14th Stakeholders’ Meeting
Expanding access channels at the community level:
Pioneering CCMP work in Odisha, India
Bali | 11 – 12 October 2017

Dr. M M Pradhan
Jt Director of Health Services, NVBDCP, Odisha
I. CCMP approach

II. Impact

III. Scaling up for elimination
Odisha accounts for the highest malaria burden in India

**Odisha in India**
- 41% of all malaria cases (449,697)
- 4% of land area (156,000 sq kms)
- 3% of population (42 m)

**Odisha at a glance**
- Predominantly rural (82%)
- Disadvantaged communities (36%)
- 30 district, 314 blocks; >51,000 villages
- Favourable geo-ecotypes for malaria transmission
  - perennial streams, forests
  - inaccessible areas
- Heterogeneous distribution of malaria
- >47,000 ASHAs* involved in malaria control

*Accredited Social Health Activists (community health workers)
CCMP*: An operational research under programmatic conditions

**Purpose**
- Provide universal access to diagnosis and treatment in different transmission settings and assess its impact

**Partners**
- Principal investigators: NIMR, NVBDCP / Odisha
- Support: MMV, WHO

**Study area**
- Odisha, India
- 4 intervention / 4 control blocks; different transmission intensity
- Population of 900K

**Study start**
- Q2 / Q3 2013

- There is high level government support for research
- Integration at all levels (State, district, & block)

*Comprehensive Case Management Programme*
Key CCMP interventions at a glance

- Diagnosis and treatment in all villages
- Alternative providers in areas with no ASHAs
- Mass surveys and treatment in selective hard-to-reach areas
- Targeted case finding

**Pf**: AS+SP +PQ single dose

**Pv**: CQ+PQ (14 days)

- Uninterrupted supplies of antimalarials up to ASHA level

- DHIS2-based data capture and surveillance system
Patient card was introduced to facilitate follow up

- Every fever case is tested for malaria
- All malaria patients are treated free of charge and followed up by the ASHA
- Individual patient data is entered in DHIS2
I. CCMP approach

II. Impact

III. Scaling up for elimination
Improved access to diagnosis and treatment

• Improved ASHA capacity

• Uninterrupted supplies of RDTs and ACTs through service-provider based quantification of needs

• Alternative providers identified and trained in hard to reach areas / areas with poor access to ASHAs
Greater proportion of cases diagnosed and treated at the community level (ASHA)

Level of detection of new cases in Dhenkanal, 2013-2016

- **2016**: 48%
- **2015**: 38%
- **2014**: 35%
- **2013**: 27%

- **% Hospital OPD**
- **% Health facility**
- **% ASHA**
Improved surveillance highlighted true malaria burden

- Transmission rates much higher than reported through routine surveillance in high endemic areas
  - Burden in low endemic areas was as expected
- Spotlight on the disequilibrium – identified very poorly served villages
- Vicious cycle: No data – therefore no intervention – therefore increased transmission
Increased surveillance, improved access to diagnosis and treatment led to an significant increase in cases followed by a decline (high endemic area).

Surveillance and Annual Parasite Incidence in Angul, 2011-2016

<table>
<thead>
<tr>
<th>Year</th>
<th>ABER (Intervention)</th>
<th>ABER (Control)</th>
<th>API (Intervention)</th>
<th>API (Control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>23</td>
<td>18</td>
<td>18</td>
<td>15</td>
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<tr>
<td>2012</td>
<td>18</td>
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<td>2013</td>
<td>18</td>
<td>17</td>
<td>21</td>
<td>21</td>
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<tr>
<td>2014</td>
<td>23</td>
<td>21</td>
<td>23</td>
<td>22</td>
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<tr>
<td>2015</td>
<td>31</td>
<td>30</td>
<td>30</td>
<td>29</td>
</tr>
<tr>
<td>2016</td>
<td>22</td>
<td>21</td>
<td>22</td>
<td>21</td>
</tr>
</tbody>
</table>

Annual Blood Blood Examination Rate (ABER)
Annual Parasite Incidence (API)
Improved implementation informed by proactive use of epidemiological data using DHIS2

- Data since 2011 imported in the application
- Both aggregate and name based data are entered
- Offline importation option available for blocks with internet connectivity issues
Contents

I. CCMP approach

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III. Scaling up for elimination
Foundations of a framework to scale up access to Rx for elimination

**IMPROVE SURVEILLANCE**

- Manage and USE data
- Correct estimates of supplies (RDTs, medicines)

