Targeted Top-Up of LLINs
Bioko Island, Equatorial Guinea

Medical Care Development International

Wonder Philip Phiri
Bioko Island, Equatorial Guinea

- Small volcanic Island about 2,000km²
- Main Island of Equatorial Guinea with a population of ~250,000
- Malaria endemic, year-round malaria transmission setting; primary health burden prior to control

<table>
<thead>
<tr>
<th>Strata</th>
<th>Description</th>
<th>Parasite Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High Endemicity</td>
<td>20% or more</td>
</tr>
<tr>
<td>2</td>
<td>Medium Endemicity</td>
<td>10-&lt;20%</td>
</tr>
<tr>
<td>3</td>
<td>Low Endemicity</td>
<td>5-&lt;10%</td>
</tr>
<tr>
<td>4</td>
<td>Very Low Endemicity</td>
<td>1-&lt;5%</td>
</tr>
<tr>
<td>5</td>
<td>Non Endemic</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>
Vector Control Strategy in Bioko Island

- Island-wide IRS from 2004 -2014
  - 2015: Targeted IRS
- LLIN distribution
  - Mass distributions in 2008, 2015, planned in 2018
  - Routine keep-up through antenatal clinics
  - Planned Top-up campaigns through primary schools
- Targeted top-up campaign in high risk communities
  - 4th -23rd of July 2016
Bed Net Ownership In Bioko Island

- % of households owning at least one net
- % of households owning at least one ITN

Massive LLIN Distribution

- 2008: 97.0%
- 2009: 55.9%
- 2010: 43.4%
- 2011: 34.8%
- 2012: 43.3%
- 2013: 49.6%
- 2014: 49.4%
- 2015: 73.64%

Massive LLIN Distribution

- 2008: 82.0%
- 2009: 46.0%
- 2010: 23.0%
- 2011: 17.6%
- 2012: 25.3%
- 2013: 29.1%
- 2014: 29.6%
- 2015: 68.4%
Why Households Did Not Keep Nets

- Net was too torn too many holes: 12.7%
- Net was too dirty: 9.8%
- Net was not needed in this season: 17.9%
- We did not like this net: 16.2%
- Needed the money: 23.7%
- Other: 12.7%
- Net was needed more by relatives on the EG Mainland: 1.2%
Foundation for Targeted Top-Up in Bioko

- **Integrated mapping system**
  - Households georeferenced with unique building identifiers
  - Communities delimited according to local Government structures
  - Ability to track different activities down to the household level over time (LLINs, IRS, etc.)
Community Household Enumeration

High prevalence communities
Malaria Indicator Survey, 2015

- Prevalence ≥ 20%
- Parks
- 1 km² grid areas
- 100 m² grid sectors
- Uniquely identified structure

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[Map showing community enumeration areas and prevalence data]
Foundation for Targeted Top-Up in Bioko

Data Sources:

- **MIS**
  - Carried out annually from August-October
  - Provides us with up-to-date community-level indicators
  - Use of prevalence data to stratify, identify high risk communities

- **HIS**
  - Will in the near future permit year-round risk assessment
  - Use of incidence data to identify high risk communities
Community Mobilization

- **Involvement of Community leadership**
  - Community Presidents
  - Community Counsellors
  - Women's groups

- **Domiciliary visits to promote the following:**
  - Net usage and care
  - Early treatment seeking behavior
  - IPT for Pregnant women
Net Ownership Prior to Top-up - Basupu
Net Ownership Post Top-up - Basupu
### Distribution Results - High Risk Areas – 4th - 23th July 2016

