HEARTWATER: A SIMPLE DISEASE WITH A PECULIAR DISTRIBUTION THAT HAS EXASPERATED FARMERS AND SCIENTISTS FOR EONS

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Heartwater is transmitted by nymphs and adult ticks.
THE ORGANISM

• *Ehrlichia ruminantium*
THE ORGANISM

• *Ehrlichia ruminantium*

• Vector: *Amblyomma hebraeum*
THE ORGANISM

- *Ehrlichia ruminantium*
- Vector: *Amblyomma hebraeum*
- Strains – many…..
  - Ball3 ; Welgevonden; Kümm;
  - Senegal; Gardel; Mbizi
  - significance
OCCURRENCE

- Heartwater areas (endemic)
- Unstable areas
- Non-heartwater areas
Recent survey of farmers and vets concluded:
- heartwater is increasing in distribution & severity

Factors involved:
- climate
- vegetation
- wildlife and livestock movements
- role of static or declining vaccine usage
- increased reliance on intensive tick control
- widespread use of whole herd antibiotic blocking
Which months of the year are the worst months for heartwater?

<table>
<thead>
<tr>
<th>Month</th>
<th>Veterinarians 24 (1)</th>
<th>Farmers 31 (8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>75%</td>
<td>71%</td>
</tr>
<tr>
<td>Feb</td>
<td>61%</td>
<td>84%</td>
</tr>
<tr>
<td>Mar</td>
<td>52%</td>
<td>35%</td>
</tr>
<tr>
<td>Apr</td>
<td>26%</td>
<td>16%</td>
</tr>
<tr>
<td>May</td>
<td>16%</td>
<td>16%</td>
</tr>
<tr>
<td>Jun</td>
<td>0%</td>
<td>8%</td>
</tr>
<tr>
<td>Jul</td>
<td>0%</td>
<td>3%</td>
</tr>
<tr>
<td>Aug</td>
<td>12%</td>
<td>12%</td>
</tr>
<tr>
<td>Sep</td>
<td>26%</td>
<td>35%</td>
</tr>
<tr>
<td>Oct</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Nov</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Dec</td>
<td>66%</td>
<td>58%</td>
</tr>
</tbody>
</table>
SUSCEPTIBILITY / RESISTANCE

- Cattle: *Bos indicus* vs European breeds
- Sheep more susceptible; breeds
- Goats most susceptible; breeds
- Game – eland, blesbok, springbok, black wildebeest develop disease
- Other reservoirs – helmeted guinea fowl?, leopard tortoise?, scrub hare
SUSCEPTIBILITY / RESISTANCE

• Nonspecific resistance

• Genetic resistance (recessive sex linked gene in Creole goats)
HEARTWATER “VACCINE”

How is the present “vaccine” produced?
FREQUENTLY ASKED QUESTION:

- Can vaccinating sheep on a farm cause a localised “outbreak” of heartwater in sheep and cattle close by?

  - Yes!
  - heartwater free or heartwater unstable area
  - suitable climate, vector and reservoirs present
VACCINATION

• Presently Ball-3 blood “vaccine”

• The Mbizi strain inactivated vaccine is being developed by OBP
  - infection but reduce mortalities
  - confers protection for more than a year
  - several field strains can be included

• Live attenuated vaccines
  - thermolabile
  - poor protection against heterologous strains
TREATMENT OF HARTWATER:

• Drug of choice
  - tetracyclines

• Supportive treatment
  - diuretics?

• Controversial treatment
  - partial exanguination
Dr Jean du Plessis was one of the pioneers of the heartwater “vaccine”