The history of the regional initiative to eliminate River Blindness from the Americas - Could this serve as a model for Africa?

Frank Richards, Jr., MD
Director
Malaria, Lymphatic Filariasis, River Blindness and Schistosomiasis Programs
Chair, Program Coordinating Committee (PCC)
Onchocerciasis Elimination Program for the Americas

Fred L. Soper Lecture
62nd Meeting of the American Society of Tropical Medicine and Hygiene
Thursday, November 14, 2013
Many thanks to the Soper Committee!
Fred L. Soper, MD, DrPH

‘[My] capacity for fanaticism [did me in].’

With respect to the Rockefeller Foundation
Structure of the Talk

• About Fred Soper and his fanaticism to ‘get to zero’
• Prospects for getting river blindness (onchocerciasis) to zero in the Americas
  – Successes by the Onchocerciasis Elimination Program for the Americas (OEPA) that have led to a 95% reduction in interventions
  – WHO ‘Verification’ of elimination in Colombia
  – The ‘last inch’: Venezuela and Brazil border
• Influence of OEPA on African Programs (“Soper’s Law”)
Eradication: Ridding the world of diseases forever?
Nancy Leys Stepan
Professor of History, Columbia University
Cornell University Press, 2011

This book is largely about Fred Soper, a ‘larger than life character.’
Commander in Chief Soper

- Not a researcher, clinician or academic, but a public health practitioner.

- Midwest (Kansas). MD in 1918 and immediately joins the Rockefeller Foundation to ultimately become its most successful field general.

- Latin America, fluent in Spanish and Portuguese, tireless, focused, and enjoyed field work (entailing camping in rough conditions).

- At best ‘uncompromising personality,’ at worst ‘a slave driver.’ Military bearing, formal manner, known for ‘abrupt dismissals.’
'Get action; 
Do things; be sane... 
Don’t fritter away your time, 
Be somebody; 
And get action.'

Theodore Roosevelt
Dr. Soper loved the idea of eradication

- His agenda was eradication and his policy was vertical programs that delivered available tools; getting it right, at scale, all the time, beyond the ‘end of the road.’
- He took his eradication philosophy to PAHO, which he directed from 1947-59.
- PAHO was and is a leader in its eradication campaigns against yaws, YF, malaria, smallpox, polio, measles, rubella, and RIVER BLINDNESS.
- After his retirement, he traveled widely lecturing on the virtues and methods of eradication. His reputation faltered with the failure of the MEP in the 1960s and he died just before SP eradication.
- His faith in the ideal of eradication never faltered.
Control versus Eradication (Elimination) Strategy

Control

Eradication (Elimination)

Interventions ‘Safely’ Stopped

Time becomes an Enemy

TIME
Definitions

- **Eradication**: Zero infection globally, surveillance unnecessary

- **Elimination**: Zero infection regionally, interventions unnecessary, surveillance continues

- **Control**: Reduced disease, but both control measures and surveillance necessary
The term ‘elimination’ is often used imprecisely.”
A word of friendly caution……

‘Elimination as a Public Health Problem’ does not necessarily mean ‘getting to zero!’…. but getting to a point of ‘virtual disappearance.’*

*Usually defined as an acceptable prevalence or incidence figure
Soper Principle

Near invisibility* of a disease in a population is the point that the serious work of eradication actually begins

*There is no acceptable prevalence or incidence figure
ELIMINATION

• Intervention interrupts *Transmission*
• Then stop the intervention
  – Post-treatment Surveillance (PTS)
• If no return of infection, then
  ‘Transmission is eliminated’
Mathematical Model of River Blindness (onchocerciasis) Transmission (Vector to Human):
Infectious Bites per Person per Year

One hundred simulations with John Davies’ SIMONA MODEL using data from Las Golondrinas – Mexico – S. ochraceum
Soper Principle

The crucial test of success is to discontinue all control methods... without any recurrence of the disease

