



## EZ Surveillance: British Columbia Emerging Zoonoses Sentinel Surveillance

### Project Outline for Sentinels

#### Introduction

Emerging infectious diseases of animal origin that are potential zoonoses are of high importance to human public health. Recently, interest has arisen in using animal health data for early warning in human public health surveillance. Several initiatives have been started worldwide looking at animal data provided by sentinels: the Veterinary Practitioner Aided Disease Surveillance in New Zealand, the Rapid Syndrome Validation Project – Animal in the United States of America, and “émergences” in France (Vourc’h et al, 2006). All of these initiatives are new and focused on specific animal species only (i.e. cattle); the utility of the animal data for surveillance in these and other projects is still being evaluated.

The Emerging Zoonoses Sentinel Surveillance (EZ Surveillance) project will collect data from sentinel animal health workers and compare this information to other data, such as animal diagnostic laboratory data submitted to a publicly-funded provincial laboratory for the purpose of surveillance. Sentinels will not be required to submit any additional laboratory samples for this project.

#### Purpose

EZ Sentinel Animal Health Surveillance is a public health research project whose aim is to evaluate the potential contribution of animal health practitioners to emerging zoonosis surveillance.

#### Methods

A convenience sample of professionals that come into contact with animals in British Columbia on a regular basis as part of their work, “sentinels”, will report data for a one year study period. Although start dates could vary from February-April 2009, and so will the corresponding end dates one year later from February-April 2010, the main start date for data collection will be **Monday March 2, 2009**.

There are two main “arms” to this project:

1. **Agricultural:** data coming from sentinels who work with agricultural and large companion animals, including poultry, cattle, swine, bison, sheep, goats and horses



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2. **Wildlife:** data coming from sentinels who come into contact with wildlife, including deer, raccoons, white-footed mice, bats, beavers and wild birds

### Data to be Collected

This surveillance project is limited to collection information from birds and mammals in the “Agricultural” and “Wildlife” groups. Laboratory samples for companion animals (pets) other than horses are often submitted to private laboratories that are not readily available for potential surveillance initiatives at this time.

The data to be collected is limited and includes: species of animal seen, general demographics (age, sex), location of animal (for wildlife only), examination information (including reason for seeing the animal, syndrome if infectious agent suspected), laboratory submission details including reasons for laboratory submission or lack thereof.

Data will be entered by sentinels into a web-based study database, or on a one page paper surveillance form if necessary. There are two main versions of the paper survey, one for the “Agricultural” group, and one for the “Wildlife” group. The same information contained on the one page surveillance form is also available in a web-based all encrypted database format. All forms and the data entry database are located on the following website: [www.ezsurveillance.net](http://www.ezsurveillance.net) . All sentinels will receive access to the online database and will be able to enter all of the necessary information online, where the entry process is more streamlined than on the paper form.

### Reporting Rules

Sentinels are asked to choose one weekday to report cases, and will report cases on the same day for one full year. Reports are made only on any “first encounter” – the first time an animal is seen for a particular reason (or group of animals seen for the same reason). The frequency of reports will depend on the volume of eligible animals seen by the sentinel:

**“Daily Count” sentinels:** Sentinels who see on average more than 15 cases of eligible animals per week (agricultural/wildlife birds or mammals), only “new encounters” or cases seen on one previously-determined reporting day of the week are reported. This situation will be applicable to most “Agricultural” sentinels.

**“Weekly Count” sentinels:** Sentinels who see on average less than 15 cases of eligible animals per week (agricultural and/or wildlife birds or mammals), all “new encounters” or cases seen the previous week are to be reported. This situation will be applicable to most “Wildlife” sentinels.



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Sentinels will have the choice when signing up as to what type of reporting they will do, “Daily Count” or “Weekly Count”. These two types of reporting exist in order to ensure that sentinels do not have to report more than 15 cases in any one week. If a such “Weekly Count” sentinel finds that they are consistently reporting more than 15 cases per week, that sentinel is encouraged to contact the study coordinators to change their reporting status from “Weekly Count” to “Daily Count”: this way they will only report cases seen on one particular day. Conversely, if a “Daily Count” sentinel finds that they are consistently reporting no cases each week because they are seeing eligible animals on other days of the week instead, and if their average weekly count is under 15, they are encouraged contact the study coordinators to switch their reporting status from “Daily Count” to “Weekly Count”: this way they will report cases seen the entire week. Those sentinels who see large increases of animals on a seasonal basis can pre-arrange a switch in the reporting status with the investigators.

### Choice of Sentinels

The two “arms” to the project require targeting two different groups of practitioners from throughout British Columbia who currently submit at least one animal ‘sample’ per year to the Animal Health Centre in Abbotsford and/or to the Ministry of Environment and/or another publicly-funded laboratory. The two groups targeted are:

- 1) Group 1: “Agricultural”
  - Veterinarians that see various agricultural and large companion animals such as: cattle, poultry, swine, sheep, goats, bison, and horses.
- 2) Group 2: “Wildlife”
  - Veterinarians, animal health workers, researchers, hunters, and pest control practitioners that come into contact with wildlife such as: deer, raccoons, wild birds, bats, beavers and mice.

### Compensation

There are funds to pay sentinels \$1,000 for their participation in this initiative. Alternatively, sentinels may choose to attend a meeting after study completion to discuss the preliminary results with up to \$1,000 of their costs covered. This meeting will include both the study team and other sentinels.

### Analysis

Data from the sentinels will be assessed using established criteria for the evaluation of surveillance systems (CDC, 2001). Using only the collected sentinel data, the following will be determined: simplicity, flexibility, data quality, acceptability, timeliness, and stability. Additional data will be



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collected and used as a comparison: laboratory diagnostic data during the same time interval for animals and humans, and animal population data estimates. These additional data will allow for the calculation of sensitivity, specificity, Positive Predictive Value, and representativeness.

### **Results**

Results will be in the form of reports, manuscripts for peer-reviewed journal publication and chapters in a PhD thesis at the School of Population and Public Health, University of British Columbia. Preliminary results will be presented to all sentinels at a meeting in early 2010.

### **Project Team**

The lead investigator is Linda Vrbova, PhD Candidate (School of Population and Public Health at the University of British Columbia). The principal investigator of the funding NSERC grant is Dr. Craig Stephen (Centre for Coastal Health, University of Calgary), with Dr. Ted Leighton (University of Saskatchewan, Canadian Cooperative Wildlife Health Centre) and Dr. John Campbell (University of Saskatchewan) as co-applicants, and Dr. Harvey Artsob (National Laboratory for Zoonotics and Special Pathogens), Dr. Brian Radke (BC Centre for Disease Control), and Dr. Ron Lewis (BC Ministry of Agriculture and Lands) as collaborators, and Dr. David Patrick (BC Centre for Disease Control) and Dr. Kate Sawford (University of Calgary) as affiliate investigators.

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### Supported By



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