The Clinical Information System response to an epidemic Influenza A H1N1

Fernan Gonzales Bernaldo de Quiros[a], Carlos Otero[a], Martin Waldhorn[a], Santiago Wassermann[a], Damian Borbolla[a] , Ariel Reynoso[a], Estela Salazar [a], Silvana Figar [b], Daniel Luna [a]

[a] *Department of Health Informatics, Hospital Italiano de Buenos Aires*
[b] *Area of Epidemiology, Hospital Italiano de Buenos Aires*

Abstract and Objective

In early June 2009, the influenza A H1N1 epidemic had been dispersed around Buenos Aires. The Hospital Italiano created a system for identification and monitoring patients in the H1N1 pandemic. This study evaluates the temporal correlation between the fully implementation of the system and the evolution of the epidemic of influenza A. Materials and Methods: The system was integrated to the HIS and consisted of: 1) A portal for use by members of the committee created for the pandemic. 2) A Web page for institutional recommendations. 3) A website for the community. 4) A system for updating of administrative and medical information and 5) A system for patients identification and follow up. This study evaluates the temporal correlation between the epidemic curve and hospital Information Systems (HIS) applications during the swine flu epidemic time period from May 24th to July 11th, 2009

Keywords:

Health information system, Hospital information system, Influenza A H1N1

Methods

Hospital Italiano de Buenos Aires (HIBA) has an advanced (HIS) by coordinating clinical information with the administrative applications. Data was obtained from the HIS to evaluate the epidemic curve of H1N1. The total number of diagnoses related to influenza like illness (ILI), acute respiratory illness (ARI) and severe acute respiratory illness (SARI) registered by physicians in the EHR were reported weekly to the National Surveillance System. ILI rate per 100.000 members was reported by day since May 31st 2009, and the implementation date of the different applications was correlated to the rate of influenza. A good correlation was considered if the applications were successfully implemented during the epidemic.

Results

Five applications were developed to manage the pandemic: 1) A portal for use by members of the pandemic committee. 2) A Web page for hospital recommendations in connection with the hospital's Intranet. 3) A website of communication for the whole community 4) A system for updating of administrative and medical information for personal health record. 5) Patients identification and follow up system which allowed the proper identification, isolation, diagnosis, treatment and monitoring of patients. This system also helped to create: a georeferenced map for patients treated at the hospital with suspected influenza A and a list of follow-up for all outpatients that required tight control. From May 24th 2009 to July 11th 2009, a total of 19095 patients had sought care for at least one unscheduled medical consultation for any cause: 48% (9127 patients) asked for home visits, 55% (10582) for unscheduled ambulatory visits and 5.3% (1020) for emergency visits. Comparing the number of total unscheduled visits between June 2008 and June 2009, there were 4230 per 100.000 more unscheduled visits: 24113 visits per 100.000 for 2008 vs. 28343 visits per 100.000 for 2009; 17% more unscheduled visits for any cause for 2009. 6566 patients had sought care due to Influenza Like Illness (ILI). The number of ILI registries increased more than fourfold comparing year 2009 to years 2007-2008. Of these patients 85% (5581) were enrolled in the program for monitoring patients with suspected influenza A. Similar number of severe acute respiratory illness (SARI) hospitalizations was reported during the same study period in years 2009, 2008 and 2007: (145, 121 and 119 respectively). Figure 1 shows the temporal correlation between the fully implementation of the applications to manage the epidemic of influenza A and the evolution of cases in the HIBA.

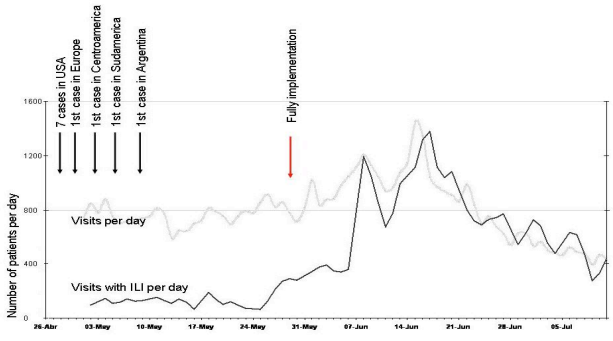

Figure 1- Temporal correlation

Conclusion

We believe that the enrollment system for monitoring patients with suspected influenza, allowed a close control of the cases that were outpatients, and could keep admission rates similar to previous years despite the increase in outpatient consultations. The implementation of epidemiological monitoring systems requires integrated hospital information systems, with

terminology services fully implemented, so these issues will limit its usefulness in other centers.