SUMMARY PROCEEDINGS

NINTH ANNUAL TRACHOMA CONTROL PROGRAM REVIEW

Ensuring Implementation of the Full SAFE Strategy

THE
CARTER CENTER

Waging Peace. Fighting Disease. Building Hope.

Atlanta, Georgia
February 11 - 13, 2008

Supported by:
Conrad N. Hilton Foundation
Lions Clubs International Foundation
Pfizer Inc

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And to many others, our sincere gratitude.

EXECUTIVE SUMMARY

Ensuring Implementation of the full SAFE strategy

The ninth annual Program Review of trachoma control programs was held at The Carter Center, February 11-13, 2008. In addition to the seven Carter Center-assisted programs, we were joined by our partners from the Centers for Disease Control and Prevention, International Trachoma Initiative, Helen Keller International, Johns Hopkins University, Research Triangle Institute, the Task Force for Child Survival and Development, and World Vision. Country program directors from Uganda and Tanzania joined the review to provide perspectives from a country just embarking on trachoma control and one in which there has been a vigorous program for ten years. In keeping with the theme of "***Ensuring Implementation of the full SAFE strategy"*** presentations focused on program progress towards ultimate intervention goals, evidence-based planning, survey methodology, and target setting.

As in previous years, the primary objectives of the program review were to assess the status of the national trachoma control programs, identify challenges encountered in planning and implementing those programs, discuss solutions and shared experience, as well as to promote sharing and standardization of information. Discussions during the program review meetings are country-specific, but the impact is global. The achievements, challenges, solutions and lessons learned continue to guide the evolution of the GET 2020 Alliance, particularly with respect to the F & E components of the SAFE strategy.

These proceedings reflect the thoughts, discussions and proposals made during the ninth annual Program Review of trachoma control programs. Program review meetings offer a unique forum for trachoma control program managers, Carter Center staff, and partners to work face-to-face to review accomplishments and plan for the future. This group, representing nine country programs, is the first and only assembly of national and regional TCP coordinators and experts to meet regularly to discuss practical application of the SAFE* strategy with an emphasis on the F & E components.

Special session highlights from this year's review included presentations on the integration of trachoma control programming with neglected tropical disease control in Southern Sudan, Nigeria and Mali. Operational research activities such as a latrine design evaluation from Ghana and results from a media habits survey research from Southern Sudan were also presented.

The review highlighted the partnership between the Lions Clubs International Foundation and The Carter Center, with particular focus on Lions Clubs of Ethiopia leadership in reducing the burden of blinding trachoma in the Amhara Regional State.

National and regional trachoma control program coordinators representing the ministries of health of Ethiopia, Ghana, Niger, Nigeria and the Government of Sudan attended. In addition, The Carter Center's trachoma control program staff from Ethiopia, Ghana, Mali, Niger, Nigeria and southern Sudan participated in the meeting. Representatives of the Arthur M. Blank Foundation, Lions Clubs International Foundation, Lions Clubs of Ethiopia, the Conrad N. Hilton Foundation and the Bill & Melinda Gates Foundation also attended.

* SAFE: the World Health Organization-endorsed strategy for trachoma control:
S for Surgery
A for Antibiotics
F for Facial Cleanliness
E for Environmental Improvement

ACRONYMS

ALB	Albendazole
ATO	Annual Treatment Objective
BLTR	Bilamellar Tarsal Rotation
CDC	U.S. Centers for Disease Control and Prevention
CDTI	Community Directed Treatment with Ivermectin
CMA	Christian Mission Aid
CWSA	Community Water and Sanitation Agency (Ghana)
FAR	Fellowship for African Relief
FGD	Focus Group Discussions
FMOH	Federal Ministry of Health
GOS	Government of Sudan
GOSS	Government of Southern Sudan
GRBP	Global 2000 River Blindness Program
GTM	Grarbet Tehadisso Mahber
HKI	Helen Keller International
IDP	Internally Displaced Persons
IEC	Information, Education, Communication
ITI	International Trachoma Initiative
IVM	Ivermectin
KAP	Knowledge, Attitudes, and Practices
LCIF	Lions Clubs International Foundation
LF	Lymphatic Filariasis
LGA	Local Government Area (specific to Nigeria, analogous to a district)
LLIN	Long-lasting insecticidal Net
MDG	Millennium Development Goal
MOH	Ministry of Health
NGO	Non-Governmental Organization
NPPB	National Program for the Prevention of Blindness
NR	Northern Region (Ghana)
NTD	Neglected Tropical Disease
OLS	Operation Lifeline Sudan
PHAST	Participatory Hygiene & Sanitation Transformation
PHC	Public Health Centers
PNLC(C)	Programme National de Lutte contre la Cecité
PZQ	Praziquantel
SAFE	Surgery, Antibiotics, Facial Cleanliness & Environmental Improvement
SF	SightFirst
TCP	Trachoma Control Program
TRA	Trachoma Rapid Assessment
TF	Trachomatous inflammation-Follicular
TI	Trachomatous inflammation-Intense
TT	Trachomatous Trichiasis
UIG/UTG	Ultimate Intervention/Treatment Goal
UWR	Upper West Region (Ghana)
VA	Visual Acuity
VDC	Village Development Committee
WAWI	West African Water Initiative
WHO	World Health Organization
WVI	World Vision International

Ethiopia Trachoma Control Program

Presented by Dr. Zerihun Tadesse, Head of Disease Prevention and Control Department, Federal Ministry of Health, Ethiopia

Background

The prevalence of blindness in Ethiopia, estimated at 1.6%, is thought to be among the highest in the world. The two major causes of blindness are cataract (50%) and trachoma (12%). A nationwide blindness and low vision survey completed in 2006 shed light on the national trachoma situation. The national prevalence of active trachoma (either TF or TI) in children 1-9 years old was 40.1%. Considerable variations are observed in the active trachoma prevalence across regional states, with the highest prevalence in Amhara (62.6%). The rural prevalence of active trachoma is almost fourfold compared to urban prevalence (42.5% vs. 10.7%). The national average prevalence of trachomatous trichiasis (TT) is 3.1%, with the highest prevalence found in Amhara regional state (5.2%). TT is almost three-fold greater in women compared to men (4.1% vs. 1.6%).

Based on the 2007 estimated population of Ethiopia (79 million), there are an estimated 68.7 million people at risk of trachoma nationally. Recent estimates related to trachoma included 1.2 million blind people, 2.8 million people with low vision, 9 million children 1-9 years of age with active trachoma, and 1.3 million adults with trachomatous trichiasis.

Timeline of Events – Ethiopia Trachoma Control Program

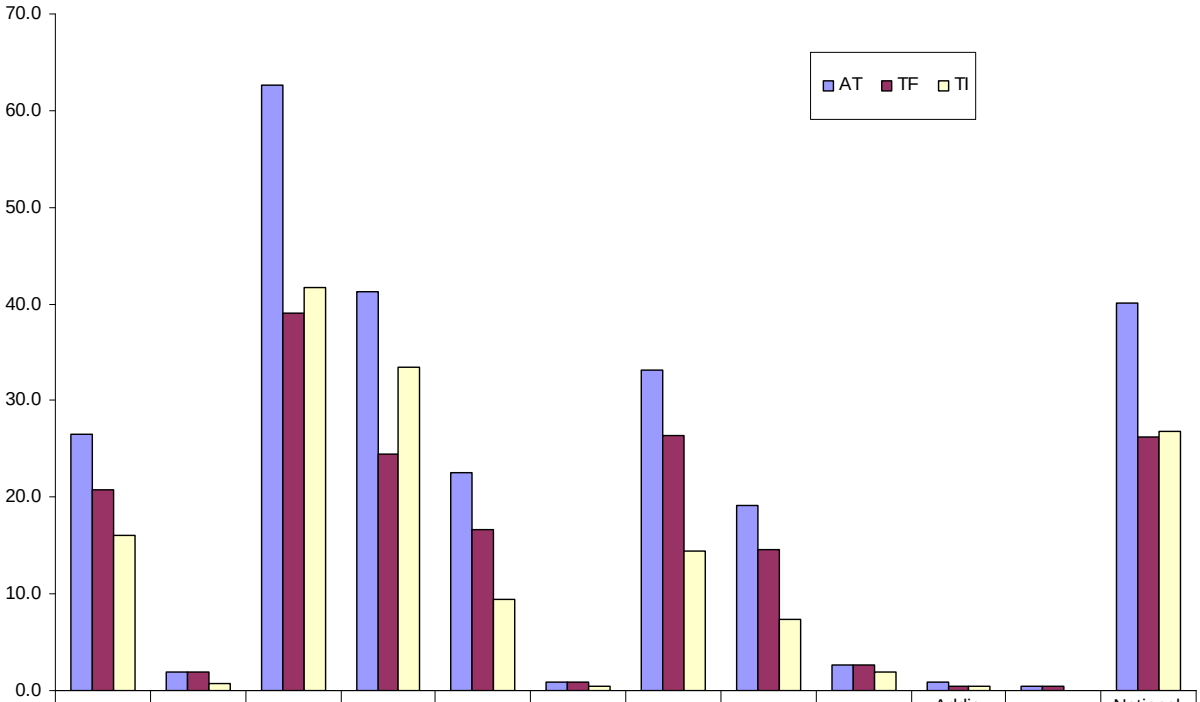
In October 2000, The Carter Center began assisting the Amhara National Region Health Bureau in trachoma control with funding from the Lions-Carter Center SightFirst Initiative. Four districts in the South Gondar Zone (Dera, Ebinat, Estie and Simada) were selected to launch activities. The initial program area comprised 155 kebeles (groups of villages), with a total population of more than one million persons.

In December 2000, the Amhara Regional Health Bureau, the Prevention of Blindness Team of the Federal Ministry of Health, and The Carter Center conducted a community-based trachoma prevalence survey in the four woredas. Survey results were consistent with reports that Ethiopia has an extremely high prevalence of both active and blinding trachoma. A knowledge, attitudes and practices (KAP) survey including focus group discussions, informal interviews and a household survey was conducted in the same four districts one month later. The findings were used to develop a school health curriculum and health education materials such as posters, flipcharts, pamphlets, and a community worker training manual. A five-year (2001-2005) action plan for the South Gondar trachoma control program was drafted in 2000.

A national strategic plan for trachoma was prepared and completed for the period 2006-2010. In the plan, the Federal Ministry of Health has set 2015 as the target for eliminating blinding trachoma. In Ethiopia, the effort to eliminate trachoma is strengthened by the highly active participation of local Lions clubs. Their leadership has made Ethiopia's trachoma control program one of the most productive in the world.

Epidemiology of Trachoma in Ethiopia

The graph below shows results from the national blindness and low vision survey that was conducted in 2005-2006. Data on prevalence of active trachoma (AT), TF, and TI are shown among children aged 1-9 years, by regional state.



	Tigray	Afar	Amhara	Oromia	Somali	Bgumz	SNNP	Gambella	Harari	Addis Ababa	Dire Dawa	National (weighted)
AT	26.5	1.9	62.6	41.3	22.6	0.9	33.2	19.1	2.6	0.9	0.5	40.1
TF	20.8	1.9	39.1	24.5	16.7	0.9	26.4	14.6	2.6	0.5	0.5	26.2
TI	16.0	0.7	41.7	33.4	9.4	0.5	14.5	7.3	1.9	0.5	0.0	26.8

Table 1: Prevalence of Trichiasis (TT) among adults aged over 14 years by state, Ethiopia

Region	TT Prevalence (%)
Tigray	2.3
Afar	1.0
Amhara	5.2
Oromia	2.8
Somali	4.2
B-Gumz	0.1
SNNP	2.0
Gambella	2.5
Harari	1.2
Addis Ababa	0.9
Dire Dawa	0.7
National (weighted)	3.1

Table 2: Prevalence of TF and TT by zone in Amhara (data from MALTRA baseline survey, 2006-2007)

Domain	TF in children aged 1-9 years	TT in children aged 0-14 years	TT in people aged 15 and above
	Prevalence (%)	Prevalence (%)	Prevalence (%)
Amhara Region	32.7	0.3	6.2
Zones			
North Gondar	34.7	0	4.3
Waghemira	60.1	0.5	6.3
South Gondar	28.9	0.1	3.8
North Wollo	51.9	0.8	9.4
West Gojjam	33.1	0.4	10.0
Awi	38.9	0.1	5.4
East Gojjam	48.3	0.3	7.1
South Wollo	12.6	0.3	3.2
Oromia	28.7	0.1	2.4
North Shewa	23.2	0.3	9.0

Program Achievements in 2007

The Lions-Carter Center program expanded its interventions to 36 new program woredas in Amhara in 2007, covering the entire region. This quick expansion to a large geographical area, and the ensuing staff recruitment and training, hindered the Ethiopia program's performance in 2007. The scale of the Lions-Carter Center-supported program in Amhara is unprecedented—last year the program experienced delays in procurement of surgical equipment by the manufacturer and in delivery of the large quantity of azithromycin for mass distribution. Amhara regional health bureau staff have multiple responsibilities and the human capacity of the regional health bureau is approaching its limit. In general, the program set ambitious, needs-based targets for trachoma elimination in 2007 and while it fell short of its objectives, still achieved record output.

Table 3: Program Achievements in 2007

Activity	Target	Output	Carter Center Target (Amhara only)	Carter Center Output (Amhara only)
Persons operated for trichiasis	95,095	45,271	95,095	28,425
Surgeons trained	306	193	306	193
Doses of azithromycin distributed	10,373,499	6,224,372	9,191,182	5,195,937
Doses of tetracycline distributed	689,463	343,963	689,463	343,963
Persons addressed through health education	70,098	11,185	70,098	11,185
Household latrines constructed	466,359	41,228	466,359	41,228

Trichiasis Surgery
The Ethiopia Trachoma Control Program conducts trichiasis surgery both at static health facilities and during mobile outreach campaigns. All TT surgeons are provided TT sets and are expected to offer routine TT surgery at their health facilities. During campaigns, a team of TT surgeons travels to health facilities where routine TT surgery is unavailable and operates all presenting TT patients. A campaign can last from 5 to 10 days and helps overcome barriers of distance for those suffering with TT. In 2007, 108 trichiasis surgery campaigns were conducted and a record 193 new TT surgeons were trained. The order of 650 surgical equipment sets was the largest the manufacturer had ever received and thus caused a delay in program implementation. The Ethiopia program certifies new surgeons using the WHO guideline "Final Assessment of Trichiasis Surgeons". Re-certification is done for surgeons who have not operated for 6 months or more and is planned to be done periodically for all surgeons but is not yet implemented.

Antibiotic Distribution
In Ethiopia antibiotic distribution takes place using the existing health infrastructure, including the *woreda* (district, population upwards of 100,000) supervisor and the *kebele* (cluster of villages, population around 5-6,000) health extension workers. The woreda level supervisor has overall responsibility and oversees all field supervisors. Field supervisors are health workers from health centers and they supervise 3 to 4 teams each. Antibiotic distribution is directly observed and recorded in both kebele log books and tally sheets. A distribution campaign can last for up to 10 days and is done from a convenient point within the kebele. Missing families are traced house-to-house by the trachoma volunteers.

In 2007, a total of 52 woredas were reached with azithromycin (42 in Amhara by the Lions-Carter Center supported program and 10 in Tigray and Oromia regions supported by Orbis and Grarbet Tehadisso Mahber, GTM). All program activities are conducted under the umbrella of the Regional Health Bureaus and therefore benefit from the credibility and trust of these Bureaus. The Bureaus also assist in micro-planning, allocate staff to the campaigns, pay salaries during the campaign period, and provide transportation where possible. The program estimates its ultimate intervention goal for antibiotic distribution to be a minimum of 60.9 million doses, including 139 woredas in the Amhara region and 148 in SNNPR.

Facial Cleanliness and Health Education (F)
In Carter Center-supported program areas, 1,447 kebeles (43.9% of the 3,299 total kebeles) received ongoing health education in 2007, reaching an approximate population of 8.7 million. The Amhara regional radio has the potential to reach all 20 million people, but radio ownership is estimated to be quite low (25% of households). Trachoma-focused health education is done in an integrated fashion with malaria education at the following locations: health facilities, schools, during community and traditional gatherings, during mass drug distribution and surgical campaigns, and during home visits by health extension workers. Trachoma messages include information on the source and cause of trachoma, the mode of transmission, trachoma treatment and prevention, and demonstration of face washing, home water management and latrine construction. The ultimate intervention goal for Amhara is to reach all 3,299 endemic kebeles with health education by 2009.

Environmental Improvement (E)
In Ethiopia, latrine construction is a priority of the federal government and is promoted in pursuit of the Millennium Development Goal 7 ("to halve the proportion of households without access to sanitation by 2015"). National latrine coverage was estimated to be 32% in 2006. According to the 2005 Demographic and Health survey, access to sanitation in Amhara is even lower, at 29.7%. The national latrine promotion program is based on behavior change and empowering community members to build their own pit latrines using only local materials. Community input in latrine building includes labor and all the materials. The program promotes individual household pit latrines in all project areas, with no specific training of masons or artisans. A key component of the National Health Service Extension program is latrine promotion.

The Amhara trachoma control program has estimated its regional ultimate intervention goal for latrine construction to be 1,217,944 (to halve the proportion of households that did not have a latrine by 2015, a total of 3,824,000 households in Amhara). To achieve total latrine coverage, a total of 2,435,888 household latrines would need to be constructed.

Current access to potable water is estimated to be about 47%. The program's ultimate intervention goal for water is to have 100% of households in endemic communities with access to potable water within 1 kilometer or a 40 minute round-trip walk. The Federal Minister of Water Resources is responsible for planning and execution of safe water provision. In 2006, Lions Clubs of Ethiopia, with CBM, ORDA, and The Carter Center built 119 small-scale water schemes in Lions-Carter Center supported trachoma-endemic areas. Approximately 10,613 households in 57 kebeles, around 38,098 people, benefited from this project.

Table 4: Lions-Carter Center SightFirst Assisted Areas Achievements from 2001 – 2007

	2001	2002	2003	2004	2005	2006	2007
TT surgeons trained	8	11	19	67	75	27	193
Persons operated for trichiasis	815	4,019	6,840	23,676	22,097	7,283	28,425
Treatment with azithromycin	0	0	100,256	625,422	1,680,394	2,925,569	5,195,937
Persons treated with tetracycline	1,042	7,964	35,106	125,208	256,048	261,733	343,963
Persons trained for trachoma control mobilization	N/A	1,080	138	6,021	8,624	3,366	11,185
Villages implementing health education strategies regularly	N/A	138	155	654	654	654	1,447
Latrines constructed	N/A	1,333	2,151	89,096	144,750	75,621	41,228

Targets for 2008
No national targets were presented during the program review meeting. The targets below are for the Lions-Carter Center assisted areas in Amhara Region.

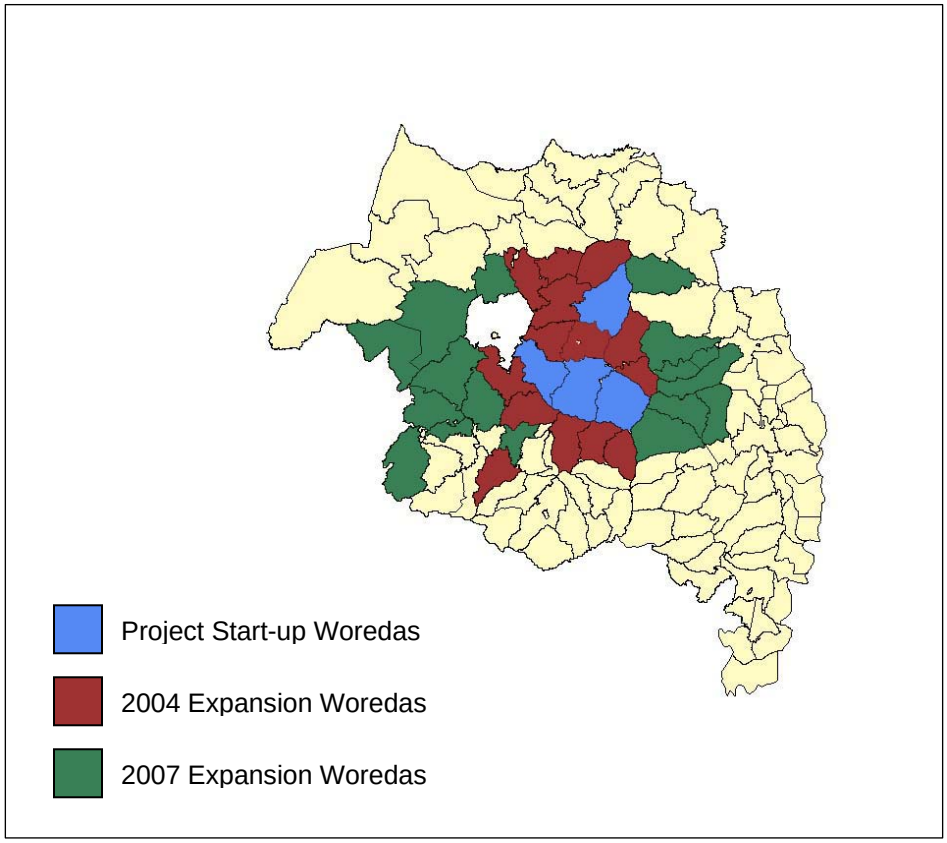
Surgery (S)
- Operate 101,187 persons with trichiasis

Antibiotics (A)
- Distribute azithromycin to 10,938,752 persons
- Distribute tetracycline to 251,566 persons

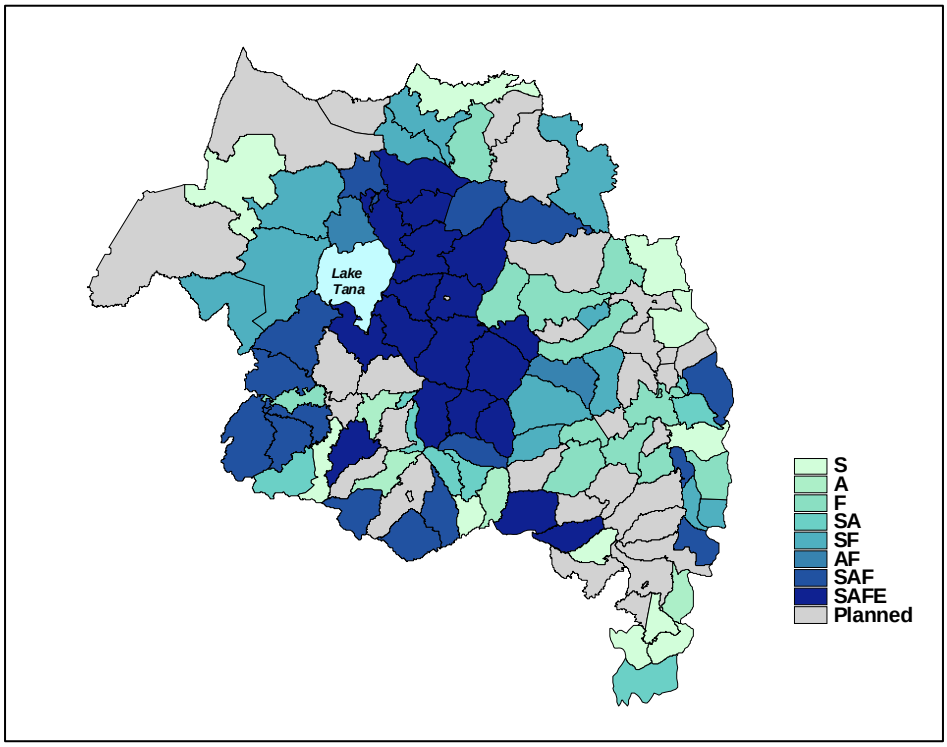
Health Education and Facial Cleanliness (F)
- Conduct health education in 2,446 trachoma-endemic villages

Environmental Improvement (E)
- Facilitate construction of 400,996 household latrines

Map: Lions-Carter Center supported antibiotic treatment woredas, Amhara Regional State (2001-2007)



Map: 2007 Implementation of SAFE Components: Amhara Regional State



Ghana Trachoma Control Program

Presented by Dr. Oscar Debrah, Head of Eye Care, Ghana Health Service

Background

Trachoma is the third leading cause of blindness in Ghana, after cataract and glaucoma. In March 2000, The Carter Center helped the National Trachoma Control Program to conduct the first population-based trachoma prevalence survey in the Upper West (UWR) and Northern (NR) Regions. The Carter Center also supported Ghana's first knowledge, attitudes and practices (KAP) studies in the UWR (December 1999) and NR (July 2000), utilizing household surveys, focus group discussions, and direct community observations. The results of these studies were used during workshops in October 2000 and January 2001 during which district and regional plans for trachoma control were established. The current estimated population at-risk of trachoma in the two known endemic regions (26 districts) totals 2.6 million.

The National Trachoma Control Task Force, which includes both governmental and non-governmental organizations, oversees trachoma control activities at the national level. In each trachoma-endemic region, a regional task force plans and monitors trachoma control activities. It reports to the National Task Force and provides feedback to the districts and other partners. A similar structure exists at the district level, which works closely with frontline workers to implement the SAFE strategy in target communities. The Ghana Trachoma Control Program has set the goal of eliminating blinding trachoma by 2010.

Timeline of Events – Ghana Trachoma Control Program

- 1999: Trachoma rapid assessment in all 18 districts of Northern Region (NR) and Upper West Region (UWR)
- 1999-2000: Epidemiological survey in five districts of NR and UWR
- 2001: Implementation of full SAFE strategy began in 5 surveyed districts
- 2002: Baseline prevalence survey in 1 additional district
- 2003: Baseline prevalence survey in 13 other districts
- 2005: 5-year strategic plan for 2005-2009 launched
- 2005: District-wide antibiotic distribution started in 5 (now 9) additional districts
- 2007: Epidemiological survey conducted in the Upper East Region (UER)
- 2007-2008: Impact assessment survey and mid-term review of 5-year plan
- 2010: Target date for elimination of blinding trachoma in Ghana

Epidemiology of Trachoma in Ghana

Table 1 below illustrates the ensemble of baseline data from prevalence surveys conducted between 2000 and 2003. Trachomatous inflammation – follicular (TF) in children 1-9 years ranged from 2.8 to 16.1% (when a measure of TF/TI is used). Trachomatous trichiasis (TT) in women 40 years and above ranged from 0.4 to 8.4%.

Table 1: Prevalence Survey Data as Presented

District	**%TF**	**%TI**	**%TFTI**	**%TT**	**Survey Year**
Tolon-Kumbungu	-	-	12.4	8.4	2000
Savelugu-Nanton	-	-	9.7	4.5	2000
Tamale Municipal	-	-	4.7	4.9	2000
West Gonja & Central Gonja	-	-	11.1	3.7	2002
Bole & Sawla-Tuna-Kalba	8.2	0.8	-	1.8	2003
East Gonja	3.7	0.2	-	0.9	2003
East Mamprusi & Bunkpurugu- Yunyoo	2.8	0.4	-	0.6	2003
Gushiegu & Karaga	4.4	0.3	-	0.8	2003
Nanumba North & Nanumba South	3.8	0.2	-	0.5	2003
Saboba / Chereponi	3.2	0.2	-	0.5	2003
West Mamprusi	6.8	1.1	-	0.8	2003
Yendi	3.5	0.4	-	1.0	2003
Zabzugu/Tatale	4.4	0.6	-	0.4	2003
Sissala East & Sissala West	-	-	11.5	1.6	2000
Wa Municipal, Wa East & Wa West	-	-	16.1	2.6	2000
Jirapa/Lambussie	5.0	0.6	-	0.8	2003
Lawra	2.8	0.1	-	0.7	2003
Nadowli	3.6	0.5	-	1.3	2003

Another trachoma prevalence survey was conducted in the Upper East Region in January 2007. Results showed that trachoma was not of public health significance in the region. This may be due to several factors including the availability of adequate potable water in almost every community.

