Construction of an indicator for Syndromic Surveillance of Gastroenteritis using data from a general practitioner network, Bordeaux, France

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Objective

to construct an indicator adapted for syndromic surveillance of seasonal gastroenteritis based on data from "SOS Medecin" in the city of Bordeaux, France.

Background

In France, surveillance of seasonal gastroenteritis uses to be monitored by an information system based on a computer network of physicians so called Sentinel Network (1). Regionally, the use of this system as limitations. SOS Medecin is an organization of general practitioners, present in many French cities, which undertakes home medical visits 24hrs a day, 7 days a week. In Bordeaux, this organization makes a daily transmission of every diagnostic related to their visits.

Methods

Data related to visit for Acute diarrhea and/or vomiting available from the city of Bordeaux were retrospectively transmitted from 1999 (week 43) to 2007 (week 14) by SOS Medecin. Cases of gastroenteritis (define as acute diarrhea) coming from the referent Sentinel Network were also regionally collected during the same period. Regionally, data from the Sentinel Network (taken as the gold standard) allowed us to define epidemic weeks using specific threshold values defined by the Serfling method. Correlation coefficients between numbers of visits for diarrhea and/or vomiting transmitted by SOS Medecin and the regional Sentinel Network indicator for Gastroenteritis were computed. Sensitivity was define as the ability of the SOS Medecin new indicator to identify epidemic period as definied by de Sentinel Network. Specificity was define as the ability to the SOS Medecin new indicator to identify non epidemic period as defined by de Sentinel Network. ROC curves were constructed to evaluate the ability of this new surveillance system to follow epidemic periods. Their area under curves and confidence intervals were also computed and compared.

Results

During the study period, SOS Medecin Bordeaux undertook 116,688 visits related to Gastroenteritis symptoms (diarrhea 15.8%, vomiting 42.4%, diarrhea and vomiting 41.8%). Correlation coefficients between time series of these 3 indicators and the Sentinels Network indicator were respectively 0.62, 0.82, 0.79, and 0.85 for the sum of these 3 symptoms. Comparison between area under the ROC curves of the indicator diarrhea and/or vomiting (0.89 [CI95% 0.82-0.96]) and

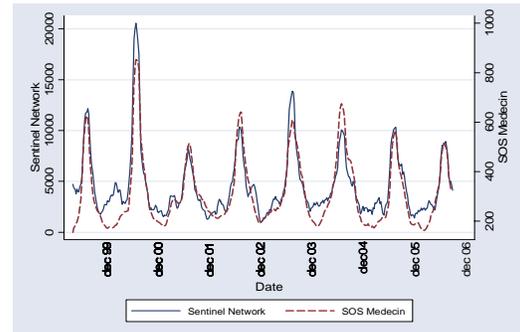diarrhea alone (0.84 [CI95% 0.77-0.91]) did not show any significant difference (p=0.12).

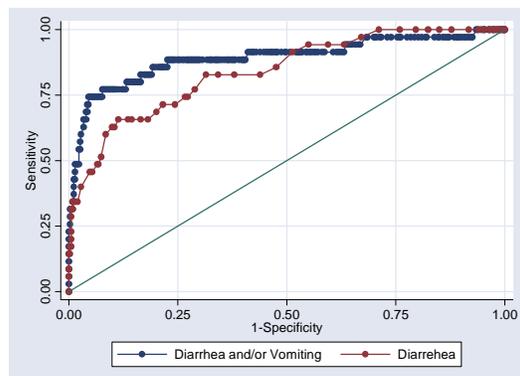Figure 1: Moving average of weekly visits for gastroenteritis according to Sentinel Network and SOS Medecin.

Figure 2: ROC curves of diarrhea an/or vomiting indicator and diarrhea indicator related by SOS Medecin.

Conclusion

Numbers of visits for diarrhea and/or vomiting by SOS Medecin were highly correlated to numbers of Gastroenteritis declared by the Sentinel Network. This new indicator had also a good ability to identify epidemic weeks as defined by the referent surveillance system.

The use of an indicator based on acute diarrhea alone for syndromic surveillance of gastroenteritis by SOS Medecin Bordeaux doesn't seem to be pertinent.

Reference

(1) Flahault A, Blanchon T, Dorleans Y, Toubiana L, Vibert JF, Valleron AJ. Virtual surveillance of communicable diseases: a 20-year experience in France. Stat Methods Med Res 2006; 15(5):413-421.