Plenary Discussion:

Critically Needed RVF Epidemiology Studies

Moderator:

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Goals for this session

• To more fully understand the gaps in knowledge and how best to design epi-studies to address these gaps
• Interactive discussion and sharing of perspectives and approaches to address our knowledge gaps
• By the end of the session: formulate a list of action items and recommendations for further studies to enable successful vaccine and therapeutic clinical trials
Rift Valley fever virus Ecology

- Inter-Epizootic cycle
  - Normal rains
  - Few floodwater mosquitoes
  - Low epizootic potential
- Heavy rains and flooding
  - Massive emergence of infected mosquitoes
  - HIGH epizootic potential

Epizootic-Epidemic cycles
- Vector Emergence
- First livestock cases
- First human cases
- Amplification of virus activity for 6-8 weeks among livestock before detection of first human case
- First detection of human cases

Outbreak recognized and response measures initiated

Methods

For Discussion: field sites in two climatic zones in Central Tanzania

Human Surveillance: febrile patient enrollment at nine (9) health clinics across region
Livestock Surveillance: 192 cross-sectional herds and 38 longitudinal sentinel herds
Vector Surveillance: transects completed at representative herd locations near each of the nine (9) health clinics

<table>
<thead>
<tr>
<th>Region</th>
<th>Human Population</th>
<th>Livestock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruaha</td>
<td>107,112</td>
<td>295,444</td>
</tr>
<tr>
<td>Kilombero</td>
<td>321,611</td>
<td>332,115</td>
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</tbody>
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Major problems for RVF clinical trials....

• Apparent low incidence in people during interepidemic periods

• Majority of RVFV infections are mild and self-limiting
  • Severe cases – hepatitis, VHF signs
  • Neurological and ophthalmological cases (delayed-onset)

• How important is vertical transmission in humans?

• Is immunity life-long?

• Is it feasible to do trial during an outbreak to find cases?
Two starter questions for vaccine trials

• Where?
  • Are there locations where RVF is hyperendemic among people?
  • These areas might allow for lower sample sizes to meet statistical power

• Who?
  • Contact with livestock is a well established risk factor – especially among abattoir workers
  • Would targeted epi-studies over a wide region reveal enough possible individuals to power a vaccine trial?
Two starter questions for human therapeutics trials

- Which RVF to treat? Hepatic disease vs. delayed on-set neurological vs. ocular disease?
  - Exactly how common is this sequelae of RVFV infection?
  - Does therapy potentiate neurological disease?
  - What specimens should be collected during epi-studies to provide baseline data to address these concerns?

- Who/Where?
  - How best to identify clinically ill patients in large enough numbers to begin to address safety and efficacy?
Now onto the discussions!

• What are the critical epidemiological needs?
• How can we address these gaps?
• How can epi-studies influence how we would use a vaccine or therapeutic?
  • Risk groups, ages, special patient populations?
• Key differences between the needs of vaccine trials and therapeutics trials?
• What are some pitfalls for RVF vaccine/therapeutics trials?
• Can multi-partner or consortium type groups tackle these problems across sites/countries?
• How would we fund these needed studies?