Post-treatment Surveillance (PTS)
River Blindness (RB) (Onchocerciasis) (Oncho)
Geographic Distribution of Onchocerciasis

99% in Africa

Source: WHO
Mass Drug Administration (MDA)
Soper’s MDA program to eradicate Hookworm
Ivermectin = Mectizan\textsuperscript{R} (donated by Merck & Co)

These 4 tablets comprise a single adult dose ("treatment")
What does this ivermectin do?
Control

Elimination
While most thought of ivermectin’s effect mainly as a way to control morbidity, Soper would ask:

“How can ivermectin be used to stop transmission?”
Christmas Party Comment (Dr. Richard Collins, 1987)

‘With Mectizan, a little money and some dedicated people, we can eradicate river blindness from Guatemala.’
IVERMECTIN: REDUCTION IN PREVALENCE AND INFECTION INTENSITY OF ONCHOCERCA VOLVULUS FOLLOWING BIANNUAL TREATMENTS IN FIVE GUATEMALAN COMMUNITIES


Department of Entomology, University of Arizona, Tucson, Arizona; Entomology Section, Department of Onchocerciasis (Robles Disease), SNEM, Ministry of Public Health, Guatemala City, Guatemala; Division of Parasitic Diseases, Centers for Disease Control, Atlanta, Georgia

Abstract. Residents of five hyperendemic communities located in the central focus of onchocerciasis in the highlands of Western Guatemala (Montebello%) or placebo every six months for 30 years. Independent of treatment, a significant decrease in the intensity of skin infection (microfilarial loads) was noted at the end of the second year. In both treated and placebo populations, the prevalence of skin infection occurred after the first treatment. In one community, the prevalence decreased from 74.0% at pretreatment to 34.9% after four treatments, while the MFD decreased from 7.8 to 2.0; reductions of 52.8% and 74.3% from pretreatment values, respectively. In every ivermectin-treated community except one, in which drug acceptance was low, the mean...
THE EFFECTS OF LONG-TERM COMMUNITY LEVEL TREATMENT WITH IVERMECTIN (MECTIZAN®) ON ADULT ONCHOCERCA VOLVULUS IN LATIN AMERICA

EDDIE W. CUPP, BRIAN O. DUKE, CHARLES D. MACKENZIE, JOSE RUMBEA GUZMÁN, JUAN CARLOS VIEIRA, JORGE MENDEZ-GALVÁN, JULIO CASTRO, FRANK RICHARDS, MAURICIO SAUERBREY, ALFREDO DOMINGUEZ, ROB R. EVERSOLE, AND MARY S. CUPP

Department of Eniologists and Plant Pathology, Auburn University, Auburn, Alabama; River Blindness Foundation, Lancaster, United Kingdom; Filariasis Diseases Unit, Michigan State University, East Lansing, Michigan; National Program for the Elimination of Onchocerciasis from Ecuador, Guayaquil, Ecuador; Vector-Borne Diseases Program, Secretariat of Health, Mexico City, Mexico; Vector-Borne Diseases Program, Ministry of Public Health and Social Assistance, Guatemala City, Guatemala; Epidemiology Branch, Centers for Disease Control and Prevention, Atlanta, Georgia; Program for the Elimination of Onchocerciasis in the Americas, Guatemala City, Guatemala; Biologic Imaging Center, Western Michigan University, Kalamazoo, Michigan

Abstract. The objective of this study was to examine nodules from Mexico, Guatemala, and Ecuador collected over a one-year period (2001) to determine the effects of semi-annual ivermectin treatments on Onchocerca volvulus macrofilariae.

