Artemisinin-based combination therapy (ACT) efficacy in Guyana and Suriname

K. Carter
A. Dondorp
P. Ringwald
Malaria Distribution in the Americas, 2011
Technical & financial collaboration

- Amazon Malaria Initiative (AMI) and the Amazon Network for the Surveillance of Antimalarial Drug Resistance (RAVREDA), 2001
- Global Fund to combat HIV, Tuberculosis and Malaria

AMI/RAVREDA ines of Intervention:
- Improve access to good quality diagnosis for malaria patients
- Monitor the efficacy of and resistance to anti-malarials
- Improve quality assurance and control of pharmaceuticals and other supplies for malaria prevention and control
- Improve epidemiological surveillance
- Improve vector surveillance and integrated vector management
- Improve, sustained networking at the regional level and system strengthening at country level
- Significant contribution in control efforts but persistent gaps in terms of malaria elimination and prevention of reintroduction
Malaria cases Suriname 2000-2012

Suriname Bureau of Public Health nov 2012
Hiwat et al. Novel strategies lead to pre-elimination of malaria in previously high-risk areas in Suriname, South America Malaria Journal 2012, 11:10
Surveillance of artemether-lumefantrine efficacy in Suriname in 2011

- Number of cases in resident population too low for regular surveillance of efficacy
- Gold miners not available for frequent sampling
- Patients mainly recruited from the gold miners malaria facility in Paramaribo (Tourtonne-lab)
- Follow up for as long as patients were available (up to day 28)
- Comparison of day 3 results with surveillance data from 2005 - 2006
Surveillance of artemether-lumefantrine efficacy in Suriname in 2011

- Study conducted from April - October 2011
- 74 patients enrolled (M/F ratio 56/9; no children)
- Evaluable patients
  - Until day 3: 52 cases
  - Until day 28: 11 cases
- Results
  - ACPR: 11/11 (100%)
  - Day 3 parasitemia: 15/52 (28.8%) (in 2005 - 2006: 2%)
Assessment of quality of slide reading

• **Problems**
  - Follow up slides taken by insufficiently trained field workers
  - Slides were not prepared for long time storage (quality assessment was not foreseen)
  - 27/48 day 3 slides considered readable
  - Day 3 parasitemia: 16.2%

• **Results**
  - 3 slides read positive that were negative by initial reading
  - 3 slides negative that were positive by initial reading.
  - Day 3 parasitaemia somewhere between 10.8 and 28.8%

• **Remark:** parasitaemia often at 1-2 parasites/500 WBC
Malaria situation in Guyana

- Malaria has spread geographically to various regions, mainly focused in the hinterland Regions 1, 7 and 8
- In Guyana more than 200,000 people live in areas considered at high and medium risk for malaria
- In recent years an increase in the proportion of *P. falciparum* among the two predominant species was observed
- *P. falciparum* and mixed infections increased from 39% in 2007 to 69% in 2011
Monitoring the therapeutic efficacy of antimalarial drugs in Guyana

<table>
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<th>Drug Combination</th>
<th>Species</th>
<th>Years</th>
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<tr>
<td>Artemether - Lumefantrine</td>
<td>(P.falciparum)</td>
<td>2004 - 2005</td>
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<td>Artesunate - Mefloquine</td>
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<td>Artemether - Lumefantrine + Primaquine</td>
<td>(P.vivax)</td>
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Surveillance of artemether-lumefantrine efficacy in Guyana 2011-2012

- Malaria Clinic & Tropical Diseases Laboratory, Georgetown Public Hospital Corporation
- Study conducted from May 2011 - July 2012
- 92 patients enrolled; 68 followed up for 28 days
  - 87% were adults
  - 64% miners
  - 91% male

Results
- Treatment failures: 7/68 (10.3%) (day 7 - day 28)
- Day 3 parasitemia: 63/89 (70.8%)
Slide reading by CDC

• **Day 3 review**
  - 7/82 (8.5%)
  - 1-2 parasites/1000 WBC

• **Day 28 review**
  - 3 slides read positive
  - 1 recrudescence (PCR); 2 PCR on-going
• Informal consultation on the emergence of artemisinin resistance in South America, held in Washington, 21 February 2013
  • Ministries of Health of Guyana and Suriname, as well as from CDC, USAID, WHO PAHO and WHO Headquarters, and the chair of DRC TEG
• There was a consensus that artemisinin resistance is now suspected in both Guyana and Suriname
• It was proposed that confirmatory studies be conducted in Suriname and Guyana
  • In Suriname artesunate for three days followed by mefloquine single dose
  • in Guyana, artesunate for seven days
• Containment activities
  • AMI/RAVREDA meeting (8-11 April)
  • Guyana shield meeting (10-11 October)
  • Guyana applying for phase 2 of Global Fund Single Stream Funding
• Communication