Rabies in the Caribbean
The First Regional Conference on Research and Surveillance on Emerging and Vector-borne Animal Diseases in the Caribbean
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J. Seetahal¹,³, S. Vokaty²,³, B. Louison³, J. Pradel³,⁴
1- Coordinator, Rabies Subgroup
2- Chair, Veterinary Public Health Working Group
3- Member, Rabies Subgroup
4- Coordination Unit, CaribVET, CIRAD

March 2015
### Countries with Rabies

#### Main Animal Reservoir and No. of Cases

<table>
<thead>
<tr>
<th>Country</th>
<th>Animal Reservoir</th>
<th>Average no. animal cases / year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belize</td>
<td>Dog, Fox, Bat</td>
<td>1-5</td>
</tr>
<tr>
<td>Cuba</td>
<td>Dog, Mongoose</td>
<td>d.n.a.</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>Dog, Mongoose</td>
<td>d.n.a.</td>
</tr>
<tr>
<td>French Guyana</td>
<td>Bat</td>
<td>d.n.a.</td>
</tr>
<tr>
<td>Grenada</td>
<td>Mongoose</td>
<td>1-5</td>
</tr>
<tr>
<td>Guyana</td>
<td>Bat</td>
<td>1-5</td>
</tr>
<tr>
<td>Haiti</td>
<td>Dog, Mongoose</td>
<td>d.n.a.</td>
</tr>
<tr>
<td>Suriname</td>
<td>Bat</td>
<td>n.s.</td>
</tr>
<tr>
<td>Trinidad</td>
<td>Bat</td>
<td>6-10</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>Mongoose</td>
<td>&gt;20</td>
</tr>
</tbody>
</table>

**n.s.**: no surveillance  
**d.n.a.**: data not available
Rabies Notifications

- **Most countries** - last human case > 20 years ago

- **Countries with older (> 5 years) notification of animal rabies cases:**
  - Suriname ?
  - French Guyana (2009)

- **Countries with recent (< 5 years) notification of animal rabies cases:**
  - Belize (2012)
  - Cuba (2014)
  - Dominican Republic (2014)
  - Grenada (2010)?
  - Guyana (2014)
  - Haiti (2014)
  - Puerto Rico ?
  - Trinidad (2014)

*OIE WAHID Interface: Animal Health Information:*
http://www.oie.int/wahis_2/public/wahid.php/Diseaseinformation/statusdetail
French Guyana

- **Last human case 2008**
  - First ever reported
  - Epidemiologically linked to bat bite

- **Passive Surveillance**
  - Clinical suspicion
  - Vector biting incidence

- **Diagnostics:**
  - Pasteur Institute (French National Reference Center for Rabies)

- **Vaccination (mandatory)**
  - Domestic carnivores
  - Ruminants

- **Challenges**
  - Illegal importation (land borders – Suriname, Brazil)
  - Underreporting of bites
  - Lack of veterinary coverage

*Drs. Manuelle Miller, Nicolas Krieger, Marie Shaan (2011)*
Belize

- Last human case 1989

- **Passive Surveillance**
  - Clinical suspicion

- **Diagnostics:**
  - BAHA and MIDA, Panama

- **Vaccination (recommended)**
  - Domestic carnivores (MoH)
  - Cattle (BAHA)

- **Importation protocols**
  - Vaccination prior to entry
High human mortality
- Cases from clinical signs (paralytic > furious)

Rabies cases distributed throughout country with some high risk areas identified
- Most notifications in cities and sub-urban areas
- Underreporting exists

Passive surveillance
- Clinical observation
- Ministries of Agriculture and Health

Vaccination: not mandatory

Challenges:
- Irregular unsustainable notification system
- No budget
- Difficulties in sending viable diagnostics samples for dx

Dr. Ludder Fleurinord (2011)
Puerto Rico

- **Last human case 2003**
  - Vector: Dog (mongoose –transmitted rabies)

- **Passive Surveillance**
  - PR Dept of Health → CDC
  - Mongoose bite report investigation