‘Semi-annual ivermectin treatment of ≥ 6 years has had a profound impact on survival and reproduction of this species.’
A SLOW MACROFIL EFFECT: adult fertility and longevity
A important caution about once per year treatment being unable to interrupt transmission
The frequency & duration of MDA needed to eliminate onchocerciasis transmission has been fiercely debated for decades!
Advance the great debate of Control versus Elimination goals, including once versus twice per year treatment and improved diagnostics.
The history of the regional initiative to eliminate River Blindness from the Americas
Geographic Distribution of Onchocerciasis in the Americas

MEXICO
1. Oaxaca focus
2. North-Chiapas focus
3. South-Chiapas focus

GUATEMALA:
4. Huehuetenango focus
5. Central focus:
• Solola
• Suchitepequez
• Chimaltenango
6. Escuintla focus
7. Santa Rosa focus

COLOMBIA
12. Lopez de Micay focus

ECUADOR:
13. Esmeraldas focus
• Cayapas River
• Santiago River
• Onzole River
• Satellite foci:
  - Canandé and others

VENEZUELA
8. North-Central focus
9. North-Eastern focus
10. South focus

BRAZIL:
11. Amazonas focus
(Yanomami area)
Soper Principle

"As satisfactory eradication techniques become available.... the importance of regional action must increase rather than diminish."

Fred L. Soper’s Remarks at the First World Health Assembly, 1948
Regional initiative
Strategy: MDA twice per year with 85% coverage
Objective: Break RB Transmission in the Americas

OEPA is a dedicated regional initiative with a Soperian goal of getting to zero
Directly Observed Treatment (DOT)
TOWARDS THE ELIMINATION OF ONCHOCERCIASIS (RIVER BLINDNESS) IN THE AMERICAS

THE 48TH DIRECTING COUNCIL

Having reviewed the report of the Director, Towards the Elimination of Onchocerciasis (River Blindness) in the Americas (Document CD48/10);

Considering the human suffering and social costs associated with the loss of vision and deforming skin lesions attributable to onchocerciasis (river blindness), which poses a threat to approximately 500,000 at-risk people in the Americas;
The Onchocerciasis Elimination Program for the Americas: a history of partnership

J. Blanks,1 F. Richards,2 F. Beltrán,3 G. Zea Flores,5 B. Bauler,1 R. Cedillo, D. Brandling-Bennett,3 W. Baldwin,1 M. Jacox1

Abstract

The Onchocerciasis Elimination Program for the Americas (OEPA), 14 Calle 3-51 Zona 10, Edificio Murano Center, Oficina 1401, Guatemala City, Guatemala

Received and accepted 14 February 2008

Human onchocerciasis (river blindness) occurs in 13 foci distributed among six countries in Latin America (Brazil, Colombia, Ecuador, Guatemala, Mexico and Venezuela), where about 500,000 people are considered at risk. An effort to eliminate the disease from the region was launched in response to a specific resolution adopted by the Pan-American Health Organization (PAHO) in 1991: to eliminate onchocerciasis from the region, as a public-health problem, by 2007. The effort took advantage of the donation of the drug Mectizan (ivermectin) by Merck & Co., Inc. In 1992, the Onchocerciasis Elimination Program for the Americas (OEPA) was launched, with its headquarters in Guatemala, to act as a technical and co-ordinating body of a multinational, multi-agency coalition that includes the endemic countries, PAHO, The Carter Center, Lions Clubs, the United States Centers for Disease Control and Prevention, The Bill and Melinda Gates Foundation, Merck & Co., Inc., and other partners.
“The essential elements of a successful river blindness elimination program—hard work, community engagement, attention to detail, data-driven, strong partnerships, and prolonged political commitment.”

Dr. Mauricio Sauerbrey, OEPA Director
Winner of the 2012 Mectizan Award on the 25th anniversary of the donation!!

