerial working group for pandemic preparedness addressing crosssectorial issues.
4. Early pandemic exercise for in-coming political administration following change of government
5. Tradition of an apolitical technical and operational response to threats and challenges in the social sector.
6. Activation of County Administrative Boards for Pandemic Planning from government (January 2007); particular identifying essential services.
7. Pilots started by Swedish Emergency Management Agency (SEMA) for County and Municipal Planning for Pandemic Preparedness.
8. Good and tested experience between the human and animal veterinary authorities following the Spring of 2006 underpinned by previous planning for responding to zoonosis.
9. Computerised health services that have considerable functionality.
10. Good experience with a national call centre and national web site during avian influenza run jointly by a number of different authorities.
11. Call networks for patient handling potentially becoming a national network of networks which might be useful in a pandemic.
12. Established nurse limited prescribing which extends to routine immunisation following national programs.
13. A new law implementing the 2005 International Health Regulations.
14. High standard national influenza reference laboratory.
15. A system of county laboratories that delivers surveillance data for planning for a pandemic.

16. Standardised planning assumptions using a tool developed in Sweden **Deserving European Attention.**
17. Unique business continuity planning combined with use of antivirals for prophylaxis **Deserving European Attention.**
18. Experience of a large multi-sectoral exercise (SAMO) each year (pandemic flu planned for 2009).
19. Capital city has exercised potential impact of pandemic on transport system **Deserving European Attention.**
20. Relatively stable population based local public health manpower based in the 'County Medical Officers System'.
21. Sensible pragmatic approach to infection control, masks and respirators in health care settings.
22. County level infectious disease departments (n = 30).
23. From other emergencies experience Posam Groups for responding to bereavement in emergencies.
24. Good start to the logistics of distribution of antivirals.
25. NBHW has committed manpower for pandemic planning.
26. Financial commitment for investment in pandemic vaccines.
27. Exercises at Government level and with Government Offices in 2006 and 2007.
28. Number of regional and Agency level exercises.
29. Good uptake of seasonal influenza (62% in elderly).
30. Focus group work on attitudes concerning pandemics in different groups (public and professionals).

Seasonal influenza

1. Seasonal influenza surveillance

Description 1.

MONITORING OF INFLUENZA ACTIVITY IN SWEDEN organised by the Swedish institute for infectious disease control

The Sentinel System

Sweden introduced sentinel-surveillance by General Practitioners (GPs) according to the European Influenza Surveillance Scheme (EISS) in 1999, and sentinel sampling in 2006. The Swedish influenza sentinel reporting system consists of around 120 sentinel units recruited by the County Medical Officers. It includes both individual GPs and larger health care centres of 2-5 GPs. The weekly reports are sent to the county medical officers and to the National Influenza Centre at the Swedish Institute for Infectious Disease Control (SMI) either by fax or the web-based reporting system, SentiNet.

Laboratory reporting

The number of influenza diagnoses made in routine diagnostic laboratories has been reported to SMI on a monthly basis since decades, and in 1993 a system of weekly reporting was introduced. SMI receives between 1000 and 3000 diagnoses per season, and presently 25 laboratories (all performing influenza diagnostics in Sweden) are reporting.

Death rates

Information on the weekly death rate in Sweden is purchased from Statistics Sweden. A calculated mean weekly death rate is used as reference for the evaluation of weekly excess mortality.

REPORTS FROM SMI ON THE INFLUENZA ACTIVITY IN SWEDEN

Weekly reports with national and international influenza information are made available at the SMI web site (www.smittskyddsinstitutet.se), and an electronic newsletter is also sent to all interested parties, including the County Medical Officers, Departments of Infectious Diseases in Sweden, Microbiological Laboratories and to the National Board of Health and Welfare. A summary of the entire season (the WHO report) is distributed and put at the web site towards the end of the summer, when all definitive data are available.

Sweden reports to WHO via Flunet, and starts reporting when the first laboratory verified case occurs. In 2000 Sweden joined EISS, and now also provides weekly information to the EISS web site.

CHARACTERISATION OF INFLUENZA STRAINS

Genotypic and phenotypic characterisation

Influenza strains are sent to SMI from the laboratories performing virus isolation for typing using standardised methods based on international collaborations with other influenza centres. In addition samples from the sentinel system is analysed and an average 40 –50 nasal swab samples have been analysed per week during the season 2006/07. The laboratory also provides QA panels for the Swedish influenza laboratories. It participates in international QA arranged by QCMD, EISS and WHO.

Surveillance and modelling under development.

Major weaknesses of existing reporting systems have been identified:

1. The impact on hospitals is not revealed.
2. The sentinel system tells only how many patients that see GPs.
 - a. Fewer persons see GPs in Sweden when they are ill, partly since they don't need a doctors certificate of illness until after one week of sick leave.
3. The impact of influenza in different age groups in society is not shown by the sentinel system
4. There is one week delay before the sentinelreporting reaches SMI
5. In a pandemic situation, GPs will be at high pressure, and are not likely to have time for reporting

Comment on point 1. The laboratory reporting is an indicator of severity of illness since sampling is almost exclusively performed at hospitals. The one-week delay of the laboratory reports will disappear this year, by adapting the reporting to our Webb-based surveillance system for reportable diseases, Sminet 2. However, the laboratory reports are not sufficient for monitoring the pressure on hospitals, and further development of hospital surveillance is needed

Based on identified weaknesses 2-6 of existing surveillance systems the following is ongoing or developing:

- Real time population based surveillance by self-reporting. The first pilot study is taking place in the Stockholm area in the autumn of 2007.
- Method: Establishment and maintenance of a representative cohort of Swedes, who self-report influenza-like disease by the Webb or automated telephone-calls as soon as possible

after falling ill. Data are made available the same day as they are sent in. Parents are asked to report for their children. A limited number of questions on symptoms will be answered. The participants are contacted and recruited by ordinary mail, and include when they submit their contact details. Different kinds of reminders will be sent out during the influenza season. In 2007-2008 we intend to recruit at least 7000 persons in the greater Stockholm area for a pilot study.

- Aim: to get real time picture of the age-related spread of influenza in the society. The data will be a basis for the modelling projects described below
- Establishment of a gold standard of influenza incidence by seasonal telephone interviews of a representative sample of the Swedish population (pending result of research grant application).
- Aim: To be used for calibration of other methods of monitoring e.g. sentinel systems, laboratory systems and self-reporting. The system per se is too expensive and labour demanding to be run as a routine-method, but the results for interviews over three seasons will be used as a gold-standard for ILI in the population, and the data will be related to data from other surveillance schemes.
- Participation in an EU-application on self-reporting of influenza and modelling (EPIforecast),
- Aim: Swedish WP to compare the efficacy of our real-time system with active recruitment with the existing system with recruitment by advertising and weekly e-mail reports.
- Prediction of development of the timing and height of the peak of yearly epidemics 4- 8 weeks ahead; based on laboratory data, ms submitted.
- Aim: To allow for preparedness and planning in good time before the peak comes
- Development of a model for spread and effects of interventions based on contact patterns for all Swedish inhabitants
 - Aim: To allow for prediction of epidemic development ,and of effect of measures early during the epidemic
 - Development of a tool for monitoring of web-activities indicative of influenza activity.
 - Aim: To have a method for estimation of activity based on data which will be collected without effort from the healthcare or sick people..

Comment 1.

Surveillance for seasonal influenza is like that in many other EU countries relying on laboratory surveillance and clinical reporting. There is a primary care surveillance system. However, it was reported that those responsible for surveillance have identified many weaknesses in the existing systems, and a population based, real-time system for influenza monitoring and new modelling algorithms for prediction of spread and effects of preventive measures is under development. This involves research work trying to establish what might be the true incidence underlying this and relationship between surveillance data and true incidence. That could be useful though it is not clear if the systems would function or the findings would necessarily apply in a pandemic.

The objectives of the surveillance were not made entirely clear to the Team (this is true for many EU countries). There was little documented information on the objectives and what public health action had happened or would happen as a result of the surveillance being undertaken during seasonal or pandemic influenza.

The exception to this is the virological surveillance which is strong, especially so for antiviral resistance, and could influence prescribing (though again that is not explicitly stated).

There is impressive and timely death surveillance system but not hospital surveillance (surveillance of admissions) at present. It has not yet been considered how well the deaths system would work in a pandemic.^{§§} It is appreciated that hospital and mortality surveillance are not easy process as many severe infections and deaths eventually attributable to influenza are not so categorized as being connected to influenza.

Recommendations 1.

- 1.1 Make explicit the objectives of the surveillance and what public health actions they would lead to
- 1.2 Particularly make explicit the objectives and links to action of the new population based, real-time system for influenza monitoring and new modelling algorithms for prediction of spread and effects of preventive measures that is under development before that development proceeds much further
- 1.3 Consider the feasibility of extending seasonal surveillance to include some sentinel hospital data inputs
- 1.4 Assess the likely robustness from automated death surveillance systems in a pandemic and ensure liaison with the developments being made by the Danish SSI investigating the likely robustness and timeliness of the current surveillance systems in a pandemic.

