Research for Access
Integrated Community Case Management of malaria and childhood illness

Franco Pagnoni
WHO/TDR

Achieving MDGs through community based approaches

"... The evidence strongly suggests that facility-based interventions require a strong community-based component in order to improve child mortality...”

Freeman et al. Gl Pub H, 2009

Figure 2: Child health interventions throughout the life cycle which are feasible at the community level (low birth weight, ORT, oral rehydration therapy, TT, influenza seasonal, SPT, tuberculosis, and HIV and childhood illness). Refer to facility-based management of acute respiratory illness, pneumonia, childhood diarrhea and maternal and child health.
Why should interventions be delivered in community settings?

- Improvement of HF alone is not sufficient to avert a large proportion of child deaths
- HF based services tend to emphasize curative care over prevention
- HF services are less likely to be accessed by the poor
  - Opportunity costs > direct costs

Research on CCMm
Results 2004-09

- CHWs can deliver ACTs with high quality (>95%)
- Mothers adhere to treatment schedule (~85%)
- Coverage of malaria (fever) cases by CHWs is high (~60%)
- Cure rate of ACTs used in CCM is high (>90%)
- Coartem is stable stored by CHWs
- CCM reduces workload in Health Facilities
- Distribution of ACTs through Private Sector improves coverage
Published Results

Impact on the Health System

- **CCMm reduces the workload in health facilities**
  - Overall reduction 43%
  - Malaria cases in int. HF reduced from 71% to 21%
  - Non-malaria cases in int HF increase to 79% from 29%

- **Overall increase of malaria Tx in intervention clusters by a 2.5 factor**
  - In int clusters, only 6.7% of malaria Tx were prescribed at HF level
HMM → CCM: an evolving concept

- Avoid a misleading term (home)
  - Key elements remain the same
- Need to incorporate the use of diagnostics (in the era of RDTs)
  - Clear malaria/pneumonia symptom overlap, specially among severe cases
  - Need to improve rational use of antimalarials
  - Need for epidemiological monitoring in a context of declining malaria transmission (→ elimination)
- → Obligation to manage pts with negative RDTs
  - Provide Dx and Tx for other killer diseases (pneumonia, diarrhoea, neonatal sepsis)
  - Even more necessary in a context of declining malaria transmission

What to blame? Malaria or Pneumonia?

Severe Malaria

Severe Pneumonia

Courtesy of Quique Bassat - CRESIB
### Integrated Community Case Management of Fevers

1. 3 cluster-randomized trials, ~90,000 U5 children to compare survival benefit of treating childhood fevers for malaria and pneumonia vs. malaria only (→ 2011-12)
2. 6 cluster-randomized trials, ~7,000 U5 children to assess role of RDTs in the context of iCCM (fever clearance, performance of RDTs, use of medicines, → Sept 2010)
3. Large scale evaluation research to measure survival benefit of iCCM implemented by PSI (~2M pop/country, → 2012)

### Use of RDTs in CCM of childhood illness in 6 African countries - study design

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDT / Resp Rate oriented treatment</td>
<td>Tx based on presumptive diagnosis (ACTs ± AB)</td>
</tr>
<tr>
<td>RDTpos and RR low = ACTs only</td>
<td>Burkina Faso</td>
</tr>
<tr>
<td>RDTpos and RR high = ACTs + AB</td>
<td>Ghana</td>
</tr>
<tr>
<td>RDTneg and RR high = AB only</td>
<td>Nigeria</td>
</tr>
<tr>
<td>RDT neg and RR low = Paracetamol only</td>
<td>Cameroon</td>
</tr>
<tr>
<td></td>
<td>Uganda (2 sites)</td>
</tr>
<tr>
<td></td>
<td>Zambia</td>
</tr>
</tbody>
</table>

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TDR for research on diseases of poverty
World Health Organization

4th CMWG meeting, Geneva, 6-7 July 2010
Preliminary results – Nigeria and Uganda: Operational Feasibility

<table>
<thead>
<tr>
<th>Tested competence after weeks of training</th>
<th>No in sample</th>
<th>Competency level (%)</th>
<th>Competency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complied with blood taking guides</td>
<td>16</td>
<td>97.3</td>
<td>0.16</td>
</tr>
<tr>
<td>Waste properly disposed</td>
<td>16</td>
<td>86.3</td>
<td>0.34</td>
</tr>
<tr>
<td>Accurate reading of RDT</td>
<td>16</td>
<td>93.2</td>
<td>0.25</td>
</tr>
<tr>
<td>Provide appropriate drugs</td>
<td>16</td>
<td>94.5</td>
<td>0.23</td>
</tr>
<tr>
<td>Complied with exclusion criteria</td>
<td>16</td>
<td>95.9</td>
<td>0.20</td>
</tr>
<tr>
<td>Maintain records</td>
<td>16</td>
<td>86.3</td>
<td>0.34</td>
</tr>
</tbody>
</table>

