



PANDEMIC INFLUENZA PHASES AND PREPAREDNESS PLAN No. 19, 2009

A range of influenza virus type A subtypes are in circulation in animals. Wild birds comprise an important reservoir, but a number of mammals, including swine, may also carry these influenza viruses. Some of the viruses are pathogenic for humans. Influenza virus constantly evolves. One mechanism of evolution is minor mutations causing seasonal influenza to change from one year to the next. Major changes in influenza virus may arise when an animal influenza virus is transferred to humans and gradually adapts to its new host, or when reassortment or remixing occurs as genes from animal and/or human virus mix. In some cases the result is a virus to which humans have no immunity and thereby have the potential to spread globally creating an influenza pandemic.

Pandemic influenza phases

WHO's risk assessment for the spreading of new influenza viruses comprises six phases, Figure 1.

Phase 1: No viruses circulating among animals have been reported to cause infections in humans.

Phase 2: An animal influenza virus circulating among domesticated or wild animals is known to have caused infection in humans.

Phase 3: An animal influenza virus or a novel virus has caused sporadic cases or small clusters of disease in people, but has not resulted in sustained human-to-human transmission.

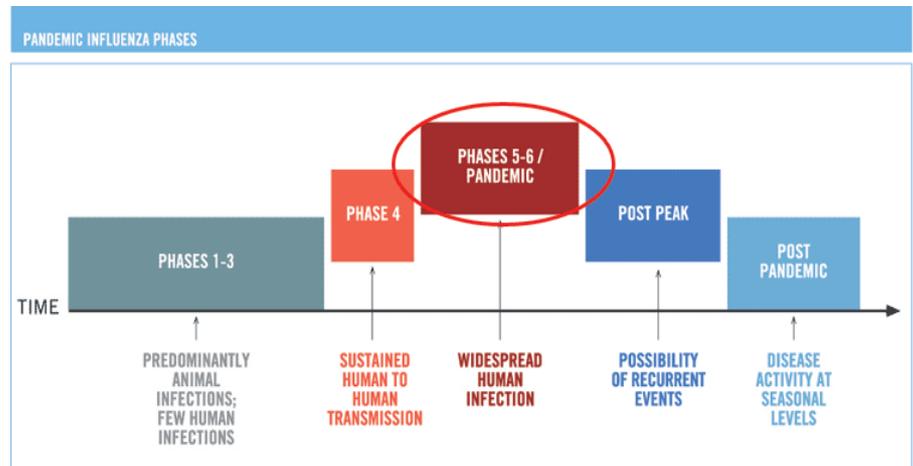
Phase 4: Human-to-human transmission of an animal influenza virus or a novel influenza virus has caused limited but sustained transmission. This marks a significant upwards shift in risk assessment, but does not necessarily mean that a pandemic is upcoming.

Phase 5: The phase 4 virus has caused sustained infection with community-level outbreaks in at least two countries in a WHO region. The declaration of phase 5 is a strong indication that a pandemic may be imminent.

Phase 6: The pandemic phase is declared by the WHO when sustained infection with the novel virus has been observed in at least two WHO regions.

In the period following pandemic culmination, known as the **post-peak period**, disease occurrence is decreasing in most countries. However, additional disease waves may occur. In the **post-pandemic period**, the influenza occurrence has returned to

Figure 1. The World Health Organisation's (WHO) phases of pandemic alert



normal. The pandemic virus may now behave as a normal seasonal influenza virus.

Danish pandemic preparedness

Danish pandemic preparedness measures are detailed in Beredskab for Pandemisk Influenza, 2006 (Preparedness for Pandemic Influenza, 2006) and in the appendix to Håndbog for Beredskab, 2007 (Preparedness Manual, 2007) both published by the Danish National Board of Health. Furthermore, the Danish Emergency Management Agency has prepared Beredskabsplanlægning for Pandemisk Influenza (Emergency Management Planning for Pandemic Influenza), a guideline for non-health care operators responsible for critical societal functions. The plans are, among others, available for download at www.sst.dk. Measures are a function of the pandemic phase currently declared. In phases 4 and 5, the main priority is to limit transference by tracing, treating and isolating patients and contacts. The intention is to contain the virus and delay its introduction to and spreading in Denmark, thereby gaining time to strengthen the preparedness level and respond to the pandemic. Furthermore, late arrival of the virus increases the probability that a vaccine will be available. During the actual pandemic, the strategy is changed, and the main priority becomes minimising morbidity and mortality, particularly in vulnerable population groups.

Current situation

Due to an outbreak with the novel A H1N1 influenza virus, EPI-NEWS 18/09, the WHO on 27 April 2009 declared phase 4, and two days later phase 5, following spreading in Mex-

ico and some parts of USA. Currently, the virus has been detected in 22 countries. The overwhelming majority of cases outside of Mexico and USA are directly or indirectly associated to travels to Mexico. The situation evolves constantly, see e.g. www.ssi.dk for updates.

Commentary

It is still unclear if the novel virus will cause a pandemic. Information from the affected countries, barring Mexico, indicates that the novel A H1N1 influenza virus seems no more infectious than other influenza viruses and that the clinical picture is similar to that of normal influenza. Developments observed and experiences gained over the next weeks are expected to establish the foundation for a more solid risk assessment. (K. Mølbak, S. Glismann, Dept. of Epidemiology)

SSI annual report 2008

The SSI 2008 annual report is now available. In 2008, SSI established a cooperation agreement with one of the world's leading vaccine producers to develop the SSI's new tuberculosis vaccine. The agreement is an important step in the fight against tuberculosis which is a primary global health issue.

With regard to preparedness, 2008 was characterized by a major salmonella outbreak and expansion and modification of the Danish Childhood Vaccination Programme. With regard to publications, 2008 was the best and most productive year for the SSI ever, yielding 328 publications, including 94% in international journals.