2. Seasonal influenza vaccination programmes

Description 2

Like most countries in the northern hemisphere, Sweden experiences outbreaks of influenza every winter season, somewhere during the period November - March (annual or "interpandemic" flu).

Guidelines from NBHW were released in 1997 ("Vaccination against influenza", SOSFS 1997:21). Immunisation is recommended every year to

- Patients with heart- and/or lung-disease
- Persons over 65 years of age
- Others (such as patients with diabetes mellitus or weak immune defence – by disease or medication)

According to the Swedish decentralised model health service is delivered by the County Councils, or in close cooperation with them. The only risk group for which there are some solid data on vaccination coverage is the population over 65 years of age. In the season 2005-06 it is estimated that 61,5 % of the elderly was vaccinated, with a range of 44-72 % between different counties (18 of the 21 counties exceeded 50% coverage). Thus, Sweden achieved the WHO goal for the elderly population ("at least 50 % in 2006") on a national basis. In 15 counties influenza vaccination is free of charge, in the other 6 counties there is a small fee (€ 3.2 -10.8).

The external team visited two regions; in Stockholm County, seasonal influenza vaccination is free of charge for risk groups, with coverage above the average in persons 65+ years (65% in 2005, 70% in 2006). No data are available for other risks groups (i.e. persons with chronic

^{§§} Note the development of cross EU work on this by the Danish State Serum Institute (Dr Anna Mazick anne.mazick@ssi.dk is the contact).

diseases). In Sundsvall, good vaccine coverage was also achieved, running at about the national average, and vaccination campaign was reinforced with publicity etc to encourage uptake in target populations. Improved in 2004 and 2005 due to positive action to reduce costs (although still not offered for free). There were also some difficulties due to production problems, which led to late delivery of vaccine in the early part of the season, and this reduced vaccine coverage in 2006.***

In relation to vaccination of health care workers, seasonal influenza vaccination is under the responsibility of each individual hospital. The team noted that several departments do recommend seasonal influenza vaccination for their staff (i.e. infectious disease wards, coverage around 80%) in some cases. However there was no apparent incentive or encouragement to improve uptake. This issue may be particularly important in homes for the elderly which fall outside the responsibility of county councils.

Comment 2 As in most EU countries monitoring of uptake poses special difficulties for what is mostly an adult vaccine. Data on coverage of those with chronic medical conditions and health care workers is difficult to obtain. Coverage has improved in the elderly and has reached 62% for 2005-6. There does not seem to be much annual publicity to the public on the dangers of seasonal influenza. Vaccination for other ‘at-risk groups’ appeared to be mixed; many health care workers were clearly encouraged to take-up vaccination, but this was dependant on individual hospital policy, and hence there were large differences nationally.

Recommendations 2.

- 2.1 Monitoring of coverage should essentially be through management system with telephone monitoring only undertaken as a validation and to answer specific questions (e.g. why do people not get immunised).
- 2.2 Uptake promotion should be followed by considerations of other measures to mitigate the annual epidemics.
- 2.3 A particular area of uncertainty is the varying vaccine coverage in risk groups in different counties. Efforts may usefully be directed at assessing uptake in different important groups in each county and taking action to increase vaccination as necessary.

3. Seasonal influenza laboratory capacity

Description 3

The majority of all influenza diagnostics are performed at the county microbiological laboratories linked to the hospitals. Different kinds of methods are used, such as IF, rapid tests and PCR. A few laboratories still undertake virus culture. All positive diagnoses are reported to SMI, and a selection of samples are sent to SMI and analysed according to what has been described above. SMI can analyse a maximum of 2000 specimens weekly by PCR, and has a continuous, limited capacity for isolation on MDCK cells that can easily be expanded if needed. Most diagnostics in Sweden are based on demonstration of virus, RNA or viral antigens. Since the serologic diagnosis rests on titre-rise between acute and convalescent samples it is of little value for seasonal monitoring, and not reported in the weekly influenza

*** NB There was a general northern hemisphere problem in the winter of 2006 due to difficulties that some manufacturers had with production

surveillance. However, at least the university virus laboratories perform some serology diagnostics for influenza. SMI performs HAI, ELISA and microneutralisation, but does not perform the assays on a routine basis.

Comment 3

Both local visited influenza laboratories were using the same methodology (Immunofluorescence) and reported forwarding all the positive samples to SMI for further investigation and to be included in the laboratory surveillance, which will decrease the likelihood of losing identified viral strains in the laboratory surveillance. The laboratory preparedness seems to be quite advanced and operational, but the trigger mechanism for decreasing sampling during a pandemic has still to be identified and communicated from the national level.

Recommendation 3

- More formalised adoption of triggers for plans e.g. When to switch off and on influenza testing in a pandemic

Pandemic Influenza

4. Planning and Coordination

- Political awareness
- Legal and ethical framework
- National pandemic planning committee
- National influenza pandemic preparedness plan
- Interministerial working group on crosssectorial issues

Description 4

The National Board of Health and Welfare (NBHW) published its general regulations on vaccination against influenza in 1997.

The documents concerning pandemic preparedness were published for the first time in February 2005 (*Influenza – Strategies for prevention and control, Contingency planning for a pandemic influenza – national measures* and *Contingency planning for a pandemic influenza – a basis for regional planning*). This was done after a specific assignment by the Government to the NBHW in its role as coordinator of national communicable disease control. Various national authorities took part in the planning process, such as the Swedish Institute for Infectious Disease Control (SMI), the Swedish Emergency Management Agency, the Swedish Work Environment Authority and representatives for the County Medical Officers. The documents are published by the NBHW and are revised yearly. The current versions were published in February 2007.

The ethical framework of the planning has been discussed in different fora with an emphasis on the priorities for antiviral use. It has also been for consideration to the ethical board of the NBHW.

The Government has followed up the assignment to develop a plan with several other assignments to improve the preparedness such as the procurement of antivirals, background documents on pandemic vaccines and others. Furthermore the NBHW and the SMI have received additional funding to improve pandemic preparedness. For the NBHW this has been focused on supporting the counties planning process.

As another follow-up to the planning document a Swedish National Pandemic Group (NPG) was formed a few months after the plan was published and has since met two to three times yearly. The group consists of the Director-Generals of the national authorities concerned and connected to the NPG there is a group of public relations managers from the authorities. The focus of the meetings has so far been coordinating the work with the bird flu cases in Sweden.

Within the Government an interministerial working group on pandemic preparedness is working on crosssectorial issues; all Ministries take part in this work. So far, the main task has been the identification of areas within respective Ministry being affected by a pandemic, measures already taken, problematic areas and specific problems with the aim to better know which legislative measures or other initiatives will be necessary in order to respond to a global influenza. The work has raised the awareness amongst non-health ministries on the necessity of pandemic preparedness. The work is ongoing and the present inventory is a first step in a process.

Comment 4

It is commendable that pandemic planning is updated regularly (the current plan was published in February 2005 and updated Feb 2007). In the health sector there is a high level of ministerial commitment to comprehensive and in-depth pandemic preparedness. This is also evident at NBHW which has already been translated into significant commitment of resources including dedicated manpower for the purpose of pandemic planning. The National Pandemic Group contains the right players and a revised collection of National Pandemic Planning Documents was issued in February 2007 and is on the national web-site.

The energetic central planning group in NBHW has been putting major efforts into planning and preparedness. The current National Pandemic Plan touches on virtually all of the essential health sector planning elements laid out by the EU and WHO.

Now more operational elements need to be developed e.g. triggers. As in most other EU countries what is less well developed is the intersectoral guidance. However that process has started well and that area should be given special attention in the next period. It has to be appreciated that inter-sectoral work is not easy and requires government indeed community wide commitment.

In terms of inter-sectoral preparation, there is an impressive approach in that all county administrative boards have received a planning letter instructing them to prepare. Essentially the government has instructed the county administrative boards to identify the services in their regions which are of importance for the society during a pandemic and to help them with their preparedness. The guideline (mentioned underneath) is supposed to assist the boards this task. The result of this is to be reported back at the end of 2007. **Deserving of European Attention**

There is a seemingly useful guideline for pandemic planning, which can be used by any organisation – public bodies or private businesses – at www.krisberedskapsmyndigheten.se, called “Planning for a pandemic – Guidelines” (published by the Swedish Emergency Management Agency – SEMA - in co-operation with NBHW). A revised version of the document has published subsequent to the visit with expanded with information and guidelines.

The hospital sector has seemingly yet to undertake much business continuity planning in relation to pandemic preparedness, specifically the functions that would need to be preserved

in a bad pandemic and how that would be achieved) See Section X below for more detail. Again this is a common finding in assessments of European countries and its an area needing further work.