The OEPA Office is the vanguard of the initiative to get to zero!
Publicity….Advocacy
Program Coordinating Committee (PCC) meets twice per year
XVIIIth IACO in Oaxaca, Mexico 2008

InterAmerican Conference on Onchocerciasis (annually since 1991)
Mectizan Treatment Coverage in the Americas, by Focus, 2001–2012

- 2001
- 2002
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012

Focuses:
- Con-MEX
- NCn-MEX
- SCH-MEX
- Hua-GUA
- Cont-GUA
- Eco-GUA
- IPR-GUA
- NCn-VEN
- Nts-VEN
- Iou-VEN
- Amp-ERA
- Lep-COL
- Br-m-ECU

Coverage percentages are indicated by the length of the bars.
Mectizan® Treatment History in the Americas 1989 - 2012 and plan from 2013 - 2018

Over 11 million treatments given

“The Realm of the Last Inch”
Sentinel Villages, Prevalence of Microfilaria in Skin, Guatemala, 1994-2010

Each data point represents a sample of >1000 persons
Prevalence of ocular disease attributable to onchocerciasis, Central Endemic Zone, 1981-2009
“.... We are helping the governments of the six remaining endemic countries in the Americas to eliminate onchocerciasis once and for all, and I am looking forward to meeting with those health ministers later today.”

Comments to the 2003 World Health Assembly
Soper Principle

Certifiable results

Finding an acceptable definition of ZERO

$$\lim_{x \to c} f(x) = L$$
WHO 2001 Guidelines

ZERO IS…..

**ENT:** <1/2000 L3 (infective) flies (PCR)

**EPI:** <0.1 percent infection in children (OV16 IgG4 Ab)*

**MORB:** <1% mf in cornea/anterior chamber of eyes

Road map for Stopping MDA

*developed @ NIH*
Onchocerciasis Transmission ‘Stop light’
Process of Certifying the Elimination of Onchocerciasis

Based on WHO Guidelines, 2001

Transmission suppressed

Interrupted

Eliminated

These colors are epidemiologically linked!

Treatment

Post-treatment

PTS: Post Treatment Surveillance

ATP: Annual Transmission Potential
Status of Onchocerciasis transmission in the Americas when OEPA began in 1993

1 Oaxaca
2 North Chiapas
3 South Chiapas
4 Huehuetenango
5 Central
6 Escuintla
7 Santa Rosa
8 North-Central
9 Northeast
10 South
11 Amazonas
12 Colombia
13 Esmeraldas

CONTINUES
SUPPRESSED
INTERRUPTED
Seventeen Years later, in 2009
Status of Onchocerciasis Transmission in the Americas, 2013

Transmission Status

- **Eliminated**: 33%
- **Interrupted**: 63%
- **Ongoing**: 4%

Population at risk: 376,601
Population no longer at risk: 184,310

Country has satisfied the criteria to apply for WHO verification of elimination.
### Regional population at risk, no longer at risk, under PTS and eligible for treatment 2013

