Development of Innovative Surveillance Methods with the Community for Emerging and Zoonotic Diseases

Presentation to: Canadian Animal Health Laboratorians Network
Date: June 6, 2017
Presenter: Dr. Andrea Osborn
Outline

• Background
• Purpose of CEZD
• Processes
• Successes
• Challenges and Lessons Learned
• Plans for the coming year
Today’s interconnected global society means that diseases can travel further and faster than ever before.

Canada has experienced outbreaks of emerging and zoonotic diseases, such as PEDv, avian influenza, and pH1N1, that have had significant impacts on public health, the environment, animal health, the economy and food production.

CEZD’s Disease Intelligence Process enables the early identification and warning of threats – a process that is essential for mitigating the fallout from future disease incidents.
What is the Purpose of CEZD?

• To provide early warning of zoonotic and emerging animal disease risks to Canada

• To bring together all partners (stakeholders) for integrated evaluation of potential risks

• To enable mitigation of the risks to animal and human health

Vision - multi-disciplinary perspectives to generate anticipatory intelligence for emerging and zoonotic diseases.
Disease Intelligence Process

4 major components of CEZD:

• Community
• Disease intelligence tool (KIWI)
• Analyses of data
• Reports and Communication
Disease Intelligence Process of CEZD has five stages:

1. Disease or Event Occurrence
2. Signal Identification
3. Multidisciplinary Review & Evaluation
4. Intelligence Reporting
5. Now What?

a real time virtual network using today's technology to provide early warning of emerging and zoonotic diseases
Benefits
How CEZD Benefits Canada and Canadians

- One stop early warning system
- Eliminates duplication of effort
- Early identification and advanced warning on key threats, fewer surprises
- Provides community based critical thinking and a collaborative analytical capacity
- Creates a single community voice which strengthens the case for action on threats
- Delivers consistent and timely distribution of relevant intelligence reports
- Produces a searchable repository of historical early warning signals
- Enhances Canada’s national surveillance system
- Informs decision making, preparedness and response
- CEZD intelligence reports put key issues in front of decision makers
CEZD– 2016/17 Successes

• Implementation of CEZD
  - Initially funded by the Canadian Safety and Security Program
  - 2016/17 was Year 1 of a two-year Implementation Phase

• Integrated Surveillance – Governance
  - CAHSS agrees to become the governance body for CEZD (September 2016)

• Community Communication

• Build the community
  - Community growth to 140 (an increase of 84 participants)

• Distribution of timely intelligence reports (52 reports) to support anticipation of emerging and zoonotic disease threats
Community for Emerging and Zoonotic Diseases

**CEZD WEEKLY INTELLIGENCE REPORT**

This intelligence report is based on the collective rating of information signals by the CEZD community, as acquired and selected from six distinct disease surveillance sources via the Knowledge Integration using Web-based Intelligence (KIWI) tool hosted on the Canadian Network for Public Health Intelligence (CNPHI) informatics platform. The report is based on the activities of the CEZD Community of Practice and subject to change based on evolving user needs.

**Most Relevant Signals 05.22.2017 – 05.28.2017**

1. **Disease:** Equine Herpes Myeloencephalopathy (EHM)  
   **Species affected:** Equine  
   **Location:** New Jersey, USA  
   **Community Relevance Rating:** 3.00  
   **Description:** The New Jersey Department of Agriculture has quarantined properties in Hunterdon and Somerset counties after a horse developed highly infectious equine herpes myeloencephalopathy (EHM). No recent movement had occurred at the farm where the virus was reported prior to this case. The horse was moved into the isolation barn at a local animal hospital the evening EHM was confirmed. Both the horses at the original farm and the hospital are under quarantine.  
   **Number of weeks in intelligence report:** 2  
   **For more information:** [http://njtoday.net/2017/05/22/deadly-horse-virus-quarantines-barns-hunterdon-somerset/](http://njtoday.net/2017/05/22/deadly-horse-virus-quarantines-barns-hunterdon-somerset/)

2. **Disease:** Porcine Epidemic Diarrhea (PED)  
   **Species affected:** Swine  
   **Location:** Manitoba, Canada  
   **Community Relevance Rating:** 3.00  
   **Description:** Another two barns in southeast Manitoba have tested positive for porcine epidemic diarrhoea (PED) in the fourth and fifth cases of the disease this year. A finisher and sow barn were confirmed PED positive in the space of two days. Manitoba Pork Council general manager Andrew Dickson said finisher barn staff noticed symptoms May 14. “That doesn’t mean every pig in the barn has got it at this moment in time, it just means some of the pigs got it, but it’s likely to spread,” Dickson said.  
   **Number of weeks in intelligence report:** 5  
   **For more information:** [https://www.manitobacooperator.ca/livestock/pork-industry-nervous-as-newest-ped-cases-confirmed/](https://www.manitobacooperator.ca/livestock/pork-industry-nervous-as-newest-ped-cases-confirmed/)