Cross Sectoral Planning: Planning outside the health sector is less developed. Partly this is inevitable because of the way that Sweden is run with a light touch from the Ministries and the politicians, much of the responsibility at the national levels being with bodies like NBHW and many cross sectoral responsibilities then transferred to regional and local bodies. It is somewhat unclear how the central authorities then know whether the local arrangements are 'safe' and what should be done if they are thought not to be. Partially this may be solved by the governmental assignment to the County Administrative Boards.

Recommendation 4.

- 4.1 In the health plans there should be more formalised adoption of triggers for plans e.g. When to switch off and on influenza testing in a pandemic.
- 4.2 Build on annual immunisation with seasonal flu for the process for mass vaccination with a specific pandemic vaccine
- 4.3 Develop Business Continuity Planning for hospital functions in a pandemic (manpower issues)
- 4.4 Either the NBHW survey should, with agreement of the relevant parties, contain non-health items or other mechanisms should be used for achieving this aim such as the current letter to local authorities.
- 4.5 The exercise in 2009 (SAMO) provides an important focus for future planning on pandemic preparedness, However, this should not delay urgently needed local and more specialist exercises.
- 4.6 There is a need to develop an overall strategy for pandemic exercises including allowing time for assimilation in order to maximize the effectiveness of outputs while avoiding exercise fatigue.

5. Pandemic Surveillance, Situation Monitoring and Assessment

Description 5

Surveillance and information: A surveillance plan for the various pandemic phases has been developed, including both enhanced collection of data on disease activity and vaccination from Sweden and collection of international information. Spread of information to authorities, health care and the general population is included in the planning. All activities will be performed in collaboration with other relevant authorities, including the County Medical Officers, and a joint web site for the authorities concerned will be used, like what was done for the avian flu.

Laboratory preparedness: Today SMI has the capacity to analyse 400 samples by PCR daily. Specific PCR systems have been established for H1, H3, and H5 and systems for H2 and H7 detection will also be developed. SMI also have the capacity to isolate and determine unknown subtypes by sequencing with general H primers. An action plan has been established for the different WHO phases.

The NBHW has an overall responsibility to assure that the population is given a high quality protection against contagious diseases and is also responsible for co-ordinating actions to prevent spread of infection that are conducted by various authorities and organisations (Act of

Communicable Diseases 2004:168). NBHW has also a responsibility for initiating and coordinating the preparations for the supply of pharmaceuticals and health care materials in case of emergency and to maintain medical care preparedness (§3, 1996:570).

In order to control and evaluate the effects of various countermeasures, there is a need for frequently updated information about the spread and effects of influenza on the community. This requires a surveillance system that can be adapted to different scenarios. In parallel there is a need for a monitoring system that can give indications of how society and the health-care system is affected by the pandemic.

According to the Governmental Guidelines for 2007, NBHW got the following assignments: (p 49 f):

- ”• to develop a system to, during a pandemic or other severe epidemic, collect, analyse and spread information regarding the impact of the pandemic/outburst on the health and medical care system and on other vital functions within the society.
- To empower the authority’s ability to plan for and handle national coordination of activities during a pandemic or other severe epidemic.
- To, within its authority according to the Act of Communicable Diseases and in cooperation with other authorities concerned, develop a preparedness to fulfil the need of information that will arise during a pandemic or other severe epidemic within or outside of the borders of Sweden.”

Comment 5

Surveillance in a pandemic is one of the most difficult functions, and has yet to be developed as a project in Sweden. There seemed to be some confusion over the roles and responsibilities in some people’s minds concerning monitoring of services and surveillance for information.

The adaptation of the surveillance system during a pandemic is being discussed but definite plans are still lacking. This is an area where EU coordination and development support will be needed since a similar approach in the EU countries has several advantages.

The monitoring and assessment system is to a great extent lacking in Sweden, partially due to the federal structure. Even if this has to be country specific, sharing of tools and ideas from other countries would be beneficial. Due to the existence of a number of possible data sources in Sweden a system using available data is currently investigated.

Based on the governmental guidelines for 2007, NBHW has started a project with the aim to develop an IT-system to, at a general level, follow the development during the pandemic or other severe epidemic. The intention is to extract the information from existing systems, without putting extra duties on the health care personnel. The systems that are of interest in particular are the economic driven systems, which most likely will continue being used during a crisis, for example patient administrative systems etc.

Recommendation 5

- 5.1 ECDC should share its initial notes and paper on Surveillance in a Pandemic with the authorities in Sweden, and to use to assist in the development a national plan for surveillance during a pandemic. **ECDC Assistance**
- 5.2 It should be made explicit clear who will undertake situation monitoring in a pandemic, and develop coordination between this monitoring system and a surveillance system.

- 5.3 The authorities might usefully look at the situation monitoring documents developed by the Civil Contingencies Secretariat in the UK. **ECDC Assistance.**

6. National reference laboratory for influenza / National influenza centre (NIC)

Description 6

The activities and capacities concerning diagnostics and surveillance at SMI have been described above. For further information; see <http://www.smittskyddsinstitutet.se/publikationer/arsrapporter-och-verksamhetsberattelser/smis-arsrapporter-om-influensasasonen/>

Comment 6

There is a strong centralized and impressive central facility in new facilities with good links both internationally and to a regional network led by this group. This is working well and is functioning as the ‘server’ for a national network of virological expertise. One detail was not clear was whether there are clear policy on trigger points for the lab to switch from specific diagnostic work to global surveillance in a pandemic (i.e. when to stop testing all patients and switch to sampling).

Recommendations 6

There should be consideration of having a formal plan for what would happen at the NIC in a pandemic – when the system would move from testing all specimens to testing only a sample

7. Outbreak investigation capacity, general and during a pandemic

Description 7

The organisation of the Swedish communicable disease control system gives the clinician diagnosing the sick patients the responsibility to initiate the tracing of the source of an infection. This is how it is normally done for individual patients but if there is indication of an outbreak the County Medical Officer is contacted and takes over the investigation. Depending on the nature of the outbreak a number of municipalities, county and national actors will be involved, but the main responsibility lies with the county. The NBHW has a legal mandate to coordinate efforts during outbreaks involving more than one county.

The core capacity at county level is the County Medical Officer’s office coordinating the efforts in an outbreak investigation. This is in many locations a small group which can be assisted by national level resources. Support in the form of advice can be obtained from mainly the Swedish Institute for Infectious Disease Control and the NBHW and manpower support can be supplied by NBHW through the Central Field Epidemiology Group (CFG). From this group of 30 veterinarians, MDs, health inspectors, nurses and others, a suitable team can be supplied to the county if assistance is needed.

Comment 7

There is a national capacity organised around a Central Field Epidemiology Group (CFG). Local capacity was not considered formally but the impression was given that this was more patchy.

The system of outbreak investigation is used fairly frequently which means that there is a rather robust system for handling minor outbreaks. Big outbreaks are very uncommon and there is seldom a need to test the national level coordination and assistance with man-power. Outbreaks handled are usually food-borne outbreaks and knowledge on handling other types of outbreaks is more limited.

Recommendation 7

7.1 Once a Strategy for Phase 6 surveillance is developed by the ECDC led-group the NBHW should see how the field epidemiology elements of that would be implemented in Sweden

7.2 On national level

- To develop protocols for national assistance in major outbreaks including protocols for unusual types of outbreaks such as a pandemic
- To test such procedures together with the county medical officers

7.3 On county level

- To develop protocols for activities at county level during nationally coordinated outbreaks.

8. Planning Assumptions

Description 8

The following planning assumptions are applicable for 2007:

- The plan applies to an influenza pandemic where the phases are announced by the World Health Organisation (WHO).
- An influenza pandemic means extensive spreading of a completely new influenza virus throughout the world.
- A new influenza virus type which is spread between humans arises somewhere in the world outside Sweden. The influenza reaches Sweden as part of a current pandemic and spreads rapidly throughout the country.
- The time from the point at which this new type of virus is first identified until Sweden is affected is probably shorter (3-4 months) than for previous influenza pandemics.
- During the early phases of an influenza pandemic a vaccine will probably not be available. At the present time it is estimated that it will take at least 2-6 months before an adapted influenza vaccine can be made available for general use. Thereafter, availability will probably be strictly limited, particularly at the beginning of the pandemic. Sweden lacks domestic influenza vaccine manufacturers and is totally dependent on imports. There is no guarantee that Sweden will receive sufficient influenza vaccine to cover national requirements.
- Knowledge of how antiviral medicines for influenza can be used optimally during a pandemic is at the present time incomplete. In line with the increase in knowledge, guidelines for antiviral medicines could need to be reformulated. They also need – during a current pandemic – to be adapted to the development of the pandemic.

Special contingency plans have been formulated separately to limit the spread of influenza from birds and animals to human beings (and thus a potential beginning of a pandemic in Sweden) and to improve the work involved in the annual influenza epidemics.

