

Global Health Partnerships contribute to better health in Africa



THE QUEEN'S
ANNIVERSARY PRIZES
FOR HIGHER AND FURTHER EDUCATION

2008

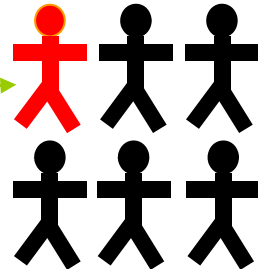
Professor Alan Fenwick OBE PhD
The Schistosomiasis Control Initiative (SCI)
Department of Infectious Disease Epidemiology,
Imperial College
Faculty of Medicine
St Mary's
University of London

Imperial College London

DID YOU KNOW....

Over **ONE BILLION** people worldwide – one in six of the human population

Live on < £1 or \$2/day



Why ?

Partly because they suffer from parasite infections which afflict the poorest people – disabling and disfiguring them – promoting the cycle of poverty and disease

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The parasitic burden in Africa is huge and unnecessary

An estimated 500 million people in Africa are infected with one or more parasitic infections, or with organisms which cause one or more of the Neglected Tropical Diseases.

Safe and effective drugs exist which should make morbidity due to these diseases unnecessary – but those who need them cannot afford them

Understanding epidemiology

To control these diseases in a cost effective way requires an understanding of the life cycles, the transmission patterns, who gets infected, and when they suffer the clinical consequences of these diseases

An evidence based epidemiology picture will lead us to treat the right target population with the correct drug at the correct interval

The Neglected Tropical Diseases

Core Group of 13 – MDA for 7

- Protozoan Infections
 - Human Leishmaniasis
 - Trypanosomiasis
 - Chagas Disease
 - Leishmaniasis
 - Bacterial Infections
 - Buruli Ulcer
 - Leprosy
 - **Trachoma**
 - Helminth Infections
 - **Ascariasis**
 - **Hookworm Infection**
 - **Trichuriasis**
- NTD's
PROMOTE
POVERTY
- Poverty
PROMOTES
NTDs
- Ascariasis
Hookworm Infection
Trichuriasis
Schistosomiasis
Lymphatic Filariasis
Onchocerciasis
Trachoma

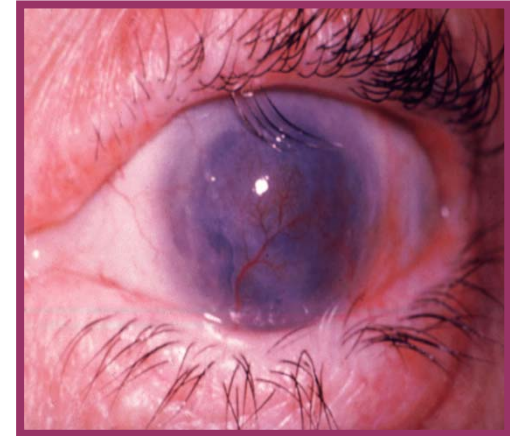
The Neglected Tropical Diseases: causing disability, stigma and poverty



Leprosy



Schistosomiasis



Blinding Trachoma



River Blindness



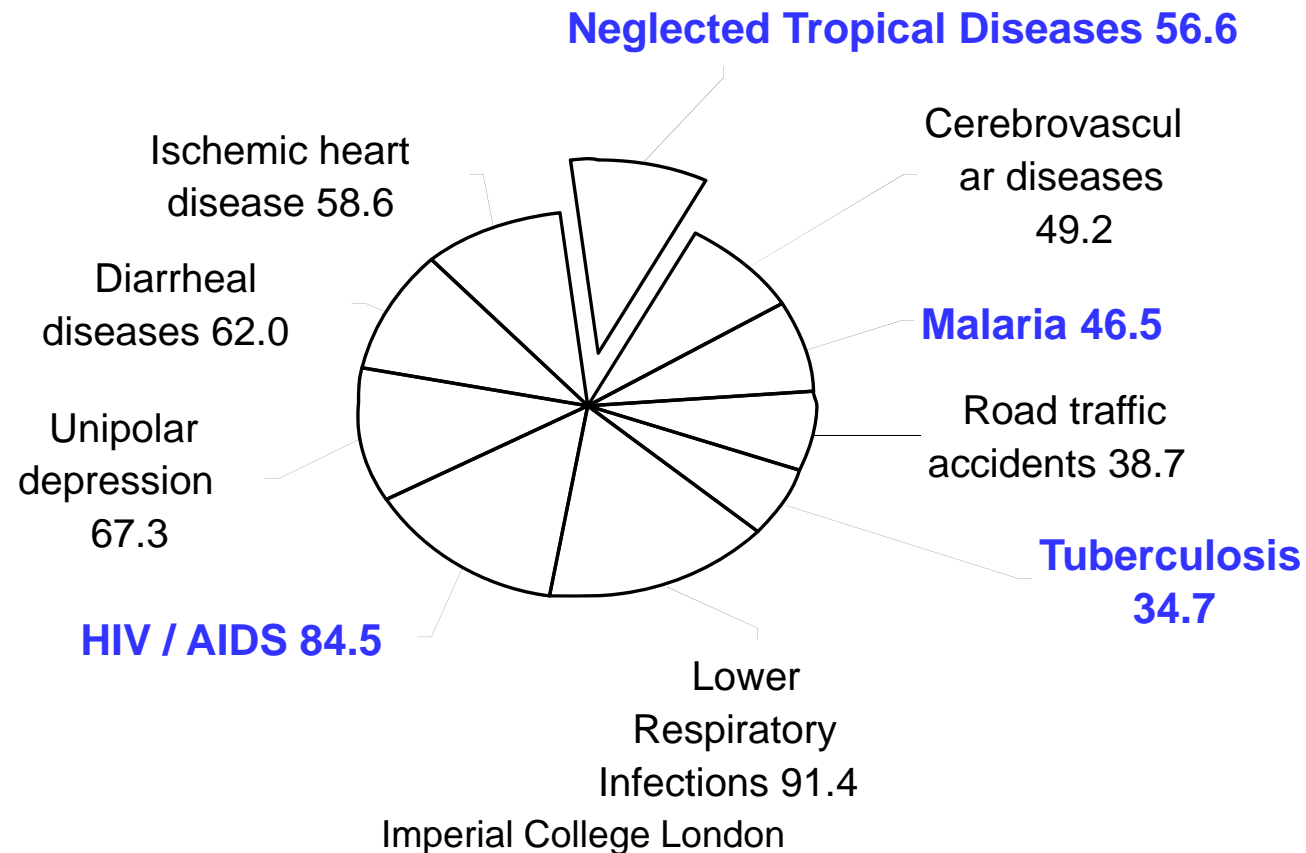
Guinea Worm



Lymphatic Filariasis

Estimated DALYs lost from NTDs compared to other conditions

DALYs (in millions)



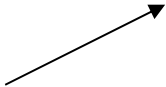
Sub-Saharan Africa has the Highest Prevalence of Nine Neglected Tropical Diseases

Condition	Cases in Africa	Proportion of Global Burden in Africa
Hookworm	198 million	27%-34%
Ascariasis	173 million	14%-22%
Schistosomiasis	166 million	89%
Trichuriasis	162 million	20%-26%
Trachoma	33 million	40%
Lymphatic Filariasis	46 million	38%
Onchocerciasis	18 million	99%
Trypanosomiasis	0.5 million	100%
Dracunculiasis	<0.1 million	100%

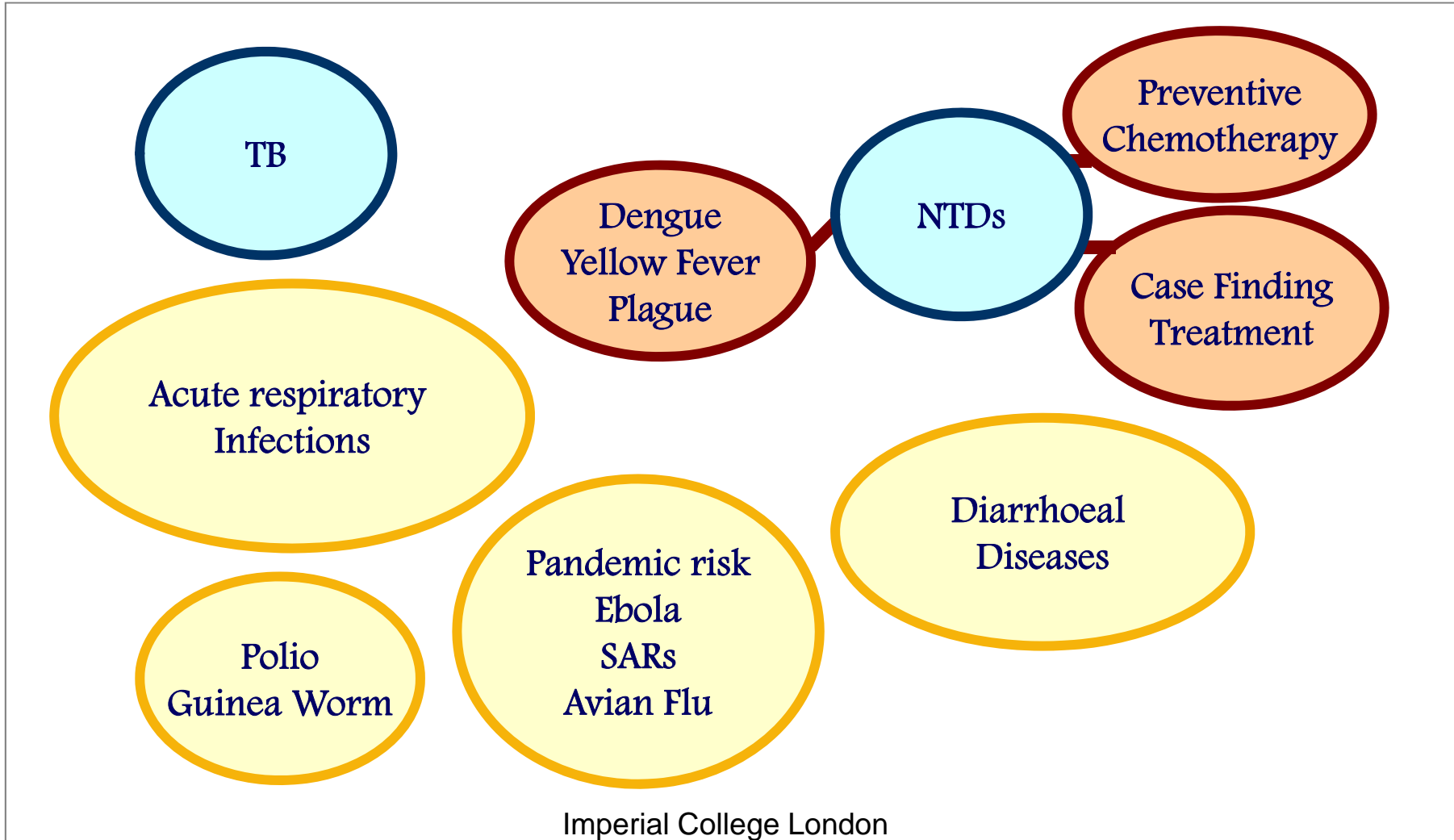
The United Nations Millennium Development Goals (MDGs) – we could speed progress towards most of the MDG's

1. Eradicate extreme poverty and hunger.
2. Achieve universal primary education.
3. Promote gender equality and empower women.
4. Reduce child mortality.
5. Improve maternal health.
6. Combat HIV/AIDS, malaria and other diseases.
7. Ensure environmental sustainability.
8. Develop a global partnership for development.

NTDs are included
in “other diseases”



HIV/AIDS, malaria and TB are hugely important, but there are the “other diseases” of MDG 6

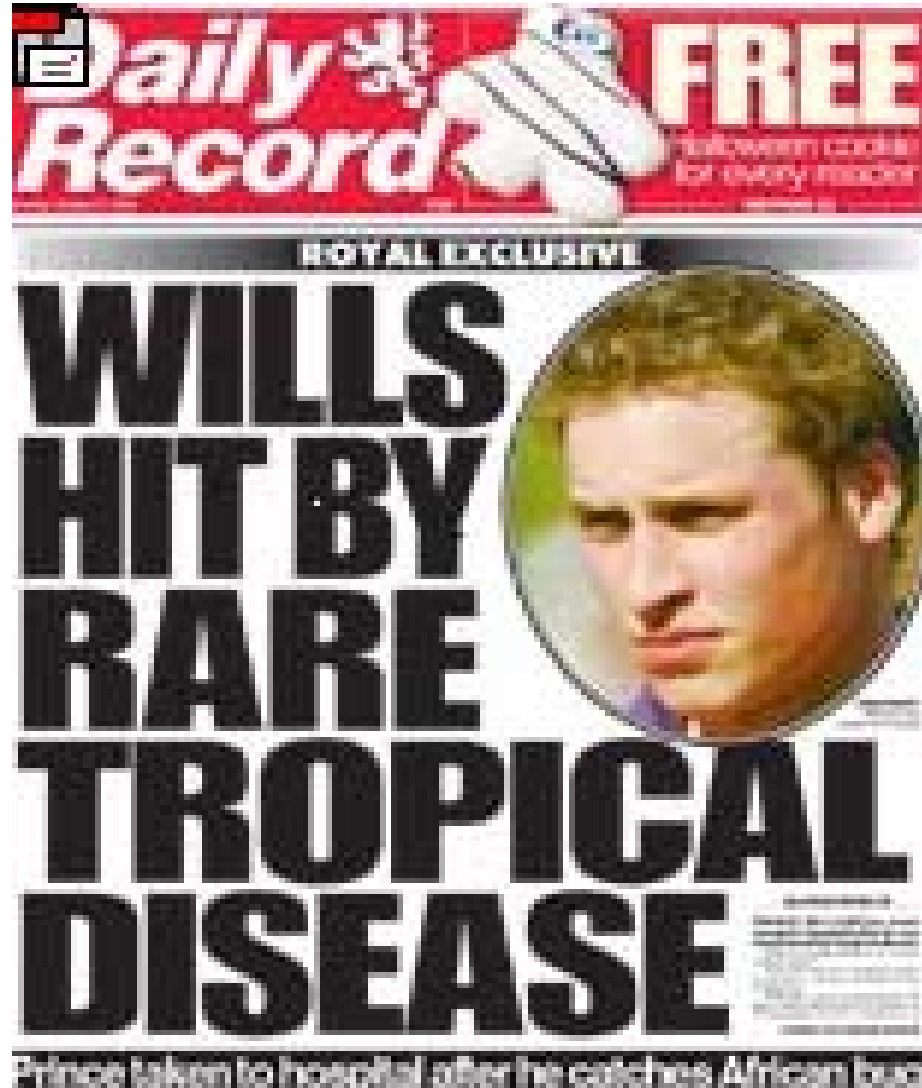


What is Schistosomiasis?

