

Self-evaluation of an electronic disease surveillance system implemented in the Peruvian Army: Alerta JESAL

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OBJECTIVE

This paper describes the evaluation of an electronic disease surveillance system implemented in the Peruvian Army following the 2001 CDC surveillance evaluation guidelines.

BACKGROUND

Surveillance systems are an essential component of evidence-based decision-making processes [1]. There is sufficient evidence demonstrating that electronic-based surveillance systems reduce the delay in data availability, allowing for automated quality control, data processing, and outbreak detection [2]. Alerta JESAL is an electronic surveillance system designed for infectious disease detection, which has been implemented in the Peruvian Army, covering all military regions of Perú. The Peruvian Army decided to implement Alerta in the late 2005, based upon the successful experience within the Peruvian Navy, giving priority to remote areas with significant tropical disease transmission. Initial activities began with nine reporting units, located in the Peruvian rainforest; however, currently there are 120 units reporting to the system. Routine surveillance system evaluation is imperative to ensure that problems of public health importance are being monitored efficiently and effectively and that the system is functioning properly. Therefore, we systematically evaluated the novel electronic disease surveillance system, Alerta JESAL [3].

METHODS

An evaluation of the Alerta JESAL surveillance system was performed retrospectively covering the period from January 2006 to December 2007. Alerta is the first electronic surveillance system implemented within the Peruvian Army and currently monitors 120 units covering approximately 98% of the entire Peruvian army personnel. Methods for this evaluation were based upon the Updated Guidelines for Evaluating Public Health Surveillance Systems published by CDC in 2001. We used information from several data sources, including the main database generated by the system platform. This evaluation included a brief overall description of Alerta, assessment of its performance, characterized through indicators and attributes, and finally it included recommendations for improving quality, efficiency, and usefulness.

RESULTS

Alerta JESAL has recorded 20,423 reports, comprising 112,380 individual cases notified from January 2006 to December 2007. In 2007, nine outbreaks were detected, including an acute diarrheal disease, influenza, febrile illness, mumps, salmonellosis and two acute respiratory and leptospirosis infection outbreaks. Coverage of the system increased from 25% in 2006 to 98% in 2007. Data quality improved as well, with reporting rate completeness reaching 94%. Furthermore, reporting error rate decreased from 13% in 2006 to 3.15% in 2007 ($p < 0.001$) and timely reporting rate increased from 36% in 2006 to 61% in 2007 ($p < 0.001$) [Figure 1].

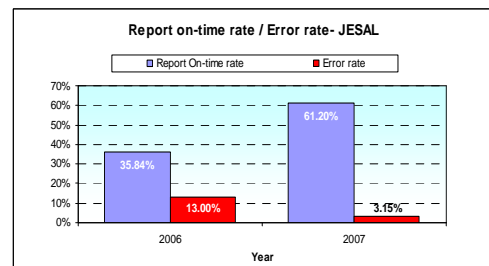


Figure 1: Report on time rate and error Rate Alerta JESAL 2006-2007.

CONCLUSIONS

Since 2006, Alerta has shown a sustained improvement in coverage, data quality and disease baseline estimates for reporting units since its initiation in the Peruvian Army. The reliable and sustained implementation of Alerta JESAL in the Peruvian Army demonstrates the effectiveness and value of electronic surveillance in resource-constrained settings and provides a successful model for other similar populations.

REFERENCES

- [1] CDC. Updated Guidelines for evaluating public health surveillance systems. MMWR 2001;50 (RR13).
- [2] Leal J, Laupland KB. Validity of electronic surveillance systems: a systematic review. J Hosp Infect. 2008 Jun 10.
- [3] CDC Framework for Evaluating Public Health Surveillance Systems for Early Detection of Outbreaks. Recommendations from the CDC Working Group. MMWR. May 7, 2004/ Vol. 53/ No. RR-5.

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