Comment 8

There is an interesting software tool that has been developed to allow planning assumptions have been adopted. Some consideration needs to be paid to how well these apply locally (it is possible, for example that they may tend to under-estimate local epidemic peaks since national models summate multiple asynchronous local epidemics). There are a number of other versions of this in Europe as well as the well known American FluSurge. However it is not clear how well used they are by their local customers.

Recommendation 8

To determine how the outputs of the software compare with other European models and how much used they are. **ECDC Assistance**

9. Antivirals and other Essential Supplies

Description 9

Ordinarily, the medical care authorities (primarily the county councils) are responsible for the purchasing and distributing of drugs, as part of their responsibility to prevent and treat diseases. However, NBHW has, in accordance with its instruction (1996:570), built up a stockpile of antibiotics and antiviral drugs to support the county councils, in case of shortness in supply within the normal channels.

The country has secured antivirals (e.g. oseltamivir) for treatment of 20% of the population plus another 5-10% of amantadine prophylaxis (6 weeks). These therapeutic stockpiles are stored securely.

The stored drugs should be for post-exposure prophylaxis or early treatment of people at high risk of complications or serious disease, and prophylaxis to people in important public activities. However the exact use of the antiviral drugs is to be decided when more knowledge regarding the virus causing a pandemic is available. This subject is dealt with in more detail in the document “Contingency planning for pandemic influenza – national measures”

Normal annual consumption of antiviral drugs is usually low, which means that the amount of drugs available at pharmacies and at their supplies is limited. Most county councils therefore have a local stock of antiviral drugs to cover temporary peaks in consumption due to local outbreaks of seasonal flu, avian flu out-breaks or the beginning of a pandemic. In the event of a pandemic, all distribution will take place from national stores. The national stores of antivirals cannot be *dynamic* because there is so little use of antivirals generally.

Distribution of drug from the national stores

There is a developing plan for the distribution of antivirals. Vigorous attempts have been made to develop practical distribution plans but have yet to settle on a solution. Normally the drugs are distributed via The National Corporation of Swedish Pharmacies (Apoteket), this is also likely to be the case in a flu pandemic. Contingency drug can be ordered through NBHW via contact with the Officer on Duty (*Tjänsteman i beredskap - TiB*), which has access to

routine descriptions advising how to handle the situation regarding ordering and distribution of drugs from the national stores. Routines for the prescription and distribution of antiviral drugs for prophylactic purpose are currently being drawn up.

Thinking is also starting to take place on supplies of other consumables for hospitals. There are some unique (for Europe) stockpiles of antibiotics, the main part of which is dynamic (i.e. some proportion is used and replaced annually so that drugs do not expire).

Comment 9

The current plan for distribution of antivirals has to be further developed. The first deliveries from the national stores must be “pushed” out to the county councils, using a distribution plan based on population – otherwise the administration of the deliveries will be too slow, and the loading sites at the national stores would rapidly be jammed with trucks waiting to load. The replenishment of antivirals could either be “pushed”, monitoring the use, or “pulled” (ordered from the county councils). The plan must be synchronised with the county councils and distribution agreements must be made.

The plan for subscription and distribution of antivirals for prophylaxis purpose is a complicated task to solve. The distribution of the subscribed drug could be solved via Apoteket, using their set-up “e-prescription”, sending the packed and labelled drugs either directly to the receiver or to the concerned companies for handing out to the personnel that the drug has been prescribed to. The task of solving the subscription procedure will be more difficult, how to perform a lot of subscriptions in a short time – or could this be done in advance? One possible way to go could be by using the network of “company health care providers”, setting up an instruction on how to proceed. This has to be further discussed with the county administrative boards and the county councils.

As in many other EU countries the distribution plans need to be tested to verify if antivirals can be delivered in a timely manner to the public when and where they need them. It should be noted that some other countries have had to change their plans after testing and exercising them.

Also like many other EU countries there is some evidence that there may be unrealistic expectations as to their effectiveness.

Recommendation 9

- 9.1 ECDC to finalise and send the revised versions of its background documents on antiviral resistance and antivirals as these become available. **ECDC Assistance**
- 9.2 The authorities should continue to work to develop practical plans for antiviral distribution and for monitoring their use and effect. There is also a need to test these elements.
- 9.3 ECDC should nominate this as a topic at the next EU Pandemic Preparedness Workshop and also try to get more information on other approaches used. **ECDC Assistance**
- 9.4 There is also a need to develop more general solutions for the mass distribution of medicines following the laws and regulations in place.

10. Non-Pharmacological Public Health Measures

Description 10

Information concerning the legal basis for public health measures in the event of a pandemic can be found in chapter 25 – Legal issues.

Comment 10 It is interesting and unusual that a document on the legal basis for these measures has been developed. There is an interesting approach that Sweden could look at in the UK ‘Planning Presumptions’ paper which now have been published. There would be many advantages for these issues being raised at a European level. While there is value in waiting to consider the ECDC menu when it appears that menu will only provide options and ‘pros’ and ‘cons’ not recommendations.

Recommendation 10

- 10.1 The authorities should look at the UK ‘Planning Presumptions’ model.
- 10,2 ECDC should finalise its menu on public health measures and distribute that to assist in such discussions. **ECDC Assistance**

11. Pandemic Vaccines

Description 11

Sweden normally purchases all vaccines at the county level, which makes each county a small buyer. In the first national plan it was pointed out that this would be a weakness in a pandemic where there would be a lack of vaccines. As a consequence Sweden today has a national system to purchase influenza vaccines.

The lack of production capacity in Sweden and on a national level has also been addressed. Sweden has made a political commitment to increase this capacity and extensive discussions with different vaccine manufacturers have taken place but no solution has been found so far. An advanced purchase agreement will be negotiated this spring of 2007 and in parallel discussion on how to increase production capacity in the long term will continue. The government has made funds available for this purpose.

Comment 11

The primary focus of planners has been to secure the purchase of vaccines. This is important, but there now needs to be focus on how such vaccine would be used. This will presumably be through the county mechanism. The centralised purchase for seasonal vaccine means that Stockholm County has the overall view of all the counties' demand and makes agreements with a limited number of suppliers, each responsible for a defined geographical area. The call offs are then made directly from the designated supplier by each health care unit and the delivery goes directly to each unit. The specific pandemic vaccine will be handled in the same way but it needs to be worked through to ensure how this will work when the specific pandemic vaccine first becomes available (it will not be available all at once). Currently, it does not seem to be clear how the limited supplies of pandemic vaccine will be administered, or how such issues such as population and geographical prioritisation will be handled when it first becomes available. However there are good models for how it would be delivered (in the same way as for seasonal vaccine). Such issues need to be further worked through.

Recommendation 11

- 11.1 It would be beneficial for Sweden to continue to pursue its ambitions to ensure a safer supply of vaccines via in the short term securing supplies from abroad, and in the longer term developing production capacity within the Country.
- 11.2 In parallel to securing supplies, detailed plans should be drawn up as to how, the pandemic vaccine will be delivered to the population. This includes the planning of the logistics for mass vaccination, and also some advanced thinking on planning on prioritisation within populations (including ethical considerations).

12. Simulation Exercises

Description 12

During the past year there have been several tabletop exercises at the national and regional level. One exercise in October 2006 tested interoperability between the authorities participating in the National Pandemic Group. There has been at least one pandemic influenza exercise that NBHW has participated in at the county level, in Uppsala County.

During the beginning of 2007 several smaller exercises with influenza pandemic scenarios have been carried out – at the Ministry of Health and Social Affairs, NBHW, and the Medicinal Products Agency.

On the veterinary side, the most recent large exercise on Avian Influenza took place in November-December 2005, arranged by the Swedish Board of Agriculture. During 2005 a joint AI exercise between Swedish and Danish local authorities in the Öresund region also took place. Sweden participated in the EU exercise “Common Ground” in November 2005. All these exercises have been considered very useful and with several lessons learnt, although full reports have not yet become available in some cases.

A joint veterinary-human health exercise is being planned for October 2007. This exercise will test communication between authorities during a simulated Avian Influenza outbreak. In addition, a large full scale exercise has been scheduled for 2009 (SAMÖ).

Comments 12

A number of table top exercises have been carried out at both regional and agency level. Also there have been exercises at Government level with Ministries (political level) in 2007, and

there remains a tradition of a large multi-sectoral exercise (SAMÖ) each year suitable for pandemic (planned for 2009). It is clear that exercises would be of particularly value to test the planning, particularly at the operational levels, including such issues as primary health care provisions and surge capacity across both health care and other sectors.

However there is some justifiable concern about the volume of exercises and the risk that resources are deflected from the business of developing operational plans. Therefore it is important that exercises are well planned and the goals clearly defined in each case. Because of the large number of exercises, some improved coordination could be valuable to rationalise resources and prevent unnecessary duplication. Such strategies should also take account of the need to evaluate results, give feedback and if necessary amend policy.

