Tribal Malaria Challenges and Prospects of Malaria Elimination

Annexure 1

Dr. Neeru Singh
National Institute for Research in Tribal Health (ICMR), Jabalpur

Distribution of districts, population, ST population, Blood Slide Examined, malaria cases and malaria deaths by categories of districts

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Categories (% ST Population)</th>
<th>N Total (India)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;10</td>
<td>10-29.9</td>
</tr>
<tr>
<td>Districts* (Number)</td>
<td>381</td>
<td>104</td>
</tr>
<tr>
<td>Total Population (%)</td>
<td>75.7</td>
<td>16.5</td>
</tr>
<tr>
<td>ST Population (%)</td>
<td>18.6</td>
<td>32.8</td>
</tr>
<tr>
<td>Blood Slide Examination (BSE) (%)</td>
<td>61.5</td>
<td>24.9</td>
</tr>
<tr>
<td>Total malaria cases (%)</td>
<td>33.4</td>
<td>20.6</td>
</tr>
<tr>
<td>P. falciparum (%)</td>
<td>10.9</td>
<td>19.5</td>
</tr>
<tr>
<td>P. vivax (%)</td>
<td>56.6</td>
<td>21.9</td>
</tr>
<tr>
<td>Deaths (%)</td>
<td>30.7</td>
<td>22.8</td>
</tr>
</tbody>
</table>

Note: * Actual 620 census districts but in NVBDCP programme clubbed in 609 districts.

Sharma et al IJMR, 2015
Map of India showing area under forest

Total forest covered area 692027 Sq km (21.05%) of total land of the country

Malarious Districts

These 91 districts about 5% of country’s total pop. and 31% of total ST pop. of the country these districts contribute 44% of country’s total malaria, 68% Pf and 43% death due to malaria


Malaria in tribal and non tribal households
(7117 House hold in 62 villages of Bargi PHC)

<table>
<thead>
<tr>
<th>Social groups</th>
<th>N</th>
<th>Percent of sample</th>
<th>Malaria positive (%)</th>
<th>Odd ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled Tribes</td>
<td>3458</td>
<td>48.6</td>
<td>23.9</td>
<td>1.7 (1.5-1.9)*</td>
</tr>
<tr>
<td>Scheduled Caste</td>
<td>653</td>
<td>9.2</td>
<td>15.9</td>
<td>1.0 (0.8-1.3)</td>
</tr>
<tr>
<td>Others</td>
<td>2803</td>
<td>42.2</td>
<td>15.5</td>
<td>1</td>
</tr>
</tbody>
</table>

* P<0.05

(Sharma et al. 2015. Socio-economic risk factors of tribal malaria, IJMRR, special issue, 141 (5), 2015, p 570.)
Malaria Situation of Tribal v/s Non-Tribal Districts in Madhya Pradesh (2014)

- Malaria:
  - Tribal: 64%
  - Non-Tribal: 36%

- Deaths:
  - Tribal: 77%
  - Non-Tribal: 23%

- Pf:
  - Tribal: 90%
  - Non-Tribal: 10%

Risk Factors
ICMR Institutes working on Vector Borne Diseases Particularly in malaria

- NIMR, New Delhi
- NIRTH, Jabalpur
- RMRC, Dibrugarh
- RMRC, Bhubaneswar
- RMRC, Andaman & Nicobar
- CRME, Madurai
- VCRC, Puducherry
- DMRC, Jodhpur

MALARIA TRAINING CARRIED OUT IN COLLABORATION WITH MINISTRY OF TRIBAL AFFAIRS (MOTA), NEW DELHI
Trend of malaria prevalence in Balaghat.

Declining trend of malaria prevalence in Dindori.

Malaria Reduction

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>36</td>
</tr>
<tr>
<td>2011</td>
<td>61</td>
</tr>
<tr>
<td>2012</td>
<td>71</td>
</tr>
<tr>
<td>2013</td>
<td>89</td>
</tr>
<tr>
<td>2014</td>
<td>89</td>
</tr>
</tbody>
</table>

Normal spleen | Enlarged spleen

Year 2009: Normal spleen 95% | Enlarged spleen 5%

Year 2010: Normal spleen 49% | Enlarged spleen 51%

Year 2011: Normal spleen 59% | Enlarged spleen 41%

Year 2012: Normal spleen 72% | Enlarged spleen 28%

Year 2013: Normal spleen 51% | Enlarged spleen 49%

Year 2014: Normal spleen 57% | Enlarged spleen 43%
Assisting staff fills consent form

Collection of blood sample for RDT

Interpretation of Rapid Diagnostic Test Kit

Medical Officer provides medicine

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**Setting up of Tribal Health Research Unit of NIRTH at Basatr**

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**Burden of Malaria in Maharani Hospital, Jagdalpur (CG)**

