Additional file 1. Assumptions used in the decision model

Point of reference / population

All persons living in an area or region that:

1) meets REMO criteria for mass treatment with Mectizan® (i.e., considered hyper- or meso-endemic for onchocerciasis)

2) appears to be "at risk" for loiasis based on the environmental risk model map

3) has not yet received Mectizan® mass treatment

Timeframe

Risks of onchocerciasis, onchocercal blindness, onchocercal skin disease, and treatment-associated *Loa* encephalopathy are considered as lifetime risks.

Once a community and an individual begin annual Mectizan® treatment, they continue 'forever'.

Endemicity of Onchocerciasis

Percentage of communities that are actually:	High-risk scenario	Low-risk scenario
Hyper-endemic for onchocerciasis	60%	30%
Meso-endemic for onchocerciasis	30%	30%
Hypo-endemic for onchocerciasis	10%	40%

Endemicity of Loiasis

Distribution of Loa loa infection risk, by community

	High-risk	Low-risk
Percentage of communities in which **no one** has *L. loa* microfilaremia of ≥30,000 per ml	40%	90%
Percentage of communities in which **0.1 – 0.9%** of persons have *L. loa* microfilaremia of ≥30,000 per ml	35%	7%
Percentage of communities in which **1.0 – 1.9%** of persons have *L. loa* microfilaremia of ≥30,000 per ml	15%	3%
Percentage of communities in which **2.0 – 3.9%** of persons have *L. loa* microfilaremia of ≥30,000 per ml	7%	0
Percentage of communities in which **4.0 – 7.9%** of persons have *L. loa* microfilaremia of ≥30,000 per ml	3	0
Percentage of communities in which ≥ **8%** of persons have *L. loa* microfilaremia of ≥30,000 per ml	0	0

Prevalence of individuals with > 30,000 mf per ml, based on community risk (mid-point assumption).

Percentage of individuals who have *L. loa* microfilaremia of ≥30,000 per ml	0%

– in communities where **no one** has *L. loa* microfilaremia of ≥30,000	
Percentage of individuals who have *L. loa* microfilaremia of ≥30,000 per ml – in communities where **0.1 – 0.9%** of persons have *L. loa* microfilaremia of ≥30,000	0.5%
Percentage of individuals who have *L. loa* microfilaremia of ≥30,000 per ml – in communities where **1.0– 1.9%** of persons have *L. loa* microfilaremia of ≥30,000	1.5%
Percentage of individuals who have *L. loa* microfilaremia of ≥30,000 per ml – in communities where **2.0 – 3.9%** of persons have *L. loa* microfilaremia of ≥30,000	3.0%
Percentage of individuals who have L. loa microfilaremia of ≥30,000 per ml – in communities where **4.0 – 7.9%** of persons have *L. loa* microfilaremia of ≥30,000	6.0%
Percentage of individuals who have *L. loa* microfilaremia of ≥30,000 per ml – in communities where ≥ **8%** of persons have *L. loa* microfilaremia of ≥30,000	10%

Performance of RAPLOA (estimates based on Figure 1).

	RAPLOA-40	**RAPLOA-20**
Probability of community testing RAPLOA-positive in which **no one** has *L. loa* microfilaremia of ≥30,000 per ml (1 – specificity)	5%	50%
Probability of community testing RAPLOA-positive in which **0 – 0.9%** of persons have *L. loa* microfilaremia of ≥30,000 per ml	50%	100%
Probability of community testing RAPLOA-positive in which **1 – 1.9%** of persons have *L. loa* microfilaremia of ≥30,000 per ml	70%	100%
Probability of community testing RAPLOA-positive in which ≥**2%** of persons have *L. loa* microfilaremia of ≥30,000 per ml	100%	100%
Sensitivity in detecting potentially 'at risk' communities	50 - 100%	100%
Specificity in detecting potentially 'at risk' communities	95%	50%

Risk of Onchocercal Disease in the Absence of Treatment

Mean lifetime risk of blindness in persons born into and living in areas:

Hyper-endemic for onchocerciasis	25%
Meso-endemic for onchocerciasis	5%
Hypo-endemic for onchocerciasis	1%

Mean lifetime risk of skin disease in persons born into and living in areas:

Hyper-endemic for onchocerciasis	50%
Meso-endemic for onchocerciasis	30%
Hypo-endemic for onchocerciasis	15%

Note: these figures would underestimate risk of skin disease in areas where the sowda form of onchocerciasis predominates.

Drug coverage

Coverage with mass Mectizan® treatment in hyper- and meso-endemic communities is 65% of total population.

Coverage with passive (individual) Mectizan® treatment in hypo-endemic communities is 10% of total population.

Once an individual begins to takes Mectizan®, he/she continues 'forever'.
Compliance with annual Mectizan® is systematic (i.e., the same 65% of the population receives Mectizan® every year).

Benefits of treatment with Mectizan®

Risk of new blindness in persons treated annually with Mectizan® if they had no previous posterior segment eye lesions: 0%

Risk of future skin disease in persons treated annually with Mectizan®: 0%

Risks of treatment with Mectizan®

Risks other than *L. loa* encephalopathy not considered.

L. loa encephalopathy does not occur in persons with microfilarial density of <30,000 per ml blood.

Risk of *L. loa* encephalopathy following the first Mectizan® treatment in persons with *L. loa* microfilarial density of ≥30,000: 1%

Risk of *L. loa* encephalopathy following the second annual Mectizan® treatment in persons who initially (pre-first-year treatment) had *L. loa* microfilarial density of ≥30,000: 0.1%

Risk of *L. loa* encephalopathy following third and subsequent annual Mectizan® treatment in persons who initially (pre-first-year treatment) had *L. loa* microfilarial density of ≥30,000: 0%

Risk of permanent sequelae of L. loa *encephalopathy*

Risk of dying from *L. loa* encephalopathy without supportive care: 50%

Risk of dying from *L. loa* encephalopathy with supportive care: 5%

Risk of permanent neurologic sequelae following *L. loa* encephalopathy in the absence of supportive care: 25%

Risk of permanent neurologic sequelae following *L. loa* encephalopathy if the patient receives supportive care*: 5%

* Supportive care includes hydration, skin care, eye care, anti-infective treatment for nosocomial infections and rehabilitation.

Values for disability-adjusted life years (DALYs) lost for specific conditions

Death	20
L. loa encephalopathy	0.2
Permanent neurologic sequelae following *L. loa* encephalopathy	10
Onchocercal blindness	8.3
Onchocercal skin disease	0.34