Regional levels also recognised the value of exercises, but because of limited resources in some cases, local levels highlighted the value of national assistance for exercise planning, including the development of generic scenario's etc that could be used for exercise planning at County level.

Recommendations 12:

- 12.1 All those who would contribute to pandemic preparedness and response should build up to the 2009 SAMO on pandemic preparedness, but not putting off local and more specialist exercises needed before them
- 12.2 Develop a strategy for pandemic exercises including allowing time for assimilation.
- 12.3 Consideration given by national authorities to the development of an a exercise toolkit for use at regional level including basic scenarios etc.

13. Maintenance of Basic Services

Description 13

The Swedish Emergency Management Agency (SEMA), together with NBHW and a team of representatives from municipalities, county councils and county administrative boards, has drawn up guidelines to support public and private services to prepare the ability to operate their services under the conditions that prevail during a pandemic. The aim is to find solutions within the own organisation or jointly with other actors.

It is especially important to maintain services that are critical to society during a pandemic. The guidelines also support municipalities and county administrative boards to take action within the framework of their responsibilities within the crisis management system and bring together the parties concerned for a dialogue to analyse and assess jointly which services that may be considered most important to society. Together they should work to ensure that suitable preparations are made to maintain the minimum level of service during a pandemic.

SEMA and NBHW have arranged seminars with representatives from all county administrative boards, county councils and some municipalities to discuss their work in these questions. In 2007 the Swedish government has given SEMA directions to develop the guidelines and the county administrative boards to follow the guidelines and report the work in the end of the year. Essential questions in the report will be what sectors are most critical during a pandemic and are there some problems that can be helped by authorities or the Government. (See also appendix 2)

Comments 13:

Sweden has made a good start to expand preparedness from health care sectors and into broad multisector planning at societal level. We encountered a particularly advanced planning model within Harnosand municipality during regional visits, which had taken part in a pilot programme run by SEMA to assist regional authorities to develop planning for the continuation of municipal services. The plan presented covered social continuity at three phases of a pandemic. Each step included communication needs, and included several measures to maximise social distancing and quarantine, including closure of schools (which schools should close were prioritised to minimise social impact), and leisure facilities.

It is unclear the extent to which multisectoral planning had been carried out in the Country as a whole, but in the Municipality where the pilot project had been used, planning was advanced.

Recommendations 13:

- 13.1 The guidelines developed by SEMA should be developed and shared with the municipalities to encourage and guide the development of plans in the country as a whole. If they have not yet been assessed by the ‘customer’ that should be done to determine if they are ‘fit for purpose’.
- 13.2 ECDC to supply its list of multisectoral planning issues which is available on the Internet at <http://www.ecdc.eu.int/pdf/Multi-sectoral%20planning%20table.pdf> **ECDC Action**
- 13.3 Examples of Guidelines of business continuity in the private sector were not discussed though the guidelines from SEMA are intended to be used by both the public and private sector; it may also be useful to consider guidelines produced in Ireland to encourage private sector planning to further improve business continuity

14. Interoperability Issues

Description 14:

Sweden is relatively geographically isolated in comparison to other EU member States, and hence there are fewer drivers for interoperability planning. However Sweden has begun to consider issues of interoperability in planning, at least in terms of sharing information on the content of plans to assist in communication. More operational discussions have begun between counties that border other states, particularly in the south of the country where large population density and close proximity to Denmark may create challenges in the management of people and resources.

Comment 14:

Though there are traditional links with other ‘Nordic’ countries, growing links with the Baltic countries these have not been exercised over influenza. Given limitations in time and personnel the Swedish technical authorities have preferred to focus preparations at an EU level. However here there has only been slow progress at the EU level with many different policy groups involved and no clear focus for policy development. It was noted that there is a

Nordic pandemic influenza communications group. The point was made to the team that there is a danger that the Communications and Technical groups take on lives of their own and not relate to each other.

There has been some work between Sweden and Denmark in the south of Sweden

Recommendation 14:

- 14.1 ECDC and the Swedish authorities to approach the Commission to repeat calls for a clearer focus for policy work on pandemic preparedness in the European Union such as an influenza sub-group under the Health Security Committee.
- 14.2 ECDC and others make formal efforts to ensure there is cross-linking between the technical and communications group at the EU and National level. **ECDC Assistance**

15. Regional and Local Health Services

Description 15

NBHW has a national responsibility for ensuring that the whole population is well protected against communicable diseases. However, according to the decentralised political structure, the health service is delivered by the County Councils. Each of the 21 counties has a County Medical Officer responsible for the prevention and control of communicable diseases within the county. In this respect the operative responsibility thus is within the counties, whereas NBHW exercise supervision and coordination.

Comment 15

Two regions were visited for short visits. The inherent strengths of the Swedish health care system result in localised co-ordination and planning in the 21 counties responsible for health care throughout the country, with specific needs of the populations in urban and rural areas being specifically addressed. There was good personal commitment at high level to ensure planning was prioritised and carried forward to improve preparedness, but it may be that in some cases the command and control structures could be further defined to support on-going commitment of dedicated individuals to direct health care in a pandemic in order that reduce vulnerability to of systems failure if key personnel are absent etc.

National guidelines for the development of health care planning for a pandemic influenza had been produced and in both regions visited there was evidence that these guidelines had been usefully applied which resulted in a consistent approach to the provision of health care during a pandemic. As yet there is no formal mechanism for assessing the robustness of local plans. Much focus for example was put in the use of mobile care teams to provide primary care. This provided a mechanism to maximise social distancing and quarantine. However it would be important to test through exercise or modelling work if volume of staff and number of care teams were sufficient to manage needs in a large or severe pandemic, particularly in peak weeks. Also it was not clear how staff absenteeism would impact on care provision. It would be important to assess via modelling if provisions identified would be sufficient for populations given various scenarios on both pandemic epidemiology, absenteeism, and also the possible range of responsibility that may fall to the care teams (e.g. acute care for severe cases only against expanded role for prescription and deliver of antivirals/antibiotics, or later vaccine administration).

The Swedish structure allows good sharing of capacity within regions, and also a long history of inter-regional cooperation which appears robust and clear mechanisms for reimbursement clearly facilitate this. Some capacity for national board to redirect resources appropriately at a national level in crisis situations also underpins the mutual assistance at county level.

Recommendation 15

- 15.1 There is a need to model and test robustness of plans for health care provisions at local level, taking into account high levels of usage and negative impacts of staff absenteeism etc
- 15.2 The initiative to develop a mechanism for assessing and supporting local preparedness should be continued drawing on examples from other EU countries such as that in the Netherlands. **ECDC Assistance**
- 15.3 The proposed mechanisms for primary care and especially delivery of antivirals in a pandemic should be tested and exercised in small focal studies
- 15.4 Develop Business Continuity Planning for hospital functions (manpower issues) needs further development.

16. Large Cities Pandemic Preparedness

Description 16

Stockholm County has a population of 1.9 million inhabitants, 26 municipalities, 7 acute care hospitals, 55 ambulances and 2 emergency vehicles and 1 helicopter.

The County Medical Officer (CMO) is the regional authority in the Stockholm County responsible for planning, organising, and leading all work concerning communicable diseases in humans including planning for an influenza pandemic. Based on the assumptions that 25 % of the Stockholm population will fall ill in influenza during 6-8 weeks, approximately 450 000 persons in the county will be infected of whom 250 000 will seek a GP and 6 000 will be hospitalised, mainly due to acute respiratory problems. 50-75 patients per day will need intensive care and 2 000 will die from influenza (if mortality rate 0.4 %). An additional problem is that 15-25 % of health care workers will be on sick leave and have to be replaced. A regional pandemic group with representatives from different parts of health service and society, has worked out a pandemic plan which will be available on the CMO website. All activities are based on national guidelines for regional planning. The plan defines measures that will be taken in the different pandemic phases according to WHO and will be revised continuously according to current knowledge. The plan is divided into separate sectors dealing with responsibilities, surveillance, health service, laboratory activity, vaccination, antiviral drugs, how to manage increased deaths, sectors of society apart from the health service, communication, and psychological aspects. Critical factors, that have to be further analysed, are emphasised. The plan has been presented for the political leaders of the County Council, municipal authorities and health service authorities and there is an ongoing implementation through lectures and tabletop exercises in different sectors of health service and community.

Comment 16

Pandemic preparedness planning has reached a detailed and operational level in Stockholm County. A clear command and control structure has been identified and especially the Department for Disaster Medical Planning is a leading partner in the management of a pandemic. The contingency planning includes different essential services in other sectors than health. Areas for further improvement have clearly been identified, and the need for surge

capacities has been considered especially important. The system of home care teams has been also implemented in the capital, but the maintenance of this approach is not ensured. Table top exercises using a pandemic scenario have been undertaken, but the results of this exercise do not seem to have been analysed in a detailed way.