**UGANDA:** 14 CHWs observed, 178 children diagnosed & treated for malaria or pneumonia or both
- all RDT results confirmed by lab scientist (134 pos, 40 neg, 4 invalid)
- 166/178 (93%) breathing assessments consistent with the paediatrician's

Preliminary results – Burkina Faso, RDT performance

<table>
<thead>
<tr>
<th>Overall</th>
<th>Malaria high transmission season</th>
<th>Malaria low transmission season</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample size</td>
<td>N = 363</td>
<td>N= 288</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>98.9%</td>
<td>98.7%</td>
</tr>
<tr>
<td>Specificity</td>
<td>32.1%</td>
<td>29.3%</td>
</tr>
<tr>
<td>Positive Predictive Value</td>
<td>84.2%</td>
<td>84.7%</td>
</tr>
<tr>
<td>Negative Predictive Value</td>
<td>89.3%</td>
<td>85.0%</td>
</tr>
</tbody>
</table>
Preliminary results – Burkina Faso, RDT performance

Figure 2: Monthly distribution of children included and Malaria smears positivity rate

| Preliminary results – Burkina Faso fever clearance |

Table 3: Fever clearance at day 3 in the study population

<table>
<thead>
<tr>
<th>Malaria season</th>
<th>Control arm</th>
<th>Intervention arm</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low malaria transmission</td>
<td>97.7% (42/43)</td>
<td>100% (67/67)</td>
<td>0.2</td>
</tr>
<tr>
<td>High malaria transmission</td>
<td>94.7% (195/206)</td>
<td>90.4% (197/218)</td>
<td>0.09</td>
</tr>
<tr>
<td>Overall</td>
<td>95.2% (237/249)</td>
<td>92.6% (264/285)</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Table 4: Fever clearance at day 7 in the study population

<table>
<thead>
<tr>
<th>Malaria season</th>
<th>Control arm</th>
<th>Intervention arm</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low malaria transmission</td>
<td>100% (40/40)</td>
<td>100% (69/69)</td>
<td>1</td>
</tr>
<tr>
<td>High malaria transmission</td>
<td>98.9% (188/190)</td>
<td>96.5% (193/200)</td>
<td>0.20</td>
</tr>
<tr>
<td>Overall</td>
<td>99.1% (228/230)</td>
<td>97.4% (262/269)</td>
<td>0.26</td>
</tr>
</tbody>
</table>
Preliminary results – Ghana: use of drugs and fever clearance

<table>
<thead>
<tr>
<th>Treatment administered</th>
<th>Arm of study</th>
<th>Diff. (P-value) Int/control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescription of ACTs (AS-AQ)</td>
<td>85% (81.8-87.7%)</td>
<td>95% (93.4-96.8%)</td>
</tr>
<tr>
<td>Prescription of antibiotics (cotrimoxazole)</td>
<td>51% (47.3-55.4%)</td>
<td>64% (60.4-68.2%)</td>
</tr>
<tr>
<td>Fever clearance by D3 (temp &lt; 37.5°C)</td>
<td>91% (88.6-93.2%)</td>
<td>83% (80.1-86.1%)</td>
</tr>
<tr>
<td>Fever clearance by D7 (temp&lt; 37.5°C)</td>
<td>90.8% (88.4-93.1%)</td>
<td>90.7% (88.3-93.0%)</td>
</tr>
</tbody>
</table>

Objectives:
- To assess feasibility/acceptability of malaria CCM in urban areas
- Descriptive studies (before/after design)
  - Identification of appropriate distribution channels
  - Assess obtainable coverage
- Studies concluded March 2010
- Data analysis & report writing workshop held, manuscript in preparation
Preliminary results – urban CCMm – 5 sites

- Urban CCMm is feasible and acceptable
- Quality of prescription and level of adherence similar to rural
- Higher diversity of CMDs
- Coverage lower than in rural CCMm (~40% on average)

CCM for uncomplicated + severe malaria

- 4 descriptive studies, ~ 6,500 U5 children
- Endpoint:
  - Feasibility/acceptability of CCM of malaria of various degrees of severity
  - Using RDTs, ACTs and rectal artesunate
- 18 months studies, launched May 2010
Lessons learnt from CCM programmes

- Quality of relationship with formal HS is crucial
  - Need for effective integration into the HS, ensure they recognise each others’ value and roles
    - Supervision
    - Supply of commodities
    - Information management
    - Referrals

- CCM not an alternative but part of overall malaria case management policy

To be successful, CCM requires a performant Health System!

Research gaps
Research gaps in CCM
Supply side

- Quality of care:
  - Can CHWs perform increasingly complex tasks correctly?

- Recruitment, retention and motivation of CHWs:
  - Which methods of remuneration/incentivation/ supervision are effective and sustainable, increase recruitment and reduce attrition?

- Resistance to medicines
  - How will large scale implementation of CCM impact on resistance to medicines?

Research gaps in CCM
Demand side

- Quality of care:
  - How does prescription of multiple drugs for multiple diseases impact on caregivers' adherence?
  - What is the impact of availability of alternative diagnostic tests / treatments on behaviour of caregivers?
Thank you for your attention