**UNDERSTAND THE TRUE BURDEN OF MALARIA**

- The TRUE burden of malaria
- HETEROGENEITY of transmission
- The actual Pv/Pf ratio

**GOOD ACCESS TO DIAGNOSIS & Rx**

- Equitable distribution of health services

In areas of high transmission, intensive vector control is essential
Lessons learnt from CCMP for malaria control and elimination

Know the real burden of malaria in the State
• Actual incidence and heterogeneity of transmission

Building the human resource capacity
• Supportive supervision and training
• Replenishing posts
• Finding alternative service providers in special situations

Strong supply chain management

Good surveillance to inform programme activities

Strong and responsive leadership
CCMP elements incorporated in malaria elimination efforts in Odisha

- **MoH, Odisha funded scaling up of mass screening and treatment (CCMP approach) in all inaccessible villages of high endemic areas (project – DAMaN [Duvgam Anchalare Malaria Nirakaran])**
  - Core package: early diagnosis & complete treatment, intensified vector control measures and behaviour change communication

- **Case based surveillance in low endemic districts** – patient card has been introduced in three districts

- **DHIS2-based surveillance is being scaled up to state-level scale up as first step for national adoption**
CCMP is fully serving its role as a living laboratory

- CCMP has allowed NVBDCP Odisha develop and test strategies for malaria elimination
- Initial impact of CCMP is perceptible. Impact analysis currently underway
Back-up
Improved surveillance highlighted the real disease burden in Dhenkanal (medium endemic).

Improved access to treatment led to an increase in cases followed by a decline, Dhenkanal (medium endemic).

- **Annual Blood Examination Rate (ABER)**
- **Annual Parasite Incidence (API)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Intervention area</th>
<th>Control area</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
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<tr>
<td>2013</td>
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<td>2014</td>
<td></td>
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<tr>
<td>2015</td>
<td></td>
<td></td>
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<tr>
<td>2016</td>
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</tbody>
</table>
Increased proportion of *P. vivax* malaria following introduction of bivalent RDTs in all areas
Initial impact of CCMP is perceptible

- Improved access to diagnosis and treatment
- Decline in parasite incidence in 2017 with high surveillance in all intervention blocks
- Lessons from CCMP are informing malaria elimination efforts in Odisha and beyond
- CCMP approach scaled in DAMan
- DHIS2 is likely to be used for malaria surveillance in India
ASHAs trained to identify signs of haemolysis due to primaquine *P. vivax* radical cure

- Active follow up of all patients by ASHAs
  - Pf cases: 3 days; Pv cases: 14 days
- Nested primaquine safety study to assess drop and recovery in haemoglobin with Pv radical cure treatment
Mass blood surveys revealed high asymptomatic rates

<table>
<thead>
<tr>
<th>Location</th>
<th>Population</th>
<th>Test</th>
<th>% tested</th>
<th>Mal. +ve</th>
<th>% +ve</th>
<th>Asmpt</th>
<th>% asymp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolangir (low)</td>
<td>8,863</td>
<td>6,955</td>
<td>78%</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Dhenkanal (medium)</td>
<td>5,790</td>
<td>4,810</td>
<td>83%</td>
<td>356</td>
<td>7%</td>
<td>249</td>
<td>70%</td>
</tr>
<tr>
<td>Kandhamal (high)</td>
<td>6,257</td>
<td>5,753</td>
<td>92%</td>
<td>460</td>
<td>8%</td>
<td>434</td>
<td>94%</td>
</tr>
<tr>
<td>Angul (very high)</td>
<td>6,393</td>
<td>6,062</td>
<td>95%</td>
<td>430</td>
<td>7%</td>
<td>200</td>
<td>47%</td>
</tr>
</tbody>
</table>
With the present decline trend (August, 2016 vs August, 2017) i.e. 44% reduction in cases and 60% reduction in deaths, with intensified efforts the goal will not be at far.
Malaria elimination requires constant attention

- Logistic support for diagnosis and treatment
- Continued motivation of ASHAs and other volunteers
- Strong partners e.g. TATA Trust working in inaccessible villages (600 villages) in southern districts
- Research institutes (ICMR organisation) have come forward for evidence generation on parasite and entomology.
- Newer agencies have approached for collaboration
- Additional fund support is available from state Govt.
- More partners have approached for partnership
Scaling up Bolangir CCMP experience will help pre-elimination drive in Odisha

District wise variation by API

8 coastal districts (API<1) with 1/3rd population of the state contribute around 2% malaria cases to the state. Pv% is 39.

