Financing Malaria Control – allocating limited resources

Richard Cibulskis

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Allocating limited resources

1. How to allocate (international) resources between countries?
2. How should limited resources be allocated within countries?

Why ask?
- Domestic malaria spending US$ 625 million in 2011
- International disbursements US$ 1.67 billion, yielding a total of US$2.3 billion.
- Global resource requirements > US$ 5.1 billion per year

- WHO is asked to advise on which countries should receive priority
- WHO recommends particular interventions but there is not always enough money to implement fully
Resource allocation between countries depends on:

1. Funds potentially available
   - Domestic government’s ability to pay
   - Other donor funding

2. Equity or health objectives
   - Who should benefit (rich/ poor)
   - Maximizing health lives saved/ cases averted, achieving elimination
   - (influenced by absorptive capacity, previous performance)

3. Political objectives

Prefer to have clear principles for allocating resources otherwise they will be driven by those with the loudest voice.
Global Fund Eligibility/ Prioritization

Pre 2008: Countries qualify if latest malaria specific death rates >1/1000

2008: WHO recommended should consider death rates for 2000

2009: GF proposed formula that would consider case incidence as well as mortality rates so countries with *P. vivax* could benefit.

If considering mortality and incidence *rates* Solomon Islands given higher rank than India – WHO suggested to also look at proportion of global burden a country represents.

WHO modified formula and produced four tiers of countries: Very Low, Low, Medium, High
Step A
A parameter based on (a) mortality rate per 1,000 persons at risk of malaria; and (b) morbidity rate per 1,000 persons at risk of malaria was established. Cut-off points and scores are shown in the table below.

Table 3: Malaria: first parameter, values and scores

<table>
<thead>
<tr>
<th>Parameter 1</th>
<th>Value</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combination of mortality rate and morbidity rate per 1,000 persons at risk of malaria</td>
<td>Mortality rate ≥ 0.75 and morbidity rate ≥ 10</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>(Mortality rate ≥ 0.75 and morbidity rate &lt;10) OR Mortality rate ≥ 0.1 and &lt;0.75 regardless of morbidity rate</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mortality rate &lt;0.1 and morbidity rate ≥1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Mortality rate &lt;0.1 and morbidity rate &lt;1</td>
<td>1</td>
</tr>
</tbody>
</table>

Step B
A second parameter based on the country’s contribution to the global number of malaria deaths was established. Cut-off points and scores are shown in the table below.

Table 4: Malaria: second parameter, values and scores

<table>
<thead>
<tr>
<th>Parameter 2</th>
<th>Values</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contribution to global deaths</td>
<td>≥ 1%</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>≥ 0.25% and &lt;1%</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>≥ 0.01% and &lt; 0.25%</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>≤ 0.01%</td>
<td>1</td>
</tr>
</tbody>
</table>

Step C
The final score is then given by the arithmetic average of the two scores for a country, rounded to the nearest integer where needed.

While "transparent" and provides a spread across the world while prioritizing higher burden countries, it does not reflect any particular principals in resource allocation – or indicate how much should go to each band.
Alternatives for allocating resources between countries

1. Equal amounts of money per person at risk – does not take into account need
2. Allocating fund in proportion to disease burden e.g. number of deaths
3. *Equalizing access* - Allocating funds according to resource need - to provide equal access to interventions
4. *Maximizing lives saved* - Allocating funds according to capacity to benefit - to achieve universal coverage in countries with highest death rates and maximize lives saved
5. *Equalizing death rates* - Allocating funds so as to reduce and equalize the highest death rates

*With schemes 4 and 5, as funds become more constrained a greater proportion of funds are directed to countries with the highest mortality rates*
# Example of resource allocations – USD 100 million

