

**SYNDROMIC SURVEILLANCE: A POTENTIAL METHOD FOR ALTERNATIVE  
ANIMAL HEALTH SURVEILLANCE SYSTEM**

*(Sindromik Surveilan : Metode Alternatif Potensial Bagi  
Sistem Surveilen Kesehatan Hewan)*

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**ABSTRAK**

Sindromik surveillance dapat dijadikan sebagai salah satu alternatif dalam melakukan surveillance terhadap suatu penyakit, dimana sistem ini mempunyai potensi dapat mendeteksi pada tahap awal dari kejadian outbreak penyakit-penyakit hewan. Walaupun sindromik surveillance dikatakan memiliki kelemahan dalam mendeteksi penyakit hewan yang bersifat subklinis dan spesifik, sistem ini diyakini mampu mendeteksi outbreak penyakit secara cepat termasuk penyakit-penyakit klinis epidemik. Sindromik surveillance juga sangat cocok dijadikan pilihan dalam mendeteksi penyakit di negara-negara yang sedang berkembang karena selain lebih murah, sistem ini juga mampu mengatasi kekurangan jumlah tenaga dokter hewan.

Kata Kunci: Surveillance, monitoring tahap awal, Epidemiologi

**ABSTRACT**

Syndromic surveillance is an alternative surveillance system which can potentially detect animal disease outbreaks in the early stages. Although syndromic surveillance has limitations for the detection of sub-clinical and specific diseases, the method has the ability to detect disease outbreaks rapidly including clinical emerging issues. In addition, syndromic surveillance is a suitable surveillance tool that can be applied in developing countries since it is a low-cost surveillance method and is an option for poorly-resourced veterinary services.

Key words: Surveillance, Early stage monitoring, Epidemiology.

## INTRODUCTION

The world that we live in has changed extensively in the past few decades, with the threat of bioterrorism, an imminent influenza pandemic, massive population movement and emerging infectious diseases. These threats require surveillance system that provides adequate lead-time for optimal public response.

Surveillance system for monitoring and detecting animal diseases become an essential requirement for livestock and poultry industry. Those industries have realized when they experienced poor surveillance on their industries, there were huge financial costs in terms of losses which caused by the disease, control and eradication or trade restrictions. In fact, the costs would become higher when in some cases of the animal disease are related to human health problems and human mortalities (Rushton, 2004).

Conventional surveillance system has served public health well in detecting and responding to infectious disease outbreaks. However, this traditional surveillance system often operates with considerable delay, thus complementary surveillance systems are required to provide the necessary lead time (Doherr and Audige, 2001).

In general, most surveillance data still rely on laboratory confirmation, which provides information to identify disease clusters (Hope *et al.*, 2006). Recently, a new method on animal disease surveillance has developed for earlier warning system than the conventional surveillance. The novel system is called syndromic surveillance. This surveillance is a type of passive surveillance which is concerned of signs or group of signs that are associated with disease infection in order to detect and report of the diseases (Buehler *et al.*, 2003, Durrheim and Speare, 2004).

A study on syndromic surveillance states that syndromic surveillance has difficulty to detect subclinical diseases and to determine the cause of disease outbreaks because of similarity of the clinical signs with other diseases. Doherr and Audige (2001) argue that syndromic surveillance has negative ability to detect sub clinical diseases as in this method the data collection is based on the clinical signs which are showed when infection is occurred. Nevertheless, in sub clinical infection, the syndromes or clinical signs of the diseases cannot be recognized (Doherr and Audige, 2001). Additionally, diagnosis of diseases can somewhat be determined on the basis of clinical signs, but this could be misleading as clinical signs of the diseases are similar to each other. For example, highly virulent avian influenza

and Newcastle disease in chickens, show almost the same symptoms like edema and congestion on the comb, loss of appetite, depression, abnormal respiratory, etc (Swine and king, 2003).