<table>
<thead>
<tr>
<th>Focus</th>
<th>Endemic communities</th>
<th>Population at risk</th>
<th>Pop. no longer at risk</th>
<th>Pop. under PTS</th>
<th>Pop. eligible for tx</th>
<th>Transmission status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escuintla-GUA</td>
<td>117</td>
<td>62,590</td>
<td></td>
<td></td>
<td></td>
<td>Eliminated</td>
</tr>
<tr>
<td>Santa Rosa-GUA</td>
<td>37</td>
<td>12,208</td>
<td></td>
<td></td>
<td></td>
<td>Eliminated</td>
</tr>
<tr>
<td>North Chiapas-MEX</td>
<td>13</td>
<td>7,125</td>
<td></td>
<td></td>
<td></td>
<td>Eliminated</td>
</tr>
<tr>
<td>Lopez de Micay-COL</td>
<td>1</td>
<td>1,366</td>
<td></td>
<td></td>
<td></td>
<td>Eliminated</td>
</tr>
<tr>
<td>Huehuetenango-GUA</td>
<td>43</td>
<td>30,239</td>
<td></td>
<td></td>
<td></td>
<td>Eliminated</td>
</tr>
<tr>
<td>Oaxaca-MEX</td>
<td>98</td>
<td>44,919</td>
<td></td>
<td></td>
<td></td>
<td>Eliminated</td>
</tr>
<tr>
<td>Esmeraldas-ECU</td>
<td>119</td>
<td>25,863</td>
<td></td>
<td></td>
<td></td>
<td>Eliminated</td>
</tr>
<tr>
<td>Northcentral-VEN</td>
<td>45</td>
<td>14,385</td>
<td>14,385</td>
<td></td>
<td></td>
<td>Interrupted</td>
</tr>
<tr>
<td>South Chiapas-MEX</td>
<td>559</td>
<td>117,825</td>
<td>117,825</td>
<td></td>
<td></td>
<td>Interrupted</td>
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<tr>
<td>Central-GUA</td>
<td>321</td>
<td>126,430</td>
<td>126,430</td>
<td></td>
<td></td>
<td>Interrupted</td>
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<tr>
<td>Northeast-VEN</td>
<td>465</td>
<td>95,567</td>
<td>95,567</td>
<td></td>
<td></td>
<td>Interrupted</td>
</tr>
<tr>
<td>South-VEN</td>
<td>10</td>
<td>11,427</td>
<td></td>
<td></td>
<td>9,615</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Amazonas-BRA</td>
<td>22</td>
<td>13,600</td>
<td></td>
<td></td>
<td>10,880</td>
<td>Ongoing</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,850</strong></td>
<td><strong>379,234</strong></td>
<td><strong>184,310</strong></td>
<td><strong>354,207</strong></td>
<td><strong>20,495</strong></td>
<td></td>
</tr>
</tbody>
</table>

June 2013
An Example of the Process
Santa Rosa Focus, Guatemala:
The first focus to apply the 2001 WHO criteria (in the world) to stop ivermectin treatments
24,941 vectors tested, all negative by PCR
ENT: <1/2000 with 95% confidence
0 positives in 3232 students

EPI: <0.1% infection rate in children with 95% confidence

OV16 IgG4 antibody by ELISA
• MORB: No mf in anterior chamber or cornea in 363 persons examined. Acute onchocercal eye disease is <1% with 95% confidence
Elimination of *Onchocerca volvulus* Transmission in the Santa Rosa Focus of Guatemala


Division of Parasitic Diseases, National Center for Zoonotic, Vector-Borne and Enteric Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia; Centro de Estudios en Salud, Universidad del Valle de Guatemala, Guatemala City, Guatemala; Onchocerciasis Elimination Program of the Americas, Guatemala City, Guatemala; Division of Geographic Medicine, University of Alabama, Birmingham, Alabama; Ministerio de Salud Publica y Asistencia Social, Guatemala City, Guatemala; Carter Center, Atlanta, Georgia

Abstract. To eliminate transmission of *Onchocerca volvulus*, semiannual mass treatment with ivermectin (Mectizan; donated by Merck & Co) has been underway in Guatemala since 2000. We applied the 2001 World Health Organization (WHO) elimination criteria in the Santa Rosa focus of onchocerciasis transmission in Guatemala (10,923 persons at risk). No evidence of parasite DNA was found in 2,221 *Simulium ochraceum* vectors (one-sided 95% confidence interval [CI], 0.0-0.086%), and no IgG4 antibody positives to recombinant antigen OV16 were found in a sample of 3,232 school children (95% CI, 0-0.009%). We also found no evidence of microfilariae in the anterior segment of the eye in 363 area residents (95% CI, 0-0.08%). Our interpretation of these data, together with historical information, suggest that transmission of *O. volvulus* is permanently interrupted in Santa Rosa and that ivermectin treatments there can be halted.