- Bloodborn fluke of *schistosoma*
- 5 species, two dominate in Africa
- Endemic in 70 tropical and sub-tropical countries
- Chronic and debilitating
- It affects the poorest of the poor



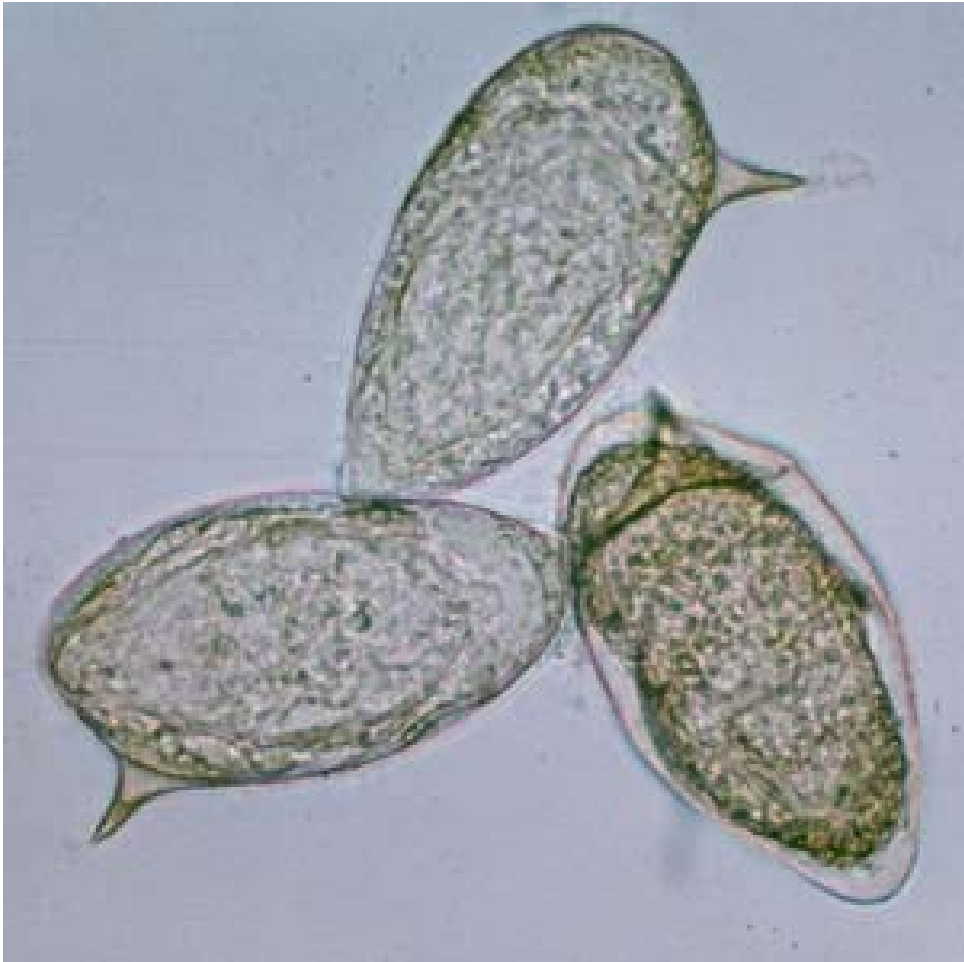
and royalty



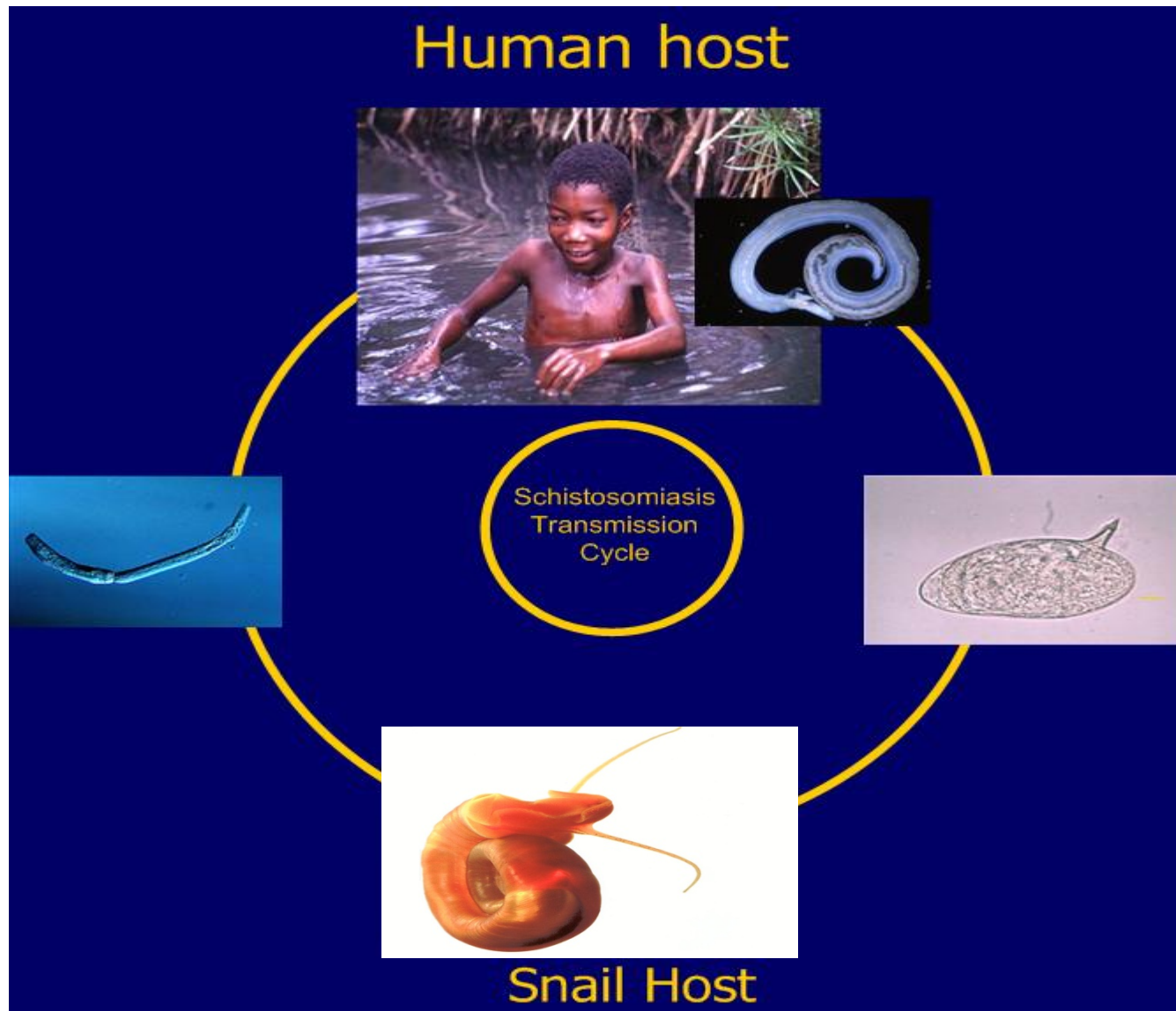
A pair of schistosome worms



S.mansoni and S. haematobium eggs



Transmission



Cercariae leave the snail into water and penetrate the unbroken skin of a human host



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Health Consequences



- Gross haematuria (blood in urine)
- Malnutrition & anemia
- Growth retardation
- Cognitive impairment
- Increased susceptibility to other infections
- Chronic health problems: inflammation and fibrosis of the bladder wall, colon, liver, spleen, lungs
- Life threatening consequences: Bladder cancer, portal hypertension, hematemesis

Children in Niger



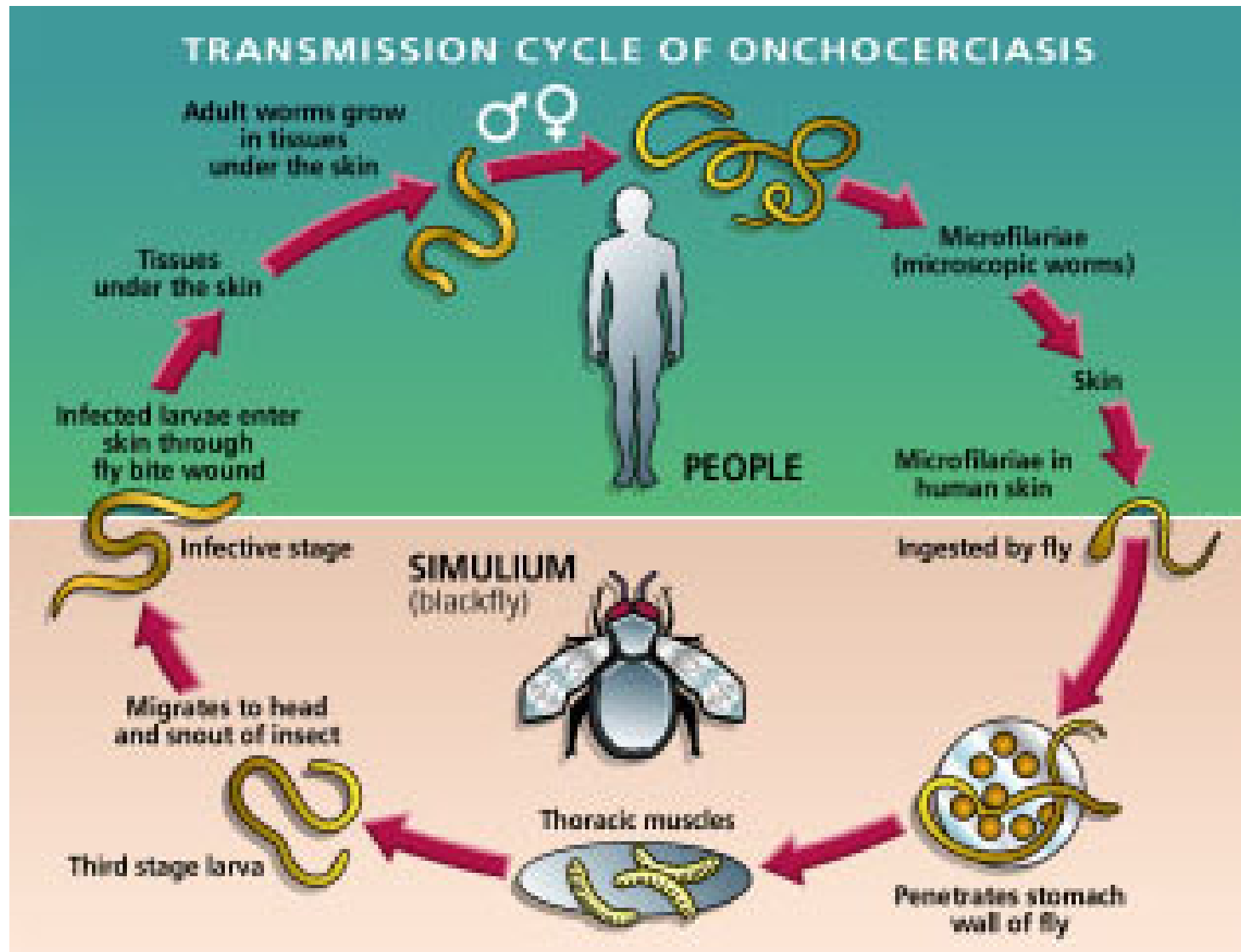
An
extreme
case
in
Uganda



Treating school children is easy



The Onchocerciasis Life Cycle





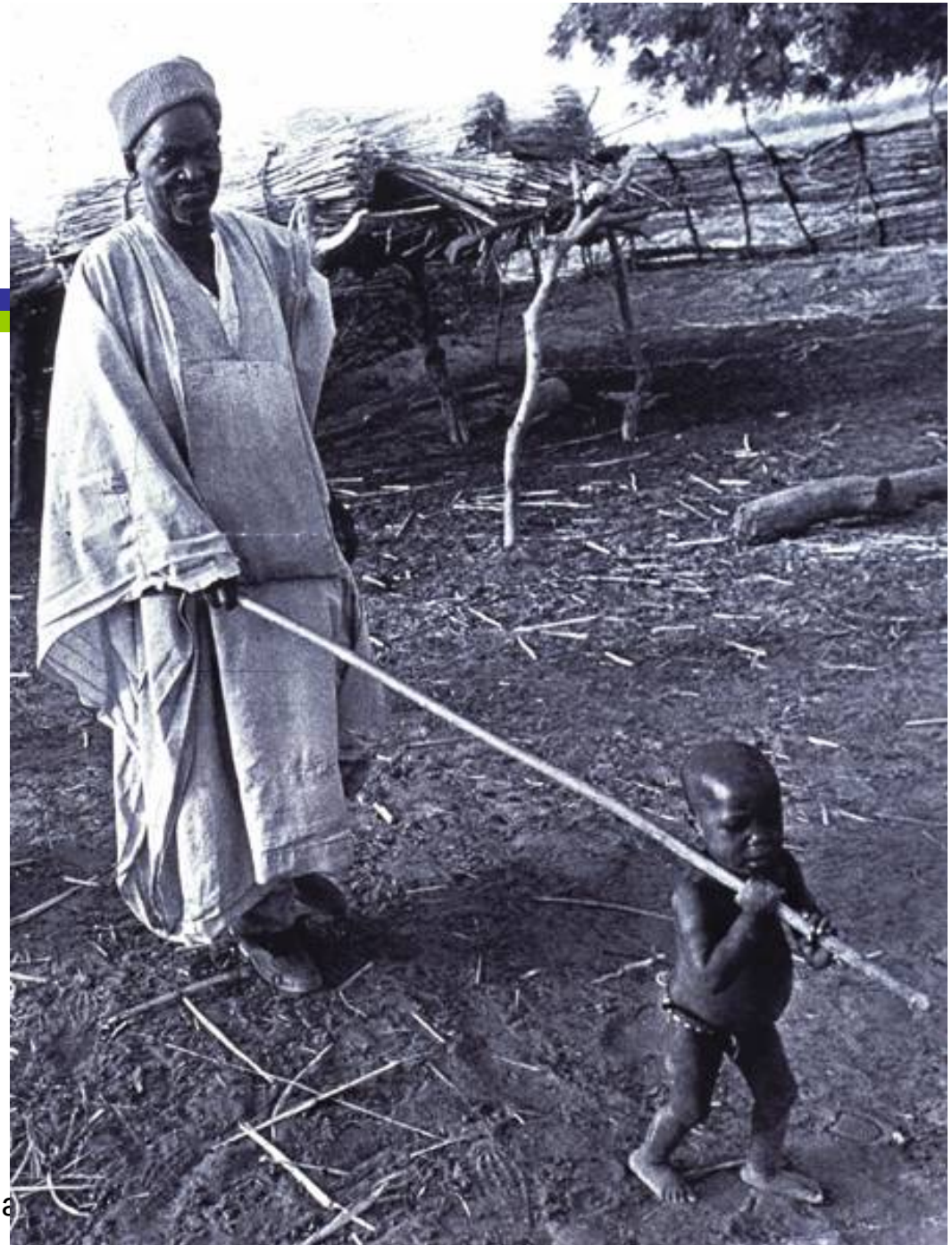


Onchocerciasis (River Blindness)

- 37 million infected
- Over 99% of those infected live in Africa
- Causes blindness and severe skin disease



Head of a simulian blackfly a vector for the onchocerciasis parasite



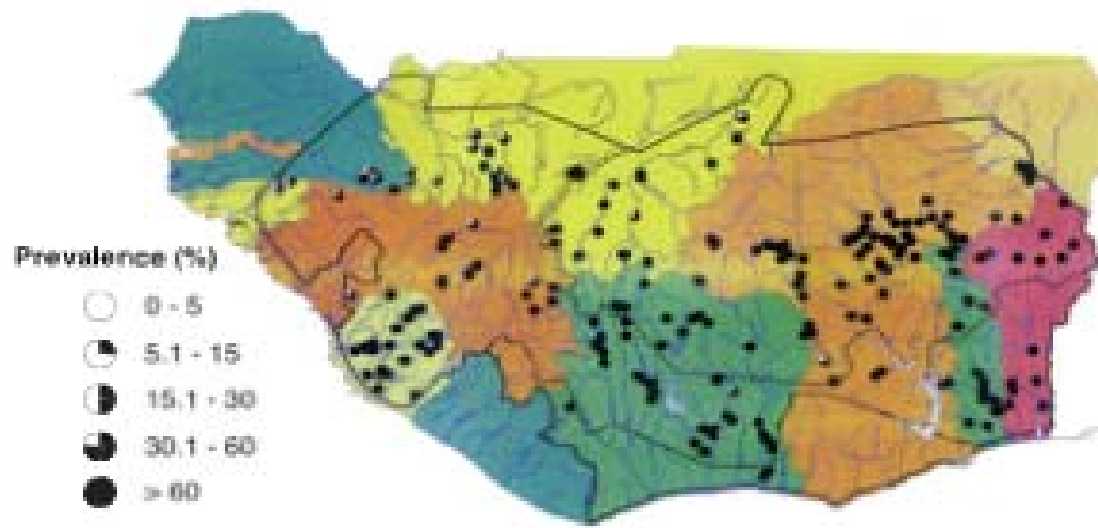
Onchocerciasis (River blindness)