During the program review provisional results from the impact evaluation survey ongoing in the districts of Upper West and Northern Regions were presented. The table below lists the provisional data as presented:

Table 2: Provisional Impact Evaluation Survey Data*

District	%TF	Number examined 1-9 years	%TT (n)	Number examined >14 years
Savelugu-Nanton	1.15	1,565	0.52	2,318
Tolon-Kumbungu	0.19	1,579	0.33	2,146
West Gonja	0.14	1,481	0.76	1,979
Sissala	0.84	1,197	1.07	1,771
Wa	1.34	1,339	0.57	1,756

*The data as presented are provisional as surveys and analysis are ongoing in the remaining 13 districts.

Program Achievements in 2007

Table 3: Ghana Trachoma Control Program Achievements in 2007

	Targets	Output	% Achievement
Persons operated for TT	1,500	504	33.6
Surgeons trained	0	0	0
Doses of azithromycin distributed	957,000	899,065	93.9
Doses of tetracycline distributed	36,400	25,311	69.5
Health education sessions	5,600	7,000	100
Communities receiving health education	49	49	100
Household latrines constructed	5,000	3,438	68.8
Household latrines constructed with Carter Center support	2,500	2,568	100

Trichiasis Surgery
Key activities for trichiasis surgery in 2007 included case identification and registration through systematic case searching and passive case identification. One eye camp was conducted in Northern Region in April 2007 during which 197 TT surgeries were performed. A total of 307 surgeries were conducted at health facilities (hospitals). There is routine follow-up of operated cases. The program estimates the current backlog of TT cases to be 8,865.

Antibiotic Distribution
The Ghana program uses Pfizer-donated Zithromax® and 1% tetracycline eye ointment for children under 6 months of age. District wide mass drug administration takes place in all districts with TF greater than or equal to 10%. In districts with TF less than 10%, only communities with TF greater than or equal to 5% are given mass treatment. The Government of Ghana is responsible for clearing of drugs at the port and for transporting them to Central Medical Stores, the regions, and the districts. Cascade type training takes place for antibiotic distributors and volunteers and supervisors. Community members are registered by community volunteers who are supervised by health workers. Drug distribution is done house-to-house by health workers assisted by the volunteers. Health workers follow-up to monitor for adverse events following distribution and an inventory of drug is carried out. In Ghana, the distribution of azithromycin for trachoma control is now integrated with mass drug administration for other neglected tropical diseases. The program intends to calculate new ultimate intervention goals for antibiotic distribution after the impact assessment surveys are completed in 2008 and after the mid-term review of the 5-year strategic plan.

Health Education
In Ghana, health education is conducted by community volunteers, health workers, environmental health officers, school teachers and NGO staff. The key messages are centered around the importance of facial cleanliness and the promotion of construction, maintenance and use of household latrines. The health education strategy focuses on community sessions (house-to-house, home visits, drama groups, durbars), school-based education (discussions using a developed manual for teachers and pupils and playing cards, and radio programming in local languages (Dagbani, Gonja and Dagaare). In 2007 more than two hours of radio programming were broadcast each week on four radio stations in the two regions, with more than 2 million people targeted. Local musicians and celebrities are becoming an active part of the campaign to improve sanitation. Trachoma has also been included in the school curricula in trachoma-endemic regions. The national program has initiated advocacy for the inclusion of trachoma specific education in the national basic school curriculum.

Environmental Improvement
The Mozambican type of latrine is promoted in Ghana. Latrine slab artisans have been trained by the Community Water and Sanitation Agency who in turn train apprentices. The beneficiary household is responsible for digging of the hole and building and roofing the superstructure. The average cost per latrine in 2007 was $54.50: $19 for 1.5 bags of cement, $8.50 for the vent pipe, $12 for sand, and $15 for aggregate. The program estimates the ultimate intervention goal for the endemic populations to be 150,000 household latrines to construct to meet the Millennium Development Goal 7. Some communities benefit from school latrine construction by other partners. The national program celebrates National Sanitation Week yearly.

Table 4: Ghana Trachoma Control Program's Achievements 2001-2007

	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Number of TT patients operated	336	421	383	951	1,146	626	504
Number of persons receiving azithromycin	71,438	101,174	163,931	292,715	740,884	825,217	899,065
Number of persons receiving tetracycline	6,292	6,668	9,785	15,101	12,697	20,134	25,311
Number of household latrines constructed	14	206	791	1,141	3,828	889	3,438

Targets for 2008

- Complete the Impact Assessment Survey
- Conduct a mid-term review of the 5-year strategic plan
- Initiate plans to develop and implement a surveillance plan

Surgery (S)

- Detect and operate 1,000 persons with trichiasis
- Train and retrain 650 teachers and 130 environmental health officers on identification of TT

Antibiotics (A)

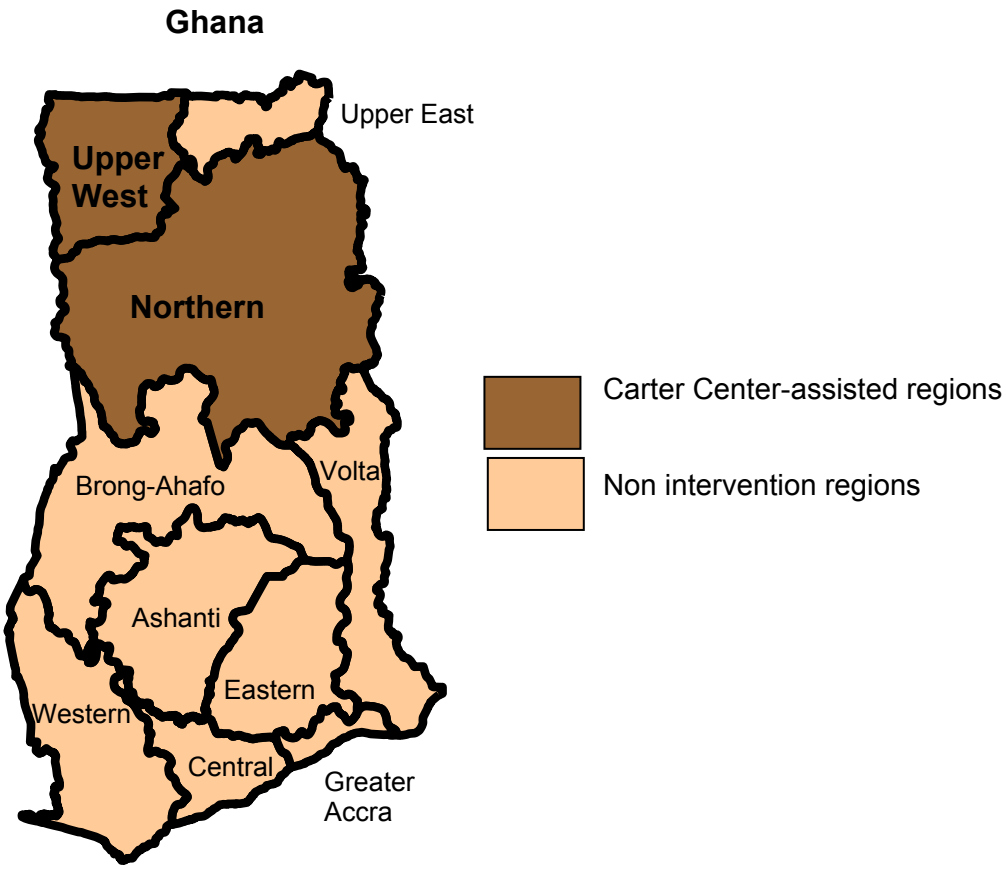
- Distribute azithromycin to 950,000 people (to be reviewed after impact survey results)

Facial Cleanliness/Health Education (F)

- Train and retrain 931 health workers on trachoma
- Train and retrain 3,900 volunteers in trachoma education

Environmental Improvement (E)

- Construct 5,000 household latrines
- Advocate for provision of at least 200 new water sources



Carter Center Ghana field officer Nazeed Fusheini demonstrates the use of a hand washing station next to a household latrine during President and Mrs. Carter's visit in February 2007.

Mali Trachoma Control Program

Presented by Dr.Sanoussi Bamani, Coordinator, National Blindness Prevention Program, Mali

Background

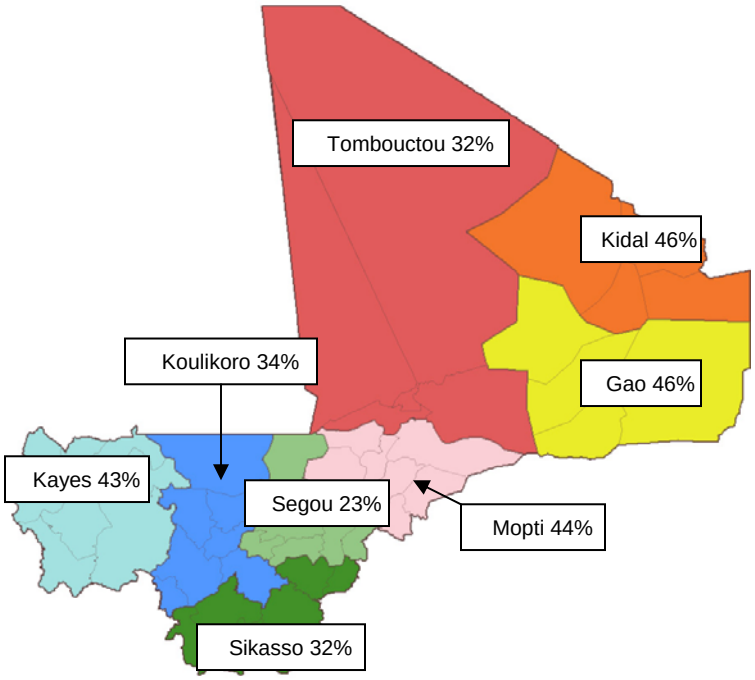
The first national trachoma prevalence survey, conducted in 1996-1997, found that trachoma is endemic in every region of Mali. The overall prevalence of active trachoma (TF and/or TI) in children under 10 years of age was 35% and the prevalence of trichiasis among women over 15 years of age was 2.5%. With these results, a national Prevention of Blindness Program was established in 1994. In October 1999, the Mali Trachoma Control Program was launched in Koulikoro in an official ceremony with the former U.S. President Jimmy Carter, former head of state General Amadou Toumani Touré (now president of Mali) and then Lions Clubs International President, Jim Ervin.

Trachoma knowledge, attitudes, and practice surveys conducted in Koulikoro Region in 1996 and 2000 provided baseline sociological data for the development of health education strategies and materials. A national survey found that in 2001, 23% of households did not have a latrine in Mali (30% in rural areas). In 2003, the Mali National Division of Hygiene and the Trachoma Control Program began household latrine promotion in Kayes and Ségou regions with assistance from the International Trachoma Initiative (ITI) and The Carter Center. A national 5-year plan finalized in 2005 is still awaiting official government approval. The Carter Center assists the national program by supporting F&E interventions in Segou and Mopti regions.

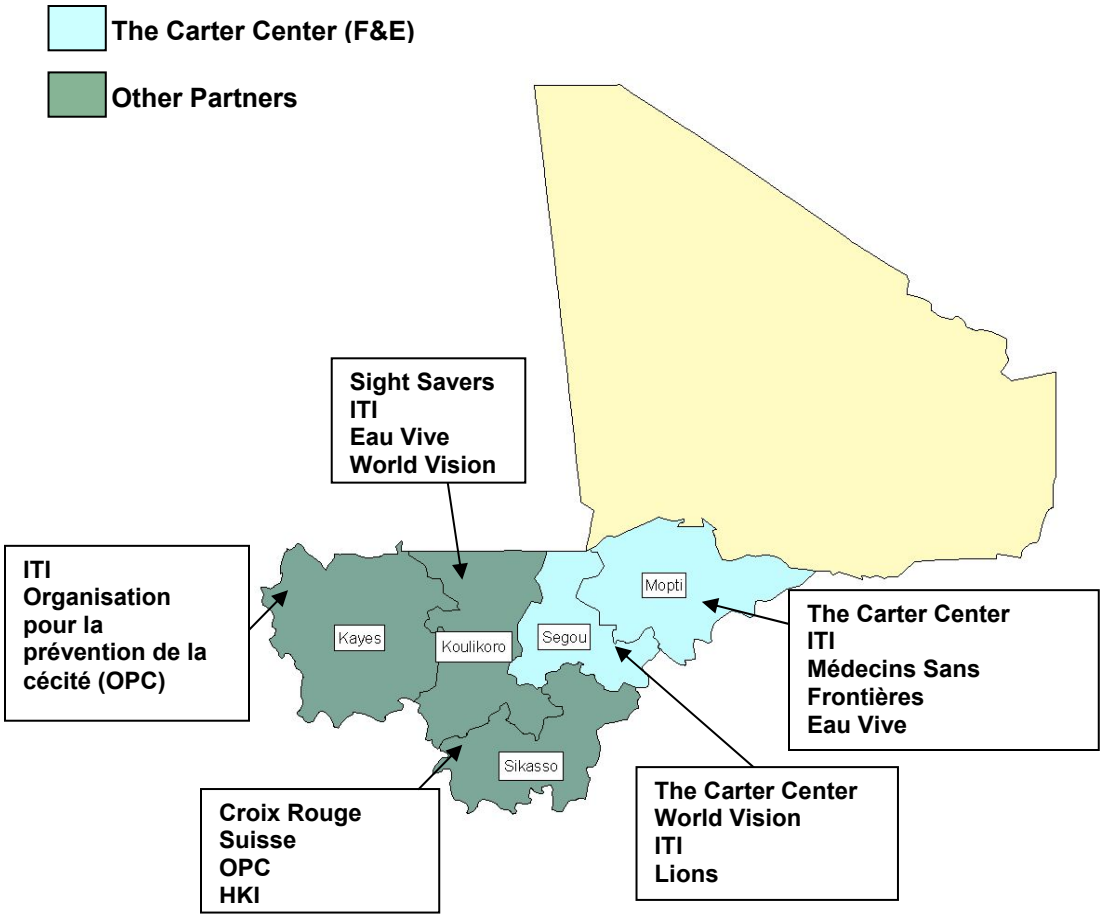
Timeline of Events

1994:	National Blindness Prevention Program launched
1996-1997:	National baseline prevalence survey
1999:	Mali Trachoma Control Program launched
2005:	Prevalence surveys in 7 districts of Koulikoro Region (Koulikoro, Banamba, Kangaba, Dioila, Fana, Ouelessebougou, and Kati)
2005:	Prevalence surveys in 5 districts of Mopti Region (Douentza, Koro, Djenné, Tenenkou, and Youwarou)
2006:	Prevalence surveys in 2 districts of Kayes Region (Kita, Bafoulabé)
2007:	Prevalence surveys in 2 districts of Kayes Region

Map 1: Prevalence of TF by region, national baseline survey, 1996-1997



Map 2: Partners supporting trachoma control in Mali



Program Achievements in 2007

Table 1: Mali Trachoma Control Program Achievements in 2007

	Targets	Output
Persons operated for TT	8,000	2,890
Surgeons trained	0	0
Doses of azithromycin distributed	6,989,045	1,767,877
Persons trained in health education	1,565	7,585
Household latrines constructed	20,000	13,610
Household latrines constructed with Carter Center support	12,000	11,871
New water points	0	1,221

Surgery (S)
Trichiasis surgery is conducted in fixed locations throughout Mali, as well as during routine rural outreach and rural trichiasis surgery campaigns. In 2007, 13 trichiasis surgery camps were conducted. The national program estimates that 95% of surgeries are performed during campaigns while the other 5% are done as routine surgery in health centers. The recurrence rate after surgery is unknown. The program now estimates its current backlog of persons with trichiasis to be 50,943.

Antibiotic Distribution (A)
Since 2001, the Malian program has distributed Pfizer-donated azithromycin in mass treatment campaigns in selected districts. Distribution takes place both door-to-door and in public gathering places and is community-directed. Antibiotic coverage surveys have not yet taken place in Mali. In 2007, the national program was only able to distribute in 8 districts of Sikasso Region with support from the Government of Mali of $64,000. The national program was not able to purchase tetracycline eye ointment for distribution this year.

Facial Cleanliness and Health Education (F)
In Mali, health education activities are carried out through multiple channels: by rural radios, primary school teachers, environmental health agents, village educators, NGO supervisors and field officers, and during village gatherings such as naming ceremonies and weddings. Community health volunteers are trained during 2 days and given a flipchart to use as an educational tool. The program estimates that it reached 4,371 villages with ongoing health education in 2007 (approximately 4.5 millions persons). Trachoma education has also been included in primary school curricula in Mali. In order to reach large numbers of persons at risk for trachoma, the program conducts radio and television campaigns to broadcast information about trachoma and its prevention. They estimate reaching 3.7 million people with rural radio broadcasts on 24 stations. In 2007 the program supported the training of women's groups in trachoma health education (see the special session summary).

Environmental Improvement (E)
The national program promotes construction of household latrines with Sanplat slabs. Masons are trained in Sanplat slab construction over two days and receive approximately $1 from the household for their work. The cost of the latrine is estimated at $49 including: cement and iron bar at $8.48 and an estimated $41 of contribution from the household for labor, sand and superstructure costs. The program now estimates its ultimate intervention goal to achieve the Millennium Development Goal 7 to be 162,428 latrines.

Water provision is supported by partners such as: World Vision, Water Aid, UNICEF, and WAWI. A total of 1,200 endemic villages benefited from new or rehabilitated water points in 2007. An additional 1,221 modern water points were built or rehabilitated.

Targets for 2008
Facial Cleanliness and Health Education (F)

- Train 8,000 community health volunteers
- Train 200 school teachers in trachoma education

Environmental Improvement (E)

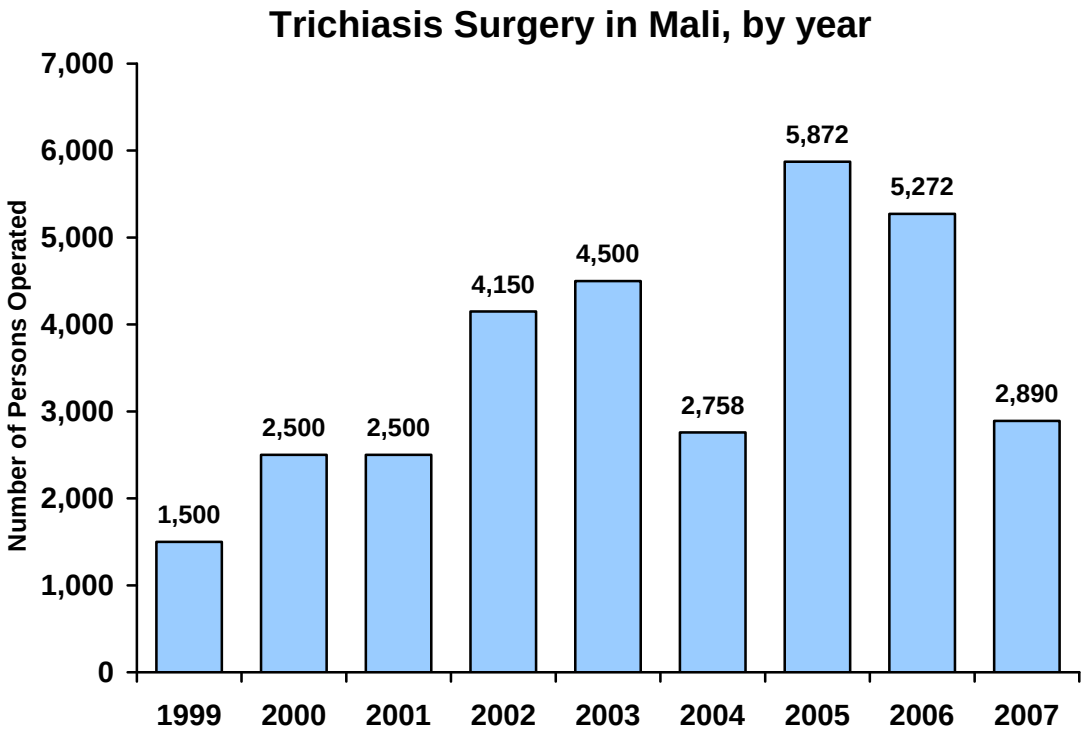
- *Train 600 masons in Sanplat slab construction*
- *Construct 14,000 household latrines*
- *Train 1,000 sanitation workers in trachoma education*

*Antibiotic*s (A)

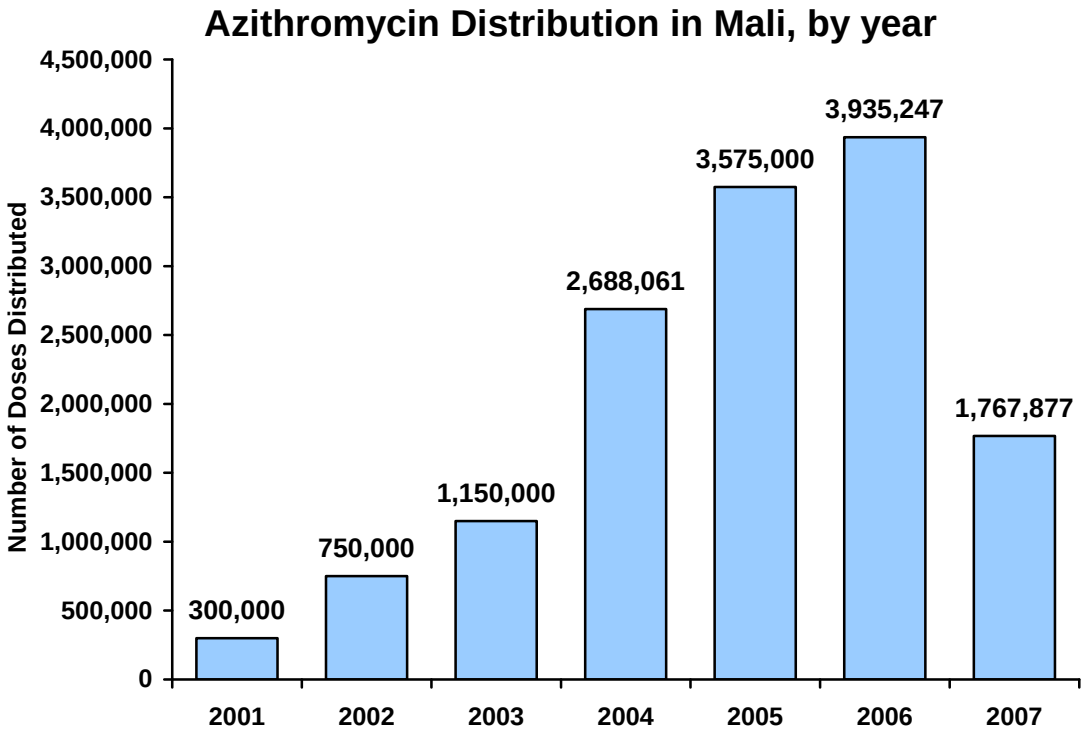
- Distribute 9,520,739 doses of antibiotics

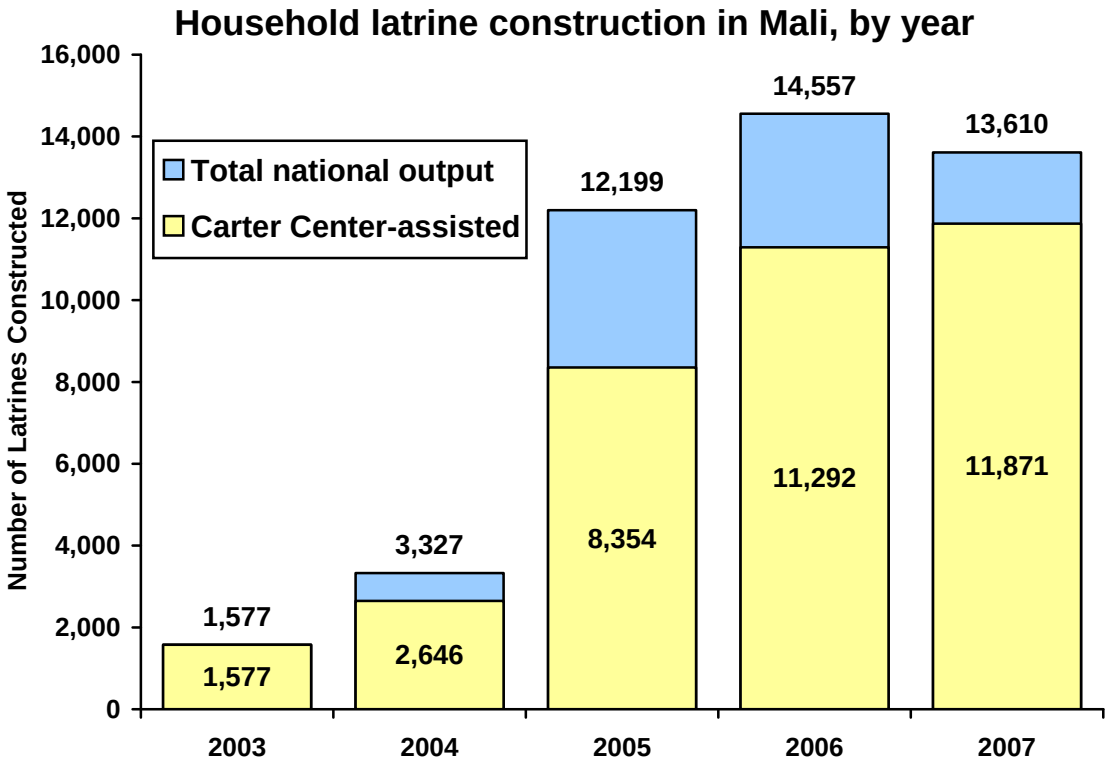
Surgery (S)

- Operate 12,000 persons with trichiasis



Masons in Mali prepare to pour cement into a latrine mold.


Azithromycin Distribution in Mali, by year
Number of Doses Distributed
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
300,000
750,000
1,150,000
2,688,061
3,575,000
3,935,247
1,767,877
2001
2002
2003
2004
2005
2006
2007


Household latrine construction in Mali, by year
Number of Latrines Constructed
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Total national output
Carter Center-assisted
1,577
1,577
3,327
2,646
12,199
8,354
14,557
11,292
13,610
11,871
2003
2004
2005
2006
2007

Niger Trachoma Control Program

Presented by Dr. Kadri Boubacar, Deputy Director, National Prevention of Blindness Program, Ministry of Health of Niger

Background

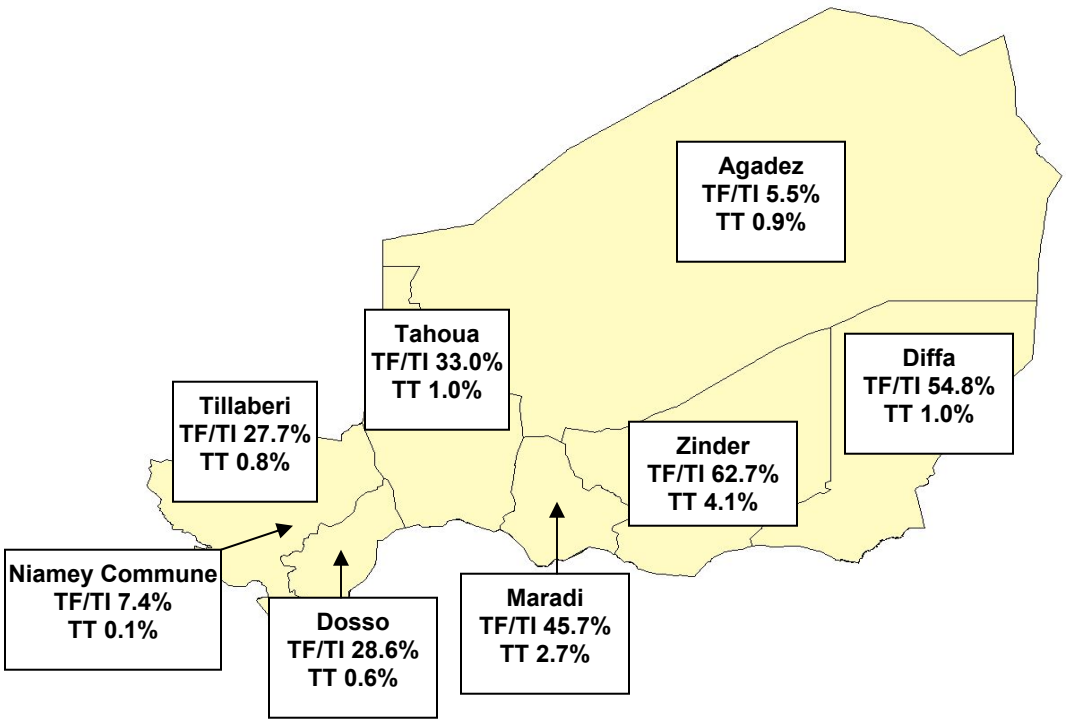
Niger's National Prevention of Blindness Program (NPBP) was established in 1987. The Ministries of Health, Education, and Water & Social Development formed a National Trachoma Task Force in 1999. Representatives of partner health organizations including The Carter Center, local Lions Clubs, Helen Keller International, CBM, the Niger Association for the Blind, the African Muslim Agency, and the World Health Organization are also Task Force members.

