National Malaria Training Model: An Accordia Global Health Foundation & ExxonMobil Malaria Initiative

The Partnership for Malaria Training

- 2004 - Accordia and its Academic Alliance, Makerere University and Pfizer established the Infectious Diseases Institute (IDI)
- 2005 - Accordia and IDI launched a malaria training program with generous support of ExxonMobil
- 2006 – The Management of Malaria Core Course (MMCC) demonstrates that a comprehensive capacity building program can improve malaria diagnosis, treatment and prevention cost-effectively.
- 2008 – Fever Case Management with RDTs

[Image of doctors and patients]
Management of Malaria Core Course

*Problem*

- Most cases of fever in Africa are treated presumptively as malaria, resulting in overuse of antimalarials and delays in treatment of actual causes of fever

*Solution*

- Innovative, comprehensive intervention to improve prevention, diagnosis and treatment using WHO guidelines at IDI
Training Methodology

• Uganda Malaria Surveillance Program and NMCP-established surveillance system at selected sentinel sites, initially Health Centers Level IV

• Curriculum materials through the Joint Uganda Malaria Program: UMSP and IDI
  - Existing materials reviewed: MOH, WHO, IMCI, others
  - Modules written by experts in malaria epidemiology, laboratory diagnosis and treatment
  - Two national stakeholders meetings
  - Pilot with 50 health workers
  - Approved by NMCP and National Case Management Technical Working Group

- Monitoring and Evaluation - designed by UCSF/MU, UMSP and University of Washington, I-TECH – data from 8 sites published

Training Methodology (2)

• Training teams at IDI: physician, laboratory technician and data manager

Cadres trained:

– Clinicians: Physicians, nurses, clinical officers

– Laboratory technicians

– Data managers
Follow-up Support

• Post-training visits by a multidisciplinary Mobile Support Team – 6 wks, 12 wks, 1 year
• Same composition as IDI training team (may be CO)
• On-site supervision
• Ongoing access to IDI’s Treatment Information Center “warm line” and publications

Performance of Laboratory Staff at Baseline and Follow-up

![Bar chart showing laboratory performance indicators at baseline and follow-up](image)
Clinicians’ Performance During Baseline, First and Second Follow-up

Clinical Performance Indicators

<table>
<thead>
<tr>
<th>Clinical Performance Indicator</th>
<th>Baseline</th>
<th>Follow-Up 1</th>
<th>Follow-Up 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper history-taking</td>
<td>56.8</td>
<td>54.9</td>
<td>56.9</td>
</tr>
<tr>
<td>Thorough physical exam</td>
<td>70.4</td>
<td>70.1</td>
<td>71.0</td>
</tr>
<tr>
<td>Correct diagnosis</td>
<td>96.2</td>
<td>95.7</td>
<td>95.6</td>
</tr>
<tr>
<td>Correct treatment</td>
<td>80.1</td>
<td>80.7</td>
<td>80.5</td>
</tr>
<tr>
<td>Patient education</td>
<td>50.6</td>
<td>50.6</td>
<td>50.6</td>
</tr>
</tbody>
</table>

Individual Health Worker Performance

Patients <5 years

Patients >5 years
Cascade Training

**Problem**
- Centralized training presents logistical challenges to national scale up.

**Solution**
- Peer-facilitated version of the MMCC in rural areas led by graduates of the MMCC and TOT modules
- Targets health facilities with sufficient laboratory capacity for microscopy-based malaria diagnosis
- Appears equally successful to IDI-based training

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### Cascade training compared to IDI-based (1)

*Improvement on tests*

Among all trainees who attended the IDI based courses, 78.6% scored over 50% on the pre-test while 95.9% scored over 50% on the post-test. In the three year grant period for trainees who attended the cascade training, 69.46% scored over 50% on the pre-test while 92.9% scored over 50% on the post-test.