In the 1970's control of the vector blackfly used initially DDT, and later more "acceptable" insecticides (OCP)

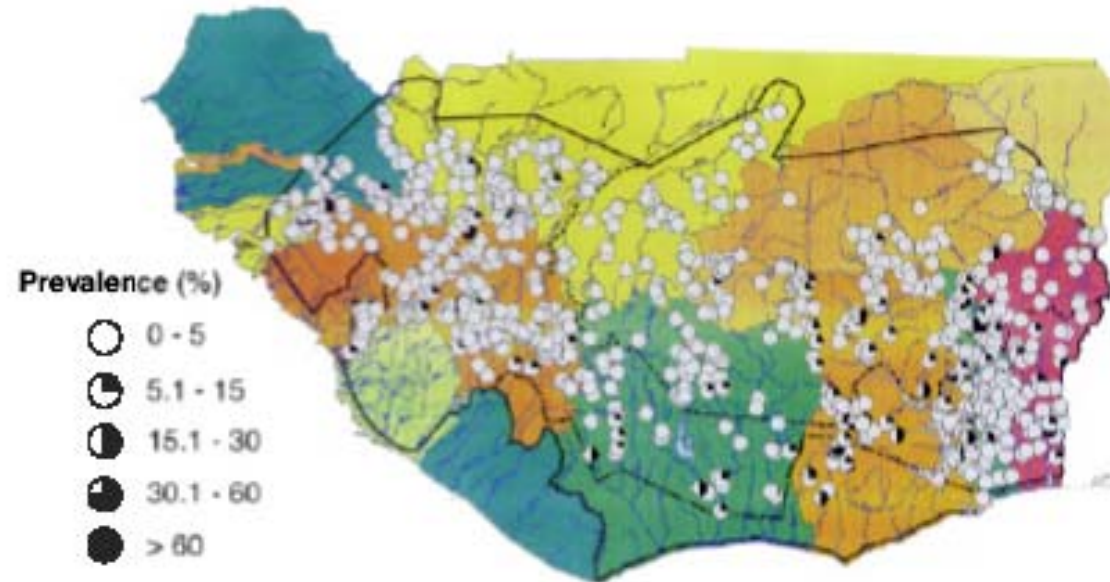
After 1985, treatment was with the donated Mectizan (courtesy of Merck)

20 years of river blindness control has been an outstanding success (OCP)

But expanded treatment is still required (APOC)



Onchocerciasis Prevalence 1974



Onchocerciasis Prevalence 2002

Filarial worm transmitted by mosquitoes



Lymphatic Filariasis

- **\$1.5 billion in lost productivity per year in India alone**
- **120 million infected**
- **40 million suffering with symptoms**



Lymphatic filariasis





LF is an evil disease



Hydrocoele surgery costs \$50

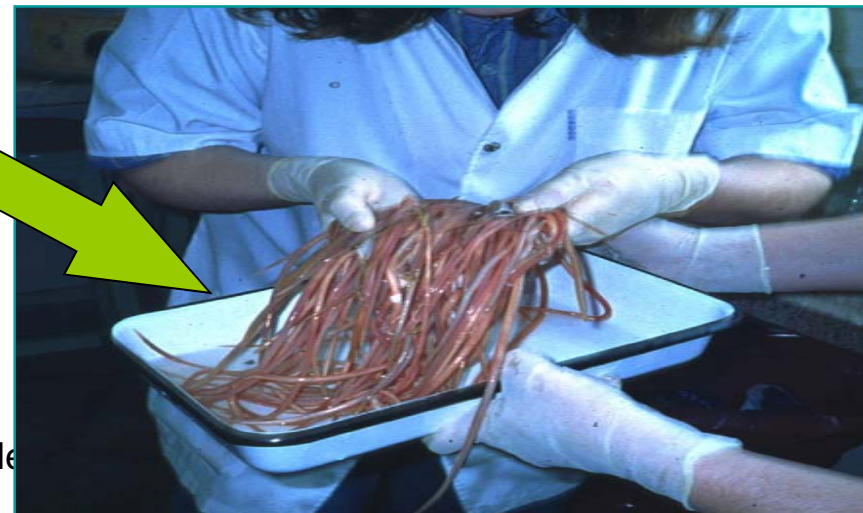


Soil Transmitted Helminth Infections

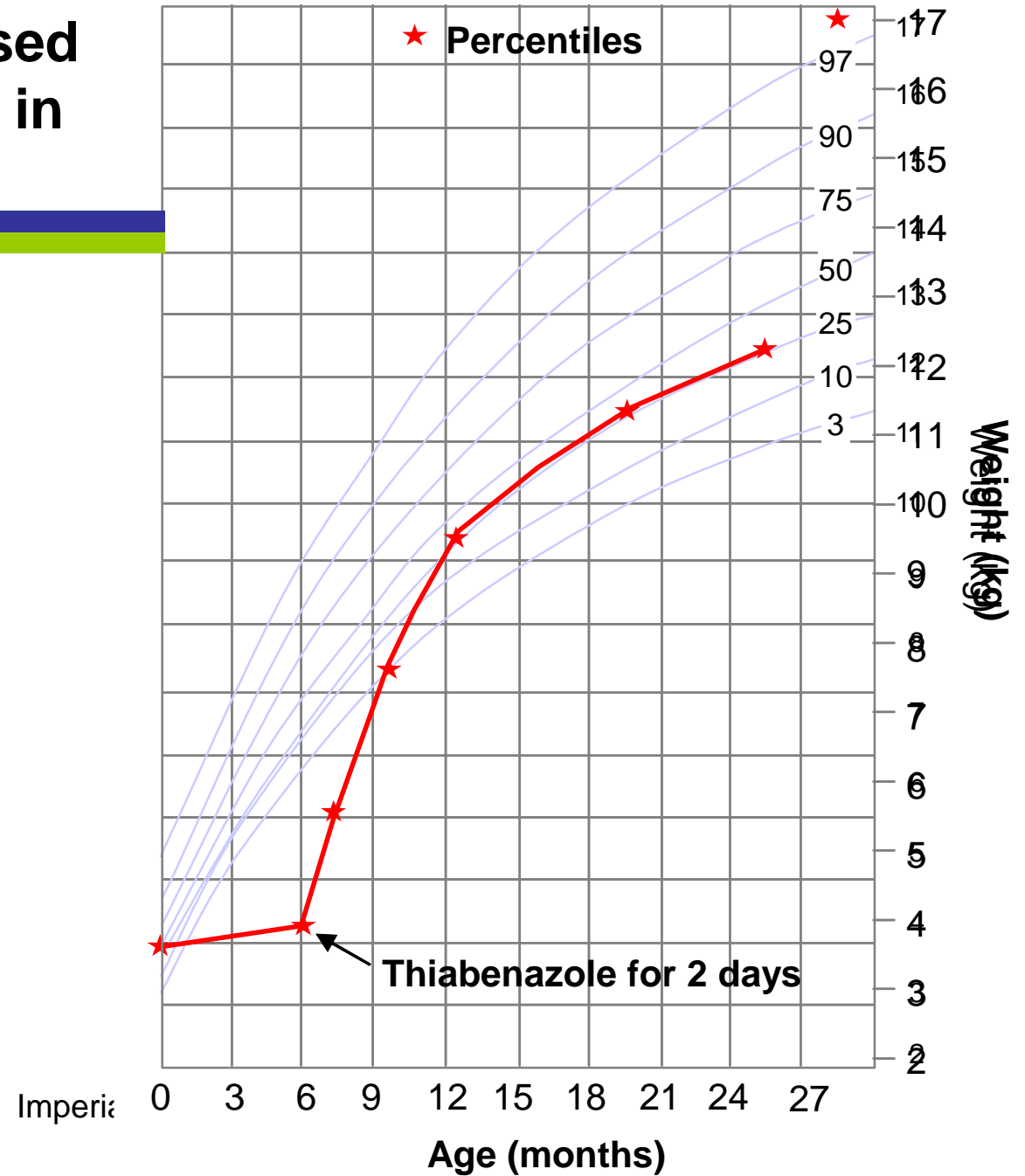
Ascariasis, Trichuriasis, Hookworm



Ascariasis	807 million cases
Trichuriasis	604 million cases
Hookworm	576 million cases



STHs Lead to Stunting and Decreased School Performance in Children



STH impact on Maternal and Child Health



STHs are the **most common infections of children worldwide**

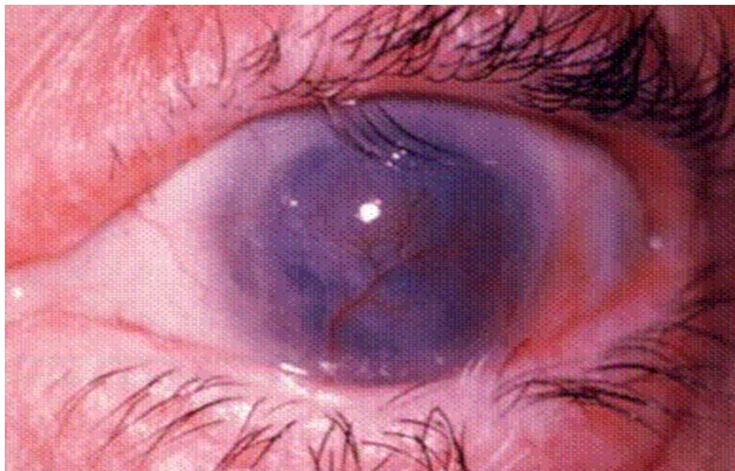
- Cause stunting, decreased cognitive ability and numerous health consequences – **23% school absenteeism**

Chronic hookworm infection and schistosomiasis are major causes of **anemia**

An estimated 44 million pregnant women harbor hookworm infections, **deworming can greatly improve pregnancy outcomes avoiding**

- increased maternal mortality
- low birthweight

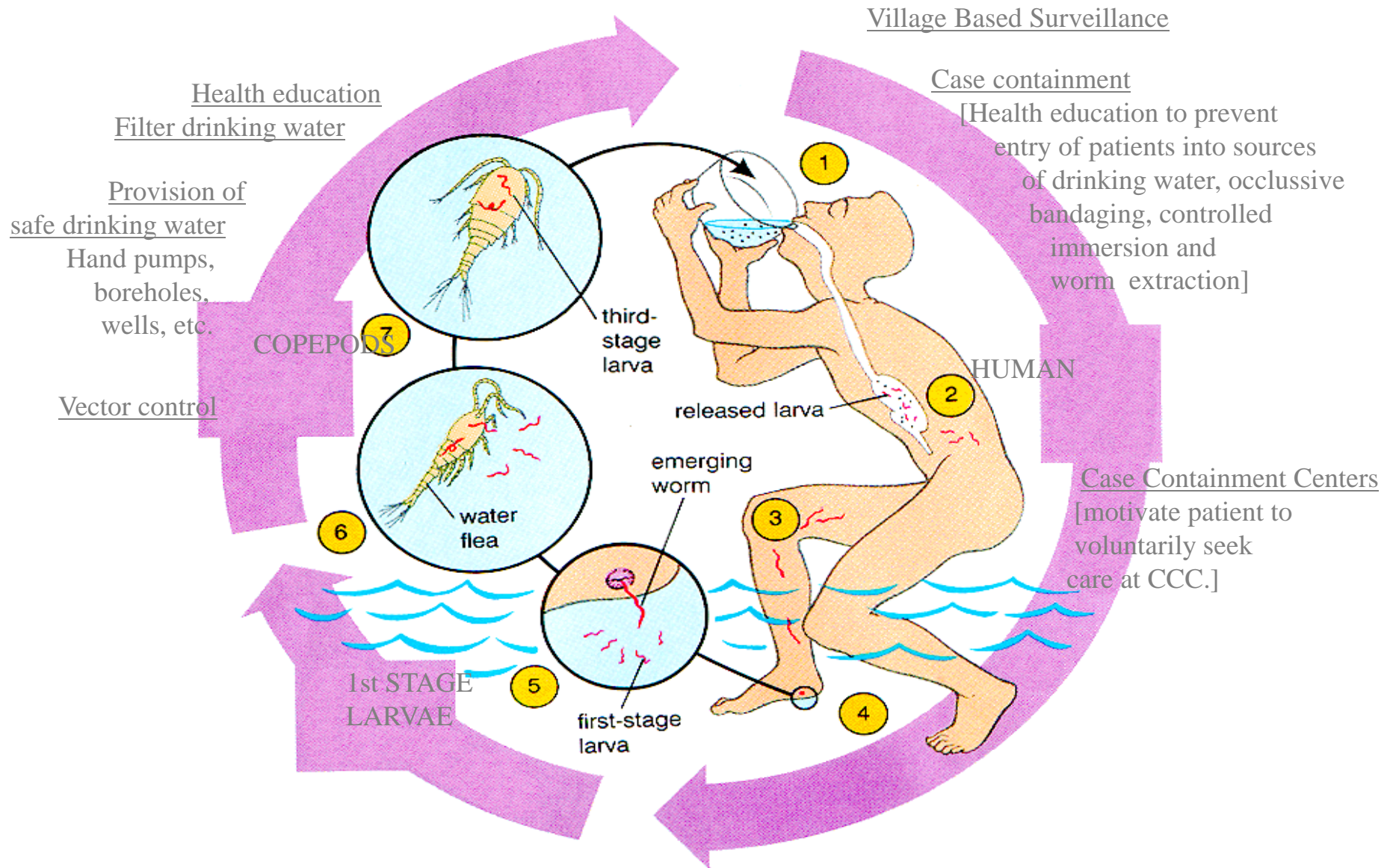
Blinding Trachoma



**World's leading cause
of preventable
blindness...**

- \$2.9 billion lost in productivity annually**
- 84 million infected**
- 8 million have visual impairment**

