

The burden of pandemic influenza A(H1N1)2009 in the Netherlands

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This study estimates the burden of disease of the pandemic influenza A(H1N1)2009 virus in the Netherlands during the pandemic season and compares it to the overall burden of disease by calculating Disability Adjusted Life Years (DALYs), a composite measure that combines incidence, sequelae and mortality associated with a disease, taking duration and severity into account. They also used available influenza surveillance data sources (primary care sentinel surveillance, notification data on hospitalizations and reported deaths and death registries). Besides a baseline scenario, five alternative scenarios were used to assess effects of changing values of input parameters. The baseline scenario estimated a loss of 5800 DALYs for The Netherlands (35 DALY per 100'000 population). This corresponded to 0.13% of the estimated annual disease burden in the Netherlands and was comparable to the estimated disease burden of seasonal influenza. This was despite a considerably different age distribution in incidence and mortality of the 2009 pandemic compared to seasonal influenza (deaths and severe ill-health was more concentrated in younger adults in the pandemic compared to during seasonal influenza). The five alternative approaches resulted in a range of DALYs between about 4500 and just over 7000. As a conclusion, this disease burden estimate confirmed that, although there was a higher mortality observed among young people, the 2009 pandemic was in their opinion overall a mild influenza epidemic.

ECDC Comment (08th April 2011):

There are significant methodological problems when estimating the burden of disease and mortality due to the pandemic and comparing it with what is experienced with seasonal influenza.(1) The study compares burden of disease expressed in DALY's of the 2009 pandemic influenza to the overall burden of disease estimated in the Dutch Public Health Status and Forecast studies. This is an acceptable approach as the methodology used in both studies is the same: though this is not clearly stated in the paper, and methods used in the Dutch Public Health Status and Forecast studies are not articulated. Furthermore, the 2003 Dutch Public Health Status and Forecast study used only one year of case data (2003) which is limiting as it does not take into account the variation between particularly virulent and low incidence years. Generally it is considered preferable to acquire data from several years to even out such season to season variability. It should also be noted that the study covers the period from the 30th April 2009 to 31st December 2009. Therefore part of what would normally be referred to as the influenza season in the Northern Hemisphere (week 40 in one year to week 20 in the next) is excluded from the study. In theory this might result in some under-estimation of burden of pandemic influenza. However this possibility is acknowledged in the article's discussion and the effect will be small in Europe in 2009-10 when most of the activity was over by the start of 2010.(2) In addition, the 'outcome tree' used for the pandemic calculation has to be based on seasonal influenza literature reviews, both in terms of actual health outcomes and in likelihood of complications. However, there are still no data on this issue for the new influenza a limitation which is also acknowledged by the authors. Finally, mortality was not corrected for under-reporting; those included only had confirmed cases. This is unusual for seasonal influenza (where deaths in older people are less likely to be attributed to influenza) (3,4) but may be more justified in the 2009 pandemic when most of the deaths seems to have been in adults under age 65 years and there was intense diagnostic activity.(2)

1. ECDC Portal. Mortality from influenza: Comparing deaths from seasonal and pandemic influenza

http://ecdc.europa.eu/en/healthtopics/H1N1/basic_facts/Pages/mortality_from_influenza.aspx

2. Amato Gauci AJ, Zucs P, Snacken R, Ciancio B, Lopez V, Broberg E, Penttinen P, Plata F, Nicoll A. The 2009 A(H1N1) pandemic in Europe A review of the experience. ECDC November 2010

http://ecdc.europa.eu/en/publications/Publications/101108_SPR_pandemic_experience.pdf

3. Kyncl J, Prochazka B, Goddard NL, Havlickova M, Castkova J, Otavova M, et al. A study of excess mortality during influenza epidemics in the Czech Republic, 1982-2000. European journal of epidemiology. 2005;20(4):365-71.

4. Thompson WW, Weintraub E, Dhankhar P, Cheng PY, Brammer L, Meltzer MI, et al. Estimates of US influenza-associated deaths made using four different methods. Influenza and other respiratory viruses. 2009 Jan;3(1):37-49.