<table>
<thead>
<tr>
<th>Course conducted</th>
<th>Number of trainees</th>
<th>Pre-test %</th>
<th>Post-test %</th>
<th>Improvement in Average Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMCC (IDI Based)</td>
<td>412</td>
<td>61.5</td>
<td>77.9</td>
<td>16.4</td>
</tr>
<tr>
<td>MMCC (Cascade)</td>
<td>98</td>
<td>54.0</td>
<td>74.4</td>
<td>20.4</td>
</tr>
<tr>
<td>RDT/Fever Case Management TOT</td>
<td>28</td>
<td>63.9</td>
<td>87.4</td>
<td>23.5</td>
</tr>
<tr>
<td>Step-down training (RDT)</td>
<td>225</td>
<td>76.0</td>
<td>90.0</td>
<td>14.0</td>
</tr>
</tbody>
</table>
Cascade training compared to IDI-based (2)

Improvement on impact indicators

Cost-effective use of antimalarial drugs
Fever Case Management

**Problem**
- Lack of microscopy capacity in many remote areas; misdiagnosis of febrile illnesses

**Solution**
- Effective rapid diagnostic test (RDT) implementation
- Not just correct RDT use, but appropriate fever case management for local context

<table>
<thead>
<tr>
<th>Site</th>
<th>Proportion of patients with fever for whom RDT performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mubende</td>
<td>99%</td>
</tr>
<tr>
<td>Jinja</td>
<td>98%</td>
</tr>
<tr>
<td>Tororo</td>
<td>98%</td>
</tr>
</tbody>
</table>
RDT results by patient age

![RDT results by patient age](image)

Antimalarial prescribing by RDT result

<table>
<thead>
<tr>
<th>Site</th>
<th>Mubende (n = 191)</th>
<th>Jinja (n = 487)</th>
<th>Tororo (n = 1308)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with <strong>positive</strong> RDT who received antimalarial prescription</td>
<td>100%</td>
<td>99%</td>
<td>99%</td>
</tr>
</tbody>
</table>
## Antimalarial prescribing by RDT result (2)

<table>
<thead>
<tr>
<th>Site</th>
<th>Mubende (n = 409)</th>
<th>Jinja (n = 616)</th>
<th>Tororo (n = 513)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with <strong>negative</strong> RDT who received antimalarial prescription</td>
<td>0.5%</td>
<td>0.2%</td>
<td>0.8%</td>
</tr>
</tbody>
</table>

## Impact of RDT training on antimalarial prescribing

<table>
<thead>
<tr>
<th>Site</th>
<th>Relative change in proportion of patients prescribed antimalarial</th>
<th>Antimalarial doses saved per 1000 patients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RR (95% CI)*</td>
<td>p-value</td>
</tr>
<tr>
<td>Mubende</td>
<td>0.32 (0.29 – 0.36)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Jinja</td>
<td>0.44 (0.39 – 0.50)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Tororo</td>
<td>0.73 (0.70 – 0.77)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*Generalized estimating equations controlling for history of fever and age, adjustment for repeated measures on the same day.*
Study limitations

- Small number of study sites, good rapport with health center staff
- Highly engaged and motivated trainers
- Relatively high malaria transmission in Uganda, so that health workers see both positive and negative RDT results every day
- Larger M&E of training program will be useful to gauge likely impact of national roll-out

470 Health Workers Reached in 2009
Next for Uganda

- Preservice training pilot
- Community level fever case management through ICCM
- Explore private sector
Pilot in Second African Country

- MMCC approved by Ugandan MOH as the official training for management of uncomplicated malaria; will use it to train all health workers in health facilities with functional laboratories
- RDT training manual adopted as official for RDT use in Uganda; incorporated into scale up to national level, with funding from USAID/PMI and the Global Fund
- New WHO treatment guidelines will increase use of microscopy and RDTs
- Validate Uganda success in another country.
- Assists donor agencies trying to ensure their malaria-specific funding is effectively used