CONTROL MEASURES AGAINST DRACUNCULIASIS AT VARIOUS POINTS OF INTERVENTION



Guinea worm in Ghana



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Treatments available

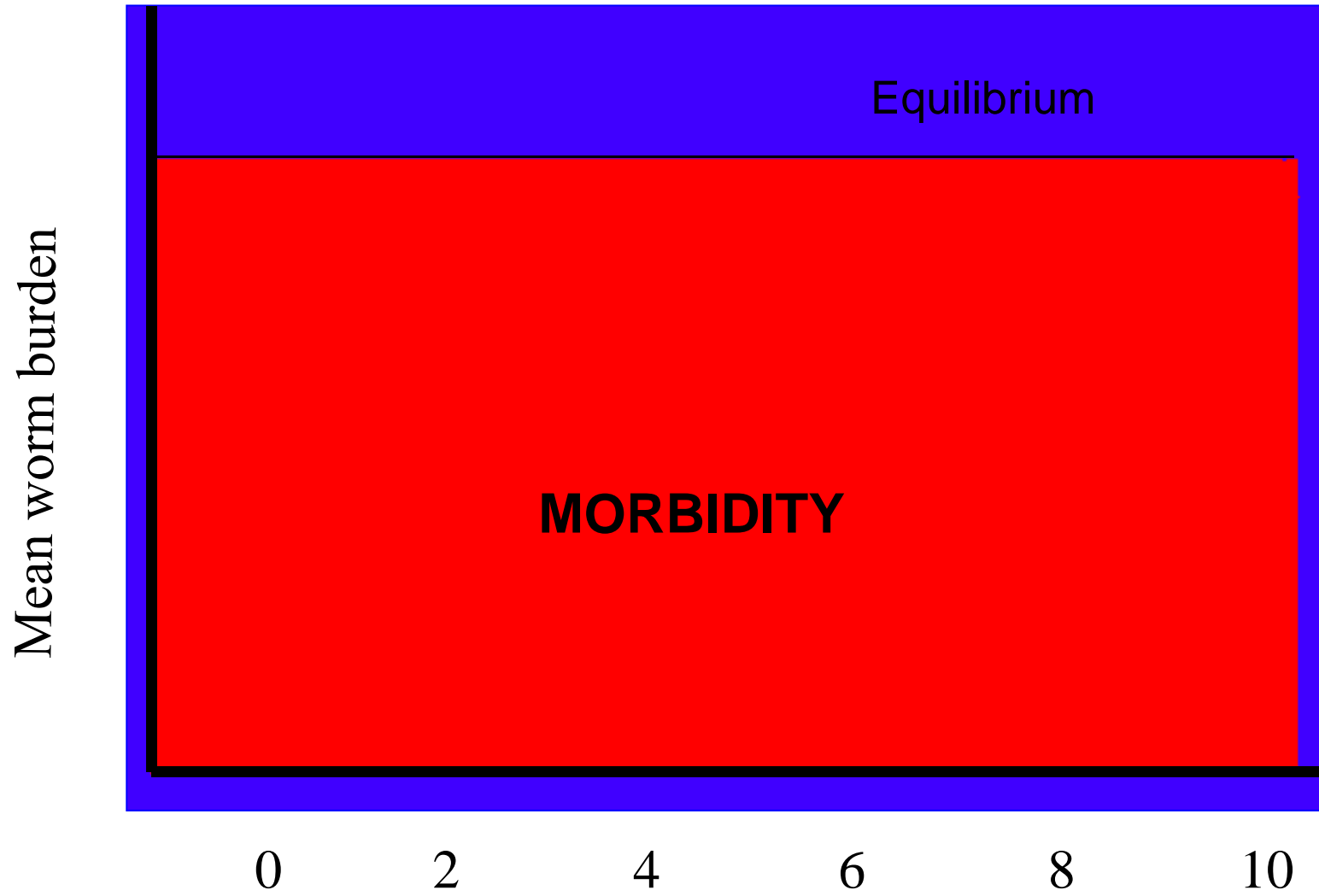
- Albendazole – helminths and LF
- Mebendazole - helminths
- Mectizan (Ivermectin) oncho and LF
- Praziquantel - schistosomiasis
- Mixed treatments against trypanosomiasis
- Combined therapy against leprosy
- Zithromax - trachoma

Strategies

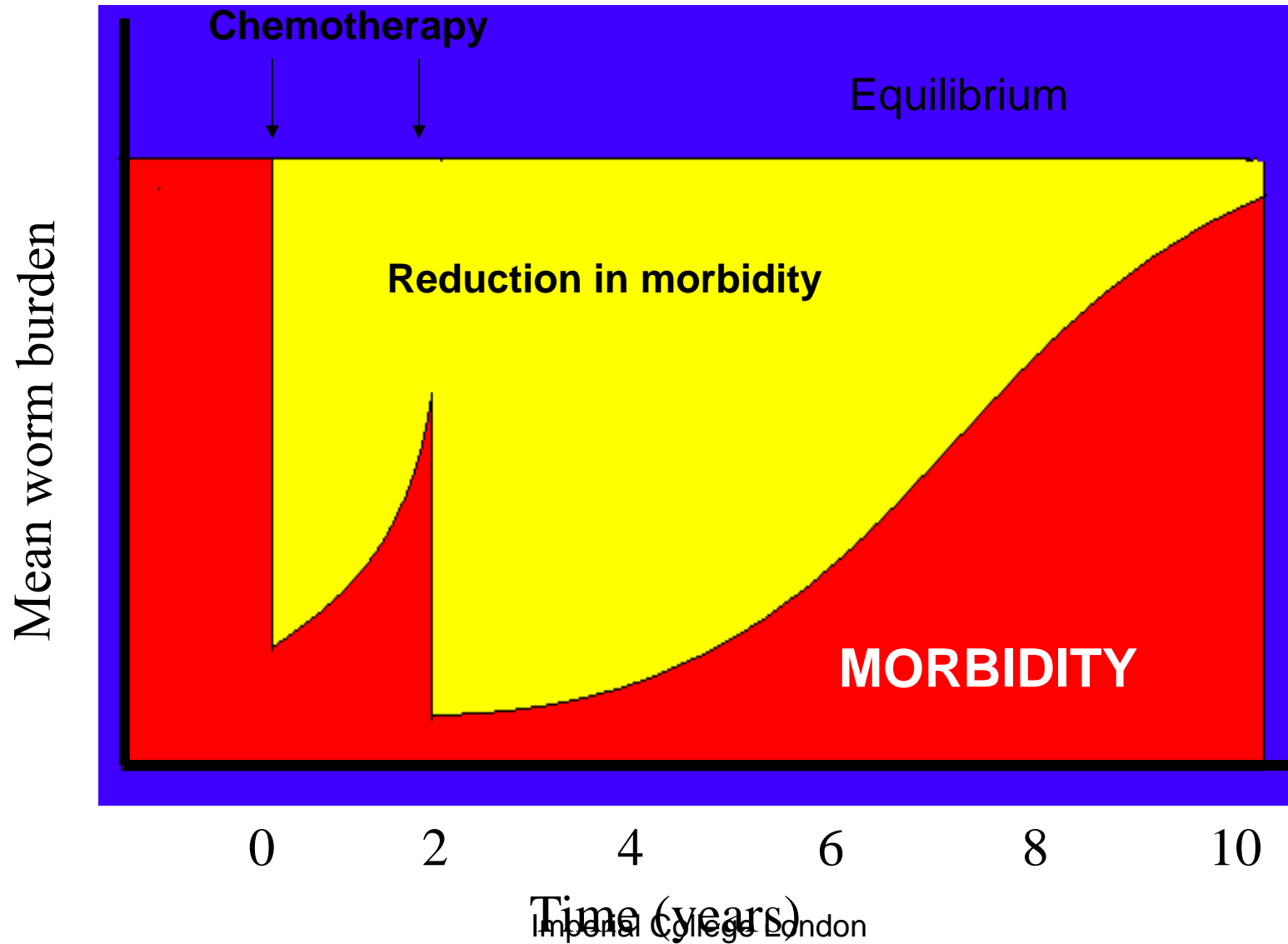
Mass Drug Administration (MDA)

- For the intestinal helminths, LF schistosomiasis, onchocerciasis and trachoma, the WHO recommended strategy is MDA in areas where prevalence rates are above certain thresholds.
- Diagnosis and treatment is impossible because of diagnostic costs
- Drugs are safe and effective

Morbidity



Reduction in morbidity



Trigger levels to justify MDA

- For Schisto 10% - target school aged children
- For Schisto >50% treat everyone (MDA)
- For STH >50% MDA
- For trachoma >10% MDA
- For LF >1% MDA

The pharmaceutical industry has increased its contribution to global health



Merck & Co Inc – have reconfirmed their commitment to donate Mectizan for as long as needed for both onchocerciasis and filariasis in Africa



GlaxoSmithKline – have already donated almost 2 billion tablets of albendazole for lymphatic filariasis and will continue until elimination is achieved

In October 2010 GSK committed an additional 400 million tablets a year for 5 years to deworm school aged children in Africa



Johnson & Johnson – has for several years donated up to 50 million tablets mebendazole per year for intestinal worms – from 2012 this will be increased to 200 million tablets per year

The pharmaceutical industry has increased its contribution to global health



Pfizer – originally committed to provide 120 million doses of azithromycin for trachoma
In 2009 alone they donated 50 million – in 2011 that number will reach 70 million



Novartis is continuing their commitment to MDT for leprosy

EISAI

In October 2010, EISAI committed to provide 2 billion tablets of DEC for LF which is used with albendazole outside of Africa

MED PHARM

Medpharm (generic manufacturer) donated some praziquantel during 2003-2006



Then E. Merck committed to 20 million tablets/year
This will increase to 250 million tabs/yr from 2016

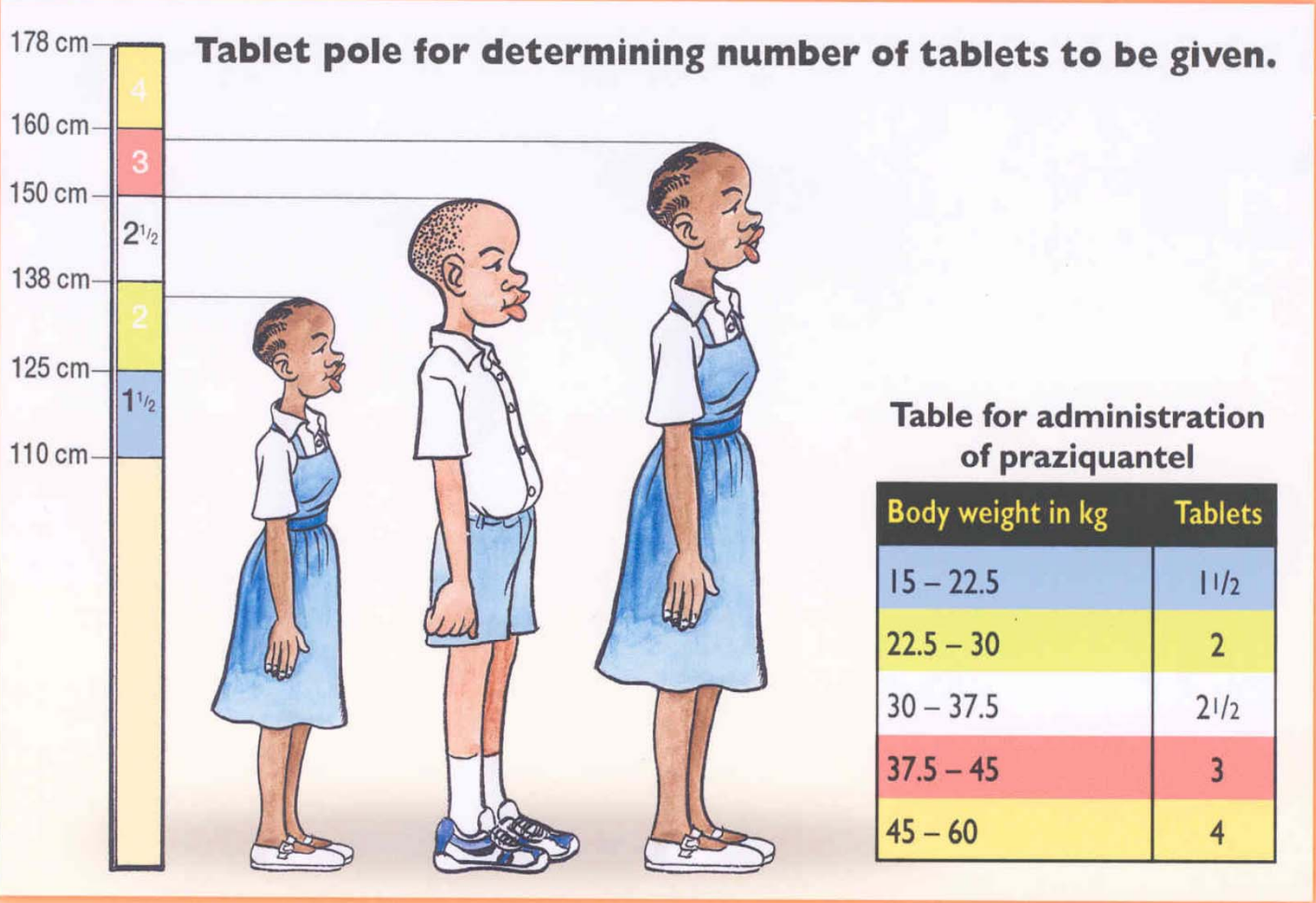
We have benefitted from changes in price of Praziquantel