INTRODUCTION

*Onchocerciasis* (river blindness), caused by the filarial

lated endemic foci. Endemic communities are associated mainly with coffee plantations located between 500- and 1,500-m elevation along the slopes of several of the many
Santa Rosa
Public Information Campaign
during the PTS period
Guide to detecting a potential recrudescence of onchocerciasis during the posttreatment surveillance period: the American paradigm

Abstract: Control and elimination of human onchocerciasis using mass drug administration of ivermectin (Mectizan®) has proceeded with marked gains over the past 10 years, more so in the Americas than in Africa. In the Americas, the initial focus on elimination of ocular morbidity has shifted to interruption of transmission, and the program has refined both the process leading up to interruption of transmission as well as the critical period following cessation of mass drug administration to document that there is no recrudescence of transmission. This is called the post-treatment surveillance (PTS) period. This report describes the aims, phases, and methodology of PTS as operationalized by the endemic countries and the Onchocerciasis Elimination Program for the Americas. Successful completion of the PTS period without signs of recrudescence leads to a country request for certification of elimination by the World Health Organization. As elimination of onchocerciasis in the Americas proceeds and emphasis in Africa switches from control to elimination, the PTS guide should prove invaluable to those programs going forward.

Keywords: *Onchocerca volvulus*, onchocerciasis, ivermectin, Mectizan®, recrudescence, surveillance
Preparation of a country report in support of the request for PAHO/WHO certification of elimination

During the PTS period, the national programs will not only have to join in the two components already mentioned (Education and Evaluation) but will also need to dedicate (representing four of the six countries in the region where the disease was endemic), foci in Mali, Senegal, and northern Sudan have also reported interruption of transmission. Thus, the development of this document serves a central epidemiological and, ultimately, a policy purpose that will be far-reaching in its utilitarian value. As for most guides of
Progress Toward Elimination of Onchocerciasis in the Americas — 1993–2012

Onchocerciasis (river blindness) is caused by the parasitic worm *Onchocerca volvulus*, transmitted to humans by the bite of infected black flies of the genus *Simulium*, and is characterized by chronic skin disease, severe itching, and eye lesions that can progress to complete blindness. Currently, among approximately 123 million persons at risk for infection in 38 endemic countries, at least 25.7 million are infected, and 1 million are blinded or have severe visual impairment (1). Periodic, communitywide mass drug administration (MDA) with ivermectin (Mectizan, Merck) prevents eye and skin disease and might interrupt transmission of the infection, depending on the coverage, duration, and frequency of MDA. The Onchocerciasis Elimination Program for the Americas (OPEA) was launched in response to a 1991 resolution of the Pan American Health Organization (PAHO) calling for the elimination of onchocerciasis from the Americas. By the end of 2012, transmission of the infection, judged by surveys following World Health Organization (WHO) guidelines, had been interrupted or eliminated in four of the six endemic countries in the WHO Americas Region. Thus, in 2013, only 4% (23,378) of the 560,911 persons originally at risk in the Americas will be under ivermectin MDA. Active transmission currently is limited to two foci among Yanomami indigenous in adjacent border areas of Venezuela and Brazil.

In 2001, WHO established a set of technical guidelines to help onchocerciasis programs determine whether interruption of transmission has occurred and whether MDA with OPEA achievements, PAHO and its member states renewed the call to eliminate onchocerciasis throughout the region and set a goal to interrupt transmission of the parasite throughout the region by 2012.† A PAHO resolution in 2009 that calls for the elimination or control of 12 neglected, poverty-related infectious diseases in the Americas by 2015 includes onchocerciasis as one of its elimination targets.§

The primary strategy for eliminating onchocerciasis from the Americas has been ivermectin MDA every 6 months, with health education and community mobilization, in all affected communities of the 13 endemic foci in the six affected countries (Figure) (5,6). MDA aims to achieve at least 85% coverage of the population at risk and eligible for treatment. Communities targeted for MDA are divided by baseline onchocerciasis prevalence into hyperendemic (≥60%), meso-endemic (≥20%, but <60%), and hypoendemic (evidence of autochthonous cases, but with prevalence <20%). Transmission is most difficult to break in hyperendemic areas, where MDA might need to be given every 3 months (7).

