

Advantages of real time surveillance for outbreak detection and management

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Objective

To discuss advantages of real time surveillance system within Armed Forces, using a real outbreak case.

Introduction

It is admitted that real time surveillance system permits to reduce delay of outbreak detection and preventive measures implementation (1). It is usually based on prediagnostic numeric data collection and transmission (2). ASTER (Alerte et surveillance en temps réel) is a real time surveillance system for French Armed Forces deployed in French Guiana and Djibouti (Fig. 1), constituted by 2 kinds of networks: several declaration networks and one analysis network (3). On June 2011, an outbreak occurred among a French Army Regiment in Djibouti, which has permitted to evaluate ASTER in real conditions.

Methods

Declaration network: at the end of medical consultation, each medical staff member declares clinic signs of his patient using a numeric standardized form on computers (specific declaration software). They transmit this anonymous form to a data base located in a Military Surveillance Disease Centre in France.

Analysis network: observed data are automatically compared with historical data every 10 minutes, using current past graph method (specific analysis software), to produce alarm signals. These signals have to be analysed by epidemiologists to confirm or not the real alert about outbreak occurrence.

Results

Data base already contained administrative data about all the soldiers present in Djibouti; and in case of illness symptoms in cause with date of onset and rapid antigenic tests results. Fifty-one cases of tonsillitis were declared during 4 days on 646 soldiers (attack rate = 8%), with 18 positive streptotests on 25

performed (72%) (Fig. 2). Epidemic curve had only one peak as if it was one source of contamination. A retrospective cohort study found one meal at risk ($RR = 12.8$, $IC95\% = [7.9-20.6]$), prepared by a local food provider.

Conclusions

ASTER produced an early warning signal, 7 days before the classic surveillance system, and only 1 day after the beginning of symptoms. It is based on clinic signs surveillance, which is more sensitive than disease surveillance. It permitted to perform immediately the description of the outbreak, using the real-time database without disturbing physicians and, therefore, to change the local food provider. The quality of data was good although physicians were busy because of the number of patients.

Keywords

Real time surveillance; outbreak; early warning; sensitivity

References

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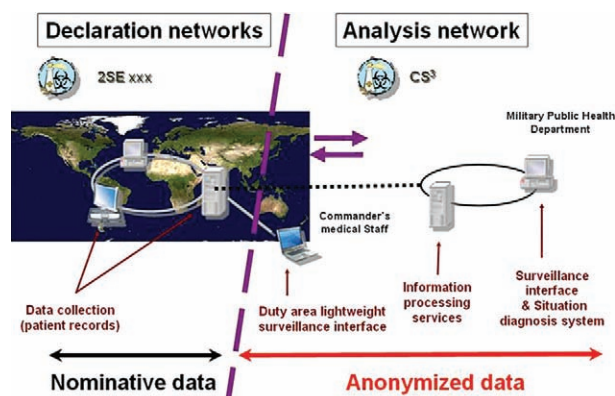


Fig. 1. ASTER overall architecture.

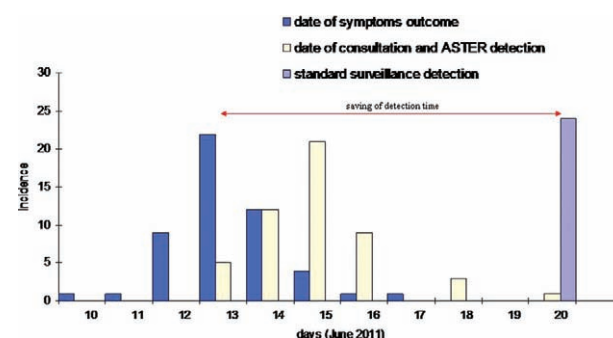


Fig. 2. Tonsillitis outbreak curve within French Armed Forces, Djibouti, June 2011.