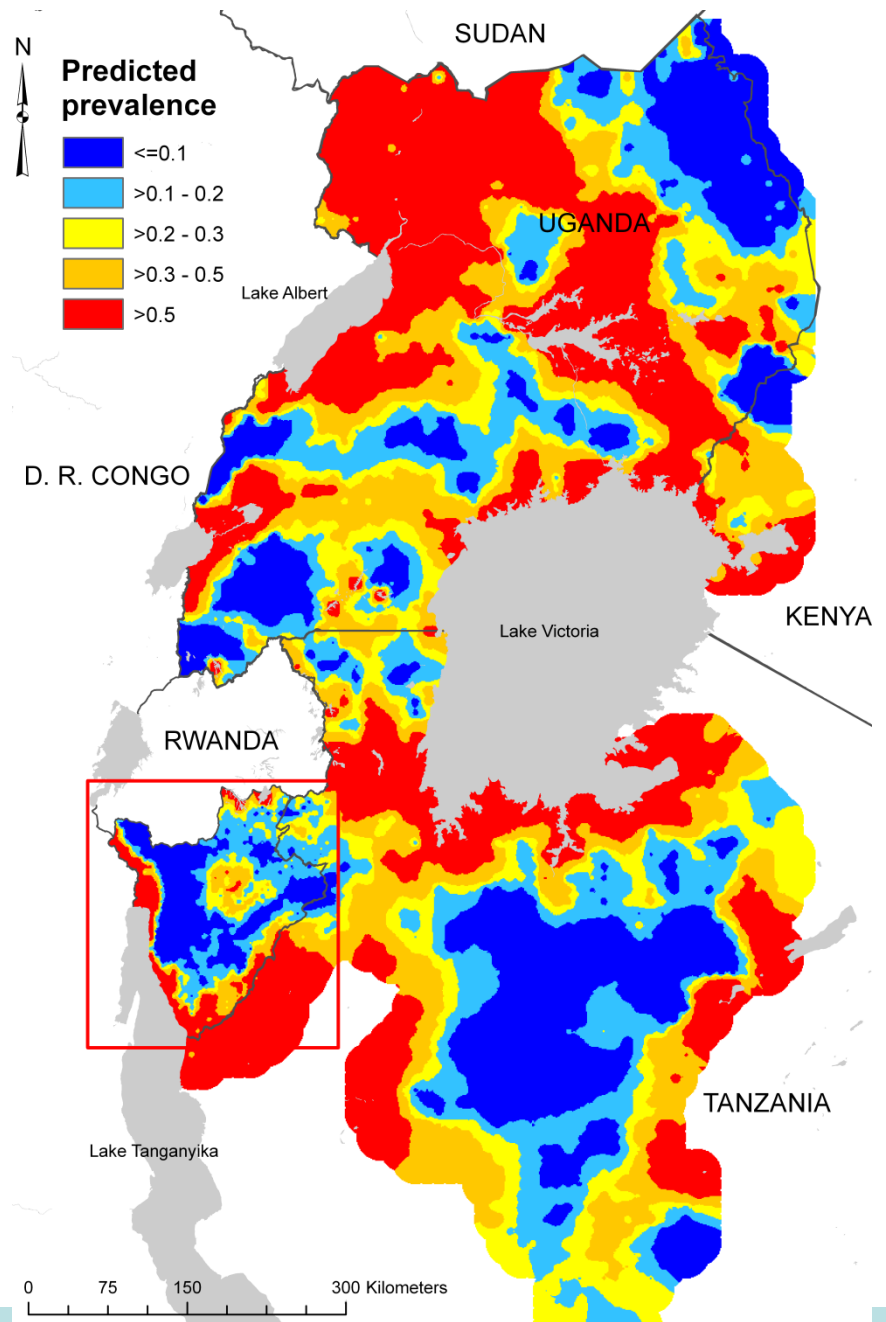
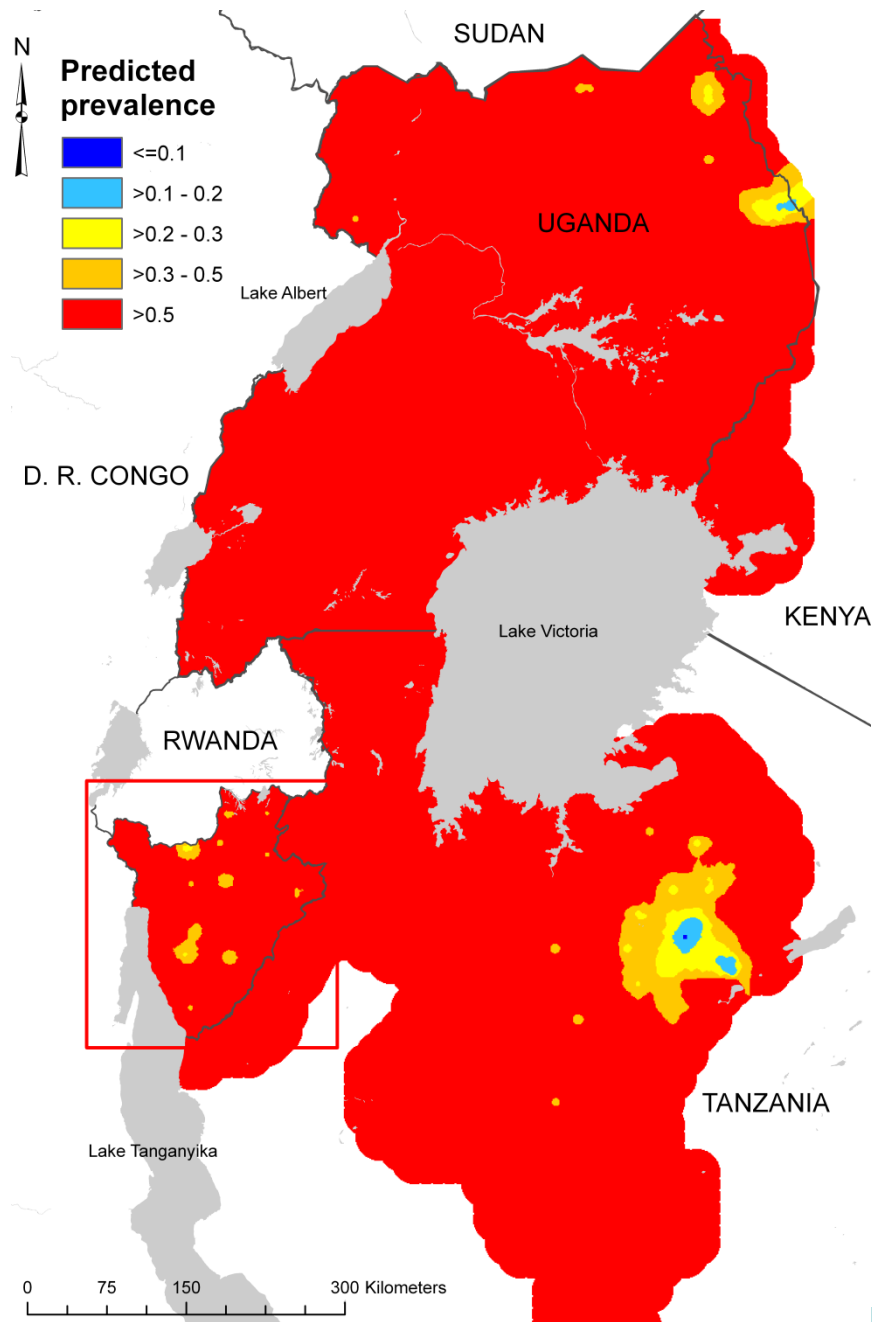
Praziquantel is now off-patent, which led to significant price cuts in 1990s

- In 1988 when praziquantel first came to market, the price was approximately \$1 per tablet (\$4 for an adult course)
- By 1998 it was selling for 15 cents a tablet
- In 2008 several pharmaceutical companies sell praziquantel ex factory for about 7 cents a tablet
- That is 93% cheaper !!!!
- Now we have a donation rising from 25 million tablets a year in 2010 to 250 million tablets a year by 2016

... and new technology

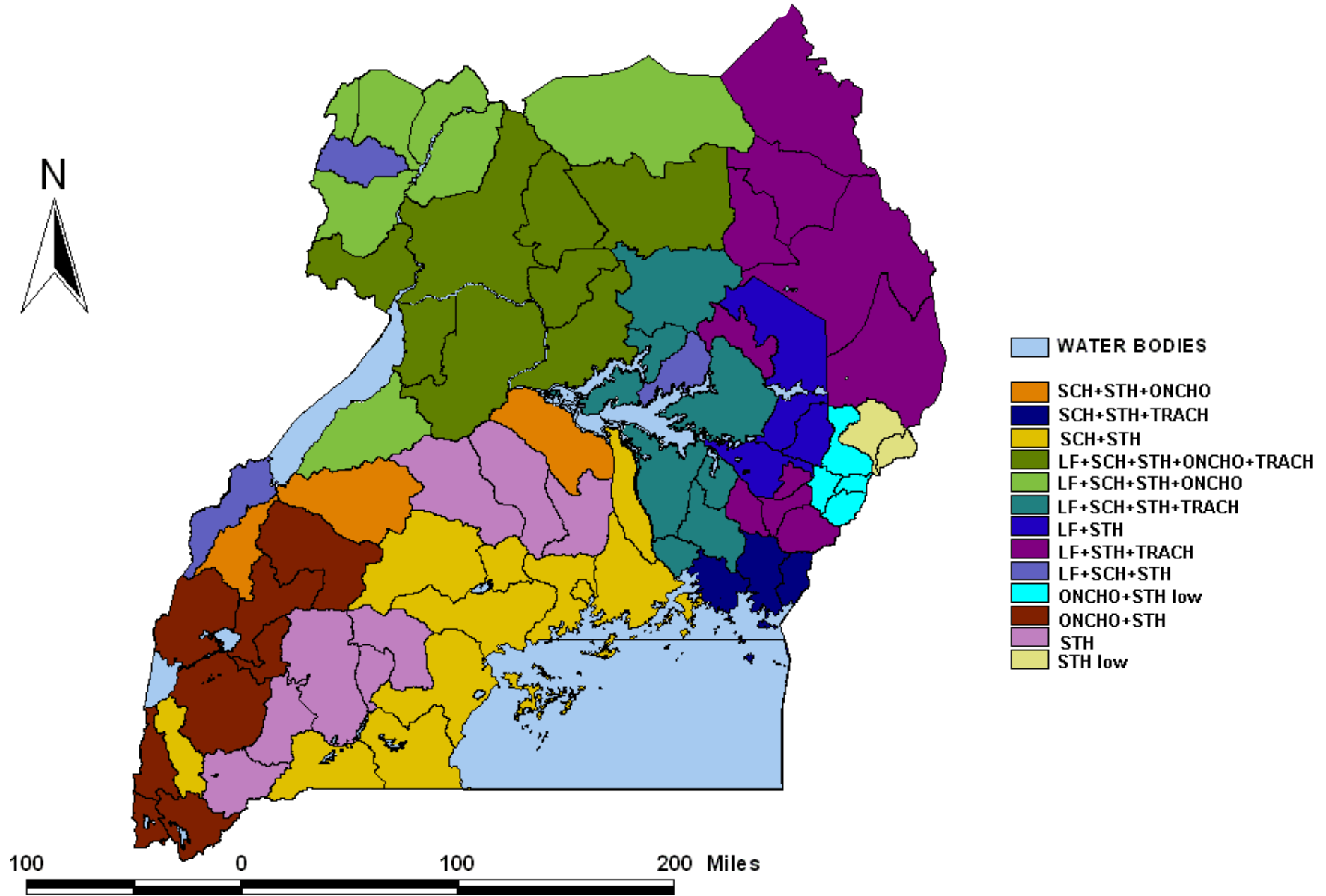
The Dose Pole instead of weighing the children



