The Rapid Syndrome Validation Project for Animals – Augmenting Contact with the Network of Accredited Veterinarians

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Is the current program, in which practicing veterinarians contact field veterinary medical officers when they encounter suspicious cases, the optimal exotic animal disease surveillance system for the United States? Or, can mobile information systems technology augment the existing system to improve our ability to detect emerging or foreign animal disease outbreaks at early stages? Sandia National Laboratories, Kansas State University, New Mexico State University and New Mexico State Department of Agriculture are collaborating on the Rapid Syndrome Validation Project – Animal (RSVP-A) to gain insight into those questions.

The RSVP-A is an animal health surveillance system which has initially focused on cattle and is patterned after the similarly named system that gathers human health information for early detection of emerging health problems. Technical development of this project focuses on two goals. The first is to efficiently consolidate animal health intelligence from practicing veterinarians who currently serve as one pillar for the initial detection of exotic or emerging animal diseases in the United States. The second goal is to make information derived from those consolidated data useful at all levels of aggregation – from daily operation of clinical practice to monitoring of local and regional animal health by regulatory veterinarians.

As part of this effort, the collaborators have developed a distributed data capture and information presentation system that goes wherever practicing veterinarians go. This system enables veterinarians to capture data and consider information derived from those data as they work with their clients' herds. Based on a select list of agents that affect cattle and endemic diseases with similar early clinical signs, clinical presentations are divided into six general categories or syndromes. The syndromes are defined to exclude the most common diseases and production problems that veterinarians typically train clients to handle, but include the signs of less common endemic disease presentations that an exotic disease outbreak might initially mimic.

The six syndromes are generally, but not completely, mutually exclusive. They are:

- non-neonatal diarrhea
- neurologic dysfunction or inability to rise
- abortion or birth defect
- unexpected death
- erosive or ulcerative lesions of the skin, mucosa or coronet
- feed refusal or weight-loss without clear explanation

The RSVP-A system requests the attending veterinarian to determine into which specific syndrome the animals they examine fit best. Within each of these six syndromes, the system also requests a few additional clinical observations that might be useful to further characterize incident patterns.

The RSVP-A system allows for a great amount of user flexibility in data capture. Practicing veterinarians can record observations on a mobile Palm device (independently of cellular Internet connections), on Internet-enabled cell phones (wherever wireless data services are available), or on standard computers with browsers and Internet connections. They can also record data on a personalized paper form available on the Internet. Veterinarians can use this form for later entry

of data into the RSVP-A system over the Internet, dictate it to a technician back the clinic by telephone, or fax it to the number listed on the bottom of the form.

Using the mobile Palm devices, practicing veterinarians can review local case patterns and advisories that are as current as their last synchronization. They can also examine up-to-the-minute patterns and advisories using Internet-enabled cell phones. Over a standard Internet connection, practicing veterinarians can review advisories and aggregates of all submitted cases throughout the entire life of the project for any state or group of counties desired. This becomes an additional source of clinical information as veterinarians make decisions regarding diagnostic strategies and interpretations.

Practitioners can use local incident patterns reported by the RSVP-A system to evaluate whether health problems recognized on one client's operation are part of a more generalized problem in a local area. Advisories provided by State and Federal veterinarians also serve as an additional communication channel to keep practitioners abreast of current animal health events. State and Federal veterinarians that have been contacted by practicing veterinarians regarding reportable diseases will also have access to the same county-based coverage areas. This can provide additional points for informed discussion between practitioners and veterinary medical officers regarding animal health in local areas.

The analytic component of the RSVP-A project is focused on evaluating the usability and utility of the system. The RSVP-A system was designed to communicate animal health intelligence to veterinarians in all levels of animal health management. Mobile, bidirectional data communications can ostensibly consolidate practitioners' animal health intelligence to provide practitioners, diagnosticians, researchers and regulatory veterinarians with better information when managing disease-based threats. However, information exchange can only happen if practitioners actively participate in the project and record their observations in the system. Practicing veterinarians will participate only if they see benefit sufficient to outweigh the time required.

The project collaborators are working on means to analyze the timeliness of information, completeness of reporting, and acceptability of the various technologies offered to practicing veterinarians. They are also considering other ways that a bi-directional data communications platform might be used to deliver information to practicing veterinarians or asynchronously interact with veterinarians in the field to enhance their vigilance and diagnostic expertise.

If you have comments about this or any other aspect of the project, please contact Brad De Groot at KSU by emailing: bdegroot@vet.ksu.edu.