Puri 0.10 0.12 0.21 0.25 0.34 0.42 0.46 0.54 1.42 2.54 4.22 4.73 5.65 6.47 7.26
Bhadrak 0.21 0.25 0.34 0.42 0.46 0.54
Bargarh 1.42
Nayagarh 7.26
Sonepur 5.65
Dhenkanal 4.22
Nuapada 9.08
Sundargarh 11.72
Deogarh 15.72
Kalahandi 16.74
Angul 20.69
Malkangiri 21.77
Rayagada 25.88
Malaria Elimination in India by 2027-30

“Interruption of local transmission (reduction to zero incidence of indigenous cases) of specified malaria parasite species in a defined geographical area as a result of deliberate activities. Continued measures to prevent re-establishment of transmission are required.”

**Interruption of local transmission**

1. Parasitic Control (Both Pv & Pf)
2. Vector Control
3. Change in Human Behaviour

Geographical areas: State, District, CHC, PHC, Sub centre
DHIS2 based Information system: Monthly and annual report cards

**ANNUAL REPORT CARD**

State: ODISHA  
District: ANGUL  
Block: Ang-bi-Alhamulik  
Year: 2016

**EPIDEMIOLOGY & IMPACT**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2015</th>
<th>2014</th>
<th>% A</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABER</td>
<td>29.7</td>
<td>30.8</td>
<td>-3.6</td>
</tr>
<tr>
<td>TPR</td>
<td>17</td>
<td>19.6</td>
<td>-13.3</td>
</tr>
<tr>
<td>Pf</td>
<td>4,896</td>
<td>5,938</td>
<td>-22.6</td>
</tr>
<tr>
<td>Pv</td>
<td>1,702</td>
<td>1,622</td>
<td>11.8</td>
</tr>
<tr>
<td>Mixed</td>
<td>193</td>
<td>297</td>
<td>-35</td>
</tr>
<tr>
<td>Total cases</td>
<td>6,491</td>
<td>7,748</td>
<td>-16.2</td>
</tr>
<tr>
<td>API</td>
<td>80.5</td>
<td>80.3</td>
<td>-0.3</td>
</tr>
<tr>
<td>Deaths</td>
<td>1</td>
<td>2</td>
<td>-50</td>
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<table>
<thead>
<tr>
<th>Year 2015</th>
<th>DH</th>
<th>SDH</th>
<th>CHC</th>
<th>PHC</th>
<th>SC</th>
<th>FTD</th>
<th>MUH</th>
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<tbody>
<tr>
<td>Tests</td>
<td>0</td>
<td>3,899</td>
<td>2,732</td>
<td>6,080</td>
<td>3,708</td>
<td>17,328</td>
<td>1,368</td>
</tr>
<tr>
<td>% Total</td>
<td>0</td>
<td>11</td>
<td>7.8</td>
<td>17.3</td>
<td>10.6</td>
<td>40.4</td>
<td>3.9</td>
</tr>
<tr>
<td>Positive tests</td>
<td>0</td>
<td>405</td>
<td>216</td>
<td>1,283</td>
<td>324</td>
<td>3,657</td>
<td>174</td>
</tr>
<tr>
<td>% Total</td>
<td>0</td>
<td>6.7</td>
<td>3.6</td>
<td>20.9</td>
<td>8.4</td>
<td>86.6</td>
<td>2.9</td>
</tr>
<tr>
<td>Severe cases</td>
<td>80</td>
<td></td>
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Top SC: Kantapada SC, Sapaghara SC, T appl SC, Thakurgarh SC, Ambassamunda SC,

![Graphs showing trends over periods](image)
Challenges: malaria in inaccessible areas

- Inaccessible especially during transmission season in monsoon hindering service delivery when it is most needed.
- Non-availability of modern transport mechanism throughout the year hindering referral.
- Community is mostly tribal, marginalized and have poor literacy rate-challenges of poverty, treatment seeking from informal healers, low malaria awareness.
- It is observed that in these areas, around 20% of malaria cases in these areas are asymptomatic.
Key CCMP interventions:
Enormous heterogeneity of malaria transmission at block, sub-centre and village level

• **Key risk factors include:**
  • Accessibility by road
  • Extent of forest cover
  • Villages at foothill
  • Proximity to irrigation canals
  • Distance to nearest treatment providers

• **Significant fluctuations in transmission rates over years**