3. **Disease:** Equine Infectious Anemia (EIA)  
   **Species affected:** Equine  
   **Location:** Colorado, USA  
   **Community Relevance Rating:** 3.00  
   **Description:** Earlier this month (May 2017) the Colorado Department of Agriculture (CDA) quarantined a Weld County facility after a horse residing there tested positive for equine infectious anemia (EIA). Now, 6 additional horses at that premises have tested positive for EIA, as well. On [Thu 4 May 2017] the CDA’s State Veterinarian’s Office received notice of the positive test from the USDA National Veterinary Services Laboratory. The index horse was euthanized following the positive test. At the time, the CDA placed the horse’s home facility under a quarantine order restricting the movement of other horses until further testing was completed.  
   **Number of weeks in intelligence report:** 1  
   **For more information:** [http://www.promedmail.org/direct.php?id=20170524.5058093](http://www.promedmail.org/direct.php?id=20170524.5058093)
Challenges and Lessons Learned from - Year 1 of Implementation
Community Membership and Participation

- Community growth and balance of members
- Limited number of people rating signals (2-11)
- Further outreach is required to move forward
Challenges and Lessons Learned from Year 1
Detection and Reporting

- Community reported events and analyst forwarded signals rated highest
- Need further input from community members on important issues in their areas
- The current reports are well received but more is needed, particularly timely reporting (daily)

<table>
<thead>
<tr>
<th>Top Rated AISs</th>
<th>Source</th>
<th>Detection Method</th>
<th>Average Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deadly bat fungal disease, White-nose Syndrome, found in Washington</td>
<td>Outbreak News Today</td>
<td>Manual</td>
<td>3.7</td>
</tr>
<tr>
<td>HPAI H7 in Tennessee</td>
<td>Community Reported Event</td>
<td>Community Reported Event</td>
<td>3.6</td>
</tr>
<tr>
<td>PRO/AH/EDR&gt; Chronic wasting disease, cervid - Europe: (Norway)</td>
<td>ProMED</td>
<td>Manual</td>
<td>3.6</td>
</tr>
<tr>
<td>Avian Flu Outbreaks Discovered in Mexico</td>
<td>The Poultry Site</td>
<td>Automatic</td>
<td>3.5</td>
</tr>
</tbody>
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Challenges and Lessons Learned from Year 1
Analytical Ability and Value

- The opportunity for analytics on the system is tremendous but undeveloped
Priorities for Year 2 of Implementation
Shared Leadership

Shared community development to meet partner needs:

- Re-define roles in the community and formalize the “Partners” body

- Establish working groups to target:
  - Engagement
  - Analysis and Reporting
Shared Leadership - Engagement

• Revise stakeholder analysis
  - Identify links with existing surveillance networks

• Create inventory of stakeholders/partners
  - Community balance
  - Looking first at under-represented groups (Academia, Industry)

• Conduct outreach
  - Connect to networks of existing partners
Shared Leadership - Analysis and Reporting

- Identify reporting and analysis needs to further enable early warning capabilities
  - Define Domestic Analysis and reporting needs
  - Define International Analysis and reporting needs
  - Peer Review Function
Priorities for Year 2 - Communication

• Define who needs key information e.g. decision makers, key partners etc.
• Continue with monthly community meetings
• Monthly training sessions for new community members
• Annual Face-to-Face meeting (late January/early February)
• Collaborate with NFAHWC to collect and promote successes to promote and build membership
• Create and release CEZD Video
Priorities for Year 2
Planning for Post-Implementation

• Existing Sustainability Plan concludes at the end of this fiscal year

• Post-Implementation plan is needed:
  – Define Costs (how much)
  – P&AH Strategy (who pays)
  – Revise Sustainability Plan for implementation beyond April 2018
Comments, Questions?
Contacts

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Help Keep Canada Ahead of the Curve

Canada’s early warning and detection of emerging and zoonotic diseases depends on an engaged community of qualified people from a broad range of sectors and disciplines.

Please join us our community needs your voice

For more information on how you can be a part of this important community, visit www.cahss.ca and access the CEZD group
Annex: How to Join CEZD

- Contact Andrea.Osborn@inspection.gc.ca to discuss your interests in CEZD
- If you decide to join, you must apply to be on the CNPHI network;
- Complete online form and specify CEZD as the collaboration centre you wish to join;
- Complete CNPHI user agreement and return to CNPHI support;
- If already a CNPHI user, email CNPHI support and request access to CEZD;
- Participate in an introductory session and start rating signals;
- Participate in community discussions.