The most recent national trachoma prevalence survey was conducted in 1997-1999, with financial assistance from the European Union and The Carter Center. It found that an average of 44% of children under 10 years old had active trachoma (TF/TI), and 1.7% of women over 15 years old had trichiasis. Nationwide, an estimated 68,300 men and women needed trichiasis surgery at that time. The highest prevalence of trachoma was identified in the regions of Zinder, Diffa and Maradi. That baseline assessment showed that about 50% of households had access to clean water within 1 km, and about 4% of households had access to a latrine. The national baseline (2001) prevalence of clean faces in children aged 1-10 years was 52%.

Timeline of Events – Niger Trachoma Control Program

1997-2001: Baseline trachoma prevalence surveys conducted
2002: Program launched 5-year strategic plan
2005: Impact surveys in 2 districts of Zinder Region
2006: Impact surveys in 4 districts of Zinder region
2015: Target date for elimination of blinding trachoma

Map 1: Prevalence of TF/TI and TT by Region, Baseline Prevalence survey, 1997-1999



Program Achievements in 2007

	Target	Output	% Achievement
Persons operated for trichiasis	15,660	2,804	17.9
Surgeons trained	127	6	4.7
Doses of azithromycin distributed	3,651,590	5,958,174	100
Doses of tetracycline distributed	107,074	120,000	100
Health education sessions	-	17,317	n/a
Community clean-up days	-	6,650	n/a
Radio messages broadcast	-	3,717	n/a
Radio listening sessions	-	72	n/a
Women trained in local soap production	252	476	100
Communities receiving health education	-	4,512	n/a
Household latrines constructed	11,400	10,725	94.1
Household latrines constructed with Carter Center support	5,000	6,776	100
Masons trained in Sanplat slab construction	224	208	92.9
School latrines constructed	60	928	100

Surgery (S)

In 2007, Helen Keller International supported surgical activities. Both health center-based surgery and outreach strategies were used, with a total of 15 camps conducted. Challenges to the delivery of surgical activities included the demands of cost-recovery for health clinic activities; competing, non-trachoma related activities; as well as the irregular supervision of the trichiasis surgeons. Surgeons are recertified after having operated 120 eyes per year. The program estimates recurrence of trichiasis at 3 years post surgery to be 15 to 20%. The program now estimates a backlog of 106,289 persons with trichiasis.

Antibiotics (A)

Distribution of azithromycin in Niger is community-based by community distributors who carry out door-to-door distributions in their villages. Mass distribution in 2007 took place in 22 health districts, of which 17 were supported by the Neglected Tropical Disease initiative. Outside of the NTD-supported zones, the Government of Niger and UNICEF support mass azithromycin distribution in five districts of the regions planned for distribution in the 5-year strategic plan.

Table 1: Doses of azithromycin distributed in Niger, 2007

Region	**Target**	**Output**
Diffa	245,114	196,091
Zinder	2,672,929	0
Maradi	733,547	586,838
Total (5-year strategic plan regions)	**3,651,590**	**782,929**
Tillaberi	0	1,979,324
Tahoua	0	2,053,878
Dosso	0	1,142,043
Total (NTD program regions)	**0**	**5,175,245**
Total Doses Distributed in 2007	**3,651,590**	**5,958,174**

Facial Cleanliness and Health Education (F)
A total of 4,512 villages in three target regions (Zinder, Maradi and Diffa) received regular health education sessions for trachoma prevention in 2007 with Carter Center support. The program uses mass media to broadcast messages on all four components of the SAFE strategy for trachoma control. They distribute cassettes, fabric, t-shirts, and posters that educate on facial cleanliness and use sketches, songs and theater works.

To broaden the reach of the program's educational campaign throughout Niger, health education messages are produced and broadcast in local languages on local radio stations. Radio listening groups gathered to hear some of the 3,717 broadcasts during the year. To reach persons without access to radio, artists and health educators performed theatrical dramas in large villages and weekly markets. The program is unable to estimate the number of persons reached with health education via radio.

Environmental Improvement (E)
Latrine promotion began in 2002 with the aim of reducing the population of *Musca sorbens* flies in trachoma-endemic villages and to improve general hygiene. The national program promotes Sanplat latrines. In 2007, partners assisted the program to build 10,725 household latrines at an average cost of $48 to $61. The Carter Center supported the construction of 6,776 latrines in 2007 in Diffa, Zinder and Maradi regions. The increased cost of cement and iron bars in Diffa region contributed to the higher cost per latrine there. To reach the Millennium Development Goal 7 of halving the proportion of households without access to sanitation by 2015, the program will need to build an additional 377,364 latrines. In addition, 476 women were trained in traditional soap manufacture, and 208 masons were trained in latrine construction.

In regards to water provision, the program seeks to construct new water points and rehabilitate nonfunctioning ones. WAWI, UNICEF and the Ministry of Hydraulics all support water provision in trachoma-endemic zones. The Niger program benefited from the construction of 270 new water points in Diffa, Maradi and Zinder regions.

Targets for 2008
- Conduct impact surveys in Tessaoua, Aguié, Diffa, Zinder, and Mirriah

Surgery (S)
- Operate 12,530 persons with trichiasis
- Organize 20 trichiasis surgery camps
- Distribute 150 new trichiasis surgery kits

Antibiotics (A)
- Organize distribution in 24 districts of 5 regions to 7,641,583 people
    - Tillaberi Region: 6 districts, 2,093,902 people
    - Dosso Region: 3 districts, 1,329,397 people
    - Tahoua Region: 7 districts, 2,235,301 people
    - Maradi Region: 5 districts, 1,757,867 people
    - Diffa Region: 2 districts, 225,116 people

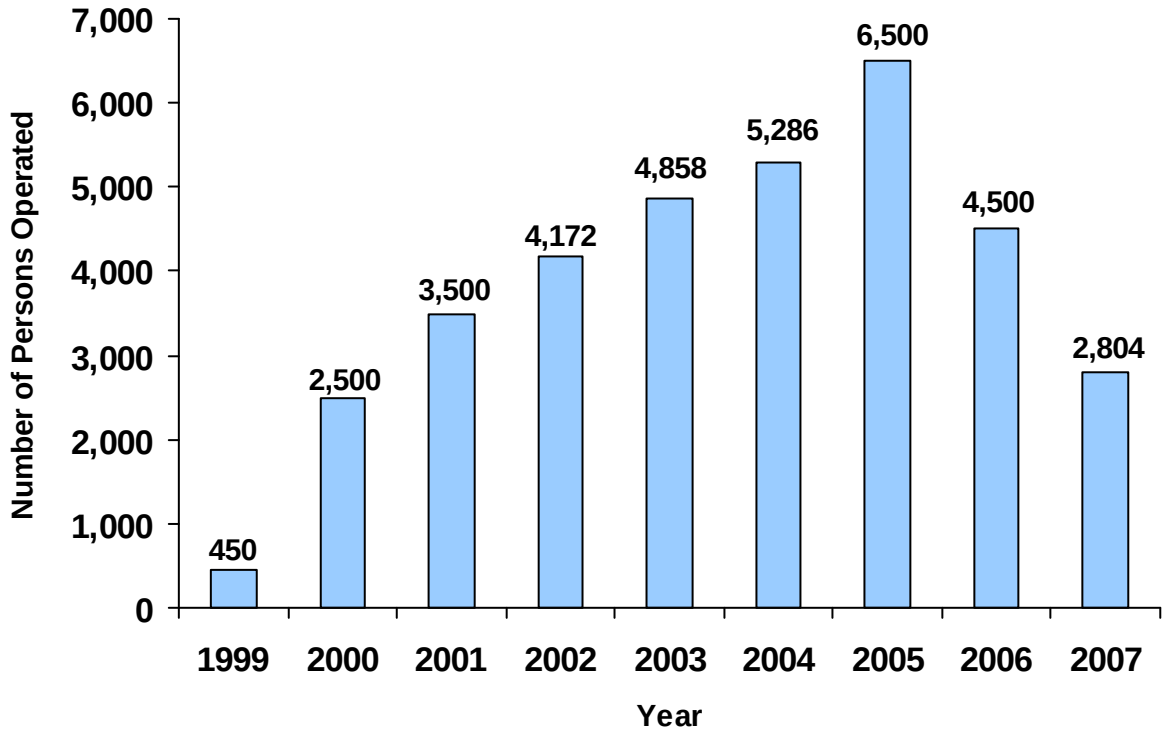
Facial Cleanliness and Health Education (F)
- Achieve 80% of children with clean face in villages reached with IEC activities
- Train 372 women in traditional soap-making
- Train 30 village hygiene committees

Environmental Improvement (E)
- Train 266 village masons and 30 water point repairmen
- Build 11,400 household latrines and 60 blocks of school latrines

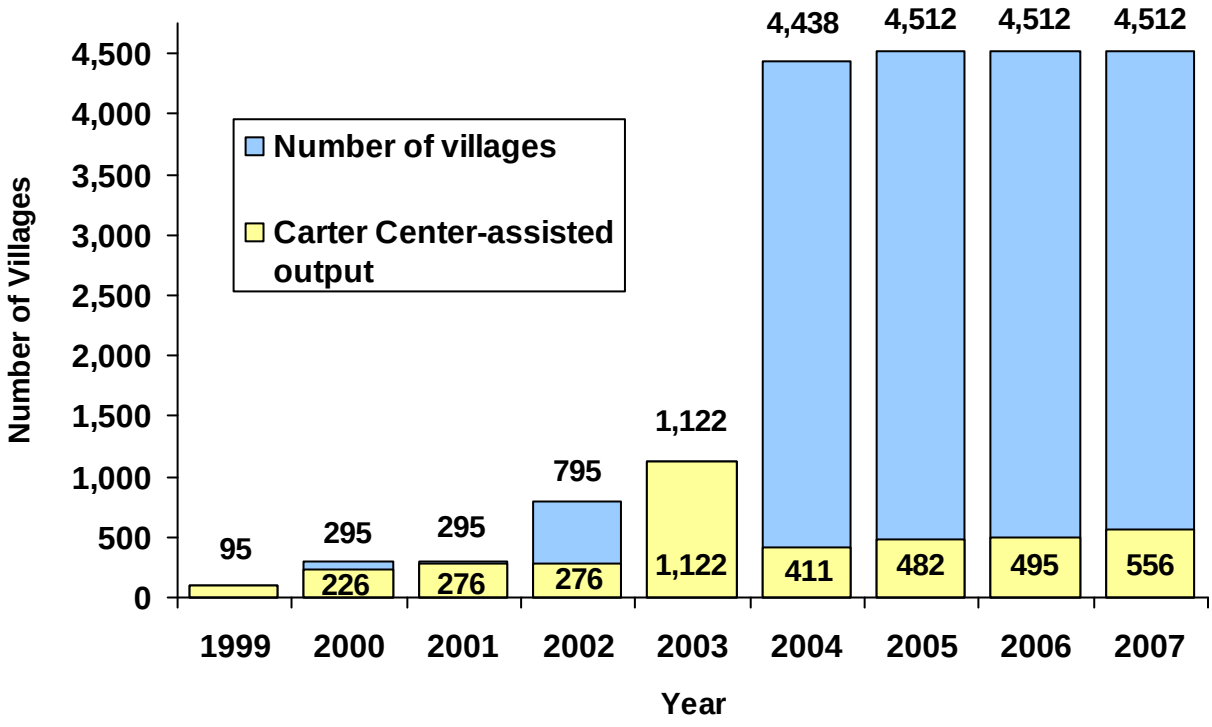
A community health volunteer educates children on the importance of sanitation in the village.

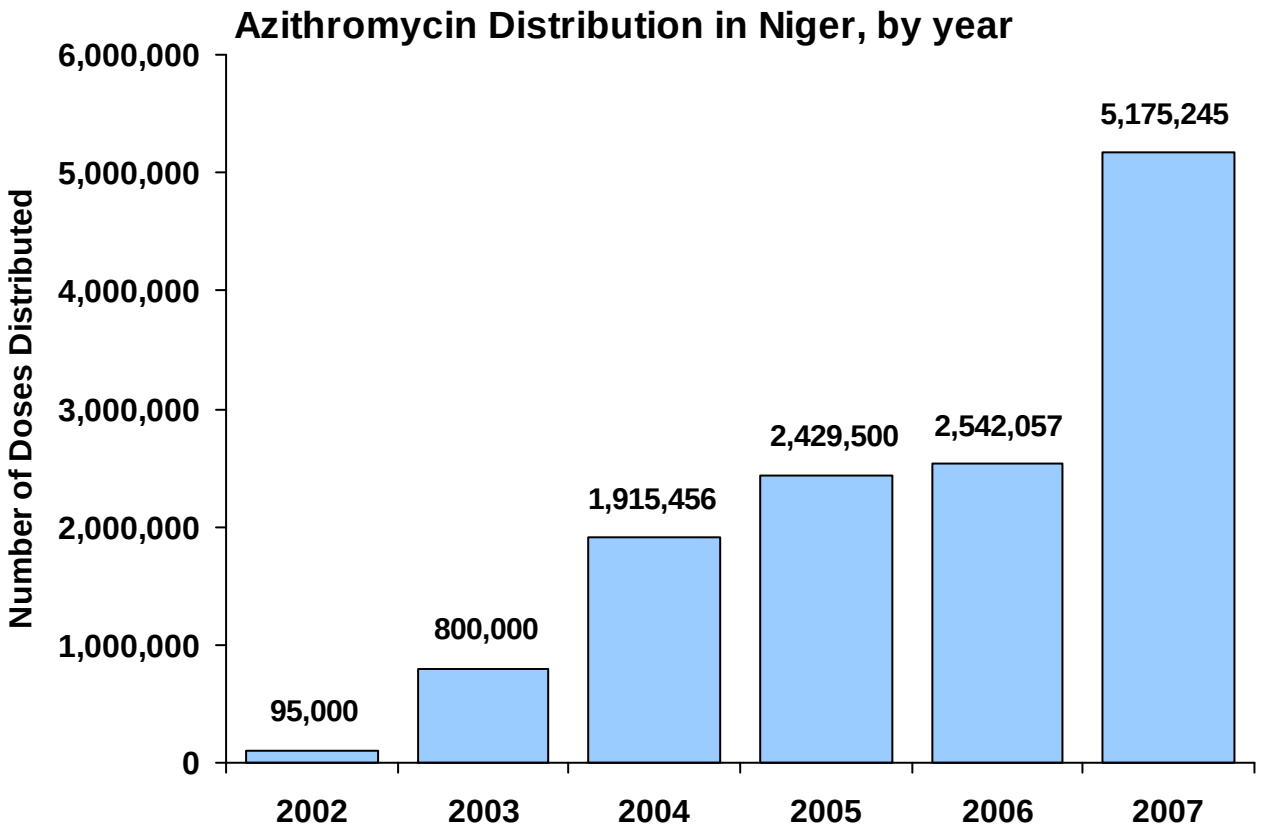
Community masons stand proudly next to a latrine with Sanplat slab.

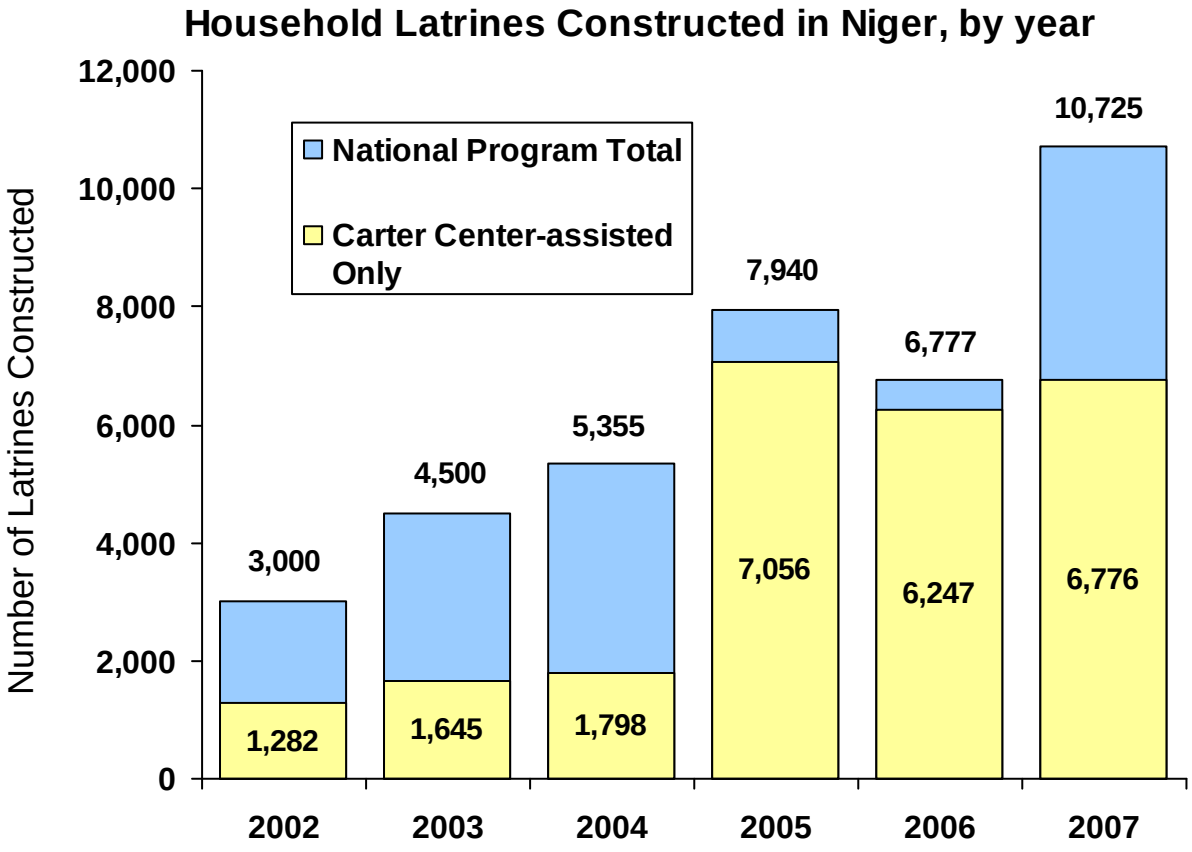
Individuals Receiving Trichiasis Surgery, Niger



Villages Receiving Health Education, Niger




Azithromycin Distribution in Niger, by year
Number of Doses Distributed
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
95,000
800,000
1,915,456
2,429,500
2,542,057
5,175,245
2002
2003
2004
2005
2006
2007


Household Latrines Constructed in Niger, by year
Number of Latrines Constructed
12,000
10,000
8,000
6,000
4,000
2,000
0
National Program Total
Carter Center-assisted Only
3,000
4,500
5,355
7,940
6,777
10,725
1,282
1,645
1,798
7,056
6,247
6,776
2002
2003
2004
2005
2006
2007

Nigeria Trachoma Control Program

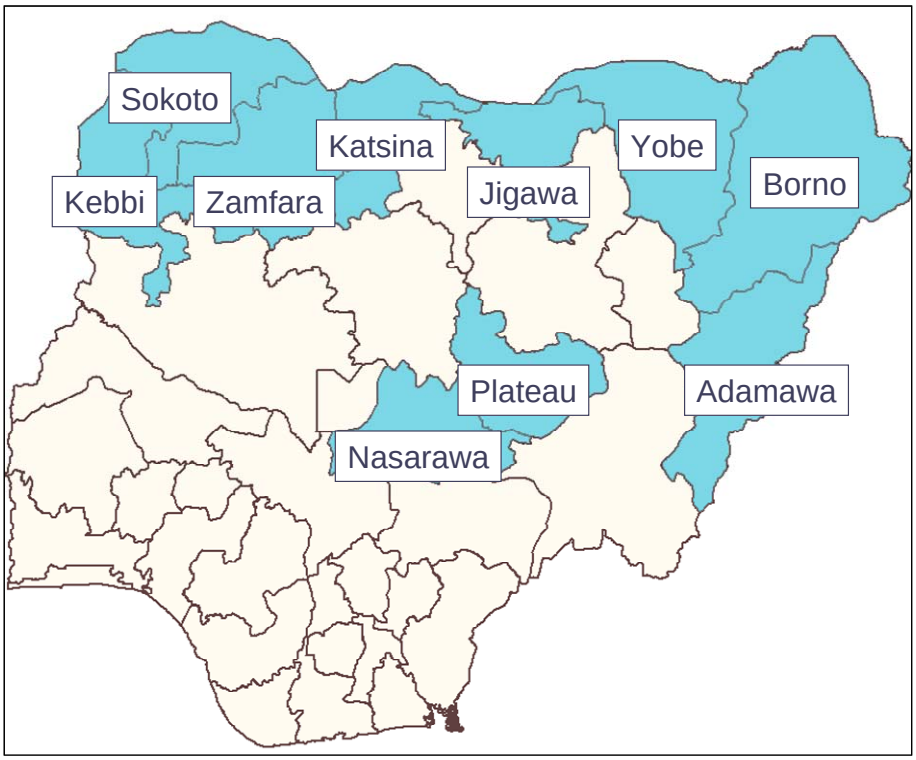
Presented by Dr. Uwaezuoke Onyebuchi, National Coordinator,
National Program for the Prevention of Blindness

Background

Trachoma control in Nigeria is done under the auspices of the National Program for the Prevention of Blindness (NPPB); the NPPB national coordinator directs trachoma control activities through the coalition of the Ministry of Health, NGOs, and United Nations agencies.

The population of Nigeria is estimated at 140 million, according to the 2006 census. The population of current trachoma program intervention areas is 12.5 million and the population believed to be at-risk of trachoma is 8.7 million, based on available prevalence survey estimates. There is incomplete trachoma mapping in Nigeria, though past review of existing data and anecdotal reports suggested that trachoma is a significant cause of blindness in the northern states. Since October 2000, blindness prevention partners have conducted trachoma prevalence surveys in four states and trachoma rapid assessments in five others. A national survey for blindness and low vision supported by Sight Savers International began in February 2005; results are not yet available, though they will only provide information on rates of trichiasis, not active trachoma.

In general, Nigeria's 19 northern states are assumed to be endemic with trachoma, with 10 of these believed to be highly endemic (see map below). The estimated mean prevalence of active trachoma in endemic states is around 24.7%, with an estimated TT prevalence of around 4.7%. The national trichiasis backlog has not yet been determined, although it will likely be in the region of 800,000 in the northern 'trachoma belt' alone. There are presently trachoma interventions in 82 local government areas nationally.



Timeline of Events – Nigeria Trachoma Control Program

The National Trachoma Control Program commenced in 2001, including the formation of the national trachoma task force. Partners joined at various times, including Helen Keller International and The Carter Center in 2001, and Sight Savers and Christoffel Blindenmission (CBM) in 2003. The National Program was approved for the azithromycin donation from Pfizer Inc in 2007 and hopes to receive drug in April 2008. The federal government has established 2015 as its target date for elimination of blinding trachoma.

Table 1: Trachoma Prevalence Surveys conducted in Nigeria

State	Number of Local Government Areas (LGAs) Surveyed	Survey Date
Jigawa	26	May 2007
Yobe	17	June 2006
Zamfara	6	January - March 2005
Katsina	10	November 2005
Kebbi	6	November - December 2004
Sokoto	13	November - December 2004
Plateau	10	April 2002
Nasarawa	10	June 2002
Adamawa	10	March 2001
Borno	10	October 2000

Program Achievements in 2007

Trichiasis Surgery

In Nigeria, trichiasis surgery takes place in health facilities (15%) and during village-based outreach camps (85%). The national program undertakes routine cataract camps during the year and has incorporated trichiasis surgeries into these camps. CBM, Sight Savers International, and Helen Keller International also use eye camps as opportunities to carry out trichiasis surgeries. In 2007, 18 camps and 19,610 trichiasis surgeries were conducted nationally and 8 new trichiasis surgeons were trained. The program reports a 1.8% recurrence rate from evaluations conducted in Kebbi, Sokoto, and Zamfara states. Thirteen of 53 surgeons were retrained as a process of re-certification that takes place after 3 years of conducting surgery. Surgical output is estimated at 370 operations per surgeon, with a minimum of 250 and maximum of 400 per year. With incomplete mapping, it is difficult to estimate the backlog of trichiasis in Nigeria. Current estimates from existing survey data (Table 1) indicate a backlog of 293,750 people with trichiasis requiring surgery. Beginning in late 2007, The Carter Center supported a special pilot project of trichiasis surgery in an integrated fashion in Kanam LGA of Plateau state. Evaluation of the project is ongoing.

Antibiotic Distribution

The Nigeria Trachoma Control Program does not yet receive Pfizer-donated azithromycin, though the donation was approved in late 2007. Sight Savers International purchased azithromycin for distribution from 2004-2006, and reached 2 communities of Sabon Birni LGA of Sokoto State. A total of 8,935 doses of tetracycline eye ointment were distributed, primarily during prevalence surveys and in association with surgery. Current ultimate intervention goals estimate at least 26 million doses of azithromycin in the first three years are required to address the populations living at-risk of active trachoma.

Facial Cleanliness and Health Education
In Carter Center-assisted areas of Plateau and Nasarawa states, health education sessions are conducted in the community using posters and flipcharts that are distributed for use by trained community health workers. T-shirts and baseball caps with health education messages are produced and distributed to help promote trachoma prevention. In 2007, 1,117 villages benefited from ongoing health education activities. Carter Center-assisted health education activities expanded to include 280 villages in 2007.

Environmental Improvement
A latrine promotion project was launched with Carter Center support in Plateau and Nasarawa States in 2003. The Carter Center-assisted program promotes household Sanplat latrines through the training of masons and the provision of construction materials. Two masons are typically trained per village. Materials provided include cement, blocks, spades, diggers, rakes and head pans, while the communities provide the labor and support the masons. There is no standard type of superstructure prescribed for the community, although they are encouraged to build a roof. The estimated total cost per household latrine is the equivalent of $66, 60% of which is contributed by the household. Without accurate survey data, calculation of a national ultimate intervention goal for household latrines is not possible.

The National Blindness Prevention Program encourages state prevention of blindness committees to advocate to state and local governments to construct wells and provide potable water for trachoma-endemic communities. Partners supporting water provision in trachoma-endemic areas include: RUWATSAN, Water Aid, UNICEF, state and local governments, and the Tulsi Chanrai Foundation. Seven villages in Plateau State benefited from new water points in 2007 with Carter Center support.

Additional Activities

With support from Bill and Melinda Gates Foundation, integrated surveys for mapping trachoma and schistosomiasis and evaluating lymphatic filariasis were completed in Plateau and Nasarawa states in 2007. The entire 30 LGAs were surveyed for trachoma to provide prevalence data on which to base decisions for implementing integrated activities.