- **Active surveillance**
  - Mongoose population survey
  - US Fish and Wildlife Services

- **Vaccination (mandatory)**
  - Livestock
  - Domestic Carnivores

*Dr. Elton Irizarry-Pasarell (2011)*
- Last confirmed outbreak in humans in 1998
  - Hinterland
  - 5 children died (15 person bitten)
  - Trend: every 8-10 years (anecdotal)

- Diagnostics
  - Laboratory not equipped
  - Infrastructure not in place for sending samples

- Passive Surveillance
  - Clinical observation

- Vaccination
  - Not mandatory for domestic animals, no program

- Import control
  - Vaccination of dogs and cats

Dr. Lorraine Akrum (2011)
Trinidad

- Last human case 1937

- **Passive Surveillance**
  - Based on clinical suspicion
  - Sample tested for confirmation

- **Active Surveillance**
  - Bat (*D. rotundus*) population routine testing
  - Concomitant vector control

- **Diagnostics**
  - DFA

- **Vaccination (mandatory)**
  - Cattle
  - Horse, sheep, goats (upon request/bat biting reports)

- **Import control**
  - Domestic carnivores
  - Rabies vaccination and titer testing prior to entry
Grenada

- Last human case 1974

- **Passive Surveillance**
  - Based on clinical suspicion
  - Sample tested for confirmation

- **Active Surveillance**
  - Mongoose population

- **Diagnostics**
  - DFA, PCR and Histopathology

- **Vaccination (recommended)**
  - Cattle
  - Domestic carnivores
- **Last human case?**

- **Passive Surveillance**
  - Based on clinical observation

- **Diagnostics:** none

- **Vaccination (recommended)**
  - Cattle

- **Vector control**
  - Targets bat population

- **Import control**
  - Rabies vaccination prior to entry
Rabies Subgroup:

- **Group Members:**
  - Alexandra Vokaty (Chair, VPH WG)
  - Janine Seetahal (Coordinator, Rabies Subgroup)
  - Jennifer Pradel
  - Bowen Louison
  - Colin James
  - Astrid Van Sauers
  - Rohini Roopnarine
  - Charles Rupprecht (co-opted)

- **Countries Represented:**
  - Grenada, Guyana, Trinidad, Suriname
  - To include representation from: PR, Cuba, DR. Haiti and French Guyana
Rabies Subgroup: Activities

- Survey on the status of rabies in the Caribbean Region
  - Questionnaire administered to 33 countries (21 responses to date)
  - Results analyzed

- Literature review of rabies in the Caribbean
  - Draft literature review prepared and comments received from WG
  - To be collated with results of regional survey
  - Final version to be submitted for publication

- Regional Rabies Diagnostic Training Workshop
  - December 2014
  - Target countries: Grenada, Guyana, Trinidad and Tobago, Suriname
  - Routine diagnostic techniques (DFA)

- Circulation of rabies educational material relevant to the Caribbean
  - Bat and Mongoose rabies
  - Target audience: general
  - Source of material: GARC website, member countries
Training Workshop on Laboratory Methods for Rabies Virus Diagnosis
Dec 15th – 19th 2014

Host: St. George’s University, Grenada
Source of funds: 10th EDF through IICA SPS project

Trainer: Dr. Charles Rupprecht

13 participants (5 countries)
- Veterinary lab staff with responsibility for rabies diagnostics
- Guyana, Haiti, Suriname, Trinidad, Grenada

Focus on diagnostics (DFA) with additional areas:
- Epidemiology
- Pathobiology
- Prevention and control
- Laboratory safety

Pre and Post tests indicate a more thorough grasp of the subject
Preliminary Results

Active surveillance

May 2011 – Mar 2013: 171 trapped mongooses

- Preliminary Rabies Virus Prevalence: 0.5 – 1.5%
  (Implication: 2000 rabid mongooses in an estimated island population of 200,000)

- Viral Characterization: distinct variant within Cosmopolitan RabV group (genotype 1)

- Sero-Prevalence: currently being tested

Ref: Zieger et al., 2013