Malaria in Tororo District after Four Rounds of Indoor Residual Spraying: Need to Test and Treat to Prevent Resurgence

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Malaria in Tororo after 4 rounds of IRS
Tororo: high malaria transmission district

- **A. gambiae**
  - Anopheles biting density
  - Rate of infective bites
  - Community malaria prevalence 2012
- **A. funestus**
  - 149/person/night
  - 2/person/night
  - 48%
Initial control strategies

- Prompt case management at health facilities
- LLINs to pregnant mothers
- Intermitent preventive therapy in pregnancy (IPTp)
Intensified vector control interventions

- Universal coverage with Long Lasting Insecticide Treated Nets (LLINs) in 2013
- IRS in December 2014
  - 4 rounds of 6 monthly IRS done
  - IRS to end in June 2017
Objectives

- Assess change in indoor biting malaria vector density
- Determine community malaria prevalence in Tororo District
- Describe relationship between indoor resting *Anopheles* and malaria magnitude in the district
Data collection

- Reviewed HMIS data to estimate incidence, test positivity rate
- Randomly selected one asymptomatic child and adult from a household
- Tested 960 under 5 children and 980 adults for malaria in 20 village communities
- Interviewed 980 adults in 20 villages
Ongoing entomological studies

- Pyrethrum spray catch in 12 houses in sentinel village before and during IRS
- Entomological surveillance data 2014-2016
- Malaria vector bionomics studies 2015-2016
Indoor vectors controlled, malaria persists

Malaria in Tororo after 4 rounds of IRS
Test positivity rates indicate ongoing transmission

Malaria in Tororo after 4 rounds of IRS

% Test Positive

IRS 1

IRS 2

IRS 3

IRS 4

Indoor Anopheles

Month & Year

Jun

Jan

Jun

Jan

Jun

Oct

2014

2015

2016
Asymptomatic community malaria prevalence persists at moderate endemicity

<table>
<thead>
<tr>
<th>Age group</th>
<th>Number tested</th>
<th>RDT positive</th>
<th>Prevalence %</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5 years</td>
<td>979</td>
<td>206</td>
<td>21</td>
</tr>
<tr>
<td>≥ 18 years</td>
<td>984</td>
<td>68</td>
<td>7.0</td>
</tr>
<tr>
<td>Overall</td>
<td>1963</td>
<td>274</td>
<td>14</td>
</tr>
</tbody>
</table>
Malaria in Tororo after 4 rounds of IRS

Vector bionomics and community exposure

- Vectors bite outdoors early after sunset
- 62% of people stay outdoors up to 9:00 pm
- 95% get mosquito bites outdoors before covering under a bed net
Malaria in Tororo after 4 rounds of IRS

Malaria persists below baseline, a potential to upsurge

Malaria Cases

Week of 2016

IRS 4

Action

Alert

Baseline

cases 2016
Conclusions

- IRS has successfully controlled indoor feeding *Anopheles* and malaria to moderate endemicity
- Malaria parasite prevalence still persist at moderate endemic level after 4 rounds of IRS
- Malaria incidence rises in presence of indoor feeding vectors
Public health implication

- Moderate prevalence of *Plasmodium* in the population, a reservoir of malaria parasites for vectors to transmit when IRS is halted
- There is potential for malaria resurgence if the vector population rebuilds after halting IRS
Recommendations

- Test and treat malaria at community level to minimize the source of *Plasmodium* transmission
- Plan sustainability measures to keep malaria vector population low after IRS is halted
Acknowledgment

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