Improving Rabies Surveillance Using Syndromic Data

Michael Wade, MPH, David Trepanier, MSEE, James Howell, DVM, MPH
Surveillance and Investigation Division, Indiana State Department of Health

OBJECTIVE

The purpose of this paper is to describe how the Indiana State Department of Health (ISDH) leverages syndromic surveillance data to improve statewide rabies post-exposure prophylaxis (PEP) reporting by hospitals. The Public Health Emergency Surveillance System (PHESS) is Indiana's syndromic surveillance system and resides at the ISDH.

BACKGROUND

In order to assess the use of rabies post-exposure prophylaxis in Indiana, the Communicable Disease Reporting Rule, adopted October 11, 2000, requires the reporting of rabies PEP administration.

Indiana is a "home rule" state; that is to say, local (county) health departments (LHD) are responsible for health issues within their jurisdiction. Reportable diseases are passively reported to the ISDH through local health department by hospitals and physicians. Often this results in under-reporting of things such as rabies PEP.

While the primary purpose of the PHESS is to enable early detection of acts of bioterrorism, naturally occurring outbreaks, and as a situational awareness tool, PHESS staff have continually worked to find other practical public health applications for the syndromic data. The Epidemiology Resource Center at the ISDH houses subject matter experts in many areas of public health, including veterinary epidemiology. Until fall of 2006, the veterinary epidemiologist received all reports of rabies PEP via hard copy.

METHODS

Initially, the veterinary epidemiologist used the ESSENCE query feature to search for rabies related patient visits. However, a more automated method was desired that could accommodate several keywords into a single query. A batch file was developed to execute a SQL query script and email the results in html format. After some experimentation, the following SQL query conditions were decided upon, where CCP is the patient chief complaint after it has been processed by the ESSENCE chief complaint parser.

```
(CCP like '%BAT%' and CCP like
'%BITE%') or
(CCP like '%MONKEY%' and CCP like
'%BITE%') or
CCP like '%RACCOON%' or
CCP like '%RACOON%' or
CCP like '%SKUNK%' or
CCP like '%COYO%' or
CCP like '%FOX%' or
CCP like '%RABIE%' or
CCP like '%RABBIE%'
```

The query was designed to catch common misspellings. Also, dog bites were removed from the query, due to the overwhelming number of hits.

The veterinary epidemiologist receives an auto-generated email each Monday morning, indicating a new data report is available via a limited-access web application on the state's secure data portal. With the information in the report, the ISDH veterinary epidemiologist contacts LHDs if they have a PEP administration at a hospital within their county. The hope was that this communication would facilitate complete PEP reporting from hospitals to LHDs. PEP reporting data were compared for the first half of 2006 and 2007 to assess the potential influence of the PEP prompting (2007 data) by the ISDH.

RESULTS

From January 1, 2006 to May 31, 2006, seven reports of PEP administration were received by the ISDH. In contrast, during the same period in 2007 reporting increased dramatically, with 31 PEP reports received.

CONCLUSIONS

The use of syndromic data has positively impacted rabies PEP reporting in Indiana. The timely nature of a weekly "rabies report" has enabled the ISDH veterinary epidemiologist to take an active quality assurance role with a relatively low level of effort.

It is the authors' belief that the significant increase in PEP administration reports in the first half of 2007 is a function of improved surveillance, as there is no reason to believe rabies PEP usage is increasing.

In addition to facilitating more complete reporting, this enhanced level of communication may lead to future improvements in the use of PEP. At $2,000 per PEP series (5 injections), unnecessary use of PEP is expensive. Using syndromic surveillance data may provide public health officials with the information needed to optimize rabies PEP administration.

Further Information:
Michael Wade **mwade@isdh.in.gov**