<table>
<thead>
<tr>
<th>Year</th>
<th>BSE</th>
<th>Pos</th>
<th>Pf</th>
<th>Pv</th>
<th>SPR</th>
<th>SM (%)</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>4001</td>
<td>335</td>
<td>277</td>
<td>58</td>
<td>8.4</td>
<td>143 (51.6)</td>
<td>14</td>
</tr>
<tr>
<td>2011</td>
<td>12742</td>
<td>1062</td>
<td>938</td>
<td>124</td>
<td>8.3</td>
<td>133 (14.2)</td>
<td>47</td>
</tr>
<tr>
<td>2012</td>
<td>12037</td>
<td>580</td>
<td>468</td>
<td>112</td>
<td>4.8</td>
<td>67 (14.3)</td>
<td>26</td>
</tr>
<tr>
<td>2013</td>
<td>12143</td>
<td>451</td>
<td>405</td>
<td>46</td>
<td>3.7</td>
<td>99 (24.4)</td>
<td>23</td>
</tr>
<tr>
<td>2014</td>
<td>13414</td>
<td>1053</td>
<td>971</td>
<td>82</td>
<td>7.9</td>
<td>293 (30.1)</td>
<td>46</td>
</tr>
<tr>
<td>2015</td>
<td>15229</td>
<td>940</td>
<td>799</td>
<td>141</td>
<td>6.2</td>
<td>93 (26.6)</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>69566</td>
<td>4421</td>
<td>3858</td>
<td>563</td>
<td>6.4</td>
<td>593 (24.5)</td>
<td>183</td>
</tr>
</tbody>
</table>

*BSE – Blood Slide Examined; **Positive – Positive for malaria; Pf – P. falciparum; Pv – P. vivax; Mixed - PF+PV infection
Malaria Situation in Darbha PHC, Chhattisgarh

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Pos/BSE (%)</th>
<th>Pf (%)</th>
<th>Mix (%) (Pf + Pv/Pm/Po)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;=1 year</td>
<td>95/338 (28.1)</td>
<td>46 (48.4)</td>
<td>5 (5.3)</td>
</tr>
<tr>
<td>&gt;1-4 years</td>
<td>231/690 (33.5)</td>
<td>137 (59.3)</td>
<td>27 (11.7)</td>
</tr>
<tr>
<td>&gt;4-8 years</td>
<td>173/521 (33.2)</td>
<td>118 (68.2)</td>
<td>21 (12.1)</td>
</tr>
<tr>
<td>&gt;8-14 years</td>
<td>225/724 (31.1)</td>
<td>175 (77.8)</td>
<td>10 (4.4)</td>
</tr>
<tr>
<td>&gt;14 years</td>
<td>555/2697 (20.6)</td>
<td>447 (80.5)</td>
<td>29 (5.2)</td>
</tr>
<tr>
<td>Total</td>
<td>1279/4970 (25.7)</td>
<td>923 (72.2)</td>
<td>92 (7.2)</td>
</tr>
</tbody>
</table>

Malaria Elimination Strategy
(Proposed PPP Mode Sun Pharma, GoMP, GOI & ICMR)

➢ Surveillance is robust (e-surveillance) 1 worker in 5 villages
➢ Scale up LLINs, RDTs, ACTs, Supervised IRS
➢ Efficient supply chain management
➢ Keeping track of migrants
➢ Intensive IEC/BCC
➢ Early referral of serious cases
➢ Inter-sectoral coordination

Total Area for Elimination: 8,771 Sq KM
Total Population: 8,94,236
Total Number of Villages: 1,247

Source:
http://mandla.nic.in/District.htm & http://www.health.mp.gov.in
Gadchiroli New initiatives for Malaria Control with SEARCH & Govt. of Maharashtra

New initiatives for Malaria Control in southern Odisha with MITRA, TATA Trust & Govt. of Odisha
**Limitation/Challenges**

- Unwillingness of staff to work.
- Limited mobile network / Public transport.
- Poor Health infrastructure.
- Strengthening of ASHA/ANM/AWW.
- Efficient supply chain management
- Sensitization camps at public places.

Cont....
Research studies undertaken by NIMR in Tribal population

- Monitoring of Antimalarial and Insecticide Resistance in malaria
- Effective and safe treatment and prevention for malaria in pregnancy in India
- Comprehensive case management studies in Odisha
- Health Impact Assessment of Indira Sagar Dam and areas in Narmada Valley
- Studies on Distribution and Biological Characteristics of the members of vector species for effective vector control strategies in tribal areas of India
- Mapping malaria receptivity in tribal areas of district Ranchi, Jharkhand using Remote Sensing and GIS
- Ecological Succession of Vectors of Malaria and their Impact on malaria cases
- Investigation of outbreak of malaria in Tripura (2014)

POLICY / PLANNING

- Preparing Ethical Guidelines for Tribal under the chairmanship of Lt. Gen. (Retd) D. Raghunath and Dr. Y. K. Gupta, Moderator.
- Revising health strategies for Tribals (NHM).
Thank You...