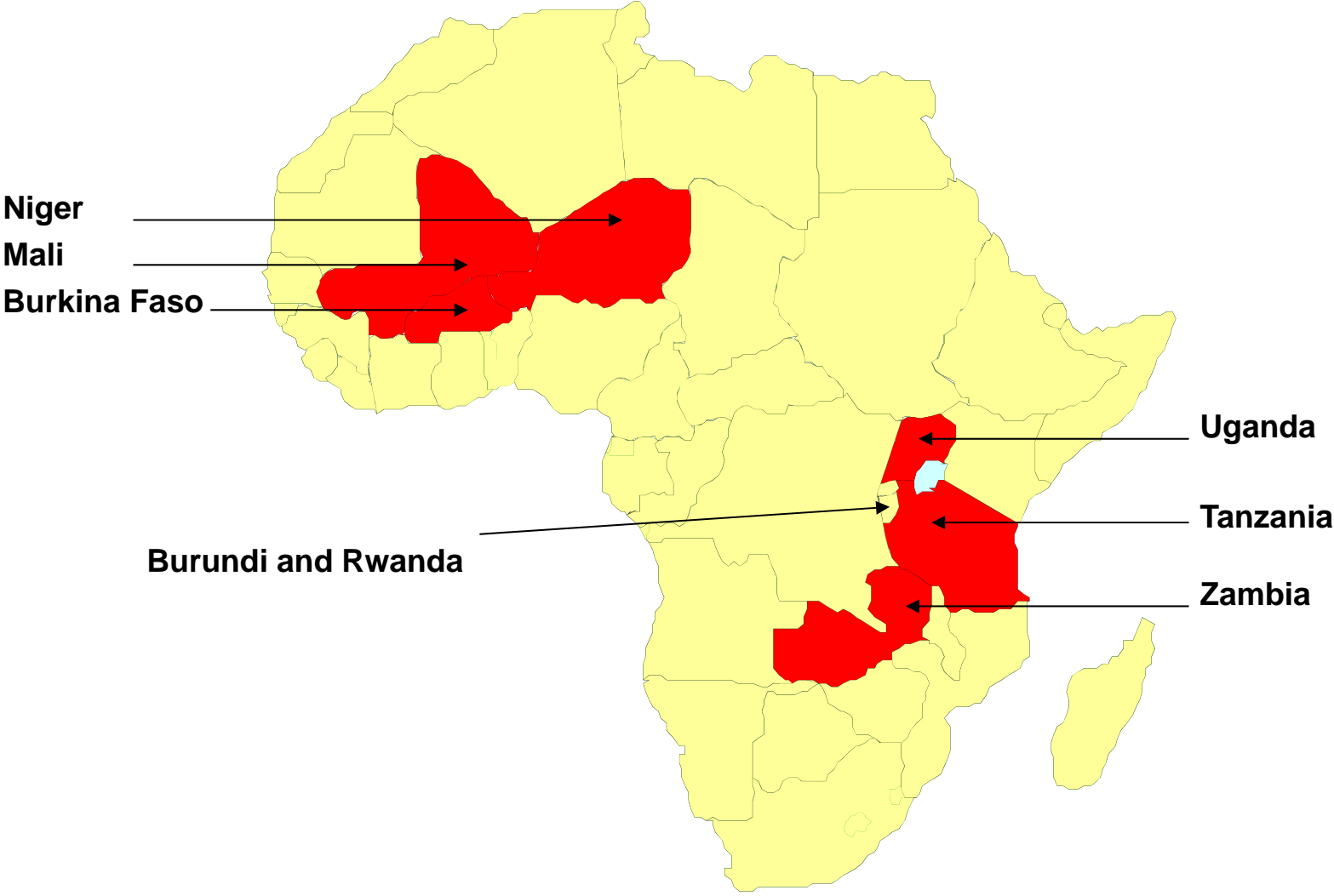


Risk maps for Hookworm and *Schistosoma mansoni*

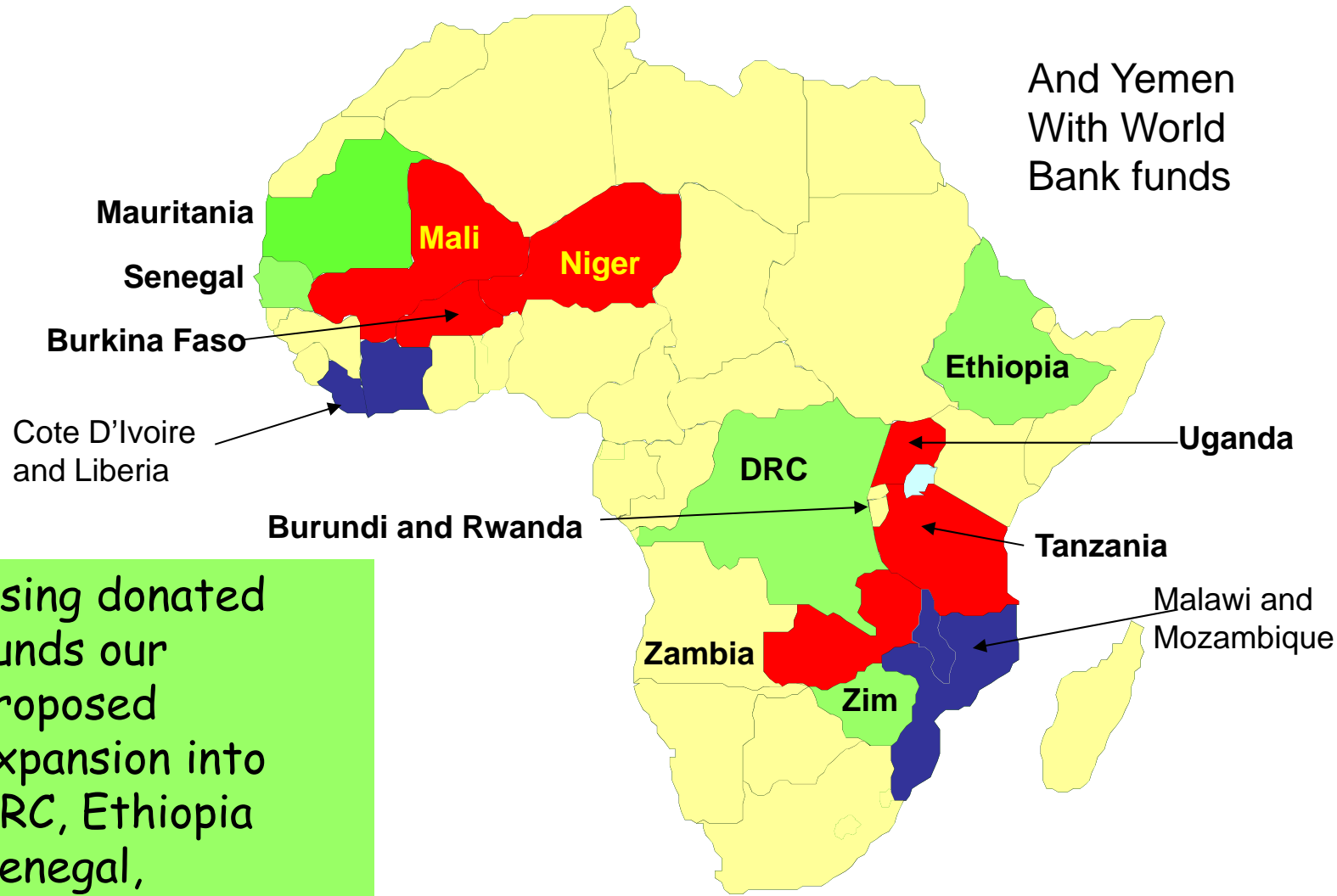
NTD ENDEMICITY IN UGANDA



SCI coverage by 2008



SCI coverage 2003 - 2016

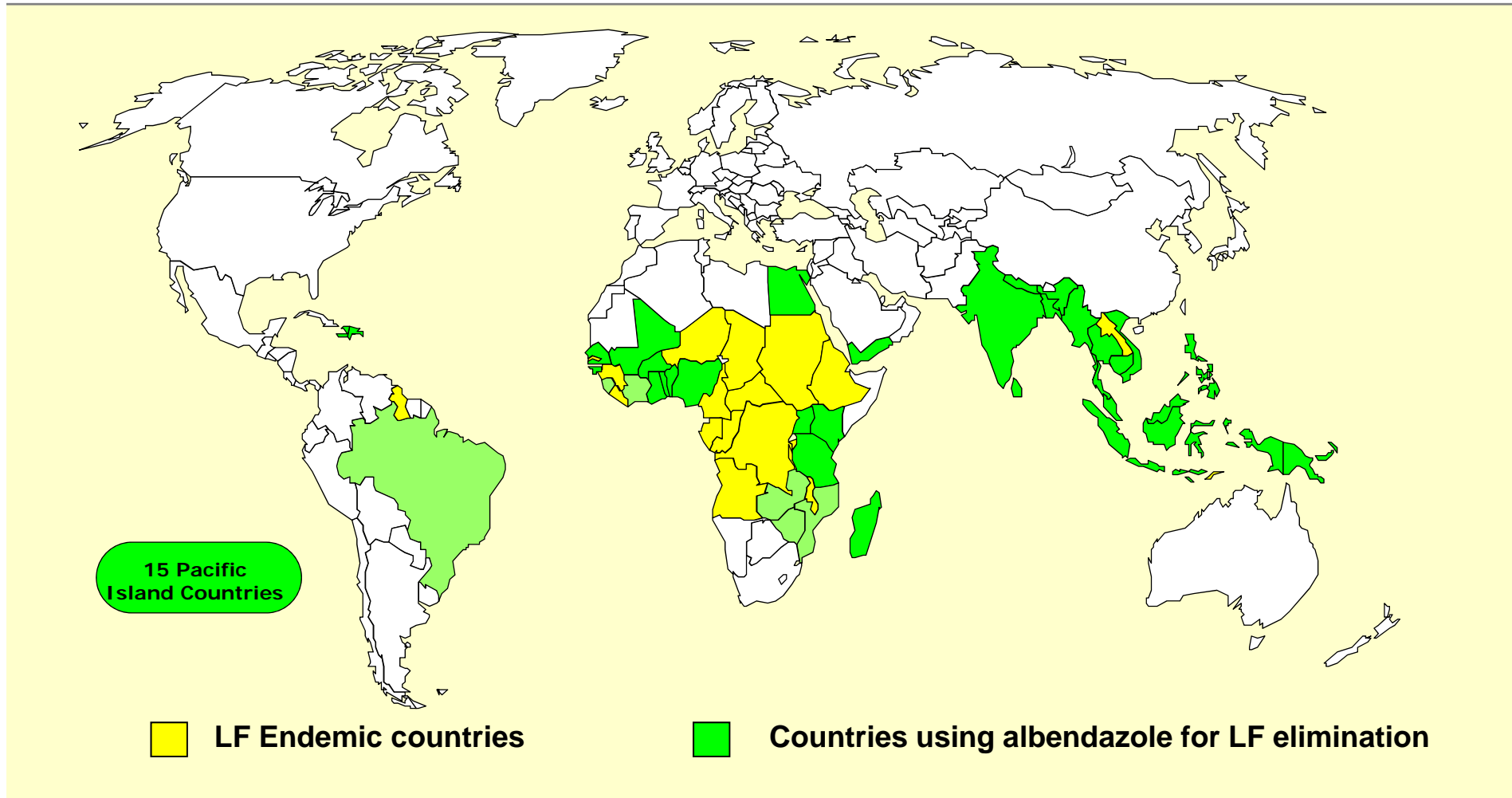


And Yemen
With World
Bank funds

Using donated funds our proposed expansion into DRC, Ethiopia, Senegal, Mauritania, and Zimbabwe

With support from the Gates Foundation
USAID/NTD, Geneva Global and DFID, UK

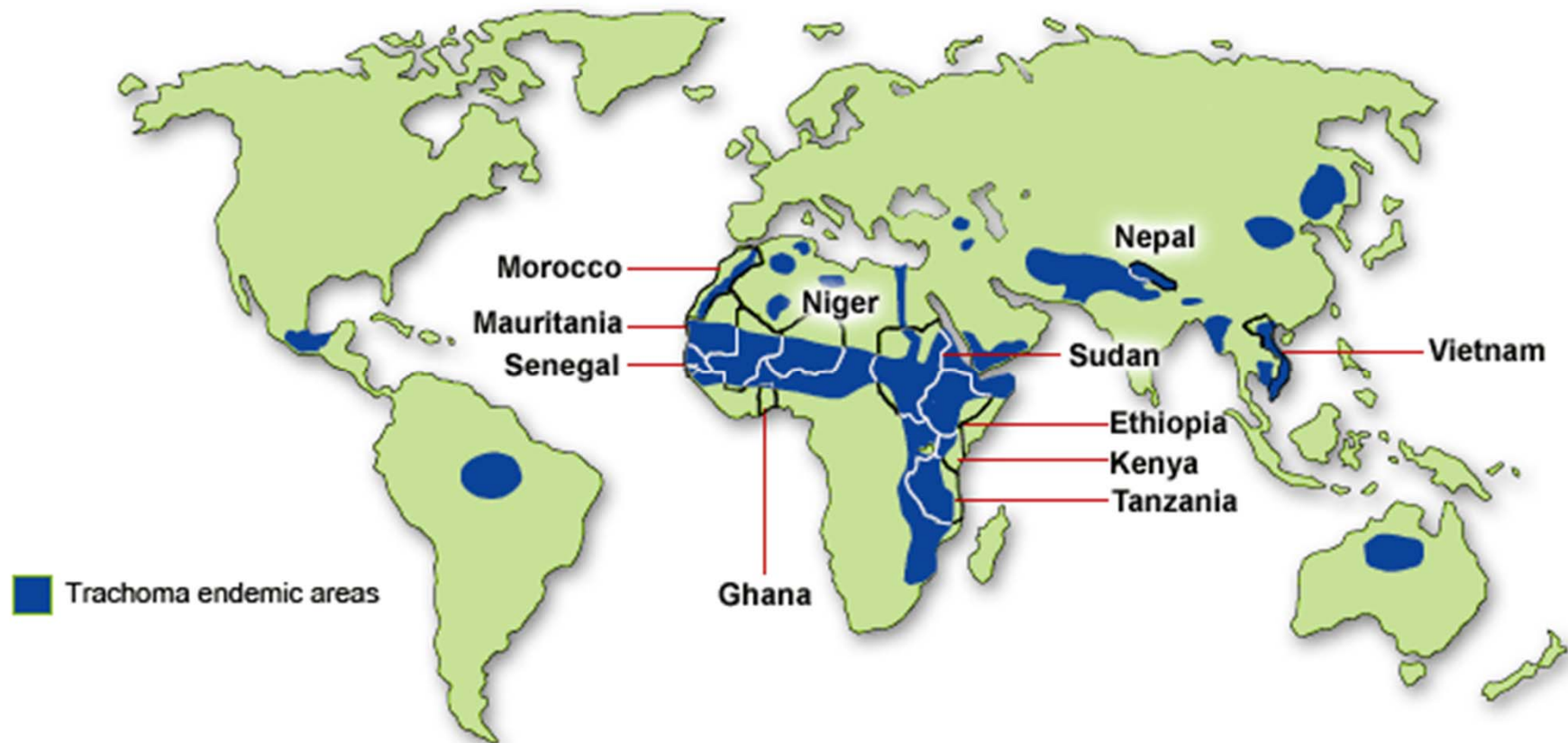
Fantastic progress to date against LF but still some way to go



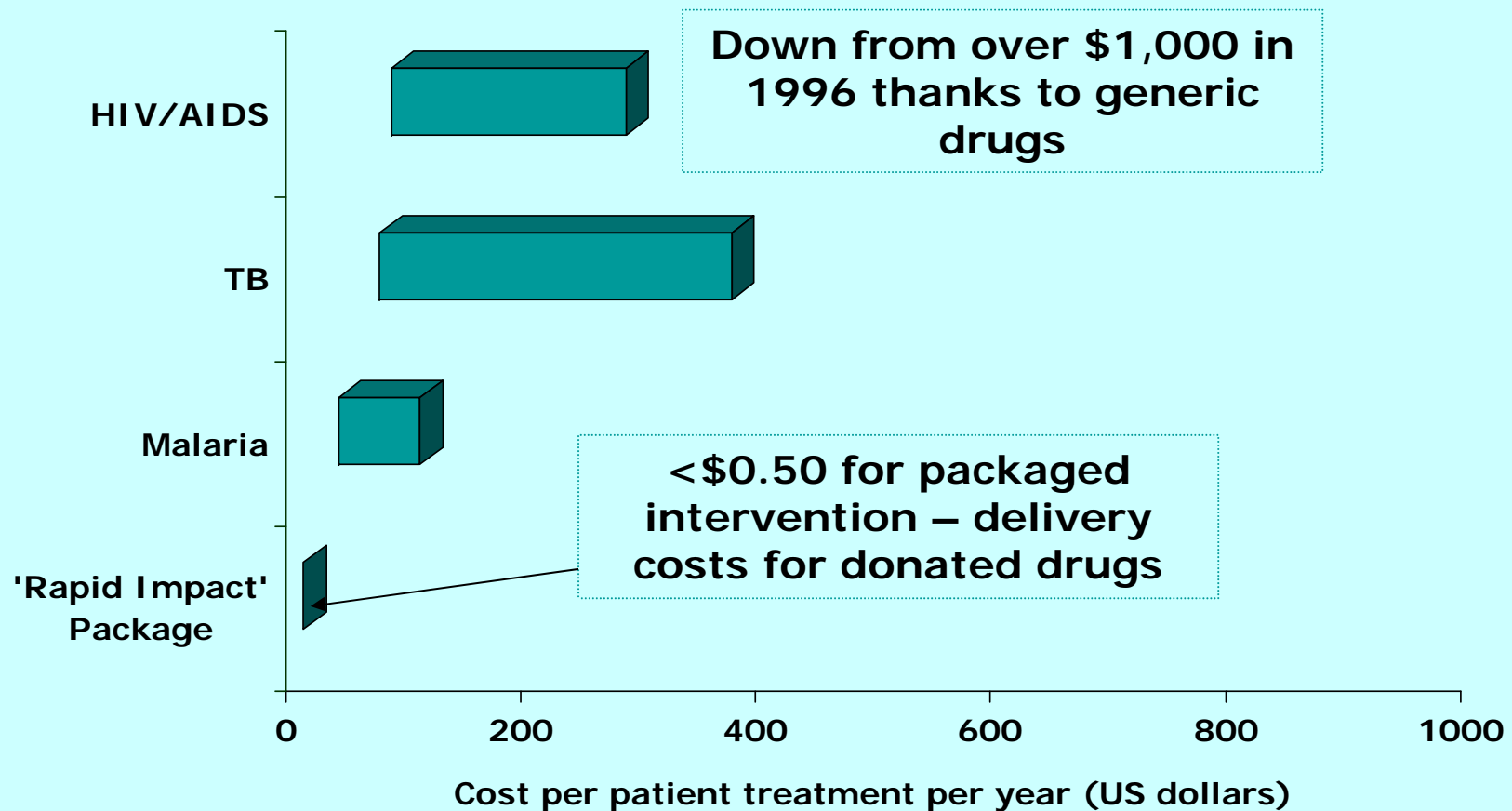
In 2012 over 600 million albendazole treatments to 43 countries

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Trachoma control in 11 countries

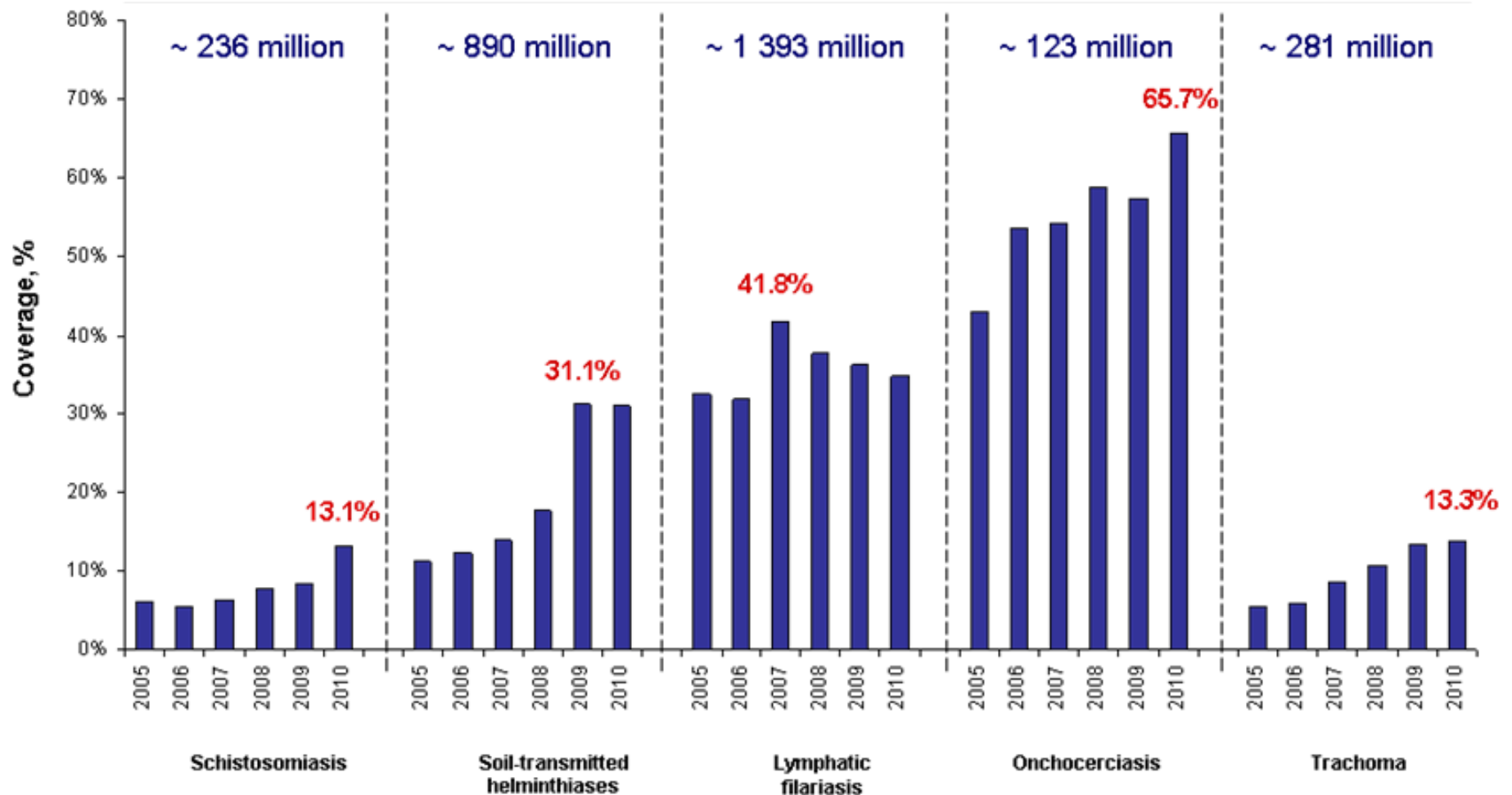


Low Cost of NTD treatments



Global coverage of preventive chemotherapy 2005–2010

Population requiring Preventative Chemotherapy



Control of co-endemic neglected diseases should be integrated “Rapid Impact”

- **Soil-transmitted Helminth Infections**
 - **Ascaris/Trichuris/Hookworm**
- **Schistosomiasis**
- **Lymphatic Filariasis**
- **Onchocerciasis**
- **Trachoma**

The pharmaceutical industry contribution is drugs but they will not do it alone

- The pharmaceutical industry are providing the tools – the drugs – but are expecting partners to fund the delivery.
- The problem is that with the drugs to treat 500 million people in our hands – we will need \$200 - \$300 million to deliver these drugs – and who will provide that ?