The microbiological laboratory of Karolinska Hospital had a very detailed and operational preparedness plan including surge capacities and mechanisms (decreasing serologic testing) and sources (personnel from other departments) has been done, including training of the entire microbiological staff in the use of IF to ensure surge capacities. Medical students and retired persons can be assigned as surge personal and the legal issues have been considered.

Supplies (Reagents) have been increased (capacity for 1 year under normal circumstances), and an inventory of other suppliers is available. The capacity of diagnostics can be tripled on demand, from 70 to 200 tests per day.

More specifically, the work done to assess the impact of a pandemic on transport systems in the city particularly noteworthy; such a study, both in terms of the methodology and conclusions are, in the opinion of the assessment team, unique. This work would be of interest to a broader audience.

Recommendation 16

- 16.1 The Microbiological Department of the Karolinska Hospital should share the detailed preparedness plans as an example best practise.
- 16.2 Need for attention to national and local surge capacity in some areas such as hospital preparedness for all departments.
- 16.3 Develop training courses and materials for health staff for use in a pandemic.
- 16.4 Stockholm's work on the potential impact of pandemic on transport system is innovative and interesting, and can be usefully shared with others.

17. Local Public Health Manpower

Description 17

In the smaller counties the County Medical Officer for prevention and control of communicable diseases is a regional authority which often consists of a physician, a nurse and an administrator only, whereas the greater counties/regions are considerable more staffed. In some areas the function of the County Medical Officer thus could be vulnerable to disturbances.

Because of the abbreviated nature of the visit this was not an area that could be considered in any detail considered.

Comment 17

One of the major hurdles during the pandemic will be the lack of man-power both in clinical care and in public health. The two systems are closely integrated in the Swedish system so the lack will simultaneously affect both. The County Medical Officer (CMO) is a crucial actor in the public health part and the CMO office is in many counties very small

Recommendation 17

To assist and follow-up that all counties develop plans to ensure that the function of the CMO will be sustained in a pandemic.

18. Hospital and Local Preparedness

Description 18

Hospitals in Sweden have a legal obligation to have preparedness plans for different disasters. Traditionally these have been focused on emergency medicine but during the intensified pandemic planning now many hospitals have included pandemic planning in their emergency plans.

In the document on regional planning the NBHW has emphasised the importance of planning for the activities at the hospitals during a pandemic and has pointed out a number of areas that the plans need to cover. A tool to estimate the number of patients to be expected at county level has been distributed to the County Medical Officers to help them in their planning.

The main concern voiced from the hospitals is that there will be an extensive lack of personnel during a pandemic.

The county has the responsibility to ensure that adequate supplies are available at the hospitals for an emergency and only certain items such as antivirals are available in national stock-piles.

Comment 18

Planning assumptions have been used in hospital preparedness and the total of extra beds and resources needed have been identified. Hospitals do have general and specific pandemic preparedness plans but usually these plans are not made fully operational. The need for surge capacities and the length of the crisis is likely to be the main problem, although the recruitment of surge capacity staff has been considered. The process of identifying elective medical interventions which could be postponed after an epidemic has started, but should probably be planned in more detail. Triage of patients, setting up of fever clinics has been handled quite differently in the two local areas visited. To detailed planning, like maintaining updated lists of surge capacities, was considered to be very labour intensive and therefore be counterproductive. Surge capacity planning is under the responsibility of the heads of department and every unit in Karolinska Hospital should prepare their own preparedness plan.

Preparing hospital for a pandemic is not easy; there is a need to identify and preserve essential services in a pandemic (major trauma services, emergency obstetrics, dialysis services etc), and in parallel consider which treatments should be postponed, how increased numbers of persons with acute respiratory conditions will be cared for and how will services manage with staff sickness. Few EU countries have yet to make much progress on this at a local level. In the local areas visited, hospital contingency planning was strong, but was focused on acute emergency. There was no evidence that planning had been specifically considered for influenza or other longer term non-acute emergencies in the two local regions visited. ECDC's *Acid Tests*. <http://www.ecdc.eu.int/pdf/Acid%20Tests.pdf> would therefore remain challenging scenarios at the current time. Hence detailed planning on specific aspects of pandemic management in hospitals, such as triage, infection management, monitoring of essential supplies should all be worked through if hospitals are to become more optimally prepared.

Recommendation 18

- 18.1 Expand Business Continuity Planning for hospital functions to include pandemic provisions. ECDC should ensure that the Swedish authorities are kept in touch with other groups working on this. **ECDC Assistance**

- 18.2 Develop monitoring mechanisms for utilisation of hospital services (pressure on hospitals) including maintaining flows of hospital supplies

19. Communications

Description 19

A lot of work has been completed in Sweden on communications in preparing for a possible pandemic. Work has been completed by experienced communications personnel across a number of areas.

This includes:

- The development and publishing of a National Communications Plan
- Market research
- Press conference
- Establishment of a communication network with relevant agencies
- Development of a cross Government response (phone line and web) to avian flu
- A pilot programme being developed in Linköping on educating health professionals

This preparatory work now needs to be finalised and integrated into one detailed national communications plan.

Comment 19

Information flow is vital and uncertainty carries the risk of confusion and wrong decisions. This is recognised, and the importance illustrated by the impressive study commissioned by NBHW to gain knowledge on information needs and expectations for the general population (and staff within the health sector). Information materials on pandemic flu is/will be based on this study.

Outlines for material on pandemic influenza (information leaflet and web) including key facts on pandemic influenza, antivirals, vaccine and personal hygiene measures are under development, and this work needs to be continued at national level, because the current structure will mean that the regions will look to the national centre for direction and information as they will be on the ground handling operational issues. So defining the key methods and messages now is vital so there will be a consistent approach nationally. The experience in the development and utilisation of the single web-entry point for the H5N1 information following cases in 2006 was positive, and the target to develop a similar ‘one-stop shop’ for web information for pandemic is a positive initiative.

As the market research findings illustrate the public at large have a very low level of knowledge of the flu pandemic. This is borne out by the low level of interest shown by the media at the latest press conference. It is critical that the “it won’t happen to me” attitude is educated with “the threat is real” and also defining exactly what everyone in Sweden should be doing now in order for Sweden to be prepared in the event of a pandemic. Detailing the facts and actions being taken by the Government and relevant authorities is of fundamental importance.

Recommendations 19

12. A co-ordinated National Communications Plan needs to be completed detailing communications methods, messages and target audiences at different phases of the pandemic.
13. Development of a one channel information source for flu pandemic i.e. development of a web portal - following on from the positive avian flu response.
14. Communications channels i.e. web and phone lines to be load tested to ensure capacity is available to handle numbers of information requests that will emanate during a pandemic.
15. Response mechanisms that are not people dependent (as many staff will be ill during pandemic) e.g. use of voice recognition technology in terms of phone line response should be investigated.
16. Research to be undertaken to see if the UK advertisement is suitable for Sweden. If positive this would be in line with consistent messaging across Europe.
17. Press conference to be linked with any new information available (e.g. the publication of the communications plan detailing all messages and forecasting numbers that will fall ill, hospitalisations and deaths or announcement of money to be spent by Government to fund vaccines).
18. Spokespeople need to be identified nationally and locally on all potential issues.
19. Development of training courses and materials for health staff for use in preparation for a pandemic would be beneficial.
20. The lessons learnt in the pilot in Linköping should be incorporated and rolled out across the country.
21. National authorities and those undertaking the study on public attitudes link up with people doing similar work on other countries and with ECDC. ECDC Assistance
22. There should be formal mechanisms for ensuring the communicators and technical groups dealing with influenza link up, **ECDC Assistance**

Avian Influenza

20. Avian influenza - response to H5N1 in animal and public health sectors

Description 20

There is a good and tested experience of joint working between the human and animal (veterinary) authorities following the experience in the spring of 2006, when high pathogenic avian influenza (AI) H5N1 was detected in 64 dead wild birds along the south-east coast of Sweden. The cooperation between the authorities is built on the previous planning for responding to Zoonoses and a generic zoonosis contingency plan published in May 2006. There is a Swedish Zoonosis Centre at the National Veterinary Institute which has been in place since 1997 and there are also Zoonosis and Epizootic laws. Two complementary planning documents have been developed by the NBHW, one concerning public health measures and infection control in the community in case of an Avian Influenza outbreak (dated July 2006) and one on risk management, infection control and clinical management in hospital settings of AI (also dated July 2006). All the mentioned plans can be accessed (in Swedish) at the web site of NBHW: www.socialstyrelsen.se/smittskydd.

In relation to the operational aspects of disease management of cases of H5N1, most of the work is regulated by the common rules within the European Union. However, to ensure advanced preparation, the national crisis organisation, led by the Swedish Board of Agriculture, went into force when AI reached the island of Rügen in the Baltic Sea. The crisis organisation consisted of different groups such as an expert group, an information group, a secretariat etc.