A total of 11,069,285 MDA ivermectin treatments were administered in the Americas during 1993–2012. By the end of 2012, transmission of the infection, as judged by surveys following established guidelines, had been interrupted or eliminated in four of the six countries, and ivermectin MDAs were halted in 11 of the 13 foci, with active transmission occurring only in two foci among Yanomami indigenous populations in adjacent border areas of southern Venezuela and northern
and 411 hypoendemic) in Mexico (Table). Mexico has achieved surveillance was completed successfully throughout the country
# Financial contribution to the OEPA Regional Initiative (rounded up to millions of US dollars)

<table>
<thead>
<tr>
<th>Source</th>
<th>1991-2012</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAHO/WHO</td>
<td>$1</td>
<td>1%</td>
</tr>
<tr>
<td>The Carter Center/RBF (various donors)*</td>
<td>$24</td>
<td>17%</td>
</tr>
<tr>
<td>Countries (counterpart funding from MOH's)</td>
<td>$51</td>
<td>40%</td>
</tr>
<tr>
<td>MSD (in kind)</td>
<td>$55</td>
<td>42%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$131</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*IDB, Lions, Gates, CDC, USAID, Alwaleed Bin Talal Foundation, OPEC, others
Financial contribution to the OEPA Regional Initiative excluding MDP (ivermectin) in kind donation (rounded up to millions of US dollars)

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<td>1%</td>
</tr>
<tr>
<td>The Carter Center/RBF (various donors)*</td>
<td>$24</td>
<td>31%</td>
</tr>
<tr>
<td>Countries (counterpart funding from MOH's)</td>
<td>$51</td>
<td>68%</td>
</tr>
<tr>
<td>Total</td>
<td>$76</td>
<td>100%</td>
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</tbody>
</table>

*IDB, Lions, Gates, CDC, USAID, Alwaleed Bin Talal Foundation, OPEC, others

average $1.14 m/year by donors
WHO verification of Colombia!!!!
23rd IACO in Quito
November 2013
Ecuador’s Success!!!
Ecuador Team, 2009

“...these are the victories of the countries. Today's news belongs to Ecuador.”

Frank Richards
Ecuador Halts Spread of River Blindness
AOLNews.com
March 2, 2010
Status of Onchocerciasis in the Americas, 2013

96% of MDA has stopped
The ‘Endgame’
The ‘Final Inch’
Soper Principle

Near invisibility of a disease...is the point that the serious work of eradication actually begins.
Near invisibility
Areas targeted for FOUR TIMES PER YEAR TREATMENT!!!
Proposal to improve treatment distribution at the South Focus of Venezuela
President Carter’s visit to the Brazilian Minister of Health

HIGH LEVEL POLITICAL SUPPORT NEEDED
Fanaticism?
Structure of the Talk

• About Fred Soper and his fanaticism to ‘get to zero’
• Prospects for getting river blindness (onchocerciasis) to zero in the Americas
  – WHO ‘Verification’ of Colombia, Ecuador pending
  – The ‘last inch’ and biggest challenge in the Amazon
• Influence of OEPA on African Programs (“Soper’s Law”)
Soper’s Law

The innate power of disease eradication programs to spread beyond their original starting point until they become worldwide.
“…a two dose-regimen [is] trickier to apply in Africa, but [Dr. Mark] Taylor believes it is a crucial next step. ‘Two doses have been shown to be very successful in Columbia [sic] and elsewhere, the African programme has to move more rapidly to endorse this strategy.’”
Since 1996, American and African River Blindness Programs assisted by The Carter Center have met at an annual Program Review. Advance the great debate of once versus twice per year treatment and Control versus Elimination goals.
Take home messages for African Programs to consider

- Multiple doses per year
- WHO guidelines
- More Sensitive Techniques
  - PCR
  - Antibody testing (OV16)
- ‘Soperian’ use of the term ‘Elimination’
  - ZERO
Carter Center-Assisted Mectizan Distribution

