Georeferencing Swine Flu in Buenos Aires, Argentina

F Campos, M Waldhorn, J Aguilera Diaz, M Soriano, F Plazzotta, A Baum, D Luna, F Gonzalez, Bernardo de Quiros

Department of Health Informatics, Hospital Italiano de Buenos Aires, Argentina

Abstract

On July 16th, W.H.O. recommends a weekly report of a qualitative assessment of the geographical spread, trend of cases, intensity of A/H1N1 Influenza and its impact on the health care system. In this study we describe the geographical spread during the onset of the southern winter in 150.000 middle class Argentinean living in Buenos Aires and its surroundings. The process of georeferencing swine flu cases was carried out using our local Geographical Information Systems. This allowed us to understand the swine flu pattern to define the appropriateness of contingency policies adopted at the onset of the epidemic.

Keywords:

Geographic information systems, Hospital information systems, Computerized medical records systems, Swine Flu

Materials and Methods

In April 2009, the Mexican Ministry of Health (MoH) reported an outbreak of respiratory illness: In affected patients, a new strain of influenza A (H1N1) virus of swine origin had been isolated. After documentation of human to human transmission of the virus in at least three countries, the WHO raised the alert to pandemic level 6. All suspected cases cared at the Hospital Italiano de Buenos Aires (HIBA), a 750-bed tertiary center with high standards in quality of health care and an advanced information system, were georeferenciated and also were reported to the National Surveillance System.

The time period analyzed spans from epidemiological week number 21 through 23 (May 24th to June 16th) for year 2009. The study took place within the Health Maintenance Organization (HMO) of the HIBA. This HMO is a prepaid health care system with approximately 150,000 enrollees; they are middle class residents in the city of Buenos Aires and its surrounding areas. The HMO provides services to 27 facilities in the city of Buenos Aires and surrounding areas.

Results

Among this HMO population the outbreak started on June 5th. The distribution of people that sought care to the emergency room due to flu like symptoms during the earlier weeks of the epidemic (EW 21-23) showed that possible cases had spread throughout the entire Buenos Aires.

The number of possible cases was high and all over distributed at the time that the MoH still recommended contingency plans. No aggregation of cases was found for any geographical zone. In 150000 middle class Argentinean HMO members the A/H1N1 epidemic sharply dispersed over these three weeks analyzed. The quick dispersion of this virus had let behind the health public policies adopted to contain it.

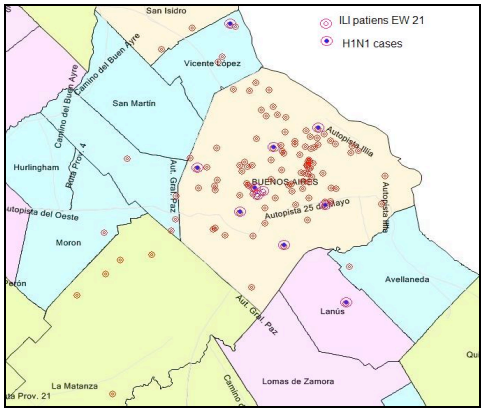

Figure 1- A/H1N1 cases during EP 21 to 23.

Conclusion

This study showed that during the period in which contingency measure were been adopted, possible swine flu cases were being distributed through Buenos Aires city.

The geographical georeference of this disease allowed us to understand that A/H1N1 influenza virus had a high attack rate as the cumulative incidence of influenza like illness observed over this epidemic period of time raised very quickly.

This study shows one of the main advantages of the GIS: the ability to communicate through a map the distribution of a disease.