Democratic Republic of the Congo:
Start of Public-Private Collaboration
in Malaria Control – First Year
Progress in Southern DRC

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Location

Katanga Province
Kolwesi District

**Tenke-Fungurume**
~180 km NW of Lubumbashi
70 km east of Kolwezi
Katanga Health Province

Sub-divided by
Health Districts
Health Zones
Health Areas
Fungurume Health Zone ‘FHZ’

FHZ ~134,000 pop

Health Areas (18)
8 inside the concession

2 Health Centers
> 60% visits malaria-related
Presumptive diagnosis only

No history of malaria/vector control activities

Dark outline represents TFM Concession area
Concession Community 2010

- Primary rural, scattered villages and 2 semi-urban centers – low income
  - Fungurume: 65,000+
  - Tenke: 15,000+
  - Villages (42): 8,500

- Total: 88,500+ (upwards to 93,000 and growing)

- % (est.) growth (2006 - present): +45%
  Last 2 years: +30%
Environment

- NW extension ‘Copper Belt’
- Upland-savanna (1300-1500m asl)
- Degraded Miombo woodlands, limited gallery forest, wetlands
- Patchwork farm fields, villages, mineralized hill.
- 80% subsistence agricultural mosaic (maize/legumes), artisanal mining, charcoal
- Similar to southern Africa than tropical central Africa
Climate

- 2 Distinct Seasons (wet and dry)
  - Oct-Nov: early rains
  - Dec-Feb: full rains (high transmission)
  - Mar-Apr: late rains (high transmission)
  - May-July: cool, dry
  - Aug-Sept: hot, dry (lowest transmission)
Malaria

Climate suitability excellent

Malaria endemic

Perennial transmission

Seasonal fluctuations

High Wet (Dec-Mar)
Low Dry (July-Sept)
Program Development Timeline

- **June 2006**: Initial vector survey
- **Oct 2006**: Malaria/vector control proposal
- **May 2007**: Malaria control program (*workforce only*)
  - Baseline school malaria survey
- **May 2007**: Baseline insecticide susceptibility
- **May 2008**: Community BLHS
- **Oct 2008**: Community IRS/LLTN distribution
- **May 2009**: MOU b/t TFM, FHZ, Katanga MoH
  - School malaria survey
- **Oct 2009**: Community IRS/LLTN
  - School malaria survey
- **May 2010**: School malaria survey
- **Oct 2010**: IRS & School malaria survey
Pre-control Surveys

Establish Vectors

- Primary: *An. gambiae s.s. An. funestus s.s.*
- Secondary: *An. arabiensis, An. coustani (?)*
- 11 *Anopheles* species identified
  (Species PCR-based, infection w/ CSP-ELISA)

Insecticide susceptibility: *An. gambiae* and *An. funestus*

- * No resistance to DDT, bendiocarb, malathion, deltamethrin
- * Soil & water sampling (negligible traces)

Baseline pt prevalence (stratified random sampling)

- May 2007: 67-89% (77%) 6-12 y.o.
- May 2008: 38-84% (55%) 0-59 mos.
Community Program Strategies & Results

- Integrated Vector Management – *Personal protection, environmental modification/manipulation, and chemical control*
  - IRS (begun Oct 2008 w/in 10 Hlth Areas)
  - LLTN Distribution (45,000 nets - free)
  - School prevalence surveys
  - Vector monitoring and larval control (2007)
  - Source reduction (long-term)
LLTN

- Phase 1 (Oct 2008) & Phase 2 (Oct 2009)
  - Total distributed (Dec 09): 45,453 (PermaNet®)
  - Retention (Oct 09): 38,406 (92%, ~1.7/house)
  - Preg & < 5 y.o. (Dec 09): 33,012 (86%)
  - Houses covered (Dec 09): 21,965 (95% with IRS)
Organized & Coordinated between:
- TFM Malaria & Vector Control Dept
- TFM Social Department (+ external relations)
- FHZ staff
- Community leaders

Four ‘teams’: 4 Supervisor/Team Leader, 32 operators, 16 Social Mobilizers (1 mobilizer per 2 operators)

Expert training (IRS), job descriptions, SOPs

Two-stage field documentation: Operator and Supervisor
- Information Officer: reconciles & collates daily
- Weekly reporting: FHZ, MoH, TFM departments
IRS

- Timing: Before the onset of the heavy ‘wet’
- Period: ~2.5 months
- Insecticides: Deltamethrin/alpha-cypermethrin
- 5 vehicles dedicated + back-up
- Spare application equipment, supplies, PPE
IRS

Coverage 2008 vs. 2009

Houses sprayed: **23,130** (87,949 rooms)

Change: **76% increase in rooms**

Compliance/acceptance: **99% w/ follow-up**
Pre & Post School Prevalence Surveys

- Population-based, stratified randomization between schools and pupils (6-12 yr old) within schools

MAY 2007 (N=536)
- BS: 77.0%

MAY 2009 (N= 595) ~ 6 months post-IRS
- BS: 33.2%

OCT 2009:(N= 588) ~12 months post-IRS
- BS: 22.6%

Percent reduction between surveys
- May 2007 [- 56.8%] May 2009 [- 32.1%] Oct 2009
- Overall: 2007 to Oct 2009 - 70.6% decrease
Summary Recommendations

One annual IRS round
- Timed (end of dry/early wet) before peak transmission
- Second year (2010) assessment
- Rotate to carbamate or OP (2010)

Diagnosis and effective treatment in existing health clinics (equipment, supplies, training)

Targeted environmental modifications/source reduction

Increase capabilities of entomology laboratory support

Document program with accurate measurement & evaluation procedures
Program Approach


- Malaria control solutions "local" and target-site specific

- Stepwise program development with changing demographic, political, and economic indicators

- Promote as Public initiative (NMPC policies)

- Priorities set by NMPC and recipients
Program Approach

- **Strong engagements**: gov’t health service & community at beginning as partners/stakeholders.

- **Transparency** and communication at ALL levels (regular information exchange)

- **Precise outcomes & accurate measures** (e.g., Disease ‘incidence’, severe anemia, % IRS coverage, LLTN per family,…)

- **Primary indicator**: Malaria infection

- **Secondary indicators**: Entomological parameters
Outlook

- Good for fostering multiple partnerships
- Agreed planned gradual transition and integration with gov’t health services
- Strong TFM support – specific catalyst to mobilize additional capital and human resources
- Strong Public momentum and commitment
- Program serve as ‘nucleus’ for area expansion
Sustainability Challenges

- Managing Community & Donor expectations
- Adapt to increase population & development
- Rate and type of area economic development
- Attracting the correct combination of partner institutions, NGOs, & community-level volunteers
- Sticking to timelines and *Patience*
Sustainability Development Timeline

Role of TFM in Community Development

Start 2007

Today 2010

Increase Partnership in Community Development

Working Towards Sustainable Development

Gradual move from Private to Public domain

Mine Closure 40+ years
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