Table 2: Program Activities in 2007

	National Targets	National Output	% Achievement	Carter Center Targets	Carter Center Output	% Achievement
Persons Operated	16,200	19,610	100	N/A	26	N/A
Surgeons Trained	8	8	100	N/A	N/A	N/A
Doses of Azithromycin Distributed	0	0	N/A	N/A	N/A	N/A
Doses of Tetracycline Distributed	9,000	5,201	57.8	N/A	1,500	N/A
Health Education Sessions	8,017	6,167	76.9	7,512	6,010	80.0
Household/ Community Latrine Construction	10,010	6,458	64.5	10,000	6,448	

Targets for 2008

Surgery (S)

- Operate 24,513 persons nationally (50 with Carter Center support)

Antibiotics (A)

- Distribute 7.6 million doses of azithromycin (1.9 million with Carter Center support)

Health Education and Facial Cleanliness (F)

- Continue trachoma health education in Borno, Sokoto, Kebbi, Zamfara, Katsina, Plateau, Nasarawa, and Yobe states
- Continue on-going health education activities in 1,117 villages (280 with Carter Center support)

Environmental Improvement (E)

- Construct 7,500 latrines (all with Carter Center support)
- Initiate a compulsory monthly environmental sanitation day
- Carry on on-going village clean-up activities in intervention villages

Primary school children line up for trachoma screening during a prevalence survey in 2007.

Sudan Trachoma Control Program: Government of Sudan

Presented by Dr. Kamal Hashim, Director, National Program for Prevention of Blindness
Federal Ministry of Health, Government of Sudan

Background

Sudan is the largest country in Africa, with an area of about 2.5 million km^2. Sudan was affected by civil war for 38 of the 51 years since its independence in 1956. On January 9th, 2005, a peace agreement ended the 21-year civil war with the Sudan Peoples' Liberation Army in the south which had been the longest lasting war in Africa. Under the terms of the Comprehensive Peace Agreement, Sudan is one country under two systems: the Government of Sudan (GOS) governs the 15 northern states; the Government of South Sudan the 10 southern states. Both GOS and GOSS are part of the Government of National Unity. GOS areas have a population of about 26 million, including 4 million internally displaced persons (IDP).

Pfizer Inc began to donate azithromycin (Zithromax®) to Sudan through the International Trachoma Initiative in August 2000. In March 2005, the Federal Minister of Health signed a resolution stating that the Trachoma Control Program has officially joined the National Program for Prevention of Blindness (NPPB), and is under the responsibility of its coordinator, Dr. Kamal Hashim. Carter Center-supported activities in GOS areas continue to be coordinated and monitored from Khartoum. In 2005, the program started the process of decentralizing implementation of program activities to the state ministries of health and localities. Sudan's first Lions Club was inaugurated in Khartoum in June 2005 with the help of President Carter, The Carter Center Khartoum, and benefiting from previous work by the Lions-Carter Center SightFirst Initiative in Sudan. The Khartoum Lions Club has the intention of strengthening collaboration with the GOS trachoma control program.

Timeline of Events – Government of Sudan

- 2000: Azithromycin donation began
- 2005: National Program re-launched
- April 2005: Baseline prevalence surveys started
- December 2005: Five-Year Strategic Plan established
- 2006: Community Participation Protocol
- 2015: Target for elimination of blinding trachoma

Epidemiology of Trachoma in Sudan

Trachoma has long been known to be a public health problem in Sudan, but little data were available until May 1999. At that time, the Sudanese Federal Ministry of Health (FMOH) completed the first population-based trachoma prevalence surveys with Carter Center assistance. One survey was done in Wadi Halfa, in the north, and the other in Malakal, in the south. Trachoma was previously believed to be a significant problem only in the north, but the surveys confirmed that trachoma is a cause of severe disability and significant blindness in southern as well as northern Sudan. In 2006, surveys were conducted in Jabal Awlia internally displaced persons (IDP) camp in Khartoum State, Dongola locality of Northern State, Haj Yusif IDP camp, and Kassala locality of Kassala State.

Table 1: Provisional Prevalence Survey Results, Government of Sudan

Prevalence indicators	TF and/or TI in children aged 1-9 (%) (95% CI)	TF and/or TI in people aged 10 + (%) (95% CI)	TT in people aged 15+ (%) (95% CI)
Dongola	8.57% (3.37-13.78)	27.78% (20.53-35.03)	1.41% (0.18-2.64)
Kassala (rural)	0.26% (-0.22-0.74)	3.69% (1.24-6.14)	1.08% (0.44-1.73)
Jabal Awlia	5.05% (2.55-7.55)	7.76% (4.19-11.33)	2.96% (-0.24-6.17)
Haj Yusif	3.06% (0.32-5.80)	9.63% (7.68-11.58)	1.13% (0.29-1.96)

Program Achievements in 2007

Trichiasis Surgery

In GOS program areas, routine trichiasis surgery is performed by ophthalmologists and trained ophthalmic medical assistants at central and state hospitals. During eye camps in rural areas, ophthalmologists conduct trichiasis surgery in addition to routine cataract surgeries. Payment is levied on a sliding scale for TT surgery in the hospitals, but is provided free in eye camps.

In 2007, TT surgery camps were conducted in Al Borgeig and Al Sair Camps, Dongola locality (Northern State). 98% of persons were operated as part of eye camps and hospitals (the other 2% were operated in TT campaigns).

A decentralized surgical program is now in place through the state-level trachoma coordinators. The national program has developed and printed a trichiasis training module and implemented the criteria for certification of trichiasis surgeons. Surgery partners include the various eye hospitals, departments and units; The Carter Center; Al Baser International Foundation; FIMA; and HelpAge International. In 2007, 2,059 surgeries were performed, achieving 82.4% of the yearly target. Eight new trichiasis surgeons were trained. The estimated minimum existing backlog is 18,817 persons, although not all states have been surveyed and the backlog will change as new information becomes available.

Antibiotic Distribution

Antibiotic distribution in GOS areas is decentralized and implemented by the state ministries of health, assisted by the national program. Local supervisors and village-based health workers organize and conduct drug distribution house-to-house, which is preceded by community mobilization and health education. Endemic communities establish distribution dates, select the volunteers and supervisors, and are involved in raising awareness of the campaign. A national policy has established that cash incentives will not be paid to drug distributors. Data collection is done in two registries, one for the whole village or block, and a second for the household. The program conducts spot checking of drug registers immediately after distribution during which 30 households are randomly identified and pertinent family cards are paired.

Facial Cleanliness and Health Education (F)
In Northern State, health education is being conducted via mass media (radio). In 2007, 120 short radio messages were broadcast, in addition to 3 radio reports and 4 TV sessions during Trachoma Week in Dongola locality. There are 3 active trachoma clubs, each with more than 25 participants, which held health education sessions in 2007. The national program estimates it reaches 30 villages with ongoing health education activities. A total of 86 health education sessions were held during mass drug administration in schools, villages, prisons (227 participants) and garrisons (400 participants). The program distributed 450 posters and 500 leaflets last year.

Environmental Improvement (E)
The GOS Trachoma Control Program does not yet promote household latrines in its intervention areas. The program has been represented in the UNICEF Water and Environmental Sanitation task force since 2005. Trachoma-endemic communities themselves play a strong role in water provision. UNICEF/WES is represented on the Trachoma National Program Taskforce since 2005. Partners supporting water provision include: state ministries of engineering, WES, and the endemic communities themselves.

Table 2: Program Achievements in 2007

	Targets	Outcome
Persons operated for Trichiasis	2,500	2,059
Trichiasis Surgeons Trained	15	8
Doses of Azithromycin Distributed	289,145	179,698
Doses of Tetracycline Distributed	N/A	4,056
Villages reached with Health Education	N/A	120

Targets for 2008

Continue trachoma mapping in:
- Northern State (Wade Halfa)
- Blue Nile (Geisan & Al Kurmuk localities)
- Al Jazeera (7 localities, >4,000,000 inhabitants)
- Red Sea State
- River Nile State
- West Darfur State (HelpAge International proposal)
- Kassala State –New Halfa Locality

Surgery (S)
- Conduct 3,000 trichiasis surgeries
- Develop and produce a trichiasis surgery training module
- Train more TT surgeons
- Equip trained surgeons with kits
- Organize TT surgery camp in intervention areas
- Implement certification/recertification criteria
- Establish a reporting and follow-up system

Antibiotics (A)
- Mass drug administration with azithromycin in parts of Northern and Blue Nile States
    - Baw Locality (Blue Nile State)
    - Second dose for Dongola locality
    - Second dose for IDP camps (Khartoum State)
    - Others, pending prevalence survey results
- Train 652 volunteers in each locality on mass distribution

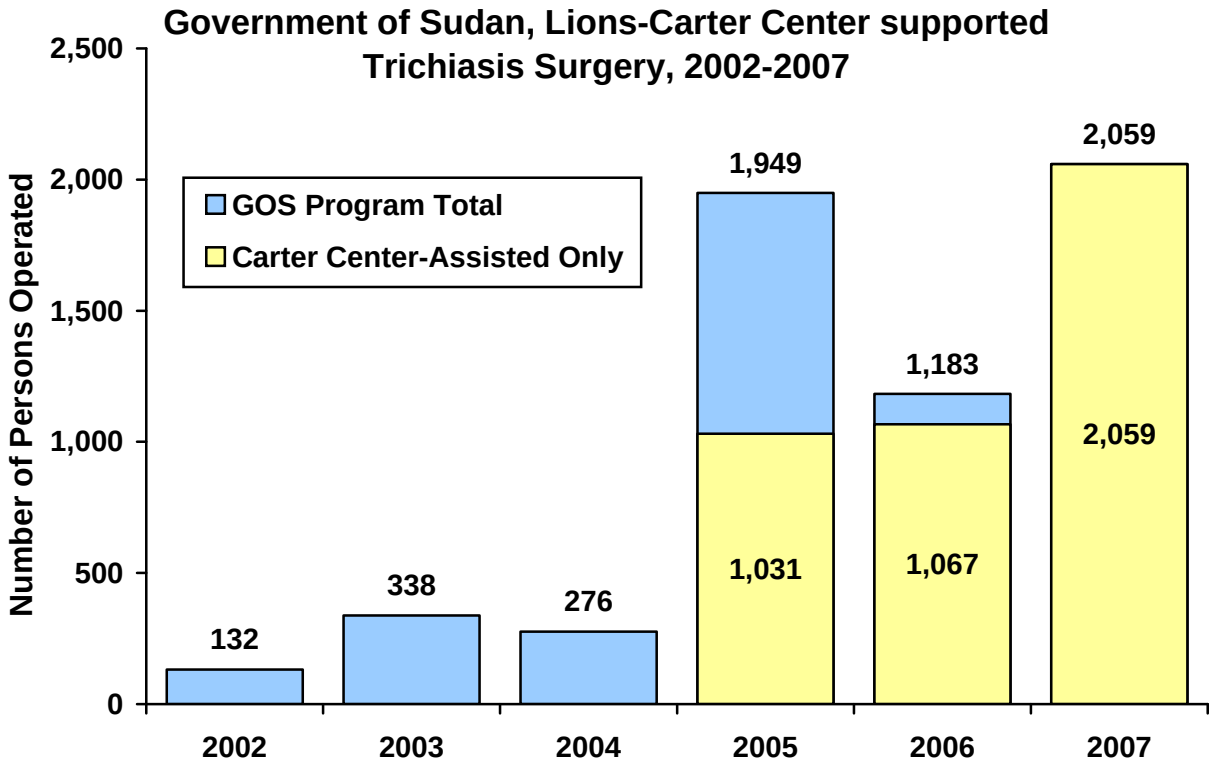
Facial Cleanliness and Health Education (F)

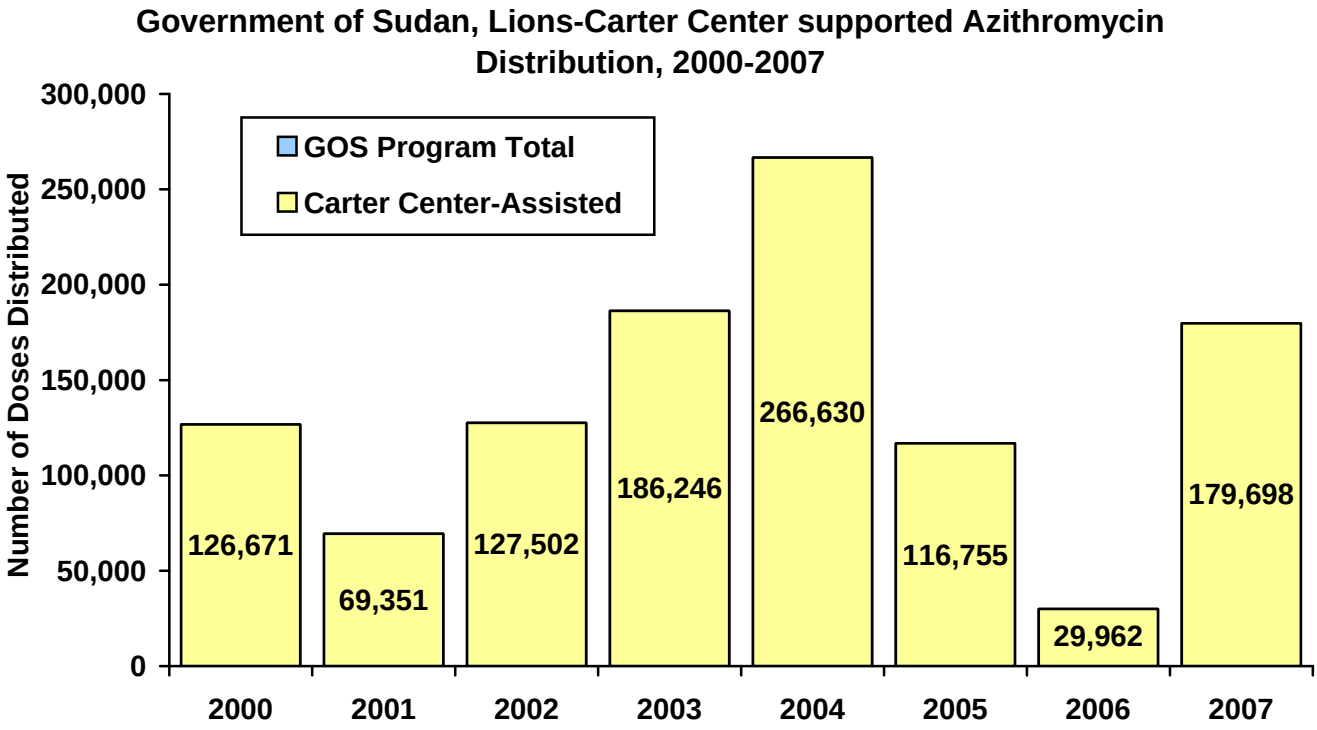
- At least 80% of children < 9 years in endemic communities should have clean faces
- Refine existing health education plans and develop stronger indicators and monitoring with the Ministries of Health of Northern, Blue Nile, and Kassala State (workshop in 2008 to discuss the above)

Environmental Improvement (E)

- Advocate that at least 50% households in trachoma-endemic communities should have a latrine
- Advocate that 100% of households in trachoma-endemic communities should have access to potable water within 1 km or 40 minute walk
- Latrines & water are the main interventions for Baw
- Strengthen E component in Roseries & Damazine localities

The Carter Center and the Federal Ministry of Health supported trachoma prevalence surveys in Blue Nile State in 2007.





N.B. After the signing of the Comprehensive Peace Agreement in January 2005, the Government of Sudan was no longer responsible for program implementation in the south.

Sudan Trachoma Control Program: Government of Southern Sudan

Presented by Dr. Lucia Kur, Coordinator, Southern Sudan Trachoma Control Program
Ministry of Health, Government of Southern Sudan

Background

Sudan is the largest country in Africa, with an area of about 2.5 million km^2. Sudan was affected by civil war for 38 of the 51 years since its independence in 1956. On January 9th, 2005, a peace agreement ended the 21-year civil war with the Sudan Peoples' Liberation Army in the south which had been the longest lasting war in Africa. Under the terms of the Comprehensive Peace Agreement, Sudan is one country under two systems: the Government of Sudan governs the 15 northern states; the Government of South Sudan (GOSS) the 10 southern states. Both GOS and GOSS are part of the Government of National Unity.

Between 1989 and 2005, humanitarian aid to southern Sudan was carried out under the auspices of Operation Lifeline Sudan (OLS), a consortium of United Nations agencies and over 40 non-governmental organizations. The initial partners for trachoma control in southern Sudan began working with non-governmental organizations in the OLS consortium to plan a broad trachoma control effort based on the SAFE strategy. Pfizer Inc began to donate azithromycin (Zithromax®) to Sudan through the International Trachoma Initiative in August 2000.

In 2000, The Carter Center began collaboration with NGOs to implement the SAFE strategy in OLS-supported areas. Activities in these areas were coordinated by The Carter Center from Nairobi with assistance from partner NGOs and humanitarian units in south Sudan. Trachoma prevalence surveys were done in four locations in 2001 and an additional three in 2002. The Carter Center office that supports activities in GOSS areas began its relocation from Nairobi, Kenya, to Juba, Sudan, in 2005.

The program now estimates the population of Southern Sudan to be 9.4 million people, with a census scheduled for 2008.

Timeline of Events – Government of Southern Sudan

- January 2005: Comprehensive Peace Agreement (CPA) signed
- 2006: Ministry of Health, Government of Southern Sudan established
- 2007: MOH GOSS Trachoma Control Program established

Epidemiology of Trachoma in Southern Sudan

The GOSS Trachoma Control Program operates in areas with extremely high prevalence of blinding trachoma, where trichiasis is found even in children under 5 years old. The Carter Center supports work in 13 locations (payams) which have an estimated total population of 1 million persons. It is sometimes difficult for the program to gain access to those most at risk because of insecurity and seasonably impassable roads. This situation is complicated by a poor health infrastructure, minimal physical infrastructure, and strong cultural beliefs and practices that inhibit behavior change. There are many mobile nomadic populations and a large number of internally displaced persons.

Prevalence surveys conducted in Upper Nile, Jonglei, Unity, Eastern and Central Equatoria states indicate prevalence of active trachoma among children aged 1-9 years of 54.4%. The prevalence of TT among children aged less than 15 years was 1.4% and among persons aged 15 years and above was 11%.

Map of Trachoma Control Program Areas in Southern Sudan, Carter Center and other partners

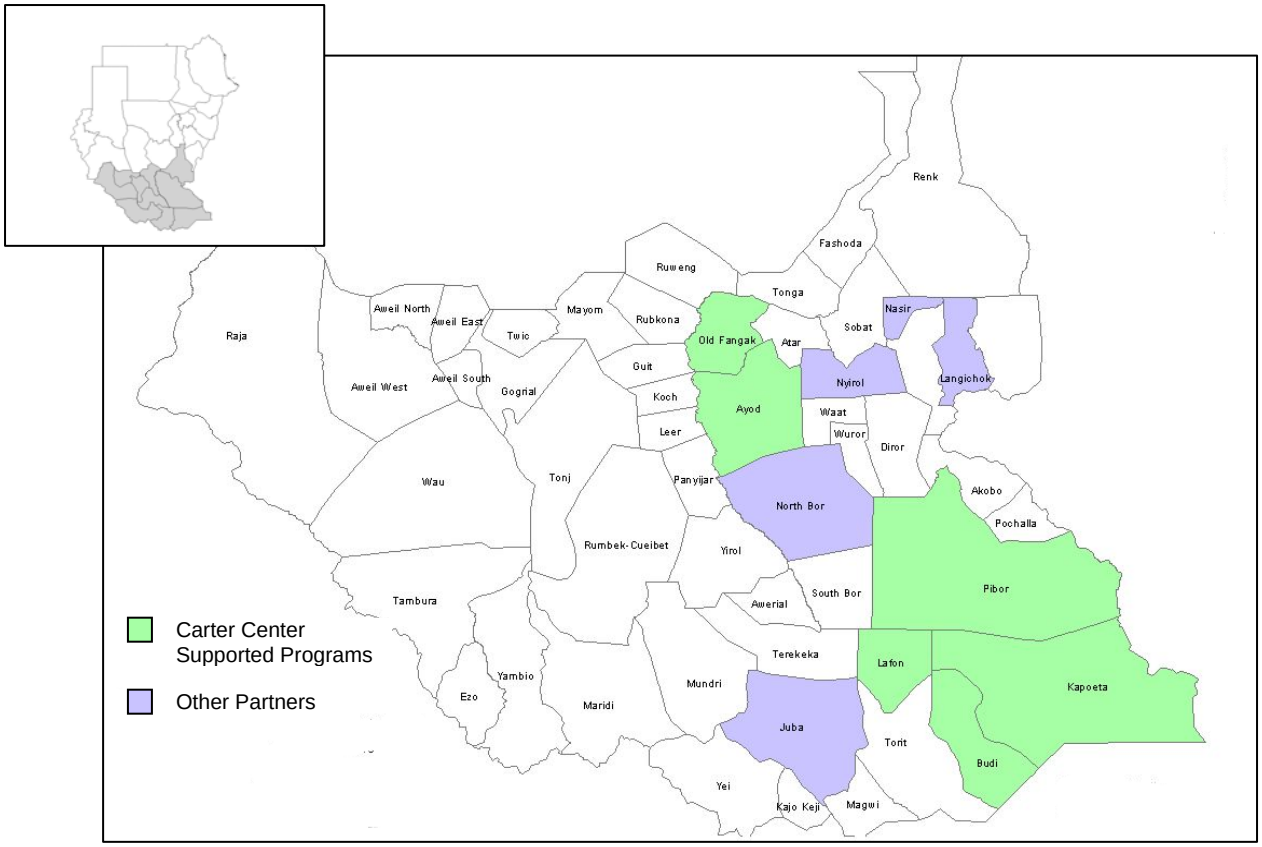


Table 1: Prevalence of Trachoma in Southern Sudan

County	Children aged 1-9 years			Children aged < 15 years	Persons aged 15 and above
	TF	TI	TF & TI	TT	TT
South Bor (Paluer)	77.2	63.6	87.8	0.5	10.0
South Bor (Padak)	65.2	63.6	76.5	0.1	10.0
Twic East (Kongor)	33.2	29.2	43.3	0.1	5.5
Pibor (Boma)	53.1	39.4	60.3	3.0	12.3
Kiech Kuon	63.0	51.9	80.2	2.2	14.7
Ayod	80.1	60.7	88.3	5.2	14.6
Juba (Katigiri)	45.5	24.5	50.0	0.2	1.3
Terekeka (Tali)	64.7	35.3	72.6	0.3	4.1
Kapoeta East (Narus)	35.4	23.8	41.5	0.6	6.3
Budi (Kimatong)	40.0	41.9	60.3	3.5	17.0

Program Achievements in 2007

Surgery

In Southern Sudan, trichiasis surgery takes place in health facilities such as Juba teaching hospital, Normeca Hospital in Kapoeta, and the Ayod Primary Health Care Center. Surgical

outreach campaigns also took place in Lafon and Lopa counties in Eastern Equatoria State in 2007. Partners supporting surgery include: The Carter Center, Christian Mission Aid (CMA), Christoffel Blinden Mission (CBM), and Merlin. Until other prevalence surveys are conducted, the program cannot estimate a realistic backlog for surgery in Southern Sudan. The current estimate from surveyed areas is 244,563 persons of all ages with trichiasis. Surgical provision for children poses a programmatic challenge believed to be unique to Southern Sudan and parts of Ethiopia.

Antibiotics

In Southern Sudan, mass distribution of antibiotics takes place at selected locations within the community, not house-to-house. The distribution stations are chosen with input from field officers, the endemic communities, and local government, taking into account population movements towards animal grazing grounds and water points. Mobilization takes place at least 5 days in advance and the distribution teams are composed of 4-5 trained community health workers, in addition to Carter Center field officers. The communities' strong role in drug distribution contributes to the successful mobilization of all community members. The program is unable to calculate an accurate ultimate intervention goal for antibiotic distribution until surveying is complete. At this time, the program estimates a minimum of 4.9 million doses to be distributed in Jonglei and Eastern Equatoria states over the first three years.

Facial Cleanliness and Health Education

In Government of Southern Sudan intervention areas, health education is conducted by trained community based health workers, including:

- Trachoma, Guinea worm and primary health care supervisors
- Community health workers at NGO primary health care units
- Maternal and child health care workers (Traditional birth attendants and vaccinators)
- Primary school teachers
- Community hygiene promoters from NGO partners involved in water and sanitation
- Community animal health workers under NGOs providing veterinary services

Regarding mass media, the main radio stations are found in the towns of Malakal and Juba. The use of media is increasing gradually, as the Ministry of Information is encouraging establishment of FM radio stations at the state capitals. The program has produced health education songs in Nuer and Toposa languages and distributed 600 cassettes for use by listening groups and to be played by amplifiers, loudspeakers and program car radios. Two health videos were also produced in 2007 in Nuer and Toposa languages. The program estimates reaching 1,371 villages with ongoing health education. Approximately 25,000 people are reached with health education sessions and 455,000 persons at-risk of trachoma are reached with radio programming. The ultimate intervention goal for health education is the 4,662 known endemic villages. The program hopes to encourage communities to identify their own indicators, set strategies, goals and develop tools for program implementation.

Environmental Improvement

Latrine construction progresses slowly in southern Sudan due to unstable soil conditions and high costs of materials that cannot be purchased in the local market and have to be imported overland from Uganda or Kenya. Ventilated improved pit latrines are typically promoted, with NGO partners providing all supplies and digging tools, and household owners providing labor. The program intends to evaluate the possibility of constructing household latrines in Southern Sudan using sustainable technology in 2008.

In Southern Sudan, water provision falls under the Ministry of Cooperative and Rural Development. This same ministry is responsible for the development of water provision guidelines and for rehabilitation and protection and rehabilitation of shallow hand dug wells and bore holes constructed by NGO partners. Due to the co-endemnicity of Guinea worm and trachoma, the trachoma program has benefited from Guinea worm safe water interventions.

