



INFLUENZA SEASON 2009-2010

No. 23, 2010

The 2009-2010 influenza season was atypical and characterised by the new pandemic influenza virus H1N1 which spread globally as from the spring of 2009, EPI-NEWS 18/09 and 25/09. The first Danish case was diagnosed on 1 May 2009 and was followed by a number of other imported cases during summer. Influenza activity followed an increasing trend in August, leading up to a minor outbreak in September, and followed by an epidemic in October and November, EPI-NEWS 49/09.

Surveillance

- The occurrence of influenza-like disease (ILD) was monitored via the sentinel surveillance, which in 2009 was continued throughout the summer and into the subsequent influenza season, EPI-NEWS 21/09, until the end of week 20, 2010. An additional 120 physicians accepted the invitation to participate, and an average of 220 physicians has reported every week.

- The development of the epidemic was monitored daily via nation-wide monitoring performed by on-call doctors. This surveillance continues all year around.

- Disease occurrence and any changes in the influenza virus were monitored via the recently introduced duty to notify to the SSI.

- The disease burden and stress on secondary healthcare were continuously assessed through laboratory data and via the National Hospital Discharge Register.

- Capacity for intensive care and risk factors associated with serious disease were continuously assessed via nation-wide surveillance comprising registration of patients admitted to intensive care units.

- Disease severity was continuously monitored by linking mortality and laboratory data.

- In cooperation with Danish Broadcasting Corporation, a web-based questionnaire on the behaviour of persons with symptoms of influenza-like illness was published. Data from a total of 17,000 responses were included in a model made for the assessment of the total disease burden.

Laboratory diagnosis

During the 2009-2010 period, the Influenza Laboratory at the SSI examined a total of 7,935 secretion specimens for influenza virus. Among the samples tested, 425 were submitted by the sentinel doctors. Positive findings with virus strain typing are shown in [Table 1](#).

Table 1. Diagnosed influenza virus cases, by sender and virus strain, 2009-2010 season

	Virus strain		
	A (H3N2)	A (H1N1)	B
Sentinel	0	128	8
Other	2	3279	11
Total	2	3407	19

Only one single case of the previous season's A H1N1 virus was diagnosed.

Resistance

The first case of oseltamivir-resistant H1N1 virus was seen in Denmark in June 2009. Subsequently, a total of nearly 300 sporadic cases have been reported worldwide. There are, however, no signs of persistent spreading of resistant 2009 pandemic virus.

The 2009 pandemic disease burden

It is estimated that approx. 300,000 Danes have had a clinical infection with the new H1N1 influenza virus. As some infections were asymptomatic, it is estimated that up to 10% of the population was infected.

The epidemic started among children aged 5-14 years and later affected adults. An increase in the number of admissions due to influenza-related disease was observed concurrently with the increase in influenza A H1N1; a total of 53 patients with influenza A H1N1 infection were reportedly admitted to intensive care units, 11 of whom did not suffer from a chronic condition. A total of 32 deaths were observed - mainly among persons with underlying risk factors.

Vaccination coverage

In the 2009-2010 season, a trivalent seasonal influenza vaccine and also a monovalent pandemic influenza vaccine were administered. As previously, seasonal influenza vaccination was offered at no charge to specific groups of persons from 1 October to 31 December 2009. The Danish Ministry of Interior and Health has calculated that a total of 587,897 persons accepted the offer, including 92,277 chronically ill, 35,860 early retirement pensioners and 459,760 \geq the age of 65 years. Among persons \geq 65 years of age, the coverage reached approx. 52%. Coverage was at its highest in the Copenhagen and the Central Jutland regions where it reached 55%, followed by the Southern Denmark

Region with 52%, the Northern Jutland Region with 50% and the Zealand Region with 48%.

The monovalent pandemic vaccine was offered free of charge to anyone with chronic illness, to healthcare professionals and to key persons, EPI-NEWS 41/09.

A total of 339,515 vaccinated persons were recorded, including 286,568 with chronic illness, 5,780 pregnant women and 4,073 contacts to severely immunosuppressed patients. A total of 42,859 persons from the groups of healthcare professionals and key personnel were vaccinated; the established logistics do not facilitate any further analysis of the coverage in these target groups. Since mid-February 2010, at which point the remaining pandemic vaccines were also offered to healthy citizens who had not previously been offered the vaccine, a total of 235 vaccinations have currently been recorded. Approx. 30% of all vaccinees received two doses.