However, some researchers believe that syndromic surveillance is a method that involves collecting and analyzing statistical data on health trends that is relying on detection of clinical case features that are discernable before confirmation diagnoses are made. Prior to the laboratory confirmation of infectious diseases, ill persons or animals may exhibit behavioral patterns, symptoms, or signs that can be reported by investigators and tracked through a variety of data sources (mandl *et al.*, 2004, Hope *et al.*, 2006). More importantly, syndromic surveillance may overcome the weakness of the traditional surveillance that can detect animal disease outbreak faster. The method is also useful to be applied in developing countries due to its benefits as a low-cost monitoring system and an option for poorly-resourced veterinary service surveillance method.

This reviewed article is written to enhance our knowledge on health surveillance, specifically on veterinary surveillance, and to acknowledge an alternative way to do health surveillance on animal population. In addition, this article is also useful as an alternative

source for a reference for further study or research on surveillance since the study on animal health surveillance needs to be improved and up dated.

### **Syndromic Surveillance System Can Detect Disease Outbreaks Rapidly**

Syndromic surveillance can respond to outbreaks earlier than conventional surveillance which relies upon confirmation by laboratory tests. In this method, syndromes are the indicator for the earlier detection of the disease incidence either in human or animal population (Berger *et al.*, 2006). In New York, a fully functional hospital which uses spatial, temporal and space-time scan statistic software (SaTScan) automated analyses the outbreak based on syndromes and the result can be showed virtually within 24 hours after data submission (Das *et al.*, 2003). More over, when doing surveillance on disease outbreaks, there are many steps that have to be prepared in order to gain a valid data which is in conventional method surveillance needs longer time to be required. Pavin (2003) believe that syndromic surveillance can provide power to conduct multiple steps in the investigation simultaneously, rapidly and efficiently (Pavin, A. J., 2003). This system is also considered as a relatively method that requires short time from the beginning to establish the result on investigation.

### **Syndromic Surveillance is A Low-cost Surveillance Method**

The syndromic surveillance technique is developed because it provides a relatively inexpensive and practical approach gathering the information required for effective animal disease control (Heffernan *et al.*, 2004, Sloane *et al.*, 2006). Davies, *et al* (2007) believe that although this method is rather a new approach surveillance which needs to be more developed, some research demonstrate syndromic surveillance technique has the ability to significantly improve the collection and management of animal health information in low-cost expenditures, yet demonstrable value to animal livestock (Davies *et al.*, 2007). In deed, compare with active surveillance, syndromic surveillance requires lower cost for investigation. For example, in data collection, syndromic surveillance generally uses available data, which is at a lower cost than by undertaking a survey (Mostashari and Hartman, 2003).

Syndromic surveillance does not require the cost for the diagnostic kits that are commonly expensive when using laboratory confirmation. In this surveillance the diagnostic of disease from clinical symptoms have already been determined, the laboratory confirmation is not compulsory to be done. Consequently, there is no cost for laboratory materials.

### **Syndromic Surveillance is Possible to be An Attractive Option for Poorly-resourced Veterinary Services**

In some areas, especially in developing countries, the availability of veterinary service is often limited. The limitation of veterinary service is important when undertaking active surveillance. In participatory epidemiology, veterinarians are needed to undertake surveys related to the animal health community by performing meetings or interviewing. The veterinarians generally lead the meeting and at the same time lead the interviews in the community (Hussain *et al.*, 2005).

As with the participatory approach which is based on interaction with the farmers, syndromic surveillance does not require a high number of veterinarians. The presence of veterinarians is not at the first line because in this method the farmers are encouraged to identify and report their sick animals not only to veterinarian but also to the head of village, or department of animal health. In other words, the farmers actively report their sick animals to the authorized health animals.

### **CONCLUSION**

Based on reviewing of some related articles, syndromic surveillance is a potential surveillance method which may improve the response of control and prevention of disease outbreaks; as it has advantages as an alternative way to do

clinical surveillance in early stage, a low-cost surveillance system and an alternative option for poorly-resourced veterinary services monitoring system.

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