Table 2: Program Achievements in 2007

Activities	Targets	Output	% Achievement	Carter Center Targets	Carter Center Output	% Achievement
Persons Operated for Trichiasis	3,700	1,475	39.9	2,000	716	35.8
Trichiasis Surgeons trained	72	10	13.9	50	6	12
Doses of Azithromycin Distributed	528,698	275,382	52.1	525,198	244,961	46.6
Doses of Tetracycline Distributed	106,439	48,398	45.5	105,239	59,100	56.2
Health Education (villages)	175	1,371	100	175	1,371	100
CMA & CBM (persons reached)	80,500	25,514	31.7			
School Latrine Construction	0	3	100	0	3	100

Targets for 2008

- Conduct a trachoma prevalence survey in Awerial County

Trichiasis Surgery (S)

- Train 37 new trichiasis surgeons (11 with Carter Center support)
- Operate 6,000 people with trichiasis (5,000 with Carter Center support)

Antibiotic (A)

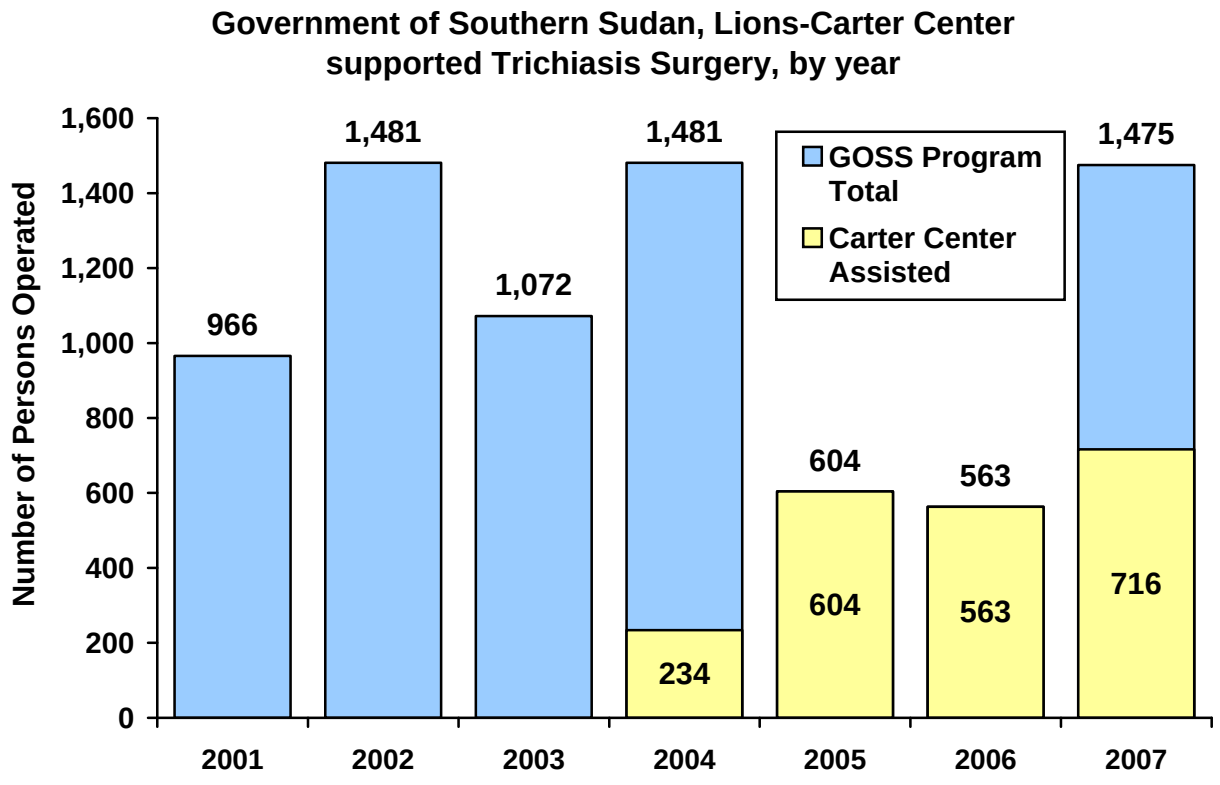
- Distribute azithromycin to 1,326,194 people (in Carter Center intervention zones in Eastern Equatoria and Jonglei States)
- Distribute tetracycline eye ointment to 331,548 people

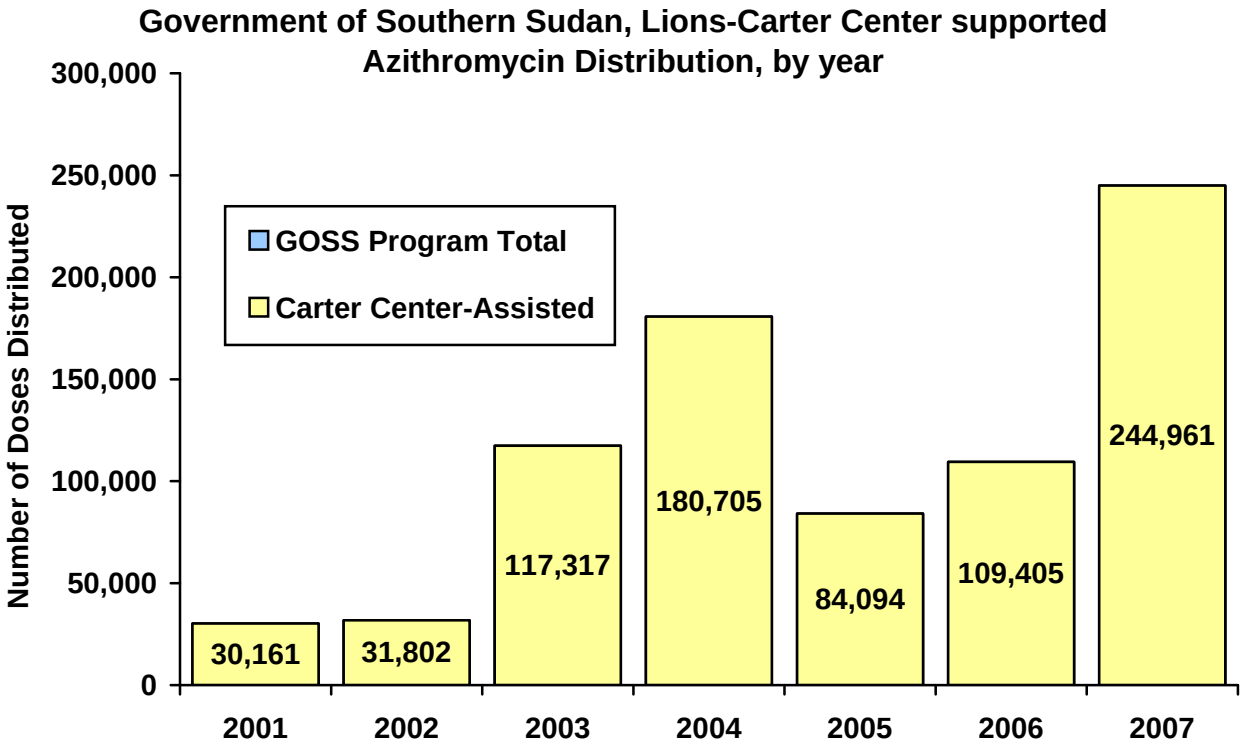
Facial Cleanliness and Health Education (F)

- Target 4,662 accessible villages for health education on personal hygiene and latrine construction

Environmental Improvement (E)

- Promote construction of 1,000 household and public latrines in endemic villages


Government of Southern Sudan, Lions-Carter Center supported Trichiasis Surgery, by year
Number of Persons Operated
1,600
1,400
1,200
1,000
800
600
400
200
0
966
1,481
1,072
1,481
234
604
604
563
563
1,475
716
GOSS Program Total
Carter Center Assisted
2001
2002
2003
2004
2005
2006
2007


Government of Southern Sudan, Lions-Carter Center supported Azithromycin Distribution, by year
Number of Doses Distributed
300,000
250,000
200,000
150,000
100,000
50,000
0
30,161
31,802
117,317
180,705
84,094
109,405
244,961
GOSS Program Total
Carter Center-Assisted
2001
2002
2003
2004
2005
2006
2007

Tanzania Trachoma Control Program

Presented by Dr. Grace Saguti, National Eye Care Program Coordinator

Background

According to the 2002 census, Tanzania has a population of approximately 35 million persons. The country is divided into 21 administrative regions and 126 districts. In the 1980s and 1990s, Tanzania was one of the countries which hosted the research leading to the conception and implementation of the SAFE strategy. In 1999, the Public Private Partnership began between Pfizer Inc, the International Trachoma Initiative and the Tanzania Ministry of Health, and distribution of Pfizer-donated azithromycin began in six districts. In 2003, The National Trachoma Control Program expanded considerably, as the SAFE strategy was integrated into 20 health district action plans.

A total of 50 districts were surveyed for trachoma between 2004 and 2006. Of the 50 surveyed districts, 43 have a prevalence of TF greater than 10%, indicating that they are eligible for the full SAFE strategy. The mean prevalence of TT for the 50 districts is 2.7% and ranges from 0.2% to 12.5%. The program concludes that blinding trachoma is present in all 50 districts surveyed.

Program Achievements in 2007

	Target	Output
Persons operated for TT	8,000	3,068
Surgeons trained	0	4
Doses of azithromycin distributed	9,793,164	5,794,824
Health education	84,096	58,872
Household latrines constructed	80,000	85,335

Trichiasis Surgery (S)

The Tanzania program conducts trichiasis surgery during eye camps and as part of routine activities in communities and health facilities. In 2007, surgery camps were organized in the highly prevalent districts in southern Tanzania. Follow-up after surgery is usually done by the TT surgeons from the districts. They record the number of recurrent TT cases in a surgery form. With the knowledge gained from recent prevalence surveys, the program now estimates the national TT backlog to be 177,906.

Antibiotic Distribution (A)

Antibiotic distribution in Tanzania is community-based using community health workers also known as community drug distributors (CDDs) throughout program districts. At the national level, the Government of Tanzania pays for drug clearance, transportation of drug to the districts, and personnel costs involved in supervision and monitoring. At the district level, district councils pay for the CDDs' training allowances, distribution of drug within the districts, and monitoring and supervision. In 2007, 16 districts had their first year of azithromycin distribution, 17 districts had their second round, and four districts had their third round. Some parts of some districts have had 6-8 rounds. Six districts have not yet benefitted from mass azithromycin distribution. The program notes that most of the districts have experienced an interval of more than 12 months between rounds of distribution.

Facial Cleanliness and Health Education (F)

The program is continuing Participatory Hygiene and Sanitation Transformation (PHAST) trainings to support F&E activities in six districts. PHAST manuals have been developed and 180 corps have been trained. Other health education activities include: distribution of posters, radio spots, house-to-house visits, community meetings and a school health program. A total of 5,000 posters, 2,500 leaflets, and 1,000 calendars have been distributed from 2003-2007. Radio spots were aired in 2003 and 2004 for a total of 1,247 spots. Annual World Sight Day commemorations have taken place and are used to heighten health education.

School children demonstrate face washing using a small amount of water from a gourd.

Health education activities are carried out at the community level in the form of community meetings, focus group discussions, school health programs, distribution of health education materials, and exhibitions in national water week commemorations. The population reached varies according to the resources allocated for health education at the district and national levels yearly. Funds allocated for F & E component interventions have been declining each year from 2000 to 2007. From 2000 to 2005 radio programs were aired through public and private radio stations. Through radio, the program reached nearly 80% of the country's population, estimated to be 25 to 27 million people. The program currently targets 5,256 villages from the 50 endemic districts.

Environmental Improvement (E)

The program notes that the condition of latrines used in Tanzania is generally poor. According to a 2004 survey, 47% of latrines are improved latrines. The national program promotes either Sanplat or ventilated improved pit latrines (VIP) depending on the economic status of the target community. VIP latrines are more expensive than Sanplats and are most often constructed in institutions.

UNICEF and the Ministry of Health and Sanitation Works have been training artisans in slab construction in six program districts (Manyoni, Kilosa, Mpwapwa, Iringa Rural, Magu and Kisarawe). The Ministry of Health provided 40 brick-making machines to support latrine construction in selected program villages in the 2007-2008 fiscal year. The program estimates the unit cost of an all-cement, lined and ventilated latrine to be $268: $170 for lining the pit with cement blocks, $20 for the floor and Sanplat slab, $18 for roofing with corrugated iron sheets, and $60 for a superstructure of cement blocks. The program notes that the use of locally available materials (e.g., stones for pit lining or use of thatch roof and burnt mud bricks) can significantly reduce the costs by 20 to 50%. To achieve the Millennium Development Goal 7 (reduce the proportion of households without latrines by half by 2015), the program would need to build 337,340 household latrines.

In collaboration with the Ministry of Education and Vocational Training, Helen Keller International has been in the forefront of school health education activities by incorporating trachoma into the primary school curriculum. The National Trachoma Control Program has been in close collaboration with the Ministry of Water to ensure the initiation of water and sanitation projects to

highly trachoma-endemic areas. Through the Water Sector Development Program of the Ministry of Water, each council was allocated $20,000 for sanitation in 2007.

In regards to water provision, baseline survey results have been used to advocate for prioritization of water supply projects to districts with high prevalence of trachoma or clean faces in fewer than 80% of children. The Rural Water Supply and Sanitation Program has scaled up to cover the whole country, as the National Water Sector Development Program was launched with a 25-year plan in March 2007. The National Trachoma Control Program has maintained a consistent participation in annual Water Week commemoration events. In 2007, the International Trachoma Initiative Tanzania was the first winner in the Annual Water Week Commemoration in the area of "Community Education and Mobilization". Partners supporting water provision in trachoma-endemic areas include: Ministry of Water, Water Aid, UNICEF, TASAF, AMREF, World Vision, and the Water and Sanitation program of the World Bank.

Program Highlights in 2007
The national program is now planning to integrate trachoma control activities with those of other neglected tropical diseases. In August – September 2007, the International Trachoma Initiative conducted a Knowledge, Attitude and Practices study on hygiene practices related to trachoma with the support from the Foundation for Civil Society.

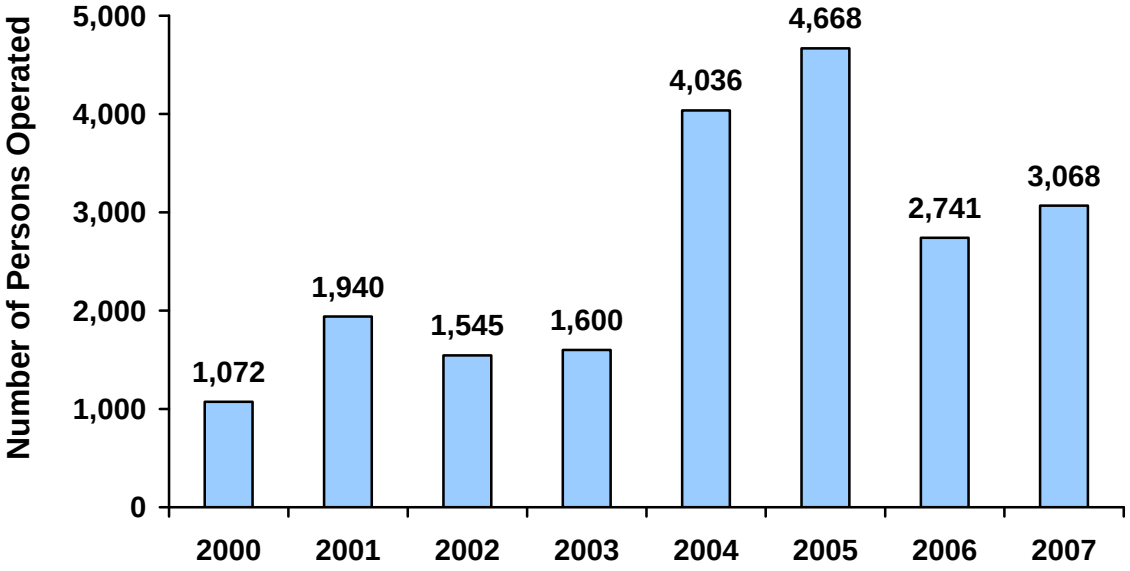
Program targets for 2008
Surgery (S)
- Conduct 31,447 trichiasis surgeries

Antibiotic (A)
- Distribute 9,522,035 doses of azithromycin

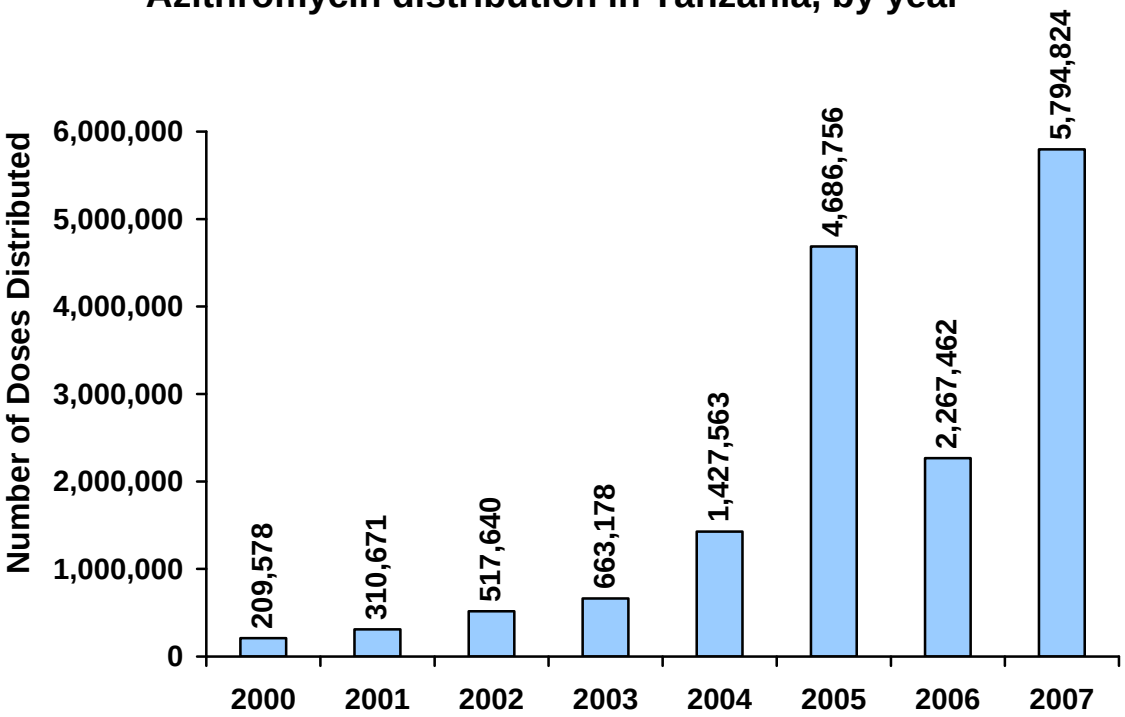
Facial Cleanliness and Health Education (F)
- Conduct 21,024 community meetings (4 meetings in each of 5,256 program villages)
- Conduct 63,072 primary school health education sessions (12 sessions in each of the 5,256 program villages' schools)

Environmental Improvement (E)
- Construct 56,195 household latrines

Trichiasis surgery in Tanzania, by year



Azithromycin distribution in Tanzania, by year



Trachoma and Progress of Elimination in Uganda

Presented by Dr. Bubikire Stanley, National Eye Care Program Coordinator

Background

In Uganda, 24 districts are believed to be endemic and seven million people are at risk of being infected with trachoma (see Map 1). It is estimated that 700,000 children below the age of ten years have active disease, 12,000 people are blind from trachoma, and 35,000 are living with trachomatous trichiasis (TT). The Ugandan Ministry of Health has prioritized trachoma for elimination in the 24 affected districts using the SAFE strategy.

In September 2005, a national trachoma task force was formed and a training workshop was organized. The task force was trained on the survey methodology using the WHO standard protocol for trachoma surveying and mandated to organize and conduct baseline surveys in the initial 7 districts (Kamuli, Kaliro, Iganga, Namutumba, Kotido, Abim, and Kabong) for which the ministry had secured funding. Moroto and Bugiri districts were surveyed in August 2007 and surveys are ongoing in Nakapiripirit and Mayuge (see Map 2).

District	Respondents 1-9 years	% with clean faces	% TF	Respondents ≥ 15 years	% TT	% CO	% TT practicing epilation
Kamuli*	2,217	48.4	33.6	1,593	5.6	1.7	-
Iganga*	2,002	48	20.1	1,376	3.8	1.6	3.4
Kotido*	2,323	29	65.7	2,615	17.5	4	5.5

District	Heard about face washing and trachoma (≥15)	% HH with access to safe water	% HH with water all year	% HH with toilet	% HH with cow pens	% HH with feces near home	% Hygienic refuse disposal
Kamuli*	0.9%	30	87.5	81	33.5	15.7	7
Iganga*	76.7%	66	86.3	63.8	44.6	17	10.5
Kotido*	27%	50	40	7.7	78	88	6.1

* The three surveyed districts were split to make seven districts (Kamuli is now Kamuli and Kaliro; Kotiko is now Kotido, Kabong and Abim; and Iganga is now Iganga and Namutumba)

Based on the results of these surveys, the national program applied and was approved for azithromycin donation from Pfizer Inc. From November 2007 to January 2008 the program conducted its first integrated distribution of azithromycin tablets and syrup.

Program Management

Program implementation includes many players and cuts across national, regional, district and community levels. The National Trachoma Control Programme Task Force, a committee of the National Program for Blindness Control, coordinates these levels of partnership in implementation of trachoma control. The Disability Prevention and Rehabilitation Section under the Directorate of

Clinical and Community Health coordinate trachoma activities at the Ministry of Health, and act as the Secretariat for the Trachoma Task Force.

The program plans to carry out surveys in all endemic districts by 2009 to establish the TT backlog and establish capacity to clear the estimated backlog of 35,000 cases. The target is to reduce the backlog by 30% (10,500 cases) and reduce active trachoma by 30% by 2009.

Next Steps

- Conduct baseline surveys in all other suspected endemic districts;
- Train 40 TT surgeons and retrain existing ones;
- Train and mobilize community mobilizers for TT case finding by kinships;
- Procure 400 lid rotation sets to facilitate and motivate the trained TT surgeons;
- Follow up on operated patients for determination of surgical outcome;
- Increase community awareness and acceptance of TT surgical services;
- Mobilize through the commonly used communication means like FM radios, local leaders, Kraal (cattle camps) leaders, musical and drama groups, places of worship and print media;
- Develop and disseminate materials (integrated materials for NTD program) for IEC to communities and schools to increase TT awareness, face washing, latrine use;
- Establish mobile TT surgical clinics and equip the existing health centers to do TT surgery;
- Establish and scale-up a supervision and monitoring system;
- Promote provision of easily accessible water in schools and communities;
- Train and re-train school health teachers on trachoma;
- Conduct a promotional campaign for construction and use of latrine;
- Sensitize communities about the need for good methods of garbage disposal.

Stakeholders

- Ministries of Health, Education, Local Government, Water, Gender Labour & Social Development.
- International Agencies: World Health Organization, International Trachoma Initiative, Pfizer Inc, The Carter Center, USAID/RTI, Sight Savers International, Christoffel Blindenmission, Lions Aid Norway, Lions Clubs International Foundation.
- Water providing agencies: Plan International, Busoga trust, Karamoja Diocese

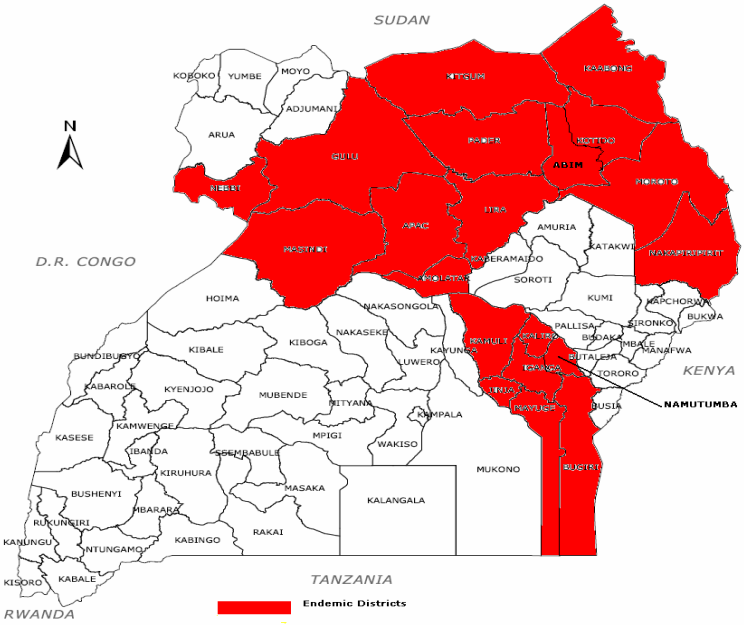
Challenges

- Gross under funding to eye care
- Currently only the “A” component of SAFE is targeted by the newly established Neglected Tropical Diseases Programme
- Inadequate personnel (TT surgeons), infrastructure and equipment.
- Insecurity in some endemic areas
- Inaccessibility of some areas in these endemic districts

Opportunities

- Government/political support: trachoma is recognized as a disease targeted for elimination. The health districts are committed.
- Other willing partners: The Carter Center, LCIF, Lions Clubs, Sight Savers International, LAN, Christoffel Blindenmission, USAID/RTI, Schistosomiasis Control Initiative
- The Carter Center is operational in some trachoma-endemic districts
- Child Days Plus strategy for health programs; integrated disease control approach, especially for the Neglected Tropical Diseases
- Kampala Declaration on Sanitation (KDS) 1997
- Widespread middle level eye care workers, 160 of which are deployed equitably

Map 1: Uganda districts believed to be trachoma-endemic



Map 2: Uganda districts surveyed for trachoma

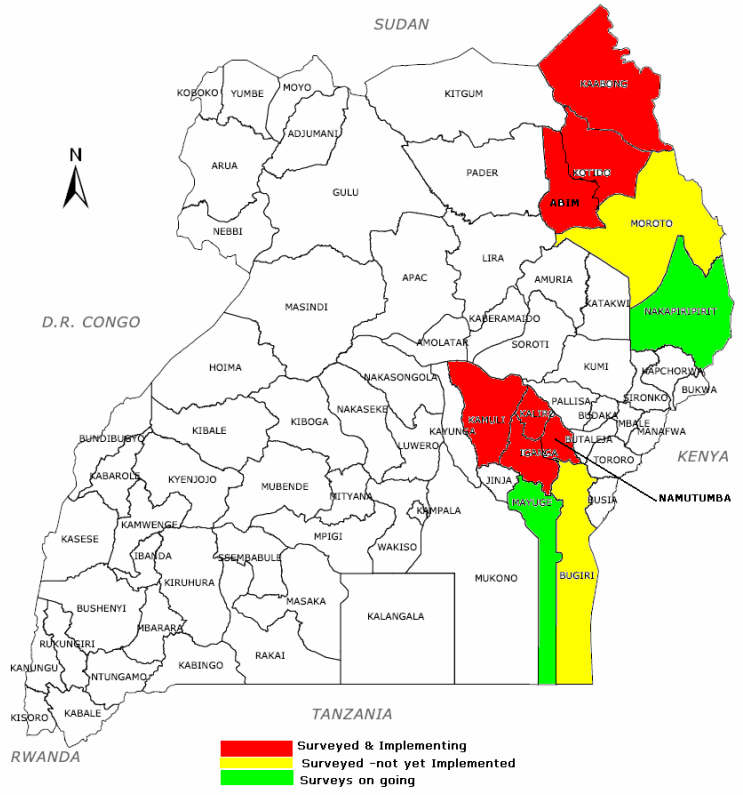


Table 1. Summary of Trachoma Control Interventions (Carter Center-assisted countries)

National data as reported for 2007 at the Ninth Annual Program Review, Atlanta, February 11-13, 2008

	Ghana	Mali	Niger	Sudan		Ethiopia	Nigeria	Totals
				GOS†	GOSS‡			
F & E								
Number of villages with hygiene education	49	4,371	561	120	1,371	1,117	446	**8,035**
Villages targeted	49	*	*	*	175	4,037	*	**4,261**
Percent coverage	100%	--	--	--	7.8%	27.7%	--	**--**
Number of household latrines constructed	3,438	13,610	10,725	--	--	41,228	6,448	**75,449**
Target for household latrines	5,000	20,000	11,400	--	--	466,359	10,000	**512,759**
Percent coverage	68.7%	68.1%	94.1%	--	--	8.8%	64.5%	**14.7%**
Antibiotics (A)								
Azithromycin								
Treatments	899,065	1,767,877	5,958,174	179,698	275,382	6,224,372	--	**15,304,568**
2007 target	957,000	6,989,045	3,651,590	289,145	528,698	10,373,499	--	**22,788,977**
Percent coverage	93.9%	25.3%	163.2%	62.1%	52.1%	60.0%	--	**67.2%**
Tetracycline								
Treatments	25,311	0	120,000	4,056	48,398	343,963	5,201	**546,929**
2007 target	36,400	124,704	107,074	*	106,439	689,463	9,000	**443,563**
Percent coverage	69.5%	0.0%	112.1%	--	37.5%	49.9%	57.8%	**--**
Surgery (S)								
Surgeries	504	2,890	2,804	2,059	1,475	45,271	16,200	**71,203**
2007 target	1,500	8,000	15,660	2,500	3,700	95,095	19,610	**146,065**
Percent coverage	33.6%	36.1%	17.9%	82.4%	39.9%	47.6%	%	**48.7%**

† Government of Sudan (GOS)

‡ Government of South Sudan (GOSS)

* Data not presented

Table 2. National Trachoma Control Program Annual Targets 2008 (Carter Center-assisted countries)

