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Implementation of a Syndromic Surveillance Pilot Program in Selected Cattle Markets in Texas, USA

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Objective

To describe the design and implementation of a syndromic surveillance program in selected cattle markets in Texas, USA.

Introduction

Syndromic surveillance of livestock animals at points of concentration, such as livestock markets, has the potential to provide early detection of endemic, zoonotic, transboundary, environmental, and newly emerging animal diseases and to identify animal health trends. In the United States, inspectors at livestock auction markets routinely observe animals for clinical signs of disease, but do not usually document the number of cattle or clinical signs observed. The purpose of this pilot program was to demonstrate the benefit and feasibility of utilizing inspectors at livestock markets to record the total number of animals observed and the number displaying body system-associated clinical signs/syndromes (BSAS). This project is a Federal and State partnership between the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Veterinary Services (VS) and the Texas Animal Health Commission (TAHC). The livestock market syndromic surveillance pilot project is part of a broader effort in VS to develop and monitor non-traditional animal health surveillance data streams. These data streams include clinical sign information from private veterinary practitioners, veterinary diagnostic laboratory test requests, and livestock slaughter facility condemnations.

Methods

Two cattle markets from each of the seven TAHC regions were selected to participate. Syndrome definitions were developed along with a training guide, job aid, and data collection form. Training for the inspectors included a webinar and a face-to-face meeting in accordance with the training guide. The job aid provided a reminder of key points from the training for inspectors to use while observing animals. Inspectors observed animals for the following syndromes: dead, gastrointestinal, hemorrhagic, thin body condition, musculoskeletal, neurologic, non-ambulatory, reproductive-urinary, respiratory, skin, ticks, vesicular, and other. Inspectors submitted the data weekly for analysis. A weekly report was created with the total counts of cattle observed at each market, counts of cattle observed by cattle type (calves, yearlings, stocker/feeders, cull cows, breeding cows, bulls), and syndrome counts analyzed to identify signals (alerts) using the Early Aberration Reporting System (EARS) C3 algorithm. VS and TAHC staff held weekly meetings to discuss the reports.

Results

Data collection at the 14 selected markets began on February 1, 2012. From that date through August 22, 2013, surveillance has been conducted on 358,464 head of cattle. An 18-month baseline is available for each syndrome to identify animal health trends over time. Identified signals of concern were followed up through communication with TAHC officials and inspectors. For example, a signal in mid-July 2013 indicated an increase in ticks observed on calves (Figure 1). Communication with the inspector at the market reporting the ticks verified that the tick increase was valid and due to increased rain in the area, leading to a growth in tick populations. The surveillance signal provided important situational awareness of an increased risk for ticks and tick-borne diseases of cattle in the area.

Conclusions

The implementation of this project at selected cattle markets in Texas successfully demonstrated the feasibility of collection and monitoring of syndromic data for information on animal health trends. The project has been funded for another year. Lessons learned include: importance of flexibility in data collection methods, as some field personnel may prefer paper and others electronic methods; feedback from livestock inspectors has been a critical element in refining data collection methods and training materials; prompt data reporting and automated data analysis protocols are critical to signal validation, surveillance information usefulness, and overall creditability of BSAS/syndromic surveillance.

Figure 1.

Keywords

animal surveillance; livestock market; syndromic surveillance

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