TWICE PER YEAR

4X/year

Venezuela
Brazil

Ethiopia
Sudan
Nigeria
Uganda
Carter Center-Assisted Mectizan Distribution

Elimination Lab Support
PCR and OV16
Carter Center-Assisted Mectizan Distribution

Elimination Lab Support
PCR and OV16
2007 Uganda Policy Change

THEME:
ELIMINATE ONCHOCERCIASIS (RIVER BLINDNESS)
FROM UGANDA TO FIGHT POVERTY
30TH JANUARY 2007
Oguttu et al. Serosurveillance to Monitor Onchocerciasis Elimination: The Ugandan Experience. AJTMH (in press)

Experience with >30,000 OV16 tests
A national advisory committee with a focus purely on Onchocerciasis Elimination (this is hard work!)
**UGANDA ‘SCORECARD’ COVERING 6.5 MILLION PERSONS**

**UOEEAC RECOMMENDED PLAN - AUG 2013**

<table>
<thead>
<tr>
<th>ID No.</th>
<th>Focus</th>
<th>Vector</th>
<th>District</th>
<th># of MDA annual rounds</th>
<th># of MDA semi annual rounds</th>
<th>Total Pop 2013 (original)</th>
<th>Semi Plan for MDA 2013</th>
<th>Annual Status of Transmission</th>
<th>Yr of elimination</th>
<th>Plan for Larviciding LF</th>
<th>LF Status</th>
<th>Cross border</th>
<th>Remarks</th>
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<td>S. damnosum</td>
<td>Buga</td>
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<td>N/A</td>
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<td>1973</td>
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<td>Nebbi</td>
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<td>LF</td>
<td>Treatment stopped in 2008 (projected by 3.5%)</td>
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<td>Mbale</td>
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<td>Sironko</td>
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<td>18</td>
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<td>Buhweju</td>
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<td></td>
</tr>
</tbody>
</table>

**Total**

- **Total Pop likely to be declared by UOEEAC**: 54,534
- **Total # of Treatments stopped next year**: 626,140
- **Total Pop immunisation not stopping due to LF**: 626,140
- **Total Pop of Interrupted Suspected**: 934,129

N.B. Population figures as per 2013 treatment projections.
History of mass treatment with ivermectin from 1994 to 2011 in Mount Elgon onchocerciasis focus, Uganda

Elimination Policy
Abate®
donated by BASF
Dosing Points and fly catching sites on river systems where *S. neavei ss* breeds from in Mount.Elgon focus.
Elgon focus: Entomological surveillance

Number vectors captured

Abate river dosing

Vector elimination

Soper would love this!
River blindness eliminated from Mt. Elgon region

By VIOLET NABATANSI
PAULINE NABUMBA

River blindness has been
eliminated from Mt. Elgon region,
has said. The disease has also been
eliminated from Itwara forest in
Fort Portal district. The assistant commissioner
of health services in charge
of neglected tropical diseases,
Dr. Dawson Mbulamberi, yester-
day said they had stopped
treating people in those areas.
He, however, said the effects
of the disease were still being
monitored. “We have stopped
treatment in these districts
marks yesterday while closing
the 4th Uganda onchocerciasis elimination advisory
committee meeting at Serena
Hotel in Kampala. He said the disease was
prevalent in over 20 districts
including Nebbi, Kisoro,
Kabale, Kanungu, Kibale,
Hoima, Bulisa and Masindi.
Others were Busheni, Ka-"wenge, Ibanda, Nebbi, Moyo,
Adjumani, Koboko, Gulu and
Nwoya districts.

Manuscript now under consideration by
American Journal of Tropical Medicine and Hygiene
Very ‘Un-Soperian’!!!!

Flexibility...
Different approaches...
A Major Paradigm Shift at the African Programme for Onchocerciasis Control Elimination
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George Punkosdy  David Brandling-Bennet  & Don Hopkins

And many others..........................
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• Lions Clubs and Lions SightFirst Program
• Pan American Health Organization
• University of South Florida

References/sources for slides shown in this presentation are available upon request
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