USAID
FROM THE AMERICAN PEOPLE

Launched in 2006

USAID Neglected Tropical Diseases Cooperative Agreement

Initially \$100 million, but this has been increased in 2010 to \$450 million (\$250m to “Envision” \$200m through FHI)

The British Government



£50 million over 5 years for NTD control announced in 2008

A new £200 million 4 year commitment in January 2012

Other implementation donors

- The World Bank
- The END FUND
(Geneva Global and Legatum)
- CIFF
- The Bill and Melinda Gates Foundation
- Global Network for NTD control
- www.givingwhatwecan.org
- www.givewell.org



How will the donated drugs get delivered to those who need them ?

We now need:

- Political will
- Advocacy tools
- Training
- Transport
- Community Drug Volunteers
- And approximately \$250 million per year to deliver these drugs
- Collaboration

Some children were given treatment
by the Deputy Prime Minister



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But it all gets political

USAID and British Government DFID

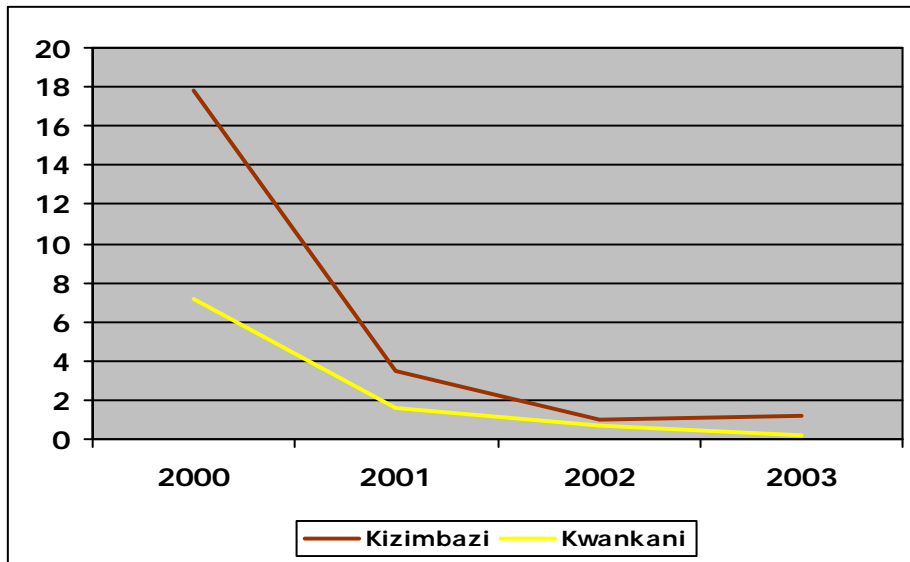
World Bank

Gates Foundation

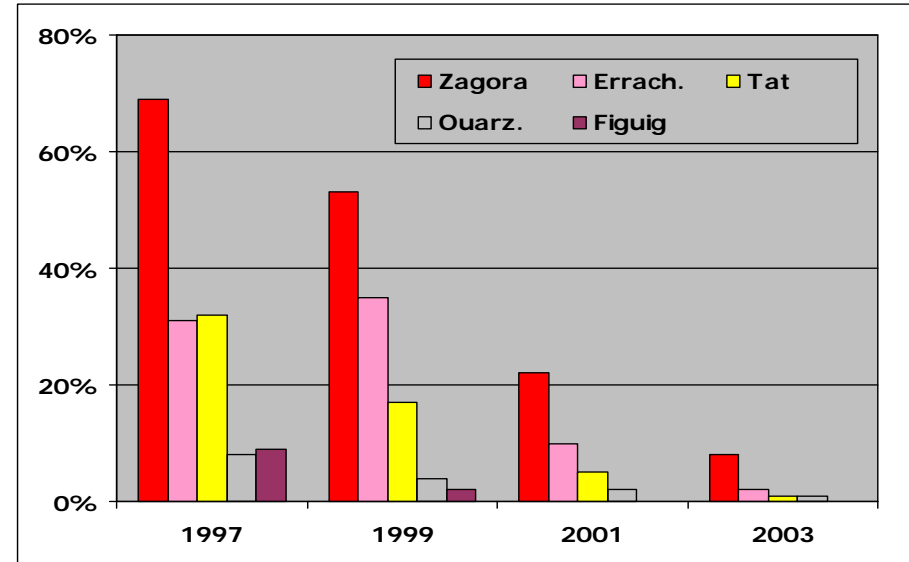
The Global Network vs RTI

SCI, ITI, APOC, HKI, World Vision, Malaria Consortium, Liverpool CNTD

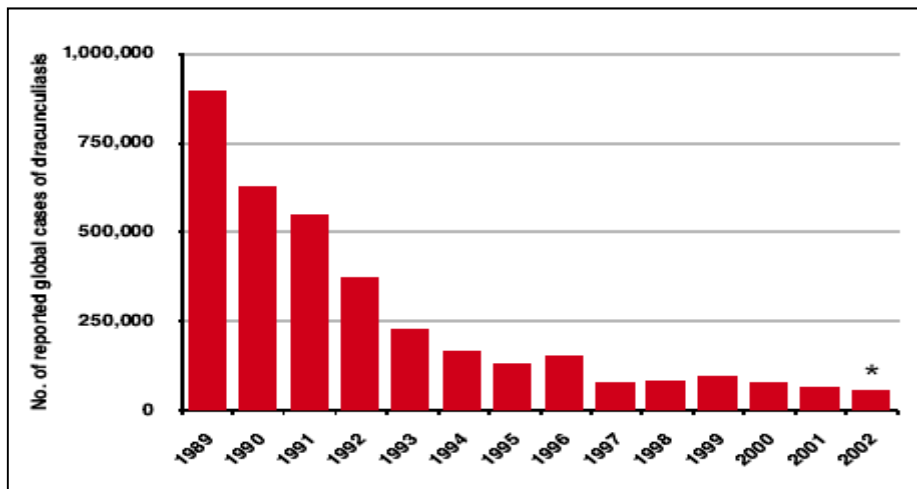
Success Stories in Control of NTDs



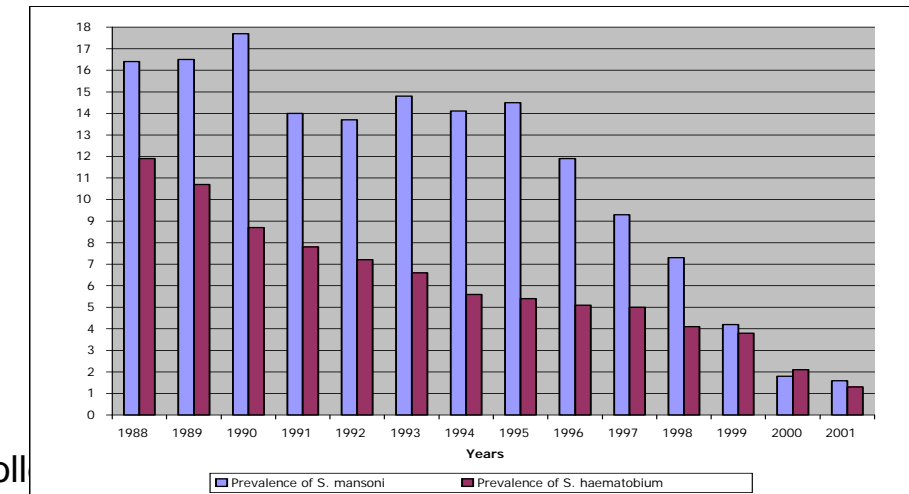
Lymphatic filariasis - Zanzibar



Trachoma - Morocco

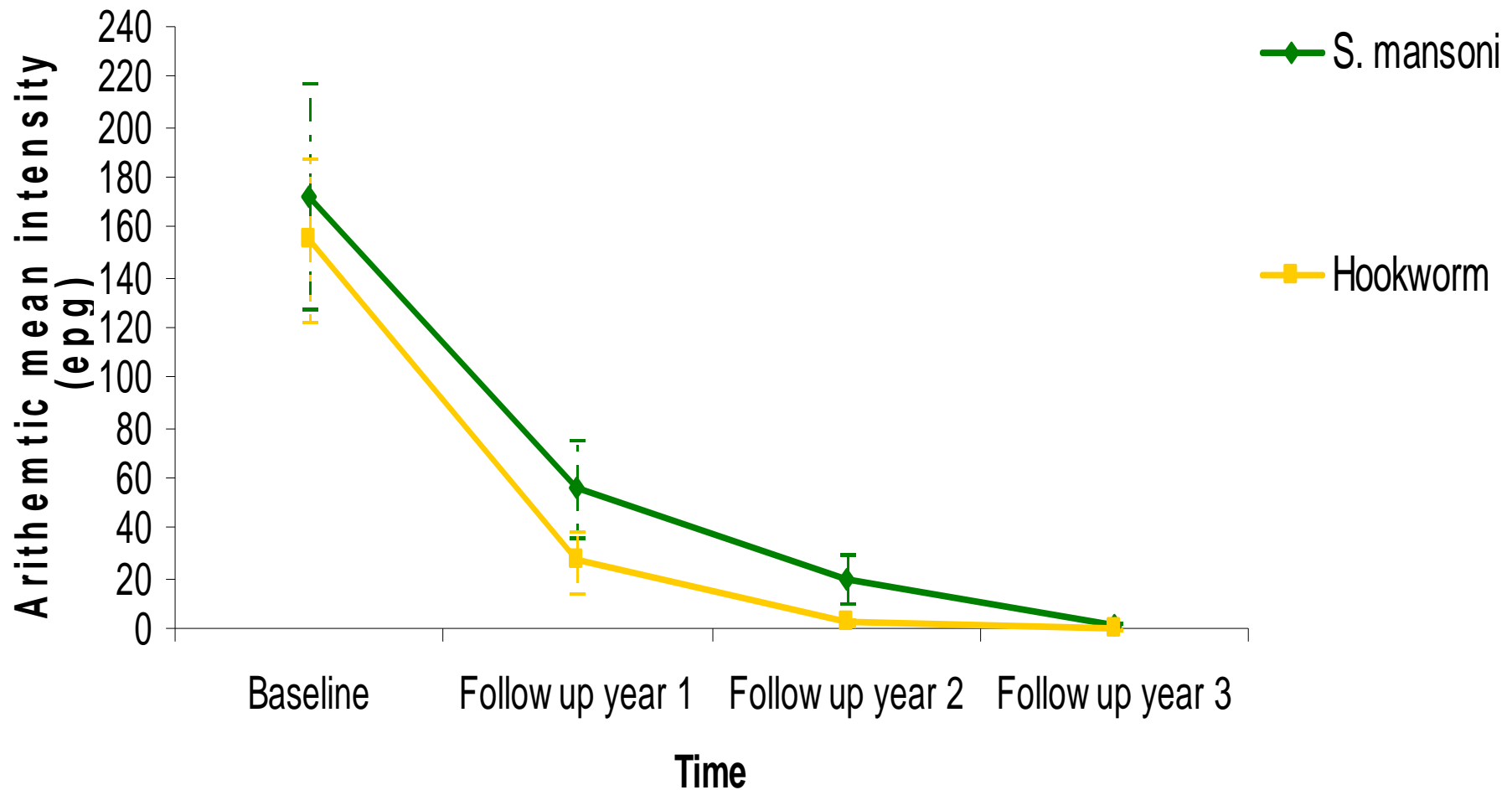


Guinea Worm - Global



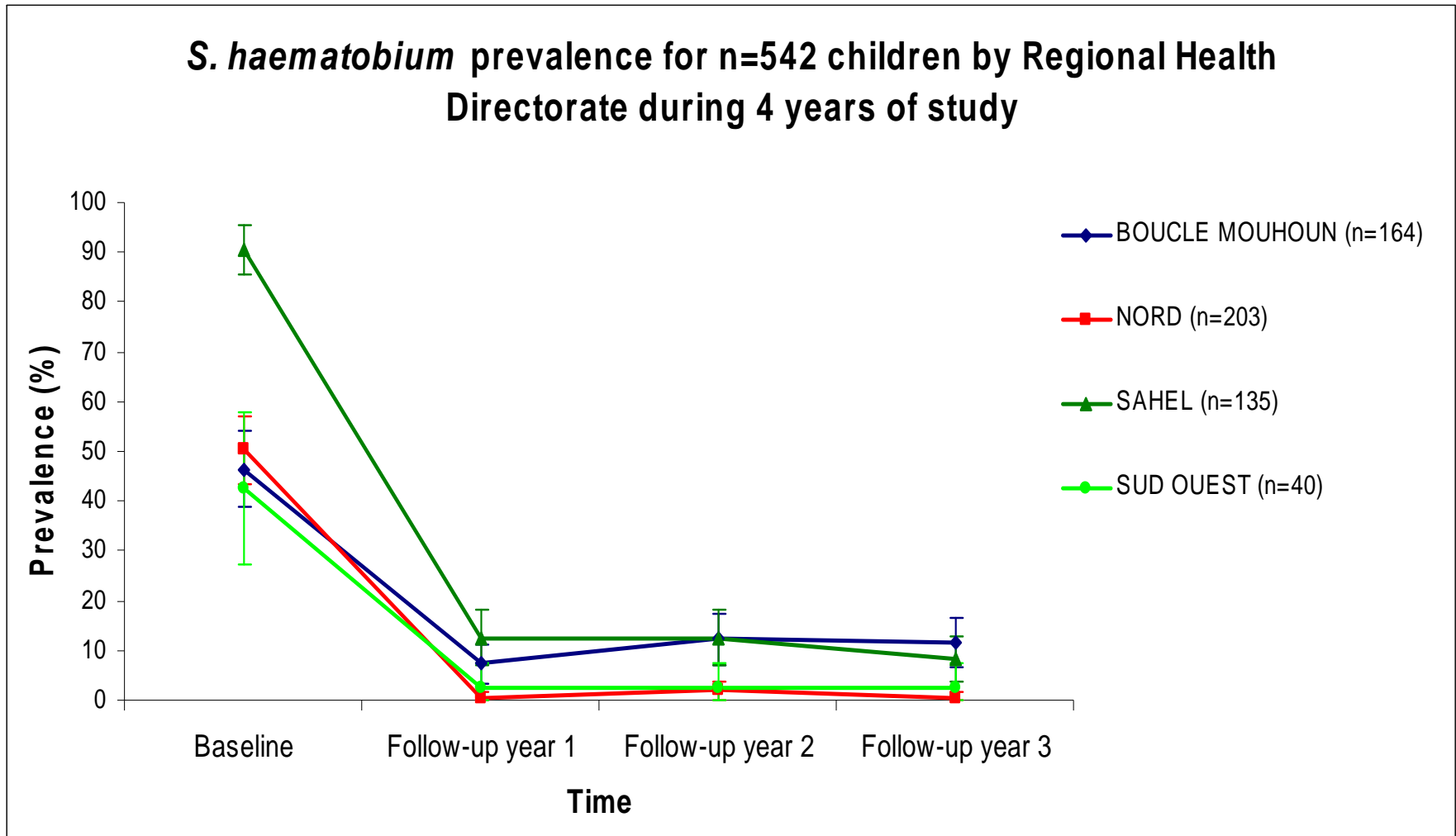
Schistosomiasis - Egypt

Uganda (Baseline, Year 1, Year 2, Year 3 in 3 districts completed so far) Arithmetic mean intensity of infection for 391 children successfully followed up