<table>
<thead>
<tr>
<th>Community Name</th>
<th>Total Houses</th>
<th>Houses that Received bed nets</th>
<th>Total Bednets Distributed</th>
<th>% Houses that received at least 1 LLIN</th>
<th>Average nets Distributed per House</th>
<th>Population Protected</th>
<th>Persons per LLINs ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granos de Oro</td>
<td>17</td>
<td>17</td>
<td>62</td>
<td>100%</td>
<td>3.6</td>
<td>121</td>
<td>1.95</td>
</tr>
<tr>
<td>Botonos Sur</td>
<td>29</td>
<td>27</td>
<td>86</td>
<td>93%</td>
<td>3.2</td>
<td>129</td>
<td>1.50</td>
</tr>
<tr>
<td>1-38 Manzana INSESO y Ministerio de Infraestructuras</td>
<td>44</td>
<td>40</td>
<td>106</td>
<td>91%</td>
<td>2.7</td>
<td>175</td>
<td>1.66</td>
</tr>
<tr>
<td>4-27 Perez V&quot; Canteras&quot;</td>
<td>100</td>
<td>91</td>
<td>288</td>
<td>91%</td>
<td>3.2</td>
<td>359</td>
<td>1.25</td>
</tr>
<tr>
<td>1-1.1 Zona Presidencial A</td>
<td>189</td>
<td>162</td>
<td>360</td>
<td>86%</td>
<td>2.2</td>
<td>701</td>
<td>1.95</td>
</tr>
<tr>
<td>1-12 Manzana Cine Jardin y Policia</td>
<td>103</td>
<td>88</td>
<td>178</td>
<td>85%</td>
<td>2.0</td>
<td>250</td>
<td>1.41</td>
</tr>
<tr>
<td>4-5.3 Parroquia Maravillas de Jesus</td>
<td>200</td>
<td>167</td>
<td>388</td>
<td>84%</td>
<td>2.3</td>
<td>440</td>
<td>1.13</td>
</tr>
<tr>
<td>Basupu</td>
<td>635</td>
<td>527</td>
<td>1,136</td>
<td>83%</td>
<td>2.2</td>
<td>1,824</td>
<td>1.61</td>
</tr>
<tr>
<td>2-5 Sumco V</td>
<td>229</td>
<td>186</td>
<td>450</td>
<td>81%</td>
<td>2.4</td>
<td>958</td>
<td>2.13</td>
</tr>
<tr>
<td>4-16 Bioko Norte II</td>
<td>185</td>
<td>145</td>
<td>352</td>
<td>78%</td>
<td>2.4</td>
<td>576</td>
<td>1.64</td>
</tr>
<tr>
<td>Sacriba Fang</td>
<td>134</td>
<td>105</td>
<td>277</td>
<td>78%</td>
<td>2.6</td>
<td>349</td>
<td>1.26</td>
</tr>
<tr>
<td>5-8.2 Santa Maria V</td>
<td>843</td>
<td>652</td>
<td>1,433</td>
<td>77%</td>
<td>2.2</td>
<td>2,509</td>
<td>1.75</td>
</tr>
<tr>
<td>1-18 Manzana Camara de Comercio y Ayuntamiento</td>
<td>20</td>
<td>15</td>
<td>35</td>
<td>75%</td>
<td>2.3</td>
<td>41</td>
<td>1.16</td>
</tr>
<tr>
<td>5-6.2 Santa Maria III</td>
<td>234</td>
<td>174</td>
<td>410</td>
<td>74%</td>
<td>2.4</td>
<td>654</td>
<td>1.60</td>
</tr>
<tr>
<td>5-16.1 Mongola I</td>
<td>634</td>
<td>458</td>
<td>1,081</td>
<td>72%</td>
<td>2.4</td>
<td>1,239</td>
<td>1.15</td>
</tr>
<tr>
<td>5-8.1 Santa Maria V</td>
<td>932</td>
<td>646</td>
<td>1,462</td>
<td>69%</td>
<td>2.3</td>
<td>2,109</td>
<td>1.44</td>
</tr>
<tr>
<td>Potao</td>
<td>132</td>
<td>83</td>
<td>240</td>
<td>63%</td>
<td>2.9</td>
<td>259</td>
<td>1.08</td>
</tr>
<tr>
<td>1-2 Zona Presidencial B</td>
<td>47</td>
<td>26</td>
<td>56</td>
<td>55%</td>
<td>2.2</td>
<td>109</td>
<td>1.95</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,707</strong></td>
<td><strong>3,609</strong></td>
<td><strong>8,400</strong></td>
<td><strong>77%</strong></td>
<td><strong>2.3</strong></td>
<td><strong>12,803</strong></td>
<td><strong>1.52</strong></td>
</tr>
</tbody>
</table>
Preliminary Analysis: Ownership

- Of the 3,609 houses in high risk communities selected to receive bed nets in 2016:

<table>
<thead>
<tr>
<th>Number of nets received in 2014/15</th>
<th>Reported Net ownership in 2016</th>
<th>% decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>9,008</td>
<td>2,509</td>
<td>72%</td>
</tr>
</tbody>
</table>

- Average time between Distributions is about 375 days

![Percent difference between nets received in 2014/15 and reported net ownership in 2016](chart.png)
Visualizing Ownership

Communities receiving LLINS during top-up campaign

Percent decrease by community in reported net ownership

- 63.1% - 43.45%
- 66.5% - 63.11%
- 75.1% - 66.51%
- 81.78% - 75.11%
- 89.24% - 81.79%

Parks
Nets Observed during Spraying Activities 8\textsuperscript{th} Aug - 12\textsuperscript{th} Sept 2016
Thank you

The struggle continues
Questions?