The work in the crises centre was run by a day schedule with a fixed timetable for meetings both within the house and on telephone with the people working in the field.

Operative command centres were set up in the areas where the dead birds were found. The centres were led by an appointed district veterinarian. 1- 3 local veterinarians and 10 – 15 personnel from the Swedish Armed Forces assisted in every outbreak. The County Administrative Board was closely linked to the centre. The work at the centre was mainly to search the area for dead birds and to find all the farmed birds within the restricted area.

Other important participants were;

The National Veterinary Institute (SVA) with expertise personnel and reference laboratory.

The regional competent authority with its local crisis organisation.

The Swedish Armed Forces with local personnel.

The zoonotic cooperation group with the close link between veterinary medicine and human medicine.

SEMA, which took care of a lot of the information to the general public.

The ornithologists with their knowledge of wild birds.

The overall impression of the work to combat AI in Sweden is that it went well. The organisation did function well and there was good cooperation between authorities. No decrease in chicken and egg consumption was seen. Staff fatigue is a significant problem. Some clarifications in the information route is needed.

Going forward, the interagency committee formed in May 2006 to improve cooperation during outbreaks of zoonotic origin (formed in response to the AI outbreak in wild birds) will now focus solely on different zoonotic outbreaks and will no longer be attached to the national pandemic group. A strategic document describing how this group is called in has been jointly agreed by NBHW, the Swedish Board of Agriculture, the National Veterinary Institute (SVA), the Swedish Work Environment Authority, the National Food Administration and the Swedish Institute for Infectious Disease Control (SMI).

In addition, the contingency plan for outbreaks of Avian Influenza as agreed on the same authorities in January 2006 is to be exercised in the planned tabletop exercise in October 2007.

Comment 20

The systems are essentially robust at the national level. On enquiry locally it was felt it might be less robust on the medical side at the local level

It was noted that an issue that has arisen in three EU countries is the public health response to an outbreak of Low Pathogenicity Avian Influenza (LPAI) in birds.

There is a robust veterinary database and surveillance system (STUDS-DBS) which might be suitable for adding in human data (there are no known models for this in the EU)

Recommendation 20 The veterinary and medical authorities to consider how they might extend the veterinary system to capture human information. The authorities should consider how they would respond to LPAI and other highly pathogenic avian influenzas (apart from H5N1 which is exceptionally difficult) in a proportionate manner. This should be done in consultation with ECDC and with the other countries having discussions on this aspect (Denmark, Netherlands and the UK). **ECDC Assistance.**

Specific Country Issues

21. Central Capacity

Comment 21

NBHW has identified some central capacity (manpower) for doing the national development work that is required for pandemic planning. However it was not clear that this was entirely sufficient for the large scale of the task.

Recommendation 21

Given the scale of the tasks and the fact that it is estimated that it takes five years or more of intense effort to prepare a country for a pandemic the central investment should be sustained and perhaps increased on a project basis.

22. Response to Disasters Abroad

Comment 22

An understandable policy assumption (post Tsunami 2004 and Lebanon 2006) that Sweden will evacuate its citizens from health and security threats abroad is not realistic for a pandemic when the numbers will be substantial and evacuation in some cases may be more dangerous than staying put.

Recommendation 22

Realistic options for what will happen to Swedes abroad in a pandemic should be communicated to decision makers, perhaps using the paper developed by ECDC for the Friends of the Presidency Group. **ECDC Assistance**

23. Specific “Institute” Issues - Research

Description

Comment 23

It was suggested by the State Epidemiologist that there should be more research undertaken / supported on the value of immune modulators

It was noted that the SMI web-site is especially well used with a record usage in 2006. There is not yet a single web-site for pandemic influenza in Sweden though one is being developed. This will partly be based on the web-site for avian flu, which is jointly run by a number of national authorities.

Recommendation 23

- 23.1 ECDC raise the issue of potential research on use of immune modulators with DG Research **ECDC Action**
- 23.2 Work continue on developing a common web-site for pandemic influenza that would function in a pandemic as the single site for Sweden.

24. Ethical Issues

Description 24

Pandemic preparedness and management has many ethical aspects. The discussion so far in Sweden has focused on that antiviral medications will not be given to everybody. The laws regulating Swedish health care specifies that if priorities are needed health care should first be given to those who have the biggest needs. The strategy of using antivirals has been discussed with the ethical committee of NBHW. They stated that the principles used were not unethical but emphasised the need to communicate the reasoning behind these strategies very clearly. A broader ethical discussion took place at the yearly congress of the Swedish medical association in 2006.

Comment 24

It was noted that there needed to be a mechanism for giving ethical advice in developing pandemic policies. There is already a group that does this under the NBHW and some influenza issues have already gone to them.

Recommendation 24 The authorities should review if there are now new issues which the NBHW Ethics Group should consider. Also they may need to consider how this group would be contacted quickly in a pandemic. ECDC should direct the authorities to other countries (e.g. UK and Finland) that had developed such mechanisms. **ECDC Assistance**

25. Legal Issues

Description 25

The current **Communicable Diseases Act** (2004:168) is the main legislation to prevent the spread of communicable diseases in the population. The act enables public authorities to take measures to protect the population from communicable diseases while protecting the individual from unnecessary intrusive intervention.

The Communicable Diseases Act contains the possibility to impose extraordinary measures for those diseases that are considered as hazardous to society (currently SARS and smallpox). Such extraordinary protective measures include closing down an area, health monitoring and quarantine on entering Sweden. The decision to close down an area or impose a general health monitoring (non-invasive) on all passengers arriving from a certain area lies with NBHW, whereas the responsibility to impose health monitoring upon entry to Sweden in a specific situation and quarantine measures lies with the County Medical Officer.

The Government has the possibility under Chapter 9 Section 2 of the Communicable Diseases Act, to order that the regulations on diseases that pose a hazard to society are to be applied

also to other diseases (for example in the case of a pandemic influenza). It will thereby also be covered by the regulations of the Quarantine Act (1989:290).

The Quarantine Act is based on IHR 1969 and will be replaced by a new **Act on protection against international public health threats** that will enter into force on the 15th of June in order to implement the revised International Health Regulations (IHR 2005) into Swedish legislation. The Act is complementary to existing legislation to prevent the spread of communicable diseases, chemical and radioactive substances. The Act designates NBHW as the National Focal Point for IHR. NBHW is also responsible for issuing more detailed regulations to implement the new Act (designating the quarantine airports, harbours and containing provisions on health declarations and sanitation certificates). New regulations will be issued in connection with the entry of force of the Act.

The **Public Order Act** (1993:1617) allows the Government or the County Administrative Boards to limit the extent of public meetings or public gatherings with the aim of limiting the spread of infection. Current legislation also allows for businesses or workplaces to be closed and communications to be curtailed. Under the **Work Environment Act** (1977:160), the Work Environment Authority can with immediate effect decide that a workplace is to be closed if there is an immediate risk of spread of infection. As a temporary measure, the Government can also order the curtailment of air travel or an outright ban under of the Aviation Act (1957:297) or the same for land transport under the **Act (1975:88) Authorising the Issue of Regulations on Traffic, Transport and Communications**.

Authorities have the possibility to limit activities and closing schools, pre-schools and other public institutions using for example the Food Act and the Work Environment Act, but municipal authorities are also – through their public responsibility for their own activities – able to decide on curtailment to prevent infection. Private schools and pre-schools may also be expected to make the same assessment as the school authorities. NBHW considers that this argument is also applicable in the event of an influenza pandemic. With respect to private enterprises, it can also be assumed that the public, in a crisis, will follow any recommendations from public agencies responsible for disease prevention.

Comment 25

It was impressive that a document on the public health measures has been prepared. The view of NBHW is that current legislation provides adequately for the need of intervention measures that may arise in the event of an influenza pandemic and that no further legislative changes are necessary. A more detailed analysis of this can be found in the document Legislative support for non-medical measures to limit the spread of infection in a pandemic (only available in Swedish).

26. Relationship between scientific community and MOHC / HSE

Description 26

There is a good relationship between the scientific community and NBHW through different channels, among them the national Surveillance Centre.

In addition, discussions between public health authorities and the scientific community takes place in a number of informal fora. The Swedish Institute for Infectious Disease Control is an expert authority connected to the Karolinska Institute and uses parts of its funding for

research. The NBHW includes experts from the scientific community in expert groups created to analyse specific issues and to recommend how certain measures should be regulated. The Swedish Emergency Management Agency (SEMA) has some research funds that can be used to improve the preparedness.

Neither the Ministry of Health and Social Affairs nor the authorities are involved in setting specific priorities for the scientific community and the majority of state funds distributed to the scientific community have no specific priorities attached to them.