As presented at the Ninth Annual Program Review, Atlanta, February 11-13, 2008

	Ghana	Mali	Niger	Sudan		Ethiopia	Nigeria	Total
				GOS	GOSS			
Surgery								
Persons for trichiasis surgery	1,000	12,000	12,530	3,000	6,000	101,187	24,513	**160,230**
Antibiotic								
Azithromycin mass distribution (persons)	950,000*	9,520,739*	7,641,583*	292,164	1,326,194	10,938,752	7,600,000	**38,269,432**
Tetracycline ointment distribution (persons)	-	-	-	**	331,548	251,566	**	**--**
Facial cleanliness								
Health education (villages)	**	**	**	**	4,662	2,446	**	**--**
Environmental change								
Household latrines to construct	5,000	14,000	11,400	**	1,000	400,996	7,500	**439,896**

* Reflects targets for total antibiotic distribution
** Targets not presented/available

Table 3. Summary of Carter Center-Supported Interventions, by Country 1999-2007

	Indicators	Ghana	Mali	Niger	Sudan		Ethiopia	Nigeria	Total
					GOS***	GOSS***			
S	Number of people operated for trichiasis	N/A	N/A	N/A	2,140	2,117	93,155	26	**97,438**
	Number of new trichiasis surgeons trained	N/A	N/A	N/A	56	61	400	N/A	**517**
A	Number people treated with azithromycin	N/A	N/A	N/A	262,124	438,460	10,121,418	N/A	**10,822,002**
	Number of people treated with tetracycline ointment	N/A	N/A	N/A	4,056	197,459	1,031,064	N/A	**1,232,579**
F	Number of villages with ongoing health education*	49	1,128	556	16	135	653	175	**2,712**
	Number of new persons trained for health education	8,079	15,158	4,272	990	24,678	24,678	1,813	**57,237**
E	Number of household latrines built	5,066	35,740	24,804	N/A	439	354,179	20,826	**441,054**
	Number of new masons trained	N/A	2,384	771	N/A	N/A	N/A	580	**3,735**

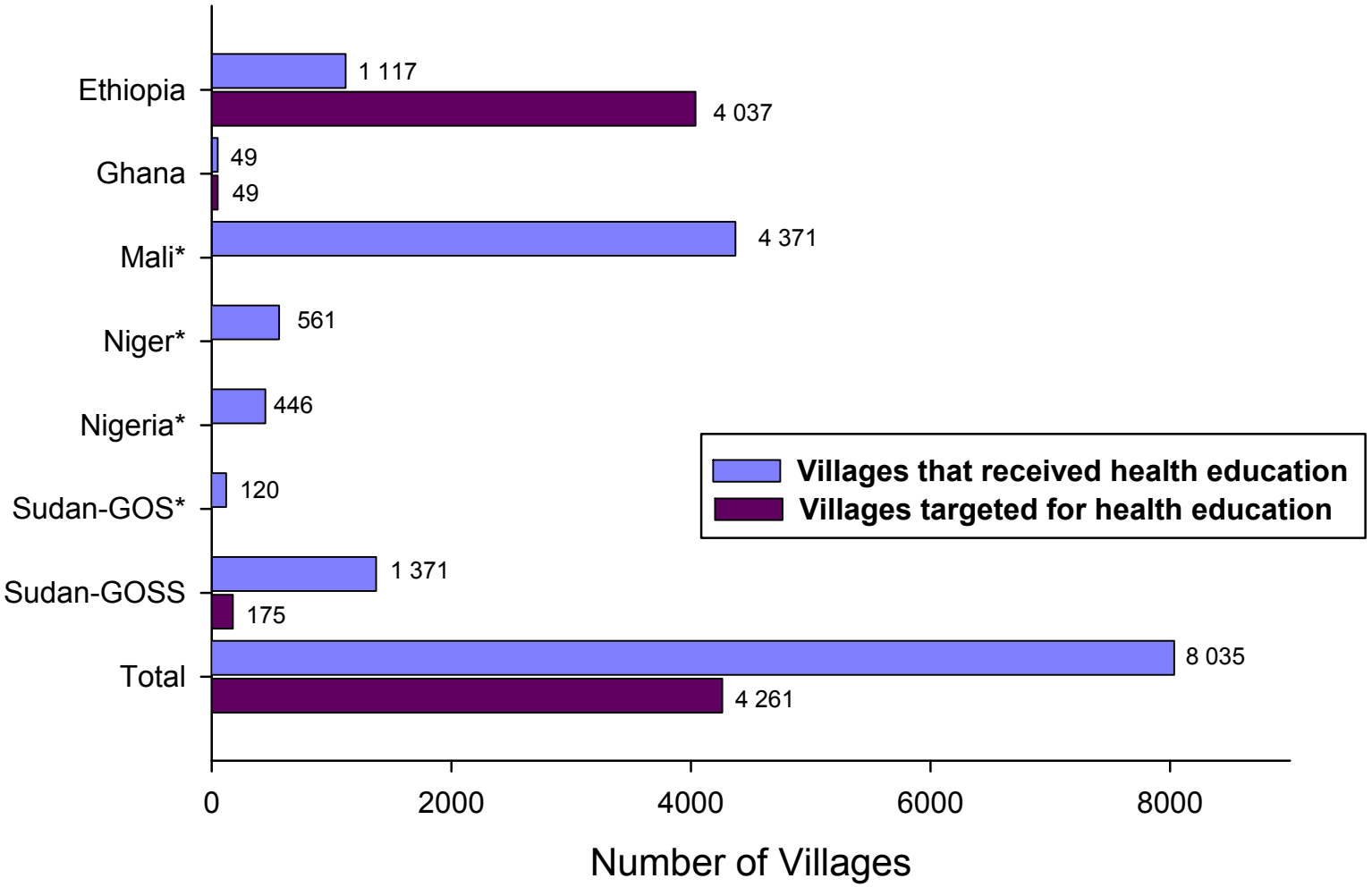
*2007 Data only.
**Carter Center support in Niger, Nigeria, Mali, and Ghana is focused on F & E intervention activities. However, indirect support to S & A activities in terms of logistics and technical advice are offered to the national programs when requested.
***GOS/GOSS: Government of Sudan/Government of Southern Sudan

Table 4. Carter Center-Assisted Trachoma Control Programs
Summary of Interventions per Country, January - December 2007

	Indicators	Ghana	Mali	Niger	Sudan		Ethiopia	Nigeria	Total
					GOS*	GOSS*			
S	Number of people operated for trichiasis	N/A	N/A	N/A	42	716	28,425	26	**29,209**
	Target persons	N/A	N/A	N/A	2,500	2,000	95,095	N/A	**97,095**
	Percentage	N/A	N/A	N/A	1.7%	35.8%	29.9%	N/A	**30.1%**
	Number of new operators trained	N/A	N/A	N/A	1	6	193	N/A	**200**
A	Number people treated with azithromycin	N/A	N/A	N/A	179,698	275,382	5,195,937	N/A	**5,651,017**
	Target population	N/A	N/A	N/A	104,000	525,198	9,713,311	N/A	**10,342,509**
	Percentage	N/A	N/A	N/A	172.8%	52.4%	53.5%	N/A	**54.6%**
	Number of people treated with tetracycline ointment	N/A	N/A	N/A	4,056	59,100	343,963	N/A	**407,119**
F	Number of villages with ongoing health education	49	1,078	556	16	166	1,447	280	**3,592**
	Number of schools with ongoing health education	49	N/A	293	21	24	600	N/A	**987**
	Number of new persons trained for health education	376	1,285	238	661	857	11,185	210	**14,812**
E	Number of household latrines built	2,866	11,871	6,776	N/A	22	41,228	6,449	**69,212**
	Target for latrines	2,500	12,000	5,000	N/A	N/A	120,000	10,000	**149,500**
	Percentage	114.6%	98.9%	135.5%	N/A	N/A	34.4%	64.5%	**46.3%**
	Number of new masons trained	N/A	474	217	N/A	N/A	N/A	310	**1,001**

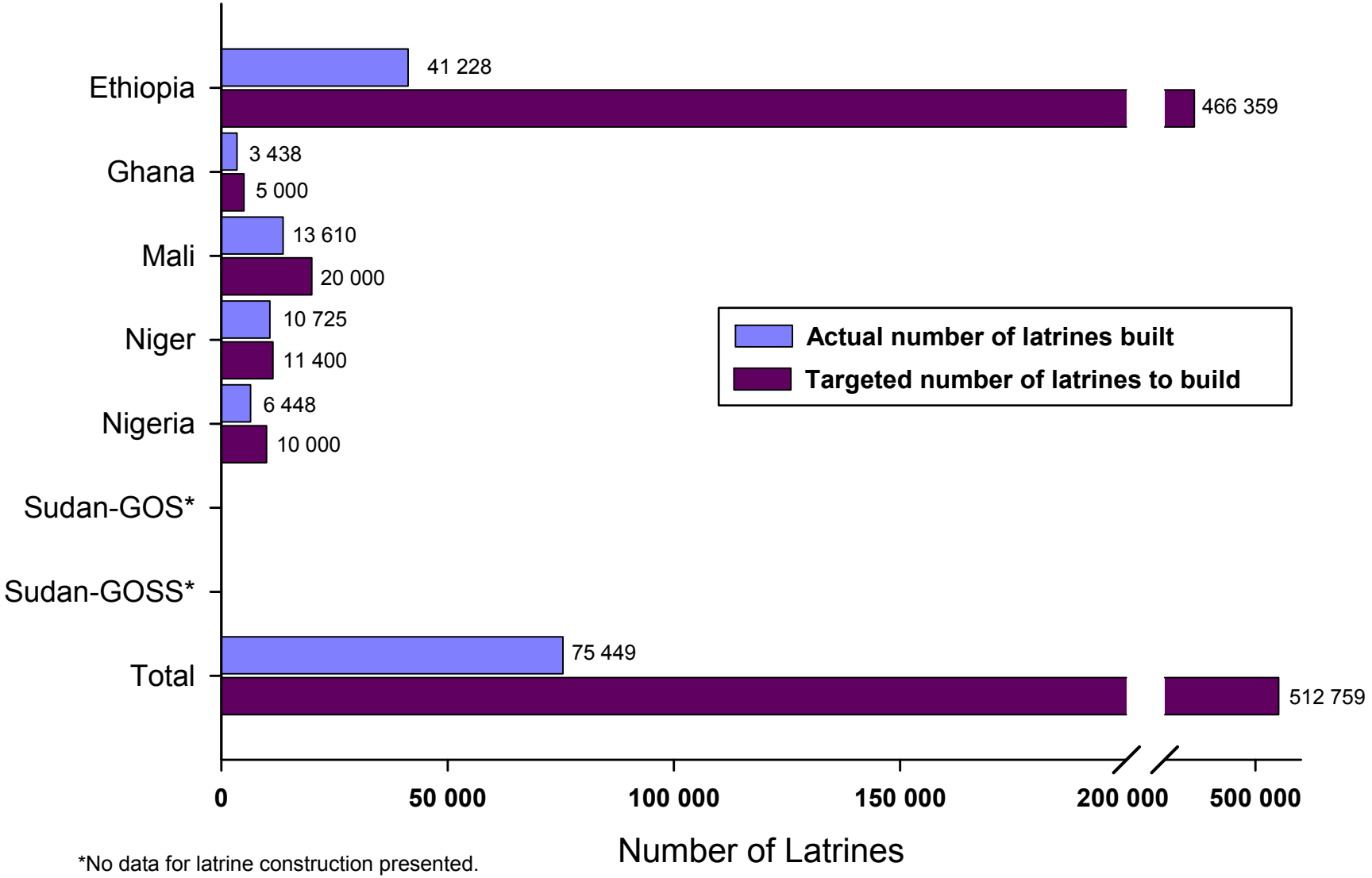
*GOS/GOSS: Government of Sudan/Government of Southern Sudan

Figure 1. Villages Receiving Health Education, Carter Center-Assisted Countries
National program data as presented for January - December 2007



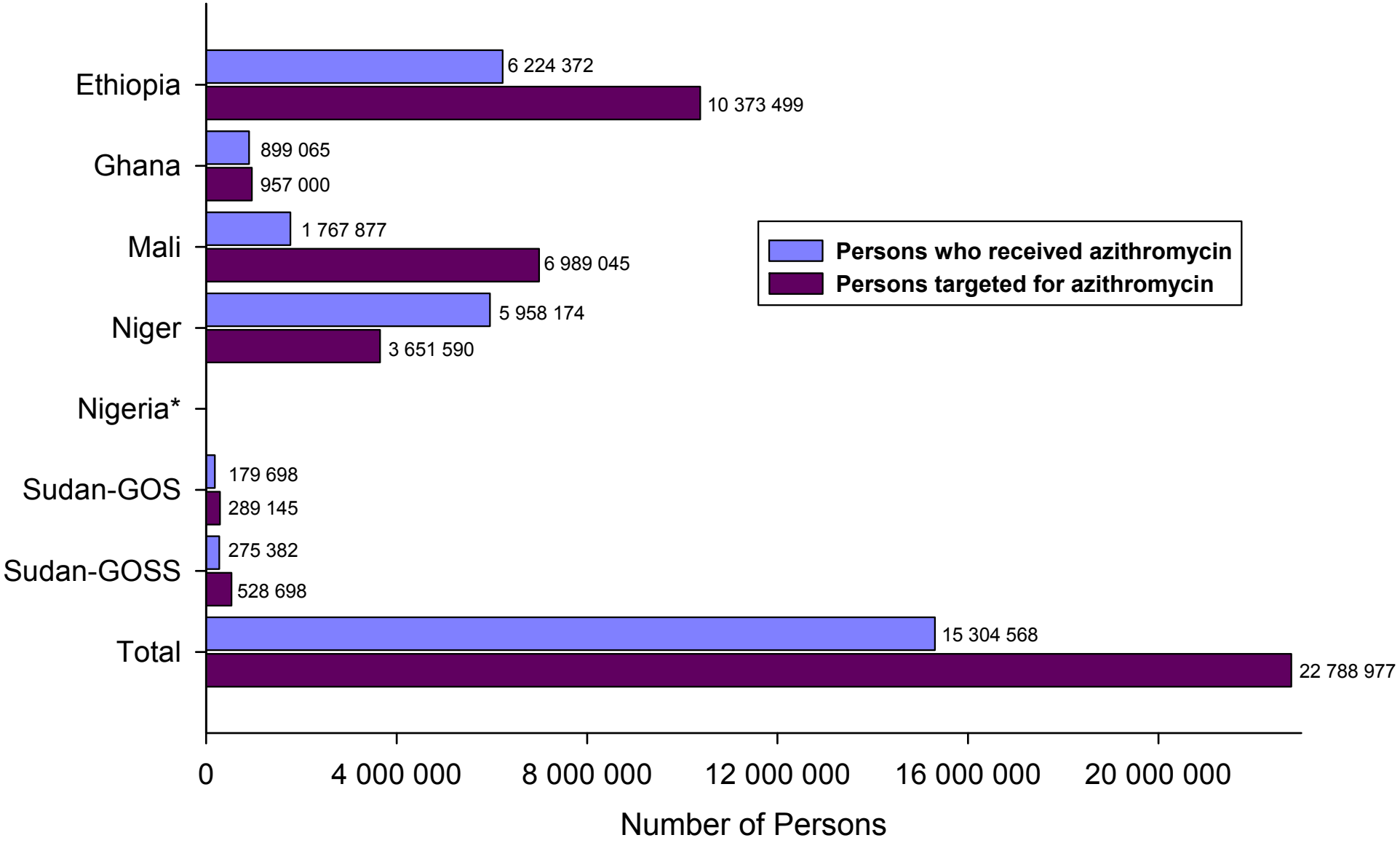
*No target for health education presented.

Figure 2. Household Latrines Built, Carter Center-Assisted Countries
National program data as presented for January - December 2007



*No data for latrine construction presented.

Figure 3. Azithromycin Distribution, Carter Center-Assisted Countries
National program data as presented for January - December, 2007



*Mass distribution of azithromycin has not begun in Nigeria.

Figure 4. Persons Having Received Trichiasis Surgery, by country
National program data as presented for January - December 2007

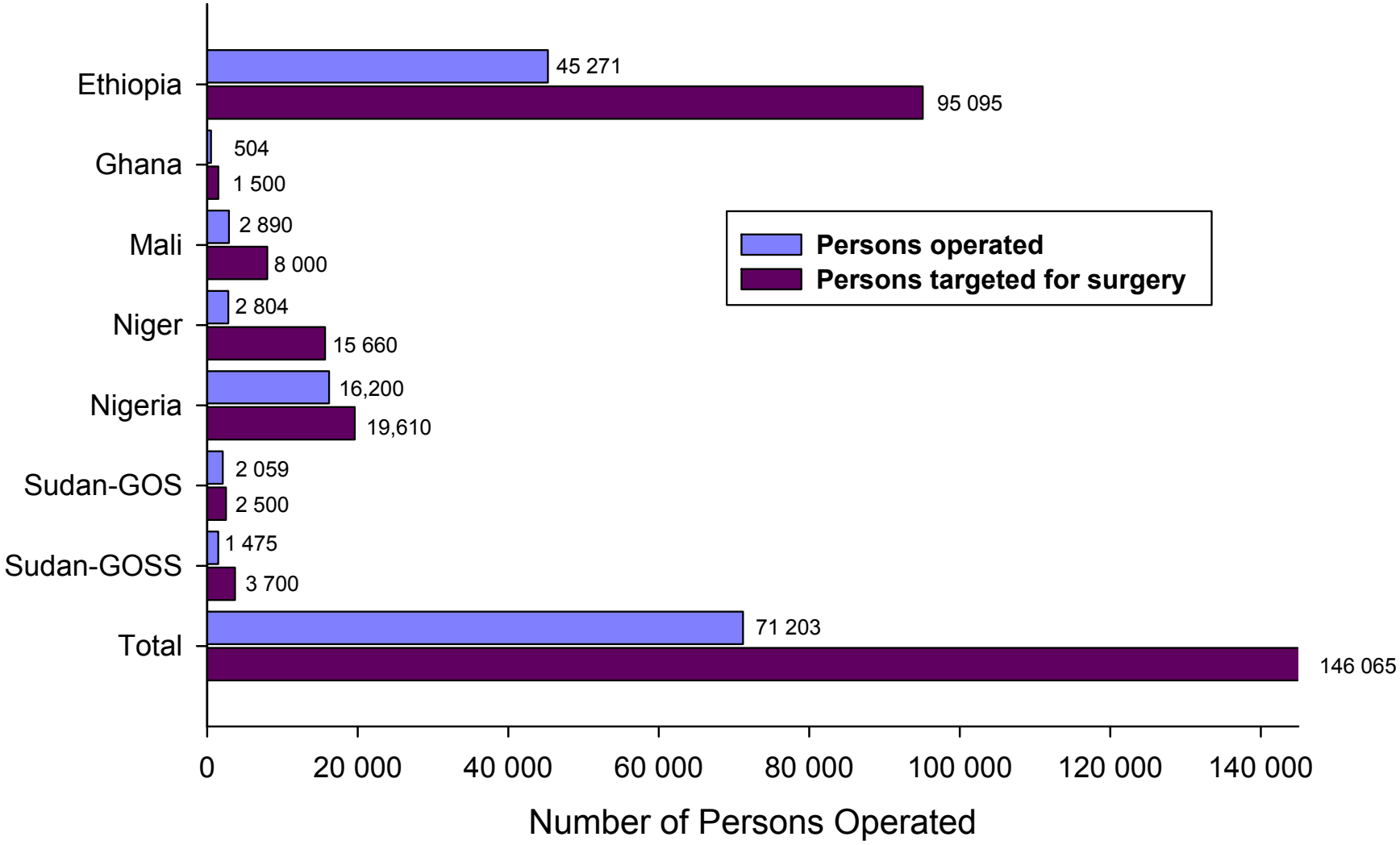


Figure 5. Villages that Received Ongoing Health Education

National data in Carter Center-assisted countries as presented for 2001-2007

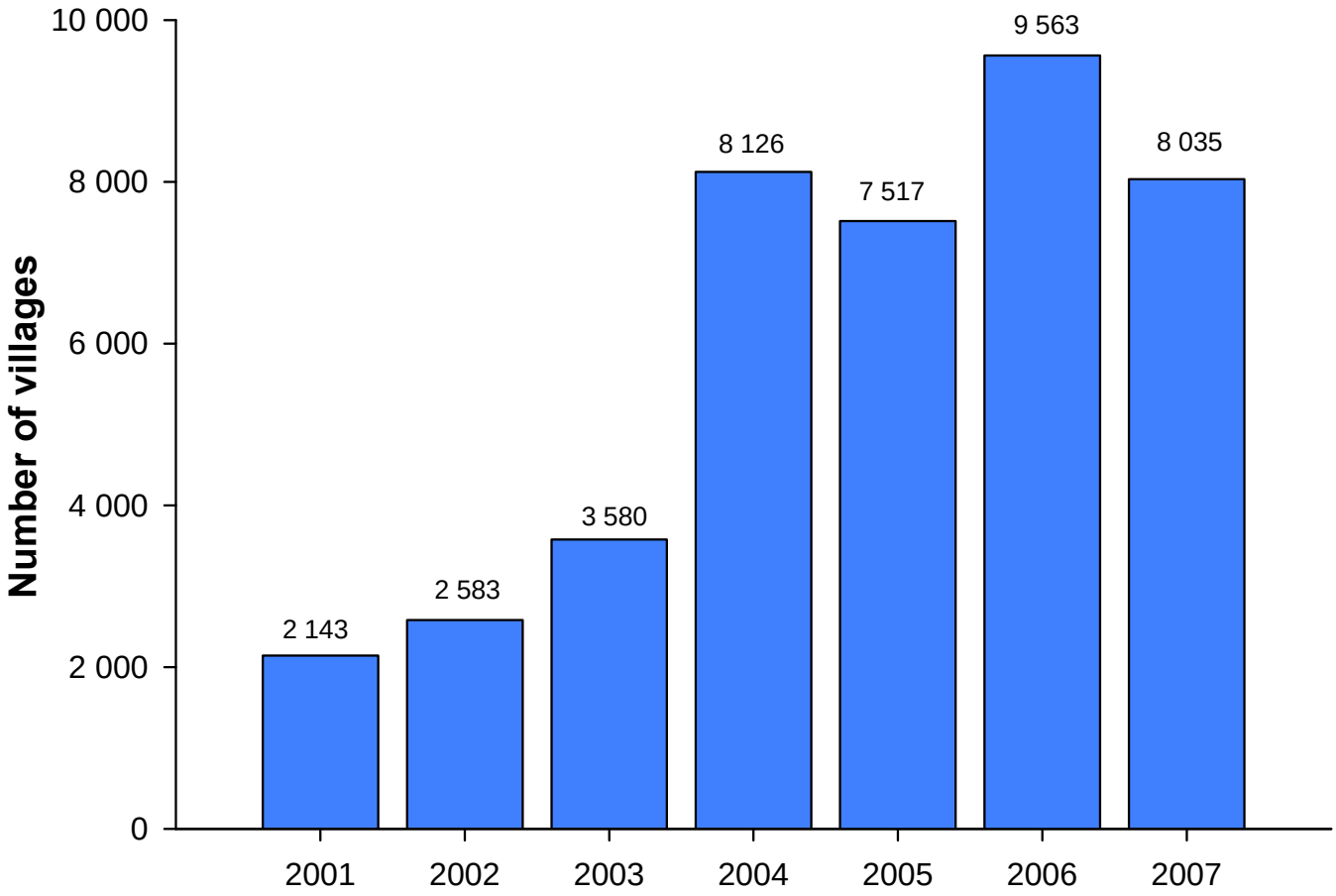


Figure 6. Household Latrines Built

National data in Carter Center-assisted countries as presented for 2002-2007

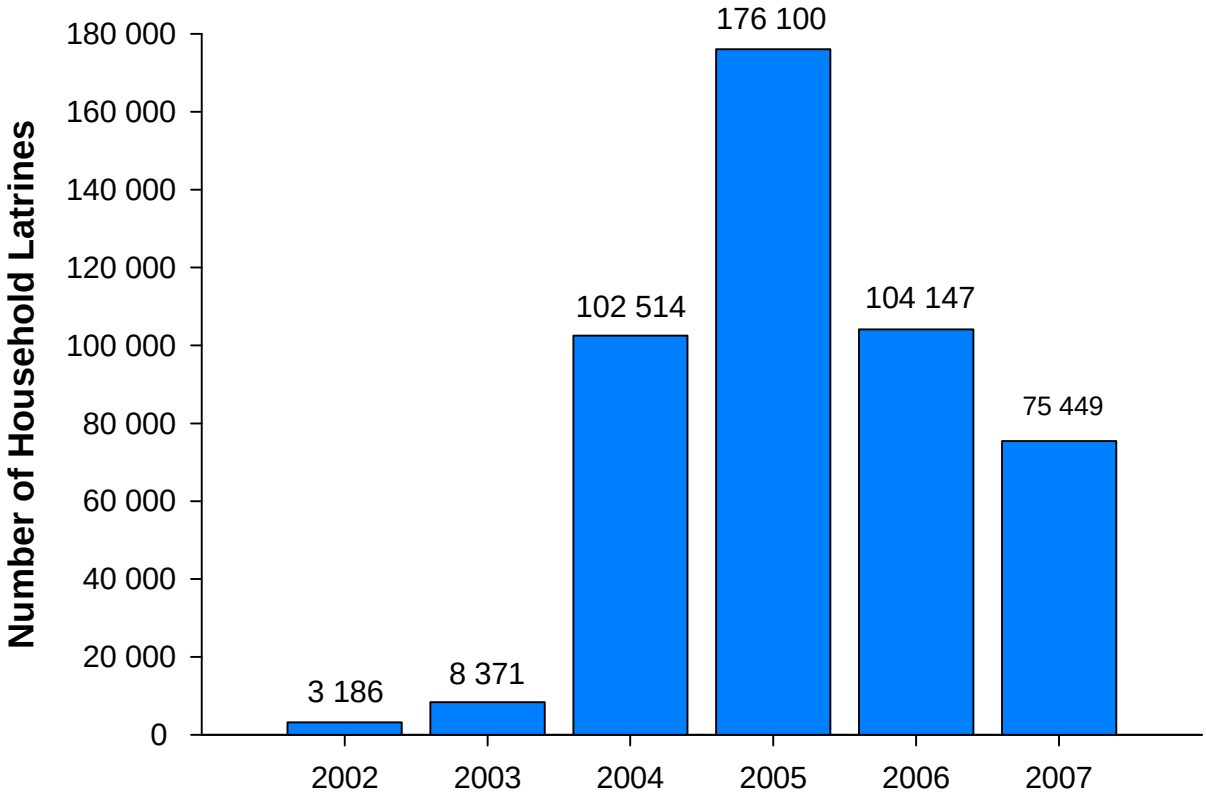
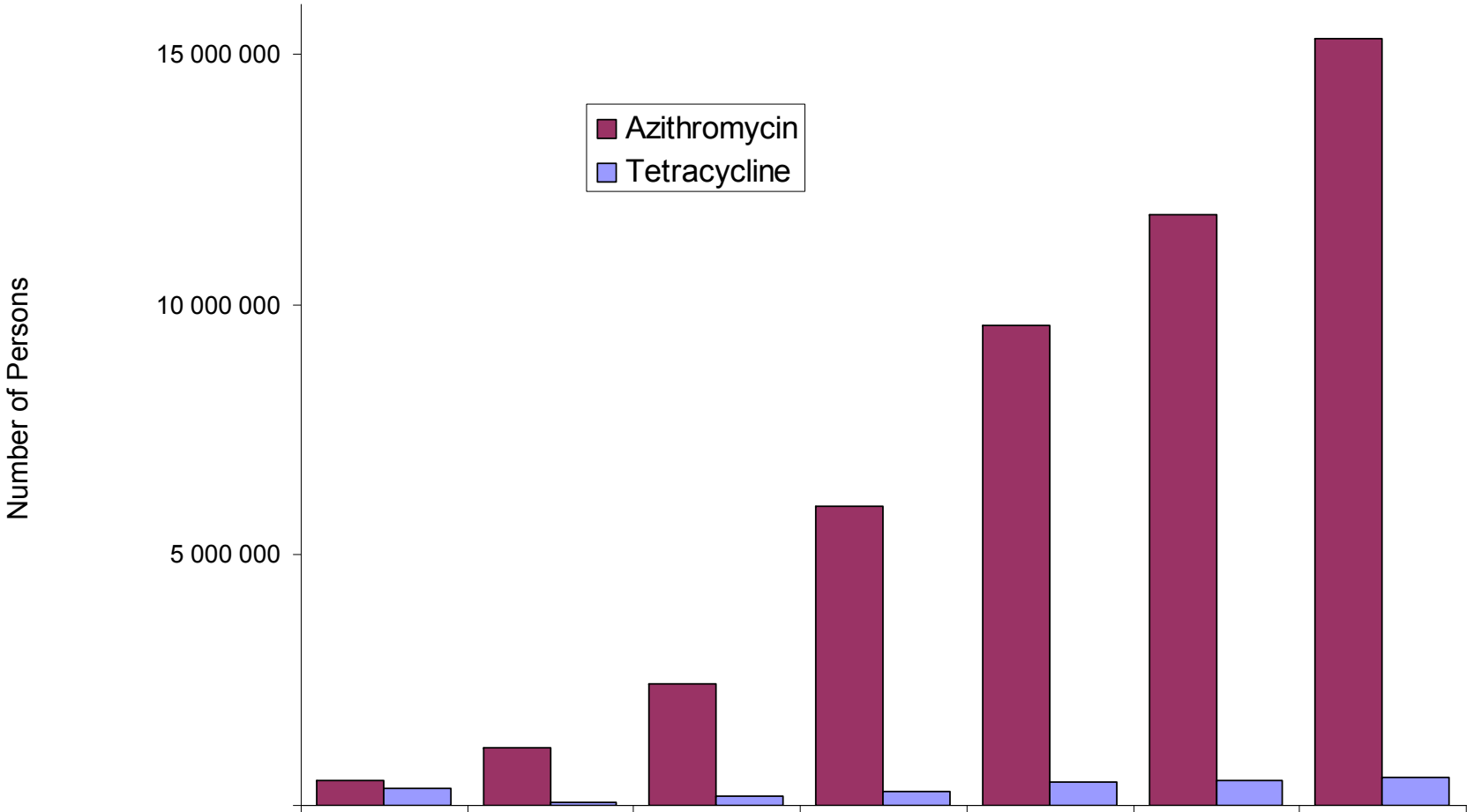