Influenza vaccine 2010-2011

On the basis of the strains in circulation, the WHO recommends that the vaccine composition for the next (2010-2011) season be changed to the following:

- A/California/7/2009 (H1N1)-like virus
- A/Perth/16/2009 (H3N2)-like virus
- B/Brisbane/60/2008-like virus.

This vaccine also covers the 2009 pandemic virus.

Commentary

The epidemiological image of the 2009 influenza pandemic was in line with previous pandemics: Infection outside the expected influenza season, change in age groups towards younger persons and several waves of infection. The total disease burden was, however, limited as elderly citizens were largely spared and as the majority of infections had a mild clinical course.

The new influenza A H1N1 virus is expected to dominate the next influenza season. Its occurrence in the Southern Hemisphere during the summer of 2010 will probably provide an important indication as to which clinical/epidemiological picture we should expect during the next influenza season in the Northern Hemisphere.

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Individually notifiable diseases

Number of notifications received in the Department of Epidemiology, SSI (2010 figures are preliminary)

Table 1	Week 22 2010	Cum. 2010 ¹⁾	Cum. 2009 ¹⁾
AIDS	0	22	14
Anthrax	0	0	0
Botulism	0	0	0
Cholera	0	0	0
Creutzfeldt-Jakob	1	6	4
Diphtheria	0	0	0
Food-borne diseases of these, infected abroad	7 2	103 29	175 30
Gonorrhoea	14	235	239
Haemorrhagic fever			
Hepatitis A of these, infected abroad	0 0	15 5	10 5
Hepatitis B (acute)	0	14	14
Hepatitis B (chronic)	0	81	81
Hepatitis C (acute)	0	0	2
Hepatitis C (chronic)	0	168	144
HIV	6	112	113
Legionella pneumonia of these, infected abroad	0 0	45 7	48 5
Leprosy	0	0	0
Leptospirosis	0	0	0
Measles	0	2	9
Meningococcal disease of these, group B of these, group C of these, unspec. + other	0 0 0 0	28 13 9 6	41 22 16 3
Mumps	0	5	8
Neuroborreliosis	0	7	4
Ornithosis	0	7	1
Pertussis (children < 2 years)	0	36	52
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 1 0 1	1 3 45 12 10 3	4 3 48 7 11 0
Rabies	0	0	0
Rubella (congenital)	0	0	0
Rubella (during pregnancy)	0	0	0
Shigellosis of these, infected abroad	0 0	38 24	43 35
Syphilis	4	170	118
Tetanus	0	0	0
Tuberculosis	1	161	168
Typhoid/paratyphoid fever of these, infected abroad	0 0	19 16	9 8
Typhus exanthematicus	0	0	0
VTEC/HUS of these, infected abroad	0 0	57 15	46 10

¹⁾ Cumulative number 2010 and in corresponding period 2009

Selected laboratory diagnosed infections

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

Table 2	Week 22 2010	Cum. 2010 ³⁾	Cum. 2009 ³⁾
Bordetella pertussis (all ages)	5	60	76
Gonococci of these, females of these, males	6 1 5	200 54 146	182 40 142
Listeria monocytogenes	2	22	32
Mycoplasma pneumoniae Resp. specimens ³⁾ Serum specimens ⁴⁾	3 1	45 93	30 62
Streptococci ⁵⁾ Group A streptococci Group B streptococci Group C streptococci Group G streptococci S. pneumoniae	3 3 5 2 19	84 52 28 74 571	86 50 14 74 631
Table 3	Week 20 2010	Cum. 2010 ²⁾	Cum. 2009 ²⁾
MRSA	18	305	258
Pathogenic int. bacteria ⁶⁾ Campylobacter S. Enteritidis S. Typhimurium Other zoon. salmonella Yersinia enterocolitica Verocytotoxin- producing E. coli Enteropathogenic E. coli Enterotoxigenic E. coli	58 2 10 10 8 4 5 4	823 95 182 235 73 60 62 161	694 118 365 268 99 47 50 94

²⁾ Cumulative number 2010 and in corresponding period 2009

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

The 2009/2010 sentinel surveillance ended by week 20