

Norway: Problems which a small and sparsely populated European country without a national vaccine production would face during a pandemic

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Abstract. Since Norway at present has no national influenza vaccine production, there is some concern that during a pandemic influenza situation it would be difficult to secure even a limited quantity of appropriate influenza vaccine. It is conceivable that national emergency directives declared in the manufacturing countries would ban or severely hinder export of a life-saving commodity such as influenza

vaccine. Most probably, this would be the situation for all European countries without a national influenza vaccine production. To ensure vaccine availability for the purchasing country even under a national influenza emergency situation declared in the manufacturing country such agreements must be safe against unilateral cancellation.

Key words: Influenza, Pandemic, Vaccine

The national influenza surveillance system

Norway has two National Institutions for Influenza within the WHO network, one in Oslo and one in Bergen. National surveillance is done through close co-operation between these two institutions.

Apart from compiling data from diagnostic laboratories, and collecting indices of influenza-like illness through a general sentinel system (National Notification System for Infectious Diseases; MSIS) of about 1,200 physicians organized by the National Institute of Public Health in Oslo – the National Sero-epidemiological Influenza Programme constitutes an important part of the national surveillance. It has been in operation uninterrupted and virtually in the same form since 1975. Annually each October about 110 random sera from each of 10 collaborating laboratories covering the whole country and all age groups are screened for antibody prevalence against current strains [1, 2]. This system gives us a unique opportunity to monitor retrospectively the introduction and spread of new viruses in the general population, as well indicating prospectively which regions and age groups would be particularly at risk when facing a novel influenza virus.

This was an exceptionally useful tool when the H1N1 subtype reappeared in 1977 [1, 3].

Vaccine usage

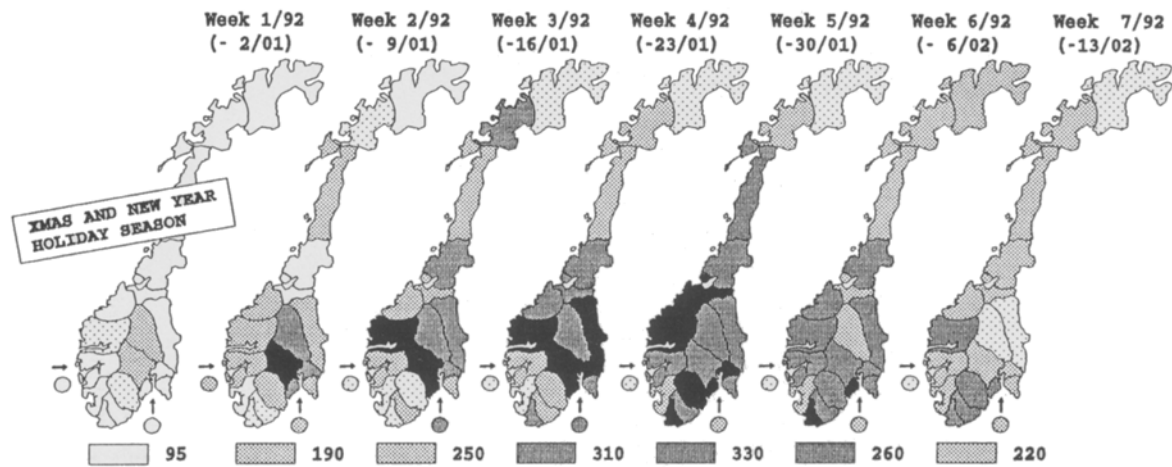
At present Norway has no national influenza vaccine

production. Through the National Health System about 200,000–275,000 doses are imported each year for use among at-risk groups, including the elderly (65+). So far, this has been done at no cost for the individual (except occasionally for a small doctor's fee). In addition, about half of that quantity of vaccine is imported for distribution to pharmacies. These doses are prescribed by doctors to anyone who asks for an influenza immunization. The full cost of vaccine and doctor's fee must be borne by the patient. In all, about 7–9% of the population is vaccinated annually. This overall coverage rate places Norway in the middle range of European countries [4].

In the event of a pandemic situation, the public demand for vaccine will probably soar to an unprecedented level. During a pandemic situation two major problems can be identified.