Figure 7. Persons Having Received Antibiotics

National data in Carter Center-assisted countries as presented for 2001-2007



	2001	2002	2003	2004	2005	2006	2007
Azithromycin	487,273	1,138,603	2,427,980	5,971,265	9,582,860	11,808,411	15,304,568
Tetracycline	328,809	69,158	193,004	281,633	452,063	483,797	546,929

Trachoma Triennial Evaluation Survey in Amhara Region of Ethiopia

Presented by Teshome Gebre, The Carter Center Ethiopia

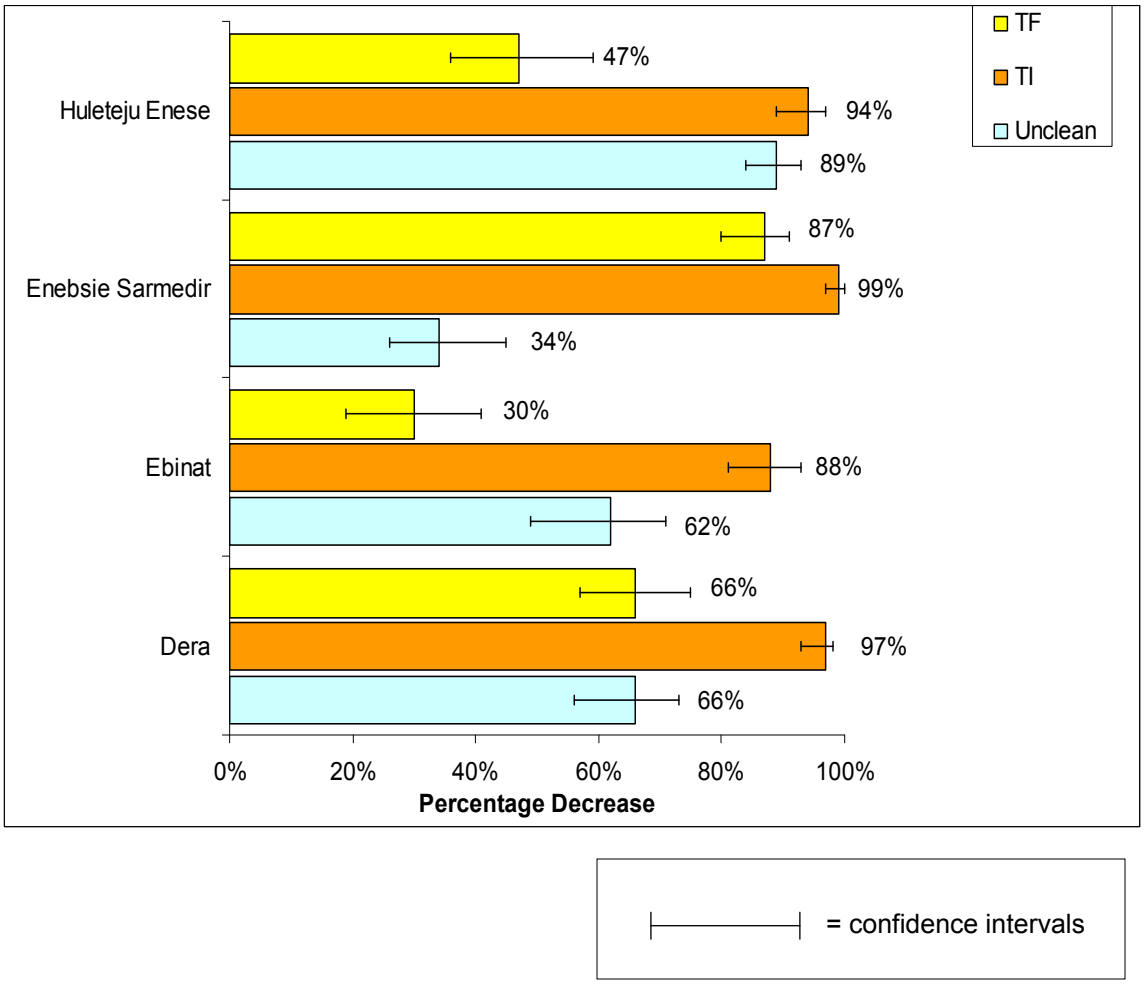
The Carter Center, in partnership with the Lions Clubs International Foundation, Lions Clubs of Ethiopia, and the Amhara Region Health Bureau, began trachoma control in four woredas (districts) of South Gondar zone in 2001. The program then expanded to 15 additional woredas in 2003. Four woredas that have completed at least three years of implementation of all four components of the SAFE strategy were selected for evaluation in December 2007. The four woredas were Dera and Ebinat from South Gondar zone and Huleteju Enesie and Enebsie Sarmedir from East Gojam zone. The objectives of the evaluation were to assess the prevalence of active trachoma and ocular chlamydial infection; to quantify the uptake of **S**urgery, **A**ntibiotics, **F**acial hygiene and **E**nvironmental improvement interventions; and assess visual acuity in persons with trachomatous trichiasis (TT).

The sample size in each woreda was calculated to detect at least a 20% change in prevalence of Trachomatous inflammation-follicular (TF) in children aged 1-9 years and to give a population-based estimate of trachoma prevalence for use as a new baseline. Three-stage cluster random sampling was used to select the sample in each study site. Clinical grading of trachoma was done using the recommended WHO method and simplified grading system. Conjunctival swabs for diagnosis of ocular *Chlamydia* were taken from children aged 1-6 years. Interviews and observations were employed to measure knowledge and attitudes, uptake of antibiotics, health education, water availability, facial hygiene, household pit latrine coverage, and cattle ownership. Visual acuity was tested using routine WHO methodology and the Snellen illiterate E chart. Data from the surveys were compared with baseline prevalence data.

Figure 1 shows the percentage decrease in trachomatous inflammation-follicular (TF), trachomatous inflammation-intense (TI), and unclean face in children aged 1-9 years in the four evaluation woredas. These preliminary results of the evaluation in the surveyed woredas indicated a significant reduction in the prevalence of TF ranging from 30% in Ebinat to 87% in Enebsie Sarmedir. Similarly, the prevalence of TI showed a marked decline of 88% to 99%. The percentage decrease of unclean faces also ranged from 34% to 89%. The PCR tests have not yet been completed. The complete data analysis and write up will be done as soon as the PCR data are received.

These preliminary findings indicate that there is a significant reduction in the prevalence of active trachoma which in turn implies that the incidence of TT will also be correspondingly decreased. However, it should be underscored that the prevalence of active trachoma in 1-9 year olds still exceeds 10% in all surveyed woredas indicating that trachoma still remains a public health problem and implementation of SAFE interventions should be continued.

Figure 1: Percentage decrease in trachomatous inflammation-follicular (TF), trachomatous inflammation-intense (TI), and unclean face in children aged 1-9 years



Studies on the Management of Trachomatous Trichiasis

Presented by Mulat Zerihun, The Carter Center Ethiopia

The optimal management of minor trichiasis remains uncertain. In most endemic communities there can be a poor uptake of surgery for trichiasis where offered. There is often significant resistance to surgery at an individual and community level. A common alternative to trichiasis surgery in many trachoma-endemic areas is epilation. Epilation is widely practiced and well-accepted in endemic communities as a means for controlling the pain and discomfort of trichiasis.

The two suture materials used for TT surgery (silk and absorbable) have not been evaluated in a randomized controlled trial. Silk sutures are more commonly used because they are cheaper, but need to be removed 7 to 10 days after surgery. Long-lasting absorbable sutures (vicryl or polyglactan) do not require removal and may enable the eyelid to heal completely and reduce recurrence of TT.

It is important for trachoma control programs to know which of these management approaches is better in terms of progression in trichiasis severity, prevention of corneal opacification and acceptability to the patient. These two randomized controlled trials will investigate: 1) whether epilation or immediate trichiasis surgery results in a better outcome at the individual and community level and; 2) whether absorbable sutures result in lower recurrence rates than silk.

The overall objectives of these studies are to:

- Improve the long-term outcome of eyelid surgery
- Establish the optimal treatment for the earlier stages of the disease
- Characterize some of the pathological processes involved in the development of blinding trachoma
- Produce and test material to enhance the training of eyelid surgeons
- Develop and test mechanisms to audit and improve the surgical outcomes of individual surgeons

Each trial will include a total of 1,300 participants, all aged 18 and older. All participants must have either minor or major TT and agree to be followed-up for a period of two years. Individuals with a previous history of eyelid surgery are not eligible for inclusion. Participants will complete a brief survey to measure demographic information, symptoms and epilation habits. Visual acuity will be measured before assignment to a treatment arm. At enrollment, all participants will receive an ophthalmic examination and be photographed. Ocular swabs will be taken at this time, as well.

Those participants selected for surgery will be randomized to receive either silk or absorbable (vicryl) sutures and will be followed up at 3, 6, 12, 18, and 24 months. The primary outcome measure for the suture trial will be the recurrence rate after surgery; the outcome for the epilation trial will be the number of lashes touching the eyeball after the intervention (surgery or epilation). Corneal opacification, visual acuity, conjunctival inflammation, surgical complications, and patient satisfaction will also be measured in these trials.

These studies will be conducted in collaboration with the Ethiopian Federal Ministry of Health, the Amhara Regional State Health Bureau, The Carter Center and the London School of Hygiene and Tropical Medicine. This project is funded by the Band Aid Charitable Trust, through Fight for Sight UK. Ethical clearance was obtained from the London School of Hygiene and Tropical Medicine, Emory University, and the Ethiopian Science and Technology Agency. Additional approval was obtained from the Amhara Regional Health Bureau, the Disaster Prevention and Preparedness Agency, and the Drugs Administration and Control Agency of Ethiopia.

What will happen if we do nothing to control trachoma?

Health expectancies associated with trachomatous trichiasis, low vision, and blindness in Southern Sudan

Presented by Jeremiah Ngondi, The Carter Center

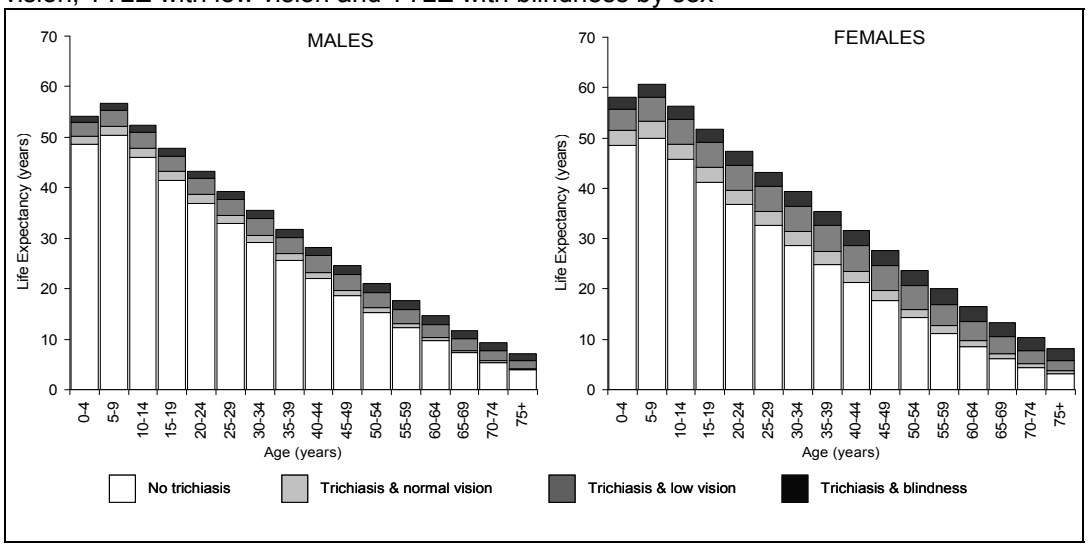
Uncontrolled trachoma can cause disability and blindness. Current global trachoma burden summary measures are presented as disability adjusted life years, but have limitations due to inconsistent methods and inadequate population-based data on trachomatous low vision and blindness. We aimed to demonstrate application of a health expectancies approach for trachomatous trichiasis health states (any trichiasis, trichiasis with normal vision, trichiasis with low vision, and trichiasis with blindness) as a summary measure of trachoma burden, using population-based survey data from Southern Sudan. The methods presented are generalizable to other trachoma-endemic areas and provide a clear and easily presented estimate of the potential burden of blinding trachoma if control measures are not implemented.

Age- and sex-specific trachomatous trichiasis (TT) prevalence was estimated from ten districts in Southern Sudan. The association of visual acuity (VA) with TT was recorded in one district. Sudan life tables, TT prevalence, and VA were used to calculate the Trichiasis Free Life Expectancy (TTFLE) and the Trichiasis Life Expectancy (TTLE) using the Sullivan method. TTLE was broken down by VA to derive TTLE with normal vision, TTLE with low vision, and TTLE with blindness.

Figure 1 and figure 2 summarize the life expectancies and proportion of life expectancy for trachomatous trichiasis. Total life expectancy at birth in 2001 was 54.2 years for males and 58.1 for females. At age five, trichiasis life expectancy was 11% of remaining life (95%CI=10-13) for males and 18% (95%CI=16-19) for females, whilst trichiasis life expectancy with low vision or blindness was 8% (95%CI=7-9) and 12% (95%CI=11-14) respectively. Women were predicted to live longer and spend a greater proportion of their lives with disabling trichiasis, low vision, and blindness compared to men.

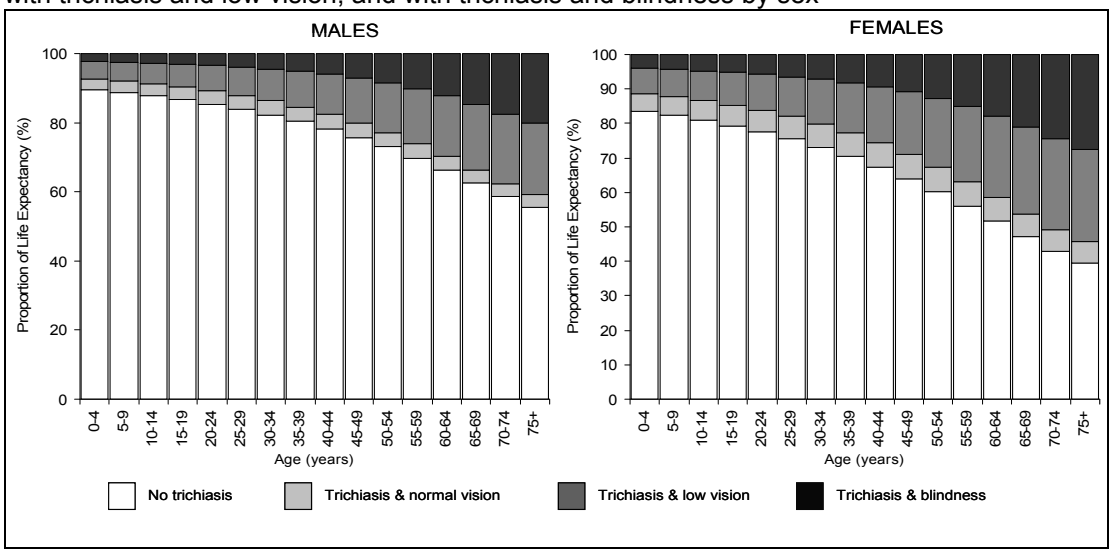
This study presents the use of health expectancies in describing the burden due to trachoma by dividing life expectancy into life spent without trichiasis and with trichiasis (trichiasis with normal vision, trichiasis with low vision and trichiasis with blindness). These data are of value in advocacy for trachoma control in engagement with politicians and donors. Unless action is taken by further delivery of trachoma control interventions, then many populations in Southern Sudan can expect to spend a substantial proportion of their life with low vision or blindness due to trachoma.

Figure 1: Trichiasis free life expectancy (TTFLE), Trichiasis life expectancy (TTLE) with normal vision, TTLE with low vision and TTLE with blindness by sex



Normal vision=presenting visual acuity of ≥6/18 in the better eye
Low vision=presenting visual acuity of <6/18 to ≥3/60 in the better eye
Blindness=presenting visual acuity of <3/60 in the better eye

Figure 2: Proportion of life expectancy: without trichiasis; with trichiasis and with normal vision; with trichiasis and low vision; and with trichiasis and blindness by sex



Normal vision=presenting visual acuity of ≥6/18 in the better eye
Low vision=presenting visual acuity of <6/18 to ≥3/60 in the better eye
Blindness=presenting visual acuity of <3/60 in the better eye

The STAR Clinical Trial: Surgery for Trichiasis, Antibiotics for Recurrence

Presented by Sheila West, Johns Hopkins University, Maryland

Background

Recurrence rates for trichiasis after surgery can be high. Data from the field suggests that rates can be as low as 10%, but recurrence can be seen in as many as 80% of operated eyes. Recurrence of trichiasis (TT) presents programs with a number of difficulties, these are reduced or comprised trust in the service providers; lower patient recruitment rates in the future; costs of re-operating patients; and operating lids that have already been operated is technically more challenging. The purpose of the STAR trial was to determine whether the outcome of trichiasis surgery could be improved by the addition of a single oral dose of azithromycin at the time of surgery.

Methods

Working in Ethiopia, an ophthalmologist experienced in trichiasis surgery trained integrated eye care workers in a highly standardized way, to perform trichiasis surgeries. The training of the eye care workers was documented and has since been adopted by the WHO as the standard method for training and certifying surgeons (the manual is available from the WHO website http://www.who.int/blindness/causes/trachoma_documents/en/index.html). For the trial, 1,452 patients presenting with TT were randomly assigned to either surgery with topical tetracycline or surgery with topical tetracycline and a single oral dose of azithromycin. The azithromycin group were additionally divided such that a proportion of patients also had all family contacts treated with a single oral dose of azithromycin. Patients were followed for one year to determine the recurrence, any change in visual acuity, subjective reporting on the outcomes and quality of life measured in terms of patient's ability to perform routine activities.

Surgical operators in the STAR trial participate in training under the supervision of a senior ophthalmologist

Results

Recurrence

Overall recurrence rates were low in this trial: 5% at 6 months and 8% at 12 months. The added value of azithromycin over topical tetracycline alone was around 30%, 6.9 of 100 person years compared with 10.3 of 100 person years. There was no additional benefit of treating household members in addition to the patient.

Visual Acuity
Successfully operated patients showed a gain in visual acuity at 12 months. The amount of vision gained was proportional to the number of lashes touching the eye prior to surgery, the greater the number of lashes prior to surgery the greater the gain in visual acuity post surgery. In all, around 50% of the patients improved vision by one line or more on the Snellen chart.

Subjective Reporting on Outcomes
Prior to surgery, 19 out of 20 of patients reported at least moderate constant pain in their eyes and 9 out of 10 reported that it was a big problem for them to see in bright sunlight. After surgery, less than 1% of patients reported moderate pain or problems seeing in bright light, 99% of patients reported considerable subjective gains.

Quality of Life
Most patients reported difficulties performing routine daily activities such as walking without aid, seeing obstacles such as ditches, cooking over open fires, milking cows, farming, and fetching firewood and water. Significant improvements were reported by patients in all of the quality of life estimates. Patients reported greatly improved ability to conduct routine activities associated with family tasks, income generation and mobility in the communities.

Conclusions

1. The overall recurrence rate was very low which demonstrates the importance of standardized training that includes proper maintenance of sterile conditions, proper maintenance and sterilization of instruments, and practice under supervised conditions leading to certification. All TT surgeons should be trained to the WHO standards and certified.
2. Post-surgical azithromycin can reduce recurrence of trichiasis with additional benefits to the program. At the time of surgery, all TT patients should be provided one gram of azithromycin as an oral dose. Use of azithromycin is approved by Pfizer Inc and ITI.

Media Habits, Social Mobilization & Health Education: Methods applied and lessons learnt among the Toposa in Southern Sudan

Presented by Anne Heggen, University of Michigan

Background

Appropriate health education messages that effectively reach the desired target groups are an essential part of any health program that promotes behavior change. In large areas with minimal infrastructure, such as Southern Sudan, mass media can be an effective mode for reaching large numbers of people with minimal effort. In May and June 2007, the Carter Center conducted formative research on media habits in Kapoeta South County, Eastern Equatoria State, Southern Sudan. A questionnaire was used to determine the types of media outlets the individuals had access to, how they currently communicate, and their preferred means of communication. The study examined both contemporary forms of communication - radio, cassettes, television, movies, print media, and signage - and traditional forms of communication - traditional entertainment and systems for receiving information. Findings were used to inform the development of a health promotion mass media campaign for the Carter Center's programs.

Methods

Structured interviews were conducted with heads of households, women with children under 5 years and youth aged 11-16 from 49 randomly-selected villages in Kapoeta South County. All eligible participants were interviewed, for a total of 1,296 respondents. Participants were allowed to self-identify their group and one standard survey was administered to all groups.

Results

Overall, 1,296 individuals were interviewed: heads of households (28.4%), women with children under 5 years (44.7%), and youth aged 11-16 (26.9%). A small portion of the population surveyed own radios (6.8%) and television sets (0.2%); however, a substantial number of individuals had regular access to radio (21.7%), listened routinely to cassettes (50.8%), and had periodic access to television and movies (21.4%). Individuals also demonstrated an interest in programs developed in their local language (89%). A low literacy rate (1.3%) and difficulty in understanding signage are potential obstacles to creating print media. 94.4% of the population attends traditional entertainment and they reported that they trusted information from chiefs (61.5%) and elders (51.5%).

A survey team member conducts a household interview

Conclusion

This research highlights the importance of understanding the media habits and preferences of community members when designing a health promotion campaign. A higher than expected access to radio and cassettes and lower than expected literacy rate were used to guide the development and promotion of an IEC strategy and tools that focus on using targeted audio and visual cues and established communication systems within communities. Mediums such as flipcharts, radio messages in the local language, radio listening groups, mobile video units, and drama groups may be the most effective methods of promoting behavior change in South Sudan.

Since the conclusion of the study, the Carter Center Southern Sudan has designed and implemented the following health education strategies: the production of professional songs and videos in local languages, the purchase of nine mobile video units, the production of flipcharts and pile-sorting cards, and the formation of school drama groups. The program is in the beginning stages of implementing radio listening groups in endemic communities.

The Ventilated Improved Pit Latrine Design

Presented by James Dumpert, Michigan Technological University

Background

The prevalence of Ventilated Improved Pit (VIP) latrines in Ghana suggests that the design must have a high user acceptance. The two key factors postulated to account for user preference of a VIP latrine over an alternative latrine design, such as the basic pit latrine, are its ability to remove foul odors and maintain low fly populations; both of which are a direct result of an adequate ventilation flow rate.

The design of a VIP latrine consists of a superstructure atop an excavated pit with a vent pipe allowing foul-smelling air emanating from the pit to pass directly into the atmosphere above the superstructure. Fly control occurs as flies attracted to the odor of excreta congregate around the top of the vent pipe rather than inside the superstructure. Flies are blocked from entering the vent pipe by a mesh screen fixed over the mouth of the vent.

Adequate ventilation for odorless conditions in a VIP latrine has been defined by the United Nations Development Program (UNDP) as an air flow rate equivalent to 6 air changes per hour (6 ACH) of the superstructure's air volume. Additionally, the UNDP determined that the three primary factors that affect ventilation are: 1) wind passing over the mouth of the vent pipe; 2) wind passing into the superstructure down the pit and out the pipe; and 3) solar radiation onto the vent pipe, drawing warm air out of the pit. Previous studies also indicate that vent pipes with larger diameters increase flow rates, and the application of carbonaceous materials such as ash to the pit sludge reduces odor and insect prevalence.

Proper design and construction is critical for the correct functioning of VIP latrines. Under-designing could cause problems with odor and insect control; over-designing would increase costs unnecessarily, thereby making it potentially unaffordable to construct, repair or replace a VIP latrine.

The present study evaluated the design of VIP latrines used by rural communities in the Upper West Region of Ghana with the focus of assessing adequate ventilation for odor removal and insect control.

Methodology

Thirty VIP latrines from six communities in the Upper West Region of Ghana were sampled. Each VIP latrine's ventilation flow rate and micro-environment was measured using a hot-wire anemometer probe and portable weather station for a minimum of four hours. To capture any temporal or seasonal variations in ventilation, ten of the latrines were sampled monthly over the course of three months for a minimum of 12 hours.

One of the VIP latrines studied in the Upper West Region of Ghana.

Results
All 30 VIP latrines were found to have a vent pipe made from polyvinylchloride (PVC) with an interior diameter of 100 mm (approx 4 inches). No other variation to vent pipe design could be found in the areas in which this study took place.

The average air flow rate over the entire sample set was 0.4 m/s (11.3 m^3/hr). The minimum and maximum air flow rates were 0.0m/s and 1.7 m/s (48.0 m^3/hr) respectively. Only 1 of the 30 VIP latrines (3%) was found to have an air flow rate greater than the UNDP-defined odorless condition of 6 ACH. Furthermore, 19 VIP latrines (63%) were found to have an average air flow rate of less than half the flow rate required to achieve 6 ACH.

The micro-environmental data are currently being analyzed to determine the effect on ventilation air flow. Elements outside of the three UNDP identified factors could also have a significant influence on ventilation. For example, during evening and early morning hours when wind speed and solar radiation levels were at or near zero, a substantial air flow rate continued to emit from the vent pipe.

