Small companion animal disease surveillance: current systems and how they may integrate with the OIE WAHIS system

Alan Radford, Fernando Sanchez-Vizcaino, Tarek Menacere, Suzanna Reynolds, Rosalind Gaskell, Susan Dawson, Philip Jones and PJ Noble.

Outline

How are diseases listed?
WAHID population data
Companion animal surveillance

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One Health: Rabies and other disease risks from free-roaming dogs

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How are diseases listed?

Multiple species diseases, infections and infestations
Cattle diseases and infections
Sheep and goat diseases and infections
Equine diseases and infections
Swine diseases and infections
Avian diseases and infections
Lagomorph diseases and infections
Bee diseases, infections and infestations
Fish diseases
Mollusc diseases
Crustacean diseases
Amphibians
Other diseases and infections

OIE Listed diseases:

117

affecting Dogs and Cats
Echinococcosis (multiple species)
Rabies (multiple species - NOTIFIABLE)
Leishmaniosis (category: "other")

affecting rabbits
Myxomatosis (poxvirus)
RHDV (calicivirus)

Small companion animal

One mans friend is another mans dinner
OIE Criteria for the inclusion of a disease, infection or infestation in the OIE list:

- At least one country listed for the disease, infection or infestation?
- Animal population
- Disease statistics
- OIE recognition

2012 - WAHID

<table>
<thead>
<tr>
<th>Country</th>
<th>Species</th>
<th>Population*</th>
<th>Density**</th>
<th>Establishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States of America</td>
<td>Bees*</td>
<td>2 624 000</td>
<td>0.27</td>
<td>27908</td>
</tr>
<tr>
<td></td>
<td>Birds</td>
<td>1 816 742 016</td>
<td>188.63</td>
<td>187420</td>
</tr>
<tr>
<td></td>
<td>Cattle</td>
<td>89 299 600</td>
<td>9.27</td>
<td>915000</td>
</tr>
<tr>
<td></td>
<td>Buffaloes</td>
<td>198 234</td>
<td>0.02</td>
<td>4499</td>
</tr>
<tr>
<td></td>
<td>Dogs</td>
<td>70 000 000</td>
<td>7.27</td>
<td>43346000</td>
</tr>
<tr>
<td></td>
<td>Goats</td>
<td>2 811 000</td>
<td>0.29</td>
<td>149000</td>
</tr>
<tr>
<td></td>
<td>Cervidae</td>
<td>337 788</td>
<td>0.04</td>
<td>7571</td>
</tr>
<tr>
<td></td>
<td>Camelidae</td>
<td>122 680</td>
<td>0.01</td>
<td>26060</td>
</tr>
<tr>
<td></td>
<td>Equidae</td>
<td>5 317 000</td>
<td>0.55</td>
<td>1780000</td>
</tr>
<tr>
<td></td>
<td>Cats</td>
<td>74 000 000</td>
<td>7.68</td>
<td>36117000</td>
</tr>
<tr>
<td></td>
<td>Hares / rabbits</td>
<td>616 129</td>
<td>0.06</td>
<td>27137</td>
</tr>
<tr>
<td></td>
<td>Molluscs*</td>
<td>94 797</td>
<td>0.01</td>
<td>1097</td>
</tr>
<tr>
<td></td>
<td>Sheep / goats</td>
<td>8 146 000</td>
<td>0.85</td>
<td>228500</td>
</tr>
<tr>
<td></td>
<td>Sheep</td>
<td>5 335 000</td>
<td>0.55</td>
<td>79500</td>
</tr>
<tr>
<td></td>
<td>Fish*</td>
<td>332 655</td>
<td>0.03</td>
<td>3957</td>
</tr>
<tr>
<td></td>
<td>All (Animals)</td>
<td>2 141 897 447</td>
<td>222.39</td>
<td>82963895</td>
</tr>
<tr>
<td></td>
<td>All (Tonnes)</td>
<td>441 569T</td>
<td>0.05</td>
<td>5842</td>
</tr>
</tbody>
</table>

...Significant morbidity or mortality in wildlife

16 critically endangered includes 3 cats
- Amur leopard
- South china tiger
- Sumatran tiger

Endangered African Wild Dog

Consequences of lack of listing

- Reduced cost
- No surveillance activity
- Uncertainty over
  - Populations
  - Trade
  - Current disease burden
  - Threat
- Lack of structured expertise
  - No reference lab
Outline

How are diseases listed?
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SAVSNET
The Small Animal Veterinary Surveillance Network

Help us build the bigger picture for the nation’s pets

www.savsnet.co.uk

2 projects – 1 aim

Project 1:
LAB SURVEILLANCE

• Passive / scanning surveillance
• Quarterly data collection and reporting

Project 2:
PRACTICE SURVEILLANCE

• Passive surveillance
• Active / targeted syndromic surveillance
• Real-time data collection

Data collation and analysis

Feline calicivirus:

IgG and IgM to detect Toxoplasma

<table>
<thead>
<tr>
<th>IgM</th>
<th>No evidence of IgM ab (&lt;=20)</th>
<th>IgM ab detected (&gt;=20)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tox IgM Ab titre by ELISA</td>
<td>3505</td>
<td>106 (8%)</td>
<td>3611</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IgG</th>
<th>Toxo unlikely (&lt;=50)</th>
<th>Toxo possible (50-200)</th>
<th>With Toxo (400-800)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tox IgG Ab titre by FA</td>
<td>3433</td>
<td>244</td>
<td>134</td>
<td>3811</td>
</tr>
</tbody>
</table>
2 projects – 1 aim

Project 1: LAB SURVEILLANCE
- Passive / scanning surveillance
- Quarterly data collection and reporting

Project 2: PRACTICE SURVEILLANCE
- Passive surveillance and
- Active / targeted syndromic surveillance
- Real-time data collection

Data collation and analysis

Practice demographics

GI disease

SAVSNET antibacterial usage statistics

Corda OptiMap is a Web-oriented dynamic mapping tool that enables Web developers to show real-time database information in a geographical format.

Public LEVEL 1 ACCESS

Data providers: benchmarking LEVEL 2 ACCESS

http://ratecalc.cancer.gov/ratecalc/
Scientists / charities can apply for access to data analysis
Publication strategy: Peer reviewed or public benefit
Independent approval process

Role of surveillance in WAHID

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balancing cost and data quality</td>
<td>Non-notifiable listed diseases (eg myxo, leishmania)</td>
</tr>
<tr>
<td>Accessing data in low resource settings (the whole world!)</td>
<td>Description of at risk populations (dog, cat +)</td>
</tr>
<tr>
<td>Unowned populations</td>
<td>Animal population Disease statistics OIE recognition</td>
</tr>
<tr>
<td></td>
<td>? Focus on a wildlife risk like CDV?</td>
</tr>
</tbody>
</table>

OIE
Capacity building
PVS
46 elements
Incl public private partenreships and vet educ