1. The speed of pandemic spread within Norway: The country is sparsely populated. 4.1 mill Norwegians inhabit an area of 324,000 km², giving a population density of 12/km² (in contrast to France with 94/km²). In earlier times when confronted with new infectious diseases, the complex topography of the country imposing restrictions on travel was a time-saving barrier. Today the affluent Norwegians make frequent international flights as well as domestic travels by scheduled flights to major towns and a high number of local airfields throughout the whole country. Civil Aviation Authority data from 1992 reports 18 mill passengers per annum. This breaks down to 3.2 domestic flights per capita, about 18% being visits to friends and relatives and 62%

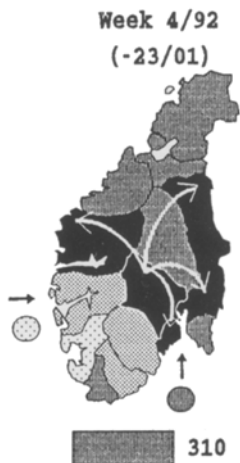
THE SPREAD OF INFLUENZA-LIKE ILLNESS, WEEK BY WEEK, NORWAY 91/92



INSER LEGE

THIS EPIDEMIC WAS DUE TO AN H3N2 VIRUS AGAINST WHICH LARGE SEGMENTS OF THE POPULATION HAD SOME IMMUNITY. IT LASTED FOR 3-4 WEEKS AT EACH GEOGRAPHICAL LOCATION, AND IT TOOK ONLY 8 WEEKS BEFORE THE EPIDEMIC HAD SWEEPED THE WHOLE COUNTRY. WHAT IF A PANDEMIC VIRUS SHOULD APPEAR? NORWAY'S RUGGED TOPOGRAPHY AND LOCATION IN THE NORTHERNMOST PARTS OF EUROPE WILL PRESUMABLY NOT OFFER MUCH PROTECTION. EXTENSIVE INTERNATIONAL AND DOMESTIC AIR TRAVEL WILL PROBABLY DISSEMINATE THE VIRUS AT A RATE EQUAL TO WHAT CAN BE EXPECTED IN THE MORE DENSELY POPULATED CONTINENTAL EUROPE.

The recent influenza epidemic started shortly before Xmas and appears to have peaked in week 5. All strains isolated so far have been resembling A/Beijing/352/89 and A/England/427/88 (H3N2), also reacting well with sera against A/England/261/91. Only 3 cases of serological evidence of influenza B infections have been recorded, and no cases of H1N1 have been noted.



The outbreaks started in South-East Norway (Buskerud county; see maps of Southern Norway) and peaked in week 4 with highest weekly incidence rate of 550/100,000 population. West Norway started a little later, and Sogn and Fjordane county had the highest recorded national weekly incidence rate at 660 cases/-100,000 population in week 4. The rates for the rest of the country culminated in weeks 5 and 6. North Norway, however, never reached the same epidemic proportions as the other regions.

(Based on: National Notification System for Infectious Diseases (MSIS), Department of Infectious Disease Control, National Institute of Public Health, Oslo)



Wkly incidence/
100,000 pop.

There has been a considerable school absenteeism among children, as well as outbreaks among recruits in military camps. Relatively fewer cases have been recorded among the elderly. No excess mortality have been noted.

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Figure 1. The spread of H3N2 virus in the 1991/92 influenza season. Based on: Haaheim LR, Flugsrud LB. Influenza Epidemiological Data Presented at the WHO Meeting on Strain Composition for Inactivated Influenza Vaccines for Use in the Season 1992/93. WHO, NIBSC (London), 24 February 1992. Superimposed text box is added for the purpose of the present report.

business travels. Once a new virus is introduced this means that the geographical barriers against spread of infectious diseases, and in particular pandemic spread of influenza, is probably of little importance. Data from recent influenza seasons shows that even the introduction of H3N2 influenza variants against which large segments of the population have some degree of immunity, the epidemic will run its course in about 8 weeks (Figure 1).

2. Vaccine availability: The supply of a relevant vaccine will most likely be limited on the international market during the first phase of a pandemic. Furthermore, as Norway has no national influenza vaccine production there is considerable concern that free trade of a life-saving medical commodity, *in casu* influenza vaccine, will be banned or severely restricted in the event of a pandemic.

Conclusion

Norway would be particularly vulnerable and unprotected in the event of an influenza pandemic and needs an assured supply of vaccine.

This situation is not unique for Norway. We have argued that the pandemic virus most probably will spread at a rate comparable to what will happen in the more densely populated continental Europe. Any country without a national vaccine production will be at the mercy of countries with such facilities. There is an obvious need for governmental commitment when negotiating purchase options and contracts. To ensure vaccine availability for the purchasing country even under a national influenza emergency situation declared in the manufacturing

country such agreements must be safe against unilateral cancellation by the supplier.

The Director-General of the Norwegian Board of Health has been informed by the Advisory Committee for Infectious Disease Control that they will commence drafting contingency plans for a pandemic scenario.

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