Comment 26

It was not clear what would be the source of scientific advice during an actual pandemic and whether the normal procedures would function given that then all the members would be extremely busy with their ‘day jobs’

Recommendation 26

When there is a relevant exercise the ‘acute’ role for scientific advice should be tested for feasibility and utility. The relevant authorities should explore how other Advisory Groups function e.g. that of the UK function in ‘peace time’ and ‘war time’ (during a pandemic).

Annexes:

Annex 1. Timetable assessment of influenza, pandemic and avian influenza preparedness in country

Annex 2. Participants of country assessment visit

Annex 3. People met

Annex 4. Documents presented and presentations made (list and CD)

Annex 5. Completed assessment tool (Section A only separate file)

Annex 1. Timetable assessment of influenza, pandemic and avian influenza preparedness in country

Time table for an assessment visit to Sweden – details

Days	Activities	
	Team one	Team two
Day 1 Monday April 16	Am 10.00 Initial team coordination briefing. Meeting with SoS, at SoS (room: Göteborg) 12.00-1.00 Lunch with SoS	see team one
	Pm 1.30-2.30 Meeting with Minister of Public Health Maria Larsson, at Regeringskansliet. Meetings with other ministries.	
Day 2 Tuesday April 17	Am 9.00-12.00 Meeting with veterinary authorities (SjV, SVA, SLV and a repr. from SoS) at SoS (room: 8419).	<i>Site visit.</i> Västernorrland (Host: County Medical Officer Hans Boman)
	Pm 1.00-5.00 Meeting with Crisis management authority (KBM and two repr. from SoS) at KBM.	(Separate schedule will be provided later)
Day 3 Wednesday April 18	Am 9.00-12.00 Meeting with public health authorities (SMI, LV, SoS and AV) at SoS (room 7510).	9.30-12.00 <i>Site visit.</i> Stockholm (Host: Deputy County Medical Officer Bo Svenungsson)
	Pm 1.00-5.00 If team wishes, visit to laboratory SMI Preparation of joint preliminary team report (all team members)	Preparation of joint preliminary team report (all team members)
Day 4 Thursday April 19	Am Preparation of joint preliminary team report (all team members)	
	Pm Sharing and discussing the preliminary report with host country and asking to correct misjudgements Debriefing of national health authorities (SoS and MoH) at SoS (room 8419).	

AV – Arbetsmiljöverket (Swedish Work Environment Authority)

KBM – Krisberedskapsmyndigheten (Swedish Emergency Management Agency)

KS – Karolinska Universitetssjukhuset (Karolinska University Hospital)

LV – Läkemedelsverket (Medical Products Agency)

SJV – Jordbruksverket (Swedish Board of Agriculture)

SKL – Sveriges Kommuner och Landsting (the Swedish Association of Local Authorities and Regions)

SLV – Livsmedelsverket (National Food Administration)

SMI – Smittskyddsinstitutet (Swedish Institute for Infectious Disease Control)

SoS – Socialstyrelsen (National Board of Health and Welfare)

SVA – Statens Veterinärmedicinska Anstalt (National Veterinary Institute)

Annex 2. Participants of country assessment visit

External Team Members

Name	Position	Institution
Professor Angus Nicoll	Team leader and coordinator of EDC influenza project	ECDC
Dr Peter Kreidl	Senior expert and deputy coordinator of ECDC Influenza project	ECDC
Dr Andrew Amato	Deputy head of surveillance and communication unit in ECDC	ECDC
Mr Howard Needham	Project officer- ECDC Influenza project	ECDC
Mr John O'Toole	External Relations and Partnership	ECDC
Ms Lisa Clancy	Communications Specialist	Ireland

Internal Team Members

Name	Position	Institution
Dr Anders Tegnell	Head of Unit	National Board of Health and Welfare (NBHW), Unit for Communicable Disease Prevention and Control
Mrs Hanna Lobosco	Public Health Analyst	NBHW, Unit for Communicable Disease Prevention and Control
Mrs Anita Lundin	Public Health Analyst	NBHW, Unit for Communicable Disease Prevention and Control
Mrs Christina Hedström Ebbersten	Communications Officer	NBHW, Unit for Communicable Disease Prevention and Control
Dr Martin Holmberg	Senior Medical Officer	NBHW, Unit for Communicable Disease Prevention and Control

Annex 3. People met

Name	Position	Institution
Day 1		
Dr Kjell Asplund	Director General	NBHW
Mr Anders Klahr	Legal advisor	NBHW, Unit for Communicable Disease Prevention and Control
Dr Anders Lindberg	Senior Medical Officer	NBHW, Unit for Communicable Disease Prevention and Control
Ms Maria Möllergren	Legal advisor	NBHW, Unit for Communicable Disease Prevention and Control
Mrs Merike Palm	Head of Department	NBHW, Information and Public Relations Department
Mrs Sara Johansson	Communications Officer	NBHW, Information and Public Relations Department
Mrs Ann Thuvander	Head of Unit	NBHW, Unit for Emergency Preparedness
Mrs Maria Larsson	Minister of Public Health	Ministry of Health and Social Affairs
Iréne Nilsson Carlsson	Director	Ministry of Health and Social Affairs
Stefan Karlsson	Senior Advisor	Ministry of Health and Social Affairs
Anita Janelm	Special Adviser	Ministry of Health and Social Affairs
Bo Pettersson	Desk Officer	Ministry of Health and Social Affairs
Anders Lindgren	Senior Adviser	Ministry of Health and Social Affairs
Angela Öst	Deputy Director	Ministry of Health and Social Affairs
Helena Lindberg	Director General for Administrative Legal Affairs	Ministry of Defense
Åsa Åhlén Hagman	Desk Officer	Ministry of Defense
Heléne Rapp	Desk Officer	Ministry of Foreign Affairs
Lars von Ehrenheim	Deputy Director	Ministry of Employment
Pär Lindahl	Desk Officer	Ministry of Enterprise, Energy and Communications
Aase Tronstad	Deputy Director	Ministry of Agriculture
Day 2 (National level)		
Bengt Larsson	Deputy CVO	Swedish Board of Agriculture
Ulla Carlsson	Deputy Head of Department	National Veterinary Institute
Lars Plym Forshell	Ass. Chief Vet. Officer	National Food Administration

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Lennart Nilsson		National Food Administration
Torbjörn Albert		National Food Administration
Magnus Dyberg-Ek	Head of section	Swedish Emergency Management Agency
Eva Granat-Hamberg	Principal Administrative Officer	Swedish Emergency Management Agency
Anna Nöjd	Principal Administrative Officer	Swedish Emergency Management Agency
Ulf Strandberg	Principal Administrative Officer	Swedish Emergency Management Agency
Anne von Stapelmohr	Communications Strategist	Swedish Emergency Management Agency
Lars Hedström	Deputy Director General	Swedish Emergency Management Agency
Renée Karlsson	Communications Strategist	Swedish Emergency Management Agency
Christina Andersson	Head of Information Department	Swedish Emergency Management Agency
Day 2 (Västernorrland County)		
Hans Boman	County Medical Officer for Communicable Disease Control	Västernorrland County
Bengt Hill	Head of the Clinic of Infectious Diseases	Sundsvall Härnösand County Hospital
Mats Jonsson	Head of Security	Sundsvall Härnösand County Hospital
Tommy Nilsson	Controller	Härnösand Municipality
Helen Ahlqvist	County Veterinary Officer	County Administrative Office
Åsa Nordius	Consultant	County Department of Laboratory Medicine, Sundsvall
Day 3 (National level)		
Gudrun Skoglund	Principal Administrative Officer	Swedish Work Environment Authority
Peter Stjärnkvist	Pharmaceutical assessor	Medical Products Agency
Charlotta Bergquist	Clinical assessor	Medical Products Agency
Annika Linde	State Epidemiologist, Head of the Swedish National Influenza Centre	Swedish Institute for Infectious Disease Control
Mia Brytting		Swedish Institute for Infectious Disease Control
Birgitta Brink		Swedish Institute for Infectious Disease Control
Harald Heibel		Swedish Institute for

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		Infectious Disease Control
Aase Steen		Swedish Institute for Infectious Disease Control
Day 3 (Stockholm County)		
Bo Svenungsson,	Associate Professor, Deputy County Medical Officer	Smittskyddsenheten, Norrbacka, Karolinska University Hospital
Åke Örtqvist, MD, PhD,	Associate Professor, County Medical Officer,	Smittskyddsenheten, Norrbacka, Karolinska University Hospital
Lena Grillner, MD, PhD,	Associate Professor, Clinical Microbiology	Karolinska University Hospital
Madeleine von Sydow, MD,	Department of Clinical Microbiology,	Karolinska University Hospital
Benita Zwegberg Wirgart	Department of Clinical Microbiology,	Karolinska University Hospital
Håkan Lindberg,	Head of Department for Disaster medical Planning	Stockholm County Council