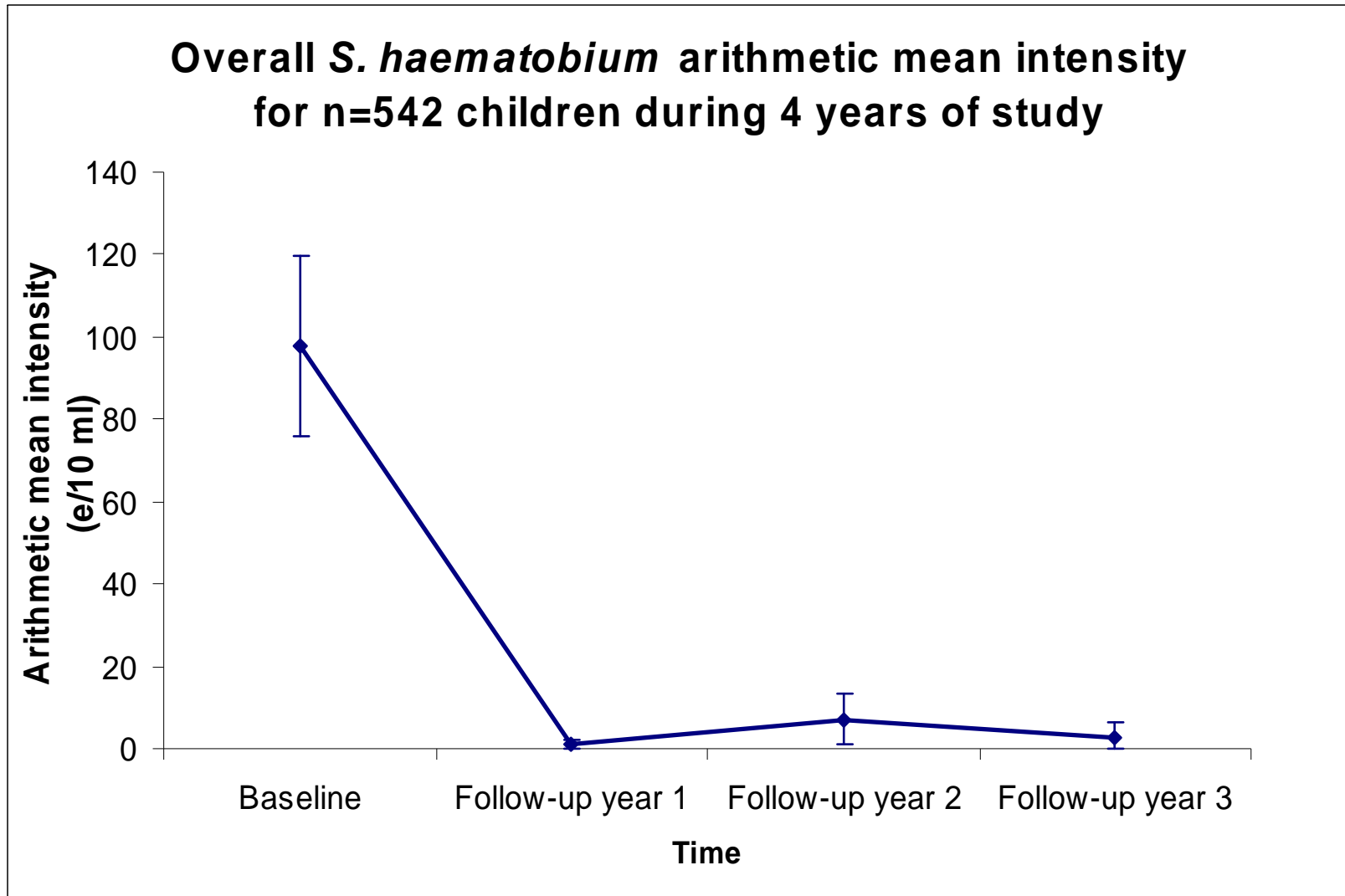
Burkina Faso

S. haematobium by directorate



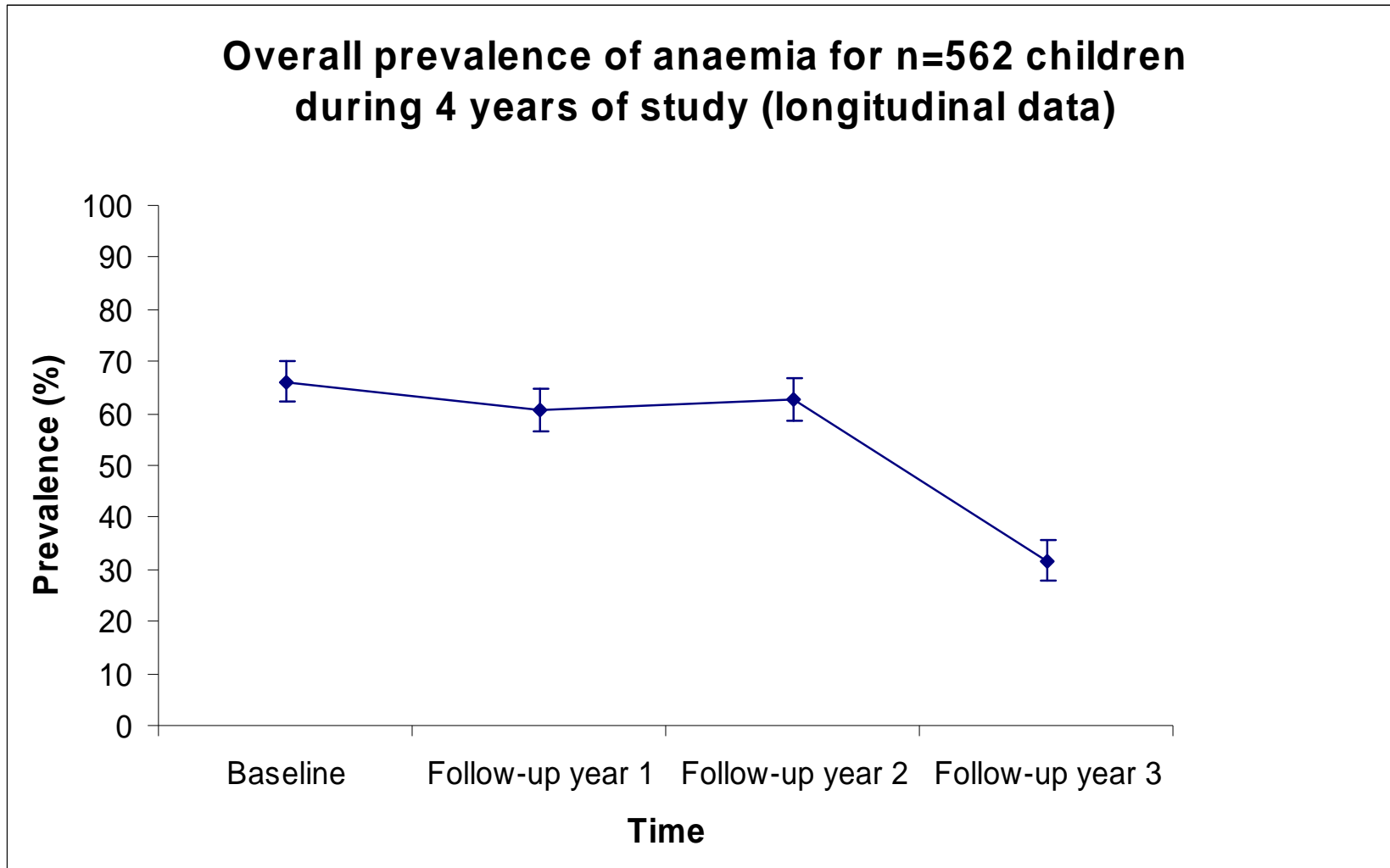
Burkina Faso

Intensity of Infection



Burkina Faso

Reduction in anaemia



A great Opportunity

We are in a position to offer treatment and improve the quality of life for millions of school aged children in Sub Saharan Africa, and protect them for the future from the terrible consequences of the Neglected Tropical Diseases

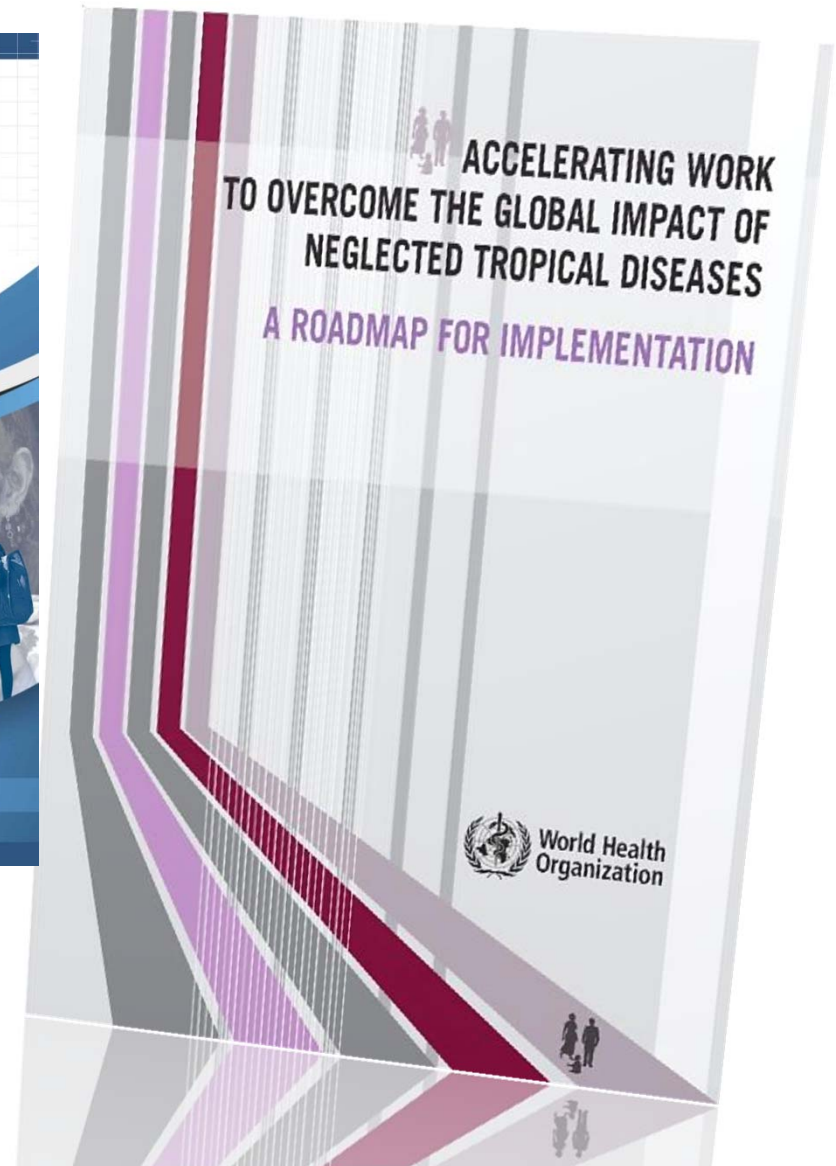
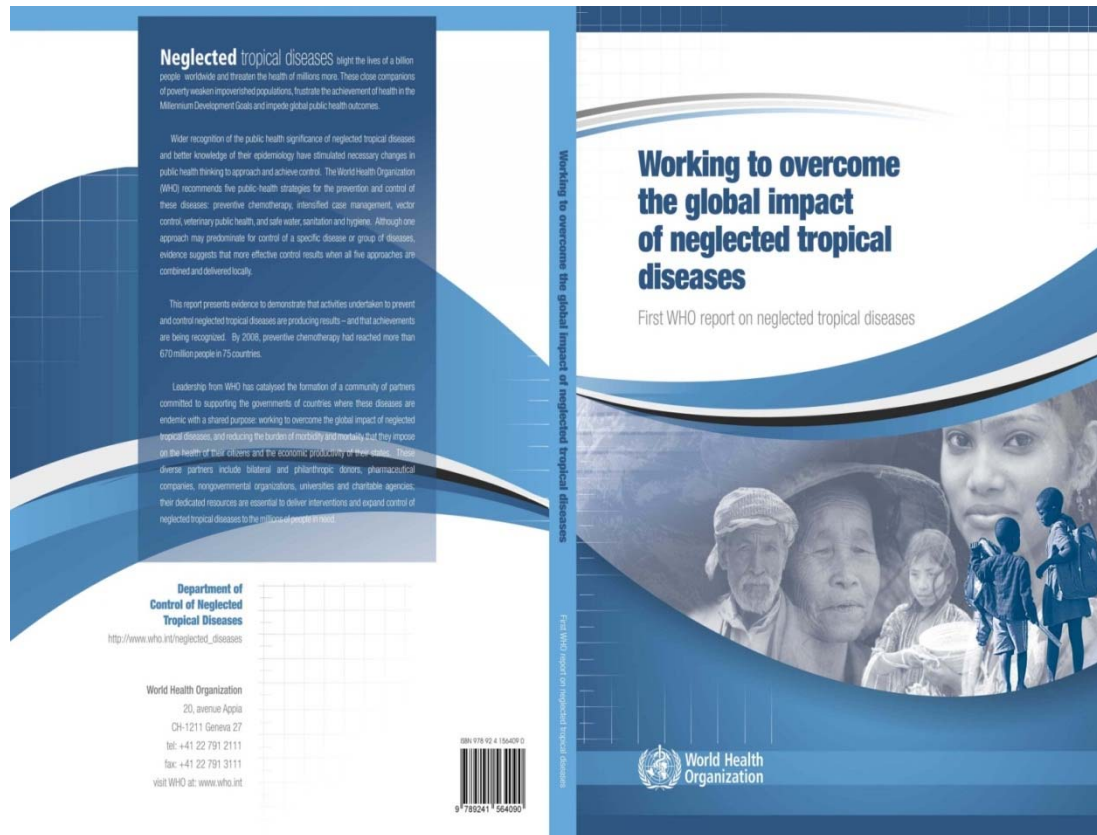
Lets do it !!!!

The London Declaration (January 31st 2012)



Unprecedented commitment - elimination target 2020

WHO leads the way



WHO resolutions against NTDs at the World Health Assembly

Acknowledgements

- Bill and Melinda Gates Foundation
- USAID – RTI
- World Bank
- Geneva Global – Legatum
- GNNTDC
- UGA - SCORE
- DFID
- Medpharm
- World Vision
- GSK, Merck Serono, Merck, Pfizer, J and J
- WHO
- GWWC
- Givewell

A highlight for SCI



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Thank you

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