(Secretariat of the Management, SSI)

Individually notifiable diseases

Number of notifications received in the Department of Epidemiology, SSI (2009 figures are preliminary)

| Table 1 | Week 16 2009 | Cum. 2009 ¹⁾ | Cum. 2008 ¹⁾ |
|---|----------------------------|------------------------------|-------------------------------|
| AIDS | 2 | 10 | 13 |
| Anthrax | 0 | 0 | 0 |
| Botulism | 0 | 0 | 0 |
| Cholera | 0 | 0 | 0 |
| Creutzfeldt-Jakob | 0 | 5 | 0 |
| Diphtheria | 0 | 0 | 0 |
| Food-borne diseases of these, infected abroad | 8 0 | 134 23 | 110 27 |
| Gonorrhoea | 7 | 180 | 122 |
| Haemorrhagic fever | 0 | 0 | 0 |
| Hepatitis A of these, infected abroad | 0 0 | 10 6 | 16 8 |
| Hepatitis B (acute) | 0 | 9 | 5 |
| Hepatitis B (chronic) | 0 | 63 | 65 |
| Hepatitis C (acute) | 0 | 4 | 4 |
| Hepatitis C (chronic) | 2 | 121 | 137 |
| HIV | 0 | 85 | 87 |
| Legionella pneumonia of these, infected abroad | 4 0 | 39 5 | 36 12 |
| Leprosy | 0 | 0 | 0 |
| Leptospirosis | 0 | 0 | 2 |
| Measles | 0 | 9 | 6 |
| Meningococcal disease of these, group B of these, group C of these, unsp. + other | 1 1 0 0 | 28 16 9 3 | 25 11 5 9 |
| Mumps | 2 | 6 | 17 |
| Neuroborreliosis | 1 | 4 | 19 |
| Ornithosis | 0 | 0 | 1 |
| Pertussis (children < 2 years) | 4 | 42 | 37 |
| Plague | 0 | 0 | 0 |
| Polio | 0 | 0 | 0 |
| Purulent meningitis Haemophilus influenzae Listeria monocytogenes Streptococcus pneumoniae Other aethiology Unknown aethiology Under registration | 0 0 0 0 1 1 | 3 2 35 6 5 14 | 1 1 44 12 12 - |
| Rabies | 0 | 0 | 0 |
| Rubella (congenital) | 0 | 0 | 0 |
| Rubella (during pregnancy) | 0 | 0 | 0 |
| Shigellosis of these, infected abroad | 0 0 | 35 30 | 25 22 |
| Syphilis | 10 | 94 | 36 |
| Tetanus | 0 | 0 | 0 |
| Tuberculosis | 5 | 137 | 138 |
| Typhoid/paratyphoid fever of these, infected abroad | 0 0 | 7 4 | 12 10 |
| Typhus exanthematicus | 0 | 0 | 0 |
| VTEC/HUS of these, infected abroad | 1 0 | 34 8 | 42 16 |

¹⁾ Cumulative number 2009 and in corresponding period 2008

Selected laboratory diagnosed infections

Number of specimens, isolates, and/or notifications received in SSI laboratories

| Table 2 | Week 16 2009 | Cum. 2009 ²⁾ | Cum. 2008 ²⁾ |
|--|---|---|---|
| Bordetella pertussis (all ages) | 4 | 51 | 43 |
| Gonococci of these, females of these, males | 11 3 8 | 146 34 112 | 122 24 98 |
| Listeria monocytogenes | 2 | 19 | 16 |
| Mycoplasma pneumoniae Resp. specimens ³⁾ Serum specimens ⁴⁾ | 2 3 | 28 57 | 41 48 |
| Streptococci ⁵⁾ Group A streptococci Group B streptococci Group C streptococci Group G streptococci S. pneumoniae | 4 2 2 1 15 | 75 37 13 57 554 | 61 39 4 39 469 |
| Table 3 | Week 14 2009 | Cum. 2009 ²⁾ | Cum. 2008 ²⁾ |
| MRSA | 20 | 219 | 166 |
| Pathogenic int. bacteria ⁶⁾ Campylobacter S. Enteritidis S. Typhimurium Other zoon. salmonella Yersinia enterocolitica Verocytotoxin- producing E. coli Enteropathogenic E. coli Enterotoxigenic E. coli | 33 7 14 15 5 3 2 6 | 490 72 282 196 60 35 42 70 | 542 86 163 241 81 37 24 91 |

²⁾ Cumulative number 2009 and in corresponding period 2008

³⁾ Resp. specimens with positive PCR

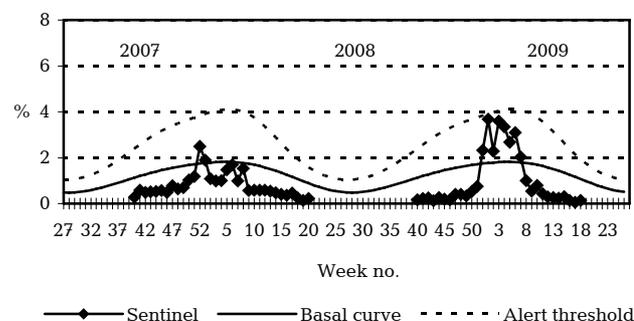
⁴⁾ Serum specimens with pos. complement fixation test

⁵⁾ Isolated in blood or spinal fluid

⁶⁾ See also www.germ.dk

Sentinel surveillance of the influenza activity

Weekly percentage of consultations, 2007/2008/2009



Sentinel: Influenza consultations (as percentage of total consultations)
Basal curve: Expected frequency of consultations under non-epidemic conditions
Alert threshold: Possible incipient epidemic

6 May 2009