Malaria Surveillance in Kenya Highlands

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Intensive interventions have reduced malaria epidemics.

This has led to reduced transmission and exposure to the malaria parasite.

Low resting indoor densities of vectors making EIR harder to use.
Objective

To examine the possibility of using a rapid diagnostic kit for the detection of anti-malaria immune markers CSP and MSP antibodies as an early indicator of transmission changes.
Study sites

A. Iguhu
B. Emutete
C. Fort Ternan
D. Marani
Methods
Rainfall distribution and vector collections
### Distribution of *An. gambiae* and *An. arabiensis*

<table>
<thead>
<tr>
<th>Species</th>
<th>Emutete</th>
<th>Iguhu</th>
<th>Fort Ternan</th>
<th>Marani</th>
<th>Mean Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>An. gambiae</em> (%)</td>
<td>97.1</td>
<td>93.3</td>
<td>33.3</td>
<td>96.4</td>
<td>91.3</td>
</tr>
<tr>
<td><em>An. arabiensis</em> (%)</td>
<td>2.9</td>
<td>6.7</td>
<td>66.7</td>
<td>3.6</td>
<td>8.7</td>
</tr>
</tbody>
</table>
CSP_MSP antibodies and *P. falciparum* dynamics

Antibody sero-conversion rates

- Iguhu_Spz
- Emutete_Spz
- Iguhu_Ab
- Marani_Ab
- Fort Ternan_Ab

Sporozoite rates

Time (Months)

Sep-09 Oct-09 Nov-09 Dec-09 Jan-10 Feb-10 Mar-10 Apr-10
Monthly indoor resting densities of *An. gambiae* s.l and the prevalence CSP-MSP antibodies

<table>
<thead>
<tr>
<th>Site</th>
<th>Adjusted $R^2$</th>
<th>$P$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iguhu</td>
<td>0.567*</td>
<td>0.031</td>
</tr>
<tr>
<td>Emutete</td>
<td>0.071</td>
<td>0.282</td>
</tr>
<tr>
<td>Fort Ternan</td>
<td>0.570*</td>
<td>0.030</td>
</tr>
<tr>
<td>Marani</td>
<td>0.159</td>
<td>0.204</td>
</tr>
</tbody>
</table>
Conclusion

The rapid diagnostic kit can be used as a tool to show exposure to the malaria parasite and it is independent of any entomological and physiological changes.
Acknowledgements

Prof Tom Scott, UC Davis
Dr Andrew Githeko, KEMRI, Kisumu
KEMRI Kisumu
IDRC