



Evolution of an influenza pandemic in 13 countries from 5 continents monitored by protein microarray from neonatal screening bloodspots



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ARTICLE INFO

Article history:

Received 18 April 2014

Received in revised form 17 June 2014

Accepted 20 June 2014

Keywords:

Influenza virus

Pandemic

Dried bloodspots

Protein microarray

Neonatal screening

ABSTRACT

Background: Because of lack of worldwide standardization of influenza virus surveillance, comparison between countries of impact of a pandemic is challenging. For that, other approaches to allow internationally comparative serosurveys are welcome.

Objectives: Here we explore the use of neonatal screening dried blood spots to monitor the trends of the 2009 influenza A (H1N1) pdm virus by the use of a protein microarray.

Study design: We contacted colleagues from neonatal screening laboratories and asked for their willingness to participate in a study by testing anonymized neonatal screening bloodspots collected during the course of the pandemic. In total, 7749 dried blood spots from 13 countries in 5 continents where analyzed by using a protein microarray containing HA1 recombinant proteins derived from pandemic influenza A (H1N1) 2009 as well as seasonal influenza viruses.

Results: Results confirm the early start of the pandemic with extensive circulation in the US and Canada, when circulation of the new virus was limited in other parts of the world. The data collected from sites in Mexico suggested limited circulation of the virus during the early pandemic phase in this country. In contrast and to our surprise, an increase in seroprevalence early in 2009 was noted in the dataset from Argentina, suggestive of much more widespread circulation of the novel virus in this country than in Mexico.

Conclusions: We conclude that this uniform serological testing of samples from a highly standardized screening system offers an interesting opportunity for monitoring population level attack rates of widespread diseases outbreaks and pandemics.

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Abbreviations: DBS, dried blood spot; HAI, hemagglutination inhibition test; MNT, microneutralization test.

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<http://dx.doi.org/10.1016/j.jcv.2014.06.020>

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