<table>
<thead>
<tr>
<th>Country data</th>
<th>Population</th>
<th>Fevers</th>
<th>Cases</th>
<th>Deaths</th>
<th>USD needed for universal access</th>
<th>Deaths per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>High burden A</td>
<td>13,000,000</td>
<td>16,000,000</td>
<td>6,000,000</td>
<td>15,000</td>
<td>30,000,000</td>
<td>115</td>
</tr>
<tr>
<td>High burden B</td>
<td>32,000,000</td>
<td>25,000,000</td>
<td>14,000,000</td>
<td>17,000</td>
<td>66,000,000</td>
<td>53</td>
</tr>
<tr>
<td>High burden C</td>
<td>39,000,000</td>
<td>35,000,000</td>
<td>15,000,000</td>
<td>15,000</td>
<td>80,000,000</td>
<td>38</td>
</tr>
<tr>
<td>High burden D</td>
<td>8,000,000</td>
<td>4,000,000</td>
<td>2,000,000</td>
<td>1,400</td>
<td>13,000,000</td>
<td>18</td>
</tr>
<tr>
<td>Low burden E</td>
<td>55,000,000</td>
<td>9,000,000</td>
<td>64,000</td>
<td>122</td>
<td>74,000,000</td>
<td>0</td>
</tr>
<tr>
<td>Low burden F</td>
<td>7,000,000</td>
<td>1,000,000</td>
<td>43,000</td>
<td>0</td>
<td>9,000,000</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>154,000,000</td>
<td>90,000,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>37,107,000</td>
<td>48,522</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>272,000,000</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>USD (millions) allocated</th>
<th>Equal amount per person</th>
<th>In proportion to no. of deaths</th>
<th>In proportion to resource need</th>
<th>Until resource need fulfilled</th>
<th>Until death rates equalized</th>
</tr>
</thead>
<tbody>
<tr>
<td>High burden A</td>
<td>9</td>
<td>31</td>
<td>11</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>High burden B</td>
<td>21</td>
<td>35</td>
<td>24</td>
<td>66</td>
<td>43</td>
</tr>
<tr>
<td>High burden C</td>
<td>25</td>
<td>31</td>
<td>29</td>
<td>4</td>
<td>30</td>
</tr>
<tr>
<td>High burden D</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low burden E</td>
<td>36</td>
<td>0</td>
<td>27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low burden F</td>
<td>4</td>
<td>0</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The type of scheme used for resource allocation can greatly affect which countries benefit, the health impact and impact on equity.
Example of resource allocations – USD 100 million

Initial malaria death rates

Deaths per 100,000

Malaria death rates after "maximizing lives saved"

Deaths per 100,000

Malaria death rates after "equalizing death rates"

Deaths per 100,000
Domestic funding per capita is highest in the wealthiest countries and in countries with the lowest mortality rates, mostly in the European Region and the Region of the Americas.

International funding for malaria control has been targeted to countries with lower GNI per capita and higher mortality rates, particularly those in Africa i.e. going to where the need is greatest.
Existing patterns of resource allocation

Disbursements for malaria control per capita per year 2006–2010 (US$)

- Equal access model
- Maximizing lives saved
- External funding

World Health Organization

Global Malaria Programme
Existing patterns of resource allocation

Disbursements for malaria control per capita per year 2006–2010 (US$)

Countries ranked by GNI per capita

- Equal access model
- Maximizing lives saved
- External funding

World Health Organization

GLOBAL MALARIA PROGRAMME
Existing patterns of resource allocation

Disbursements for malaria control per capita per year 2006–2010 (US$)

Countries ranked by malaria mortality rates 2000

- Equal access model
- Maximizing lives saved
- External
Future international funding for malaria may be stagnant – malaria endemic countries are growing
Questions for MPAC

Between countries:

1. Should external funds be allocated to maximize health gain or some other criteria?

2. What external funds should be allocated to containment of drug/insecticide resistance or elimination?
Investing limited resources within countries

Few countries have sufficient resources for achieving universal coverage of all interventions. Therefore, they make decisions on what blend of interventions should be used, their scale of deployment, and on the populations that should benefit. Two questions:

1. a) What interventions should a country invest in if resources are not sufficient to achieve universal coverage of vector control, diagnostic testing, and treatment?

2. b) To which populations should interventions be targeted? There are at least three options.
   i. No targeting – all populations at risk get an equal share of resources
   ii. Targeting to highest transmission areas
   iii. Targeting to demographically vulnerable groups such as pregnant women and children.
Questions for MPAC

Between countries:
1. Should external funds be allocated to maximize health gain or some other criteria
2. What external funds should be allocated to containment of drug/insecticide resistance or elimination?

Within countries:
1. Faced with a resource constraint, should malaria programmes prioritize certain interventions, e.g. diagnosis and treatment, given that they account for a smaller part of the malaria control budget?
2. Faced with a resource constraint, should malaria programmes prioritize certain populations e.g. those with highest morbidity and mortality rates.