Conclusions
Within the context of the 30 VIP latrines sampled in the present study, most do not possess a flow rate adequate enough to achieve 6 ACH of the superstructure's air volume. This would suggest that the ability of these VIP latrines to effectively remove odor and control flies is compromised. Significant micro-environmental influences would suggest optimizing the design in order to increase air flow, such as increasing the diameter of the vent pipe and repositioning the superstructure opening to face the prevailing wind direction. However, making such alterations would possibly increase cost and compromise user preference. More cost effective ways of removing odor and flies should also be investigated; for example, making larger diameter vent pipes out of local materials, or the frequent application of carbonaceous materials to the pit sludge.

Trachoma & SAFE in the Integrated Neglected Tropical Disease Control Program

Presented by Dieudonné P. Sankara, Research Triangle Institute (RTI)

Program Overview
The USAID Neglected Tropical Disease (NTD) Control Program is a five-year, $100 million project funded by the United States Government with the objective to "support, design, and scale up integrated NTD programs for schistosomiasis, lymphatic filariasis, onchocerciasis, soil-transmitted helminths, and trachoma". The Research Triangle Institute (RTI) is the prime current recipient of the USAID grant and sub-grants to the implementing organizations. The program's goal is to "reduce disease burden through delivery of 160 million integrated treatments to 40 million people". The program comprises three specific objectives:

1. Integrate and scale up mass drug administration of preventive chemotherapy to achieve national coverage for co-endemic NTDs in affected countries;
2. Document results and develop new models and tools for replicating successful integration in new countries; and
3. Advocate for increased global and national commitment to integrated NTD control.

Countries covered by the USAID NTD Control Program and Selection of Countries
The USAID NTD Control Program started in September 2006, and as of February 2008, the program is supporting eight countries to deliver integrated preventive chemotherapy for NTD control. Five countries (Burkina Faso, Ghana, Mali, Niger, and Uganda) were selected in RTI's fiscal year 2007. In fiscal year 2008, three more countries (Haiti, Sierra Leone, and Southern Sudan) have been selected. The program's target is to cover a total of 15 countries through this grant. As money becomes available, requests for application will be issued and new countries will be reviewed through competitive grant selection.

Countries must compete for grants, demonstrating Ministry of Health commitment (including providing the government's own resources), and the possibility of scaling up and achieving high coverage. Continued funding depends on the demonstrated achievement of the program goals of integration, high coverage, and additionality.

How is the USAID NTD Control Program working?
Integrated control or elimination of NTDs requires successful public/private partnerships. This highlights the importance of reinforced collaboration and coalition between pharmaceutical companies and drug donation programs, international agencies, foundations and NGOs, as well as governments and governments' structures in NTD-affected countries. The USAID NTD Control Program works with countries already committed to NTD control to provide additional funds to scale up preventive chemotherapy and improve integration.

By providing additional funds for drug delivery in endemic countries and coordinating closely with the donation programs, the USAID NTD Control Program is leveraging drug donations to countries. The USAID NTD Control Program works closely with the NTD community to maximize resources, and share lessons learned and best practices. USAID's funds are not adequate to meet all NTD program needs and do not replacing existing funds. USAID's funds must result in additional people treated, additional diseases treated (mapping to target treatment), improved rates and quality of coverage, and increased geographic coverage (numbers of districts).

What has the USAID NTD Control Program done in Year 1 (October 2006 – September 2007)
At the end of the first year of activities, NTD control program-supported countries have trained more than 100,000 people and have distributed over 35 million treatments to an estimated 13 million people[1]. The program channeled NTD funds through NGOs to countries. Activities included:

[1] Provisional data

- Continued support to integrated mass drug administration implementation in Burkina Faso, Ghana, Mali, Niger and Uganda
- In collaboration with Ministries of Health, designed integrated NTD plans which included a phased approach to rapidly integrate ongoing, previously vertical mass drug administration activities with the intent to scale up
- Provided technical and grant management assistance to country programs
- Supported countries to develop integrated IEC tools
- Post mass drug distribution surveys are being used to validate coverage data
- Supported mass drug administration for onchocerciasis, lymphatic filariasis, soil-transmitted helminthes, schistosomiasis, and trachoma.
- Facilitated expansion of the lymphatic filariasis control program in Mali and Uganda
- Initiated the lymphatic filariasis control program in Niger
- Purchased praziquantel ($2.5 million) for schistosomiasis-endemic countries

The program was supporting countries to continue to build upon current single disease efforts without dismantling what was working. The program also was careful not to overburden current mass intervention programs by adding treatment for five diseases. In addition, the program supported countries to identify effective social mobilization and communication for behavior change strategies for mass drug administration in different countries and localities.

Elimination of Blinding Trachoma within the Neglected Tropical Disease Control Program
The USAID NTD Control Program has been contributing to the effort to eliminate blinding trachoma by supporting grantees and countries to deliver the "A" component of the SAFE strategy where it is needed. The program contributed to the gathering of more data on trachoma in Burkina Faso and Uganda and facilitated national trachoma control program expansion in Uganda, Burkina Faso, Mali, and Niger. About 8,272,708[2] people received antibiotics for trachoma in 2007.

What is the USAID NTD Control Program doing in Year 2 (October 2007 – September 2008)?
The program plans to increase its geographical scope and the population reached with mass drug administration. For trachoma in particular, the program has data which provide a basis for antibiotic distribution in Southern Sudan. Burkina Faso, Mali, Uganda plan to expand mass drug administration for blinding trachoma. For all diseases, mapping is still needed in many areas, particularly in Sierra Leone and Southern Sudan. Mapping to assess blinding trachoma is still needed in Burkina Faso, Southern Sudan, Sierra Leone and Uganda.

The program plans to continue to learn and to document the potential added-value and issues associated with integration. In order to build a synergistic and comprehensive effort against NTDs, it will continue cooperation with other NGOs currently working in NTD control. The USAID NTD Control Program provides opportunities for vertical disease programs to evaluate whether integration leads to an increase in the number of people or geographic regions reached. There is a need to assess whether the duplication of resources avoided under integration reduces the cost per beneficiary.

Donated drugs include:
- Ivermectin from Merck & Co., Inc./ Mectizan Donation Program for lymphatic filariasis, onchocerciasis
- Albendazole from GlaxoSmithKline for lymphatic filariasis
- Azithromycin from Pfizer Inc / International Trachoma Initiative for trachoma
- Mebendazole from Johnson & Johnson for soil transmitted helminthiases

Purchased drugs include:
- Praziquantel purchased at a discount by the Schistosomiasis Control Initiative and distributed to country programs in first year. In following years, USAID funds will be used to purchase praziquantel.

[2] Provisional data

Integration of Trachoma, Guinea worm and Malaria in Southern Sudan

Presented by Gideon Gatpan Thoar, The Carter Center Southern Sudan

Trachoma, Guinea worm disease and malaria are all highly endemic in Southern Sudan, and their respective health programs are challenged by weak local infrastructure and few human resources. The Carter Center Trachoma Control Program began to integrate its operations and delivery of program interventions with the Guinea Worm Eradication Program in Eastern Equatoria and Jonglei states in July 2007. Using its field experience, The Carter Center Southern Sudan maximized intervention coverage by integrating program delivery with targeted malaria control efforts, without compromising its own disease eradication and elimination efforts. In late 2007, mass distribution of long-lasting insecticidal nets (LLINs), azithromycin for trachoma, and Guinea worm pipe filters were synchronized in 6 areas in Eastern Equatoria State.

Key components of the program interventions were the community mobilization, data collection and quality control, and health education. A 3-day training was held for field officers involved in the synchronized distribution to educate them on distribution strategy and implementation. Key malaria control health education messages were included, as well as a demonstration of the use of LLINs for all community members. The program distributed antibiotics before the LLINs in order to reduce crowds and minimize chances of duplication (in line with local guidelines, LLINs were only distributed to mothers). Local government representatives were involved in planning, mapping distribution centers, and in distribution, as were the endemic communities themselves.

The synchronized distribution faced logistical challenges and was hampered by the lack of accurate population statistics. In order to overcome logistical obstacles, the program prepositioned fuel in intervention areas, and used heavy 4x4 and 6x6 trucks for transporting drugs, pipe filters and LLINs into intervention areas. LandCruisers and motorcycles were used for transporting personnel and camping supplies and for mobilizing the communities. Ultimately, all distributors walked long distances to distribution sites. Without any census data, population data were sought from the Southern Sudan Relief and Rehabilitation Commission (SSRRC), as well as from the Southern Sudan Guinea Worm Eradication Program (SSGWEP). The program found considerable discrepancies between these two estimates and the population actually treated with antibiotics during integrated distribution (see tables 1 and 2).

Table 1: Population estimates and Number of Persons Treated

Payam	SSRRC Population	SSGWEP Population	Population Receiving Azithromycin	% Population Treated from Coverage Assessment Survey
Katodori	66,100	54,484	21,411	92%
Narus	89,000	82,492	47,525	80%
Karukomuge	35,000	35,692	38,654	57%
Longeleya	45,200	48,599	20,120	64%
Machi I	46,500	24,066	13,167	89%
Machi II	43,800	12,328	6,559	93%

Table 2: Kauto Payam, Persons Treated with Azithromycin and LLIN distribution

Area	SSGWEP Pop.	Pop. Treated	Antibio % Coverage (GW Pop)	SSGWEP households	Household received LLIN	LLIN % HH Coverage (SSGWEP)	LLIN Pop (based on avg. HH size)	Antibio % Coverage (LLIN Pop)
Kauto Central	6,887	4,743	69%	1,503	972	65%	4,305	110%
Kauto North	3,947	2,770	70%	773	669	87%	3,330	83%
Lokurwa	12,454	2,528	20%	2,164	912	42%	4,369	58%
Lotimor	10,107	3,193	32%	3,659	644	18%	3,255	98%
Namorupus	15,505	8,403	54%	2,931	2,294	78%	9,916	85%
Nanyangacor	22,630	6,171	27%	4,150	1,813	44%	8,664	71%
Total Kauto Payam	**71,530**	**27,808**	**39%**	**15,180**	**7,304**	**48%**	**33,839**	**82%**

The program learned several lessons by synchronizing efforts of the three health programs. First, integrated intervention delivery should not compromise individual disease control efforts and each program must bring some relative advantage to the integrated programs—"you cannot integrate something into nothing." The participation of the communities is paramount to successful distribution and community uptake of the intervention, and leadership by local government is paramount for meaningful collaboration and implementation. The program plans to explore further opportunities for synchronization within current project areas for assessment, implementation, and monitoring activities, and will conduct a cost-effectiveness analysis of past operational synchronization activities.

Distribution activities are conducted with community support (left); distribution teams travel by foot to the most inaccessible areas (right).

Trachoma Control in the Context of the Integration of Neglected Tropical Disease Control in Mali

Presented by Bamani Sanoussi, Mali Prevention of Blindness Program

In the context of neglected tropical disease (NTD) control, the Malian Ministry of Health facilitates mass chemotherapy for lymphatic filariasis (LF), onchocerciasis, schistosomiasis, intestinal worms and trachoma. A national trachoma prevalence survey conducted in 1996-1997 showed a national prevalence of TF/TI among children aged 1-9 years of 34.9% and a national prevalence of TT among women aged 15 years and older of 2.5%. The prevalence of other NTDs has been measured nationally: 7.1% for LF (2004); 2.7-22.1% for hookworm, 2.4-10.3% for *Hymenolepis nana*; 0.86% for onchocerciasis. Both urinary and intestinal schistosomiasis have been identified in Mali but prevalence data is not available.

Since the NTDs are often found to be coincident in the same areas, it is possible to integrate the different programs to maximize the benefit to endemic communities. Mass treatment of NTDs has been established as an effective method and co-administration is possible to treat LF, onchocerciasis and intestinal worms. The overall objective for the NTD integration program is to reduce the morbidity and complications associated with NTD infections and to improve the general health status of the population by 2011. The specific objectives are: (1) to reach at least 80% of the population with mass treatment each year from 2007-2011 and (2) to reach 100% geographic coverage on an annual basis.

The NTD drug distribution program utilizes the following strategies:

1. Integrated mass distribution campaigns to reach the at-risk populations, including urban and nomadic populations. Treatment occurs on an annual basis under the following regime:
    a. Week 1: Azithromycin
    b. Week 2-3: No treatment
    c. Week 4: Ivermectin and Albendazole (IVM/ALB)
    d. Week 5: Praziquantel (PZQ)
2. Health education for behavior change
3. Integrated training of health and community agents at the regional, district and community levels
4. Procurement and distribution of drug from the national level to the regions, health districts and villages

Supervision and evaluation during and after the distribution are the responsibility of the local health agents. At the end of each campaign, the district and regional officials will conduct a formal evaluation of the program and present those results in a final evaluation report.

The measurement indicators for the NTD program are:

Process
1. Percentage resource mobilization
2. Percentage of activities completed

Results
1. Percentage population coverage of distribution
2. Percentage geographic coverage of distribution

Impact
1. Prevalence of NTDs

The NTD program is directed by a coordination committee composed of the National Director of Health, the Head of the Preventive Medicine Division and the national coordinators from the four disease programs. The steering committee is tasked with the organization, supervision and

validation of the outcomes of the program. This committee is composed of members of the coordination committee, other partners, the Public Sanitation Division and the National Planning Division. At the regional and district level, focal points will conduct the planning and oversee the implementation of the distribution.

The NTD program is supported by several partners including: the International Trachoma Initiative; Sight Savers International; the Organization for the Prevention of Blindness; Helen Keller International; The Carter Center; Lions Clubs International Foundation; the World Health Organization; World Alliance; the Mectizan Donation Program; Schistosomiasis Control Initiative; the Organization for the Senegal River; and the National Program for Rural Infrastructure.

In 2007, the region of Kayes reached 80.0% coverage for IVM/ALB and 69.0% coverage of PZQ. Koulikoro obtained a coverage rate of 80.9%, 85.7% and 84.6% for IVM/ALB, PZQ and azithromycin, respectively. The program plans to cover all eight regions and the Bamako district in 2008.

The program has demonstrated its strengths through the integration of five diseases, securing resources for distribution and the expansion of the program to include partners in trachoma control. However, the NTD program has experienced setbacks: the other components of trachoma control are not included; poor geographical coverage; burdensome procedures for funds disbursement; weak incorporation of the Ministry of Health in the planning process; and risk of confusion among community health workers.

As implementation activities continue, the NTD program should encourage better administration and coordination of program resources and take into account the global control strategies for each disease. The integration of these disease programs is considered a necessity. The program will use the lessons learned during the first year of implementation to deliver a more efficient program in the future.

Mid-term Evaluation of the Strategic Plan for Trachoma Control in Niger 2005-2009

Presented by Kadri Boubacar, Niger Trachoma Control Program

In Niger, trachoma is a public health problem; all regions are affected by the disease to varying degrees, with an overall national prevalence of 36.4% of TF/TI in children 1-9 years of age. Faced with this problem, the Ministry of Health developed its five-year strategic plan to fight the disease. As part of its strategic plan, the National Trachoma Control Program conducted a mid-term evaluation in November 2007. The results are presented in Table 1.

Table 1. Indicators Measured during Evaluation

Outcome Indicators	Target	Output	Percent of Target (%)
Persons operated for trichiasis	33,800	13,804	40.8
Doses of antibiotic distributed	13,540,833	10,263,072	75.8
Latrines constructed	28,200	21,888	77.6
Surgeons trained	213	60	28.2
Water points built or rehabilitated	334	1,179	353
Masons trained in Sanplat slab construction	720	712	98.9
Women trained in soap-making	750	1,442	192.3

The findings from this evaluation demonstrate that the trachoma control program has improved the capacity of the health system at the regional, district, community and village levels. Thus far, the program has increased human resource capabilities in Niger through the training of supervisors, surgeons, masons, community health agents, teachers, religious leaders, and community distribution workers. Other strengths identified by the evaluation include the installation of community radio stations, the radio broadcast program, hygiene promotion activities and the construction of household latrines.

The evaluation identified the following weakness in the existing program: lack of access for trichiasis patients to the facility-based surgical program; limited access among households to improved water sources due to depth of water table; insufficient budget for medicines and consumables needed for trichiasis surgeries; and the lack of resources for antibiotic distribution. Lack of resources is the principal threat to the implementation of planned activities.

Despite existing challenges, the evaluation identified opportunities for the program. These include a strong network of partners involved in water provision and hygiene promotion, a new national water policy and the arrival of the neglected tropical disease control program.

In conclusion, the implementation of the trachoma control program has had a positive impact on the reduction of trachoma and has been shown to be responsive to the needs of the population. Remaining efforts at trachoma control require the consolidation of resources under a more concrete agreement with the government and support from partners.

Integration Applied: Mapping of urinary schistosomiasis and trachoma in Plateau and Nasarawa States

Presented by Jonathan King, The Carter Center Atlanta

District level estimates of prevalence are recommended for mapping trachoma prior to intervention. Where the prevalence of active trachoma (trachomatous inflammation – follicular TF) is 5-9% in children 1-9 years of age, a community-by-community approach to assessment and intervention is suggested. Yet there is no recommended methodology for assessing trachoma at the community level. One option for mapping *Schistosoma hematobium* is the rapid assessment of hematuria in school children to provide a community estimate of the burden of disease. Drug interventions to control schistosomiasis are made at the community level.

We conducted two separate integrated surveys to complete mapping of trachoma and urinary schistosomiasis in eight LGAs of Plateau and Nasarawa States of Nigeria and to determine whether the integrated results provide sufficient evidence to guide program interventions. In the first survey we added trachoma assessment to the WHO-recommended methodology for urinary schistosomiasis mapping. We surveyed all rural government primary schools in the eight LGAs taking a systematic sample of 32 to 47 children for each disease. All children less than 10 years of age were eligible for trachoma exam. All children 10-14 years of age were eligible for hematuria assessment with a dipstick test.

The second survey added indicators for urinary schistosomiasis, lymphatic filariasis, and household characteristics like mosquito net ownership to the recommended trachoma survey methodology. A systematic sample of 20 enumeration areas (EA) per LGA served as the primary sampling units. Households in each EA were randomly selected with equal probability. All ages were examined for trachoma and children ages 10-14 years were selected for hematuria assessment.

A survey worker examines assesses the presence of schistosomiasis using a rapid diagnostic test.

According to WHO guidelines, the prevalence estimate from either method was lower than the 10% threshold for mass intervention. Prevalence estimates of active trachoma fall either below 5%, where no intervention is indicated, or between 5-9%. The prevalence of trichiasis in adults was less than 1% in all LGAs. LGA level estimates of active trachoma derived from the integrated school surveys were similar to the findings from the standard trachoma survey methodology across all LGAs. Greater than 5% of the examined children had signs of active trachoma in 129 out of the total 352 schools assessed. Following the WHO guidelines for mapping and intervention would have identified only 56 of the 129 communities where trachoma interventions are warranted.

Communities surrounding a total of 65 schools qualified for praziquantel treatment to control urinary schistosomiasis. Mass praziquantel treatment of all ages was warranted in 8 of the 65. LGA level estimates of hematuria from integrated cluster surveys exceeded 10% in one out of the eight LGAs surveyed. The decision to treat based on integrated cluster survey estimates would have qualified only one LGA for praziquantel in school children and missed 50 communities that met the threshold for school-aged treatment. In addition, the eight communities that exceeded the threshold for community-wide treatment would have been missed.

Integrating trachoma examinations with urinary schistosomiasis assessments in schools was quick, easy and useful. School surveys may provide a method of identifying hot spots of trachoma in hypo-endemic areas where school enrollment is high. LGA estimates of urinary schistosomiasis from integrated cluster surveys may not be useful for planning treatment interventions. The value of disease surveys may be increased by including more than one disease indicator.

International Trachoma Initiative Update

As presented by Adam Zayan, International Trachoma Initiative

The main role of the International Trachoma Initiative (ITI) is to provide support to the trachoma control efforts in endemic countries. More specifically, ITI:

- Provides Pfizer-donated Zithromax®
- Supports TT surgery
- Promotes the F & E components of the SAFE strategy
- Provides technical assistance including logistics
- Assists with monitoring and evaluation efforts
- Supports advocacy and resource mobilization efforts towards trachoma control programs, and
- Engages in applied research

The International Trachoma Initiative currently works in 17 countries. The following table shows when the ITI-supported countries started their trachoma control programs. Because these countries started the ITI-supported programs in different years, they are at different stages of trachoma elimination efforts.

Year	Countries
1999	Morocco, Tanzania
2000	Mali, Sudan, Vietnam, Ghana
2001	Ethiopia, Nepal, Niger
2004	Mauritania, Senegal
2005	Kenya
2006	The Gambia, Uganda
2007	Burkina Faso, Guinea Bissau, Nigeria

ITI uses the following criteria to qualify countries for its support:

- Evidence of burden of disease as confirmed by national or regional assessment surveys
- Strong government commitment towards eliminating trachoma, and
- Partners' willingness to support implementation of all components of the SAFE strategy.

Countries interested in ITI support need to prepare a proposal. The proposal is than reviewed by ITI staff that provide technical support for completing the proposal and prepare it for submission to ITI's Technical Expert Committee (TEC). The TEC debates the proposal and either approves it, approves it with conditions or disapproves it. Once the TEC approves a proposal, ITI staff work with counterparts in the concerned country to plan and implement the trachoma control program.

The program cycle in the country consists of the following steps:

Step 1: A Rapid Assessment to demonstrate that trachoma is a problem

Step 2: A Prevalence Survey to assess the rate of infection. ITI consider that a TF rate of ≥10% constitutes a confirmation that trachoma is a public health problem in the country.

Step 3: Mass Drug Administration of Zithromax® is the key component of the program. It is done once a year, every year for 3 or more years.

Step 4: At the end of third year, an impact survey is conducted. If the rate of infection is $\geq$ 10%, than another 3-year regimen is implemented. If the rate is < 10%, than the drug administration is

discontinued and a surveillance system is instituted to detect new cases. Identified cases are treated as well as their surroundings.

ITI is recognizing the importance of investing in making trichiasis surgery available because untreated patients will not only live with the pain but will also end up losing their sight. To that end, ITI:

- Engages in active fundraising. This includes securing and donating trichiasis kits
- Works with counterparts to develop sustainable programmatic strategies especially in fixed centers, and
- Promotes a systematic zone by zone backlog clearing methodology to avoid the return of the infection in communities where not people have been treated.

Additionally, ITI

- Advocates with governments and organizations to increase their role in implementing F & E programs, and
- Develops partnerships that promote face washing, access to clean water, and latrine construction.

More recently, ITI is getting increasingly involved in the global program for the control of neglected tropical diseases. In Mali, ITI is implementing a research project funded by the Melinda and Bill Gates Foundation. The purpose is to assess the feasibility and the cost effectiveness of implementing an integrated strategy to control trachoma and lymphatic filariasis. ITI is also working to ensure that trachoma is an integral component of the neglected tropical diseases agenda. This will allow for an expansion of the trachoma program by those who are implementing NTD programs, and for additional financial resources from donors, governments and NGOs to be directed towards trachoma control efforts.

Finally, ITI is working to establish a new operating model that is more cost effective and has a better chance of eliminating trachoma in the 55 endemic countries identified by the WHO by the year 2020.

Lions Clubs of Ethiopia

As presented by Tebebe Y. Berhan, Lions Club District 411A, Ethiopia

The Lions Clubs of Ethiopia have been successful in securing several SightFirst grants, as described below.

SightFirst 1297
This project was approved for the implementation of 15,000 cataract surgeries with IOL for the year 2007-2008.

Grant Administrators	Lion Himat Dodhia, IPDG
	Lion Surinder Sihra, Council Chairperson
Project Chairpersons	The Hon. Dr. Med. World Laureate Tebebe Y Berhan, Past District Governor
	Lion Getachew Desta
Grant Amount	$1,090,000

SightFirst 1176
This grant was approved for ophthalmic nurses' training program for 5 years, a continuation program of Sight First 844. The first group of 24 nurses graduated in January 2008.

Grant Administrators	Lion Surinder Sihra, IPDG
	Lion Safderali Jaffer, MCC
Project Chairpersons	The Hon. Dr. Med. World Laureate Tebebe Y Berhan, Past District Governor
	Lion Ramendra H. Shah
Grant Amount	$285,765

SightFirst 1259
This grant was approved January 10, 2007 to expand the trachoma control program in Amhara Region and is being implemented successfully.

Grant Administrators	Lion Himat Dodhia, IPDG
	Lion Surinder Sihra, Council Chairperson
Project Chairpersons	The Hon. Dr. Med. World Laureate Tebebe Y Berhan, Past District Governor
	Lion Getachew Desta
Grant Amount	$1,850,568

Sight First 1369
The most newly approved grant for continuation of the trachoma and onchocerciasis control programs for the amount of $3,125,822.

Training of Women's Groups in Mali

As presented by Yaya Kamissoko, The Carter Center Mali

After ten years of trachoma control program interventions, the prevalence of TF has decreased to less than 10% in children aged 1-9 years in some regions in Mali. In order to maintain this progress, the Carter Center Mali trained women's groups to ensure uptake of the F & E components of the SAFE strategy for trachoma control. Women and children are typically the primary target groups for trachoma control intervention. However, they are often not reached by existing channels of health education because of inadequate training of community health workers and the bulk of messages with which they are confronted.

In late 2007, The Carter Center Mali, in support of and in collaboration with the National Blindness Prevention Program (PNLC), targeted already existing women's groups in nine health districts in Segou and Mopti regions for training related to trachoma control. Five women were chosen per group based on criteria of literacy, either in French of local language. Training took place at the district level, with technical support from the Carter Center and the PNLC. Three, separate one-day trainings were conducted with a total of 846 participants. The training program focused on the fundamentals of behavior change for hygiene and sanitation improvement, implementation of the SAFE strategy, and support for how to incorporate trachoma activities with existing community-based interventions. Upon completing training, each group received a trachoma flipchart, a radio cassette player and a trachoma cassette.

The women's group training project ensures that improved hygiene and sanitation practices are integrated into the regular activities of rural women and their families. In addition, the involvement of trained women leading trachoma control activities complements the ongoing activities of community health workers. The women's groups will also establish radio listening clubs to ensure that trachoma messages are reaching other women.

Funding for the women's group training activities was provided by Lions Clubs of Mali.

Associations between active trachoma and community intervention with Antibiotics, Facial cleanliness, and Environmental improvement (A, F, E)

Presented by Jeremiah Ngondi, The Carter Center

Surgery, Antibiotics, Facial cleanliness and Environmental improvement (SAFE) are advocated by the World Health Organization (WHO) for trachoma control. There is evidence from randomised controlled trials that the individual A, F, E components of the SAFE strategy have an effect on active trachoma when applied on their own. In the biological and epidemiological context, it is reasonable to expect there to be an additive effect of the A, F, E components of the SAFE strategy. Mass azithromycin administration, plus an increase in clean faces among children, plus improved access to water, plus reduced vector populations will likely be more effective than any one component alone. However, few studies have evaluated the complete SAFE strategy and of these, none have investigated the associations of Antibiotics, Facial cleanliness and Environmental improvement (A, F, E) interventions and active trachoma. We aimed to investigate associations between active trachoma and A, F, E interventions in communities in Southern Sudan.

Surveys were undertaken in four districts after three years of implementation of the SAFE strategy. Children aged 1-9 years were examined for trachoma and uptake of SAFE, assessed through interviews and observations. Using ordinal logistic regression, associations between signs of active trachoma and A, F, E interventions were explored. Trachomatous inflammation-intense (TI) was considered more severe than trachomatous inflammation-follicular (TF).

A total of 1,712 children from 25 clusters (villages) were included in the analysis. Overall uptake of A, F, E interventions was: 53.0% of the eligible children had received at least one treatment with azithromycin; 62.4% children had a clean face on examination; 72.5% households reported washing faces of children two or more times a day; 73.1% households had received health education; 44.4% of households had water accessible within 30 minutes; and 6.3% households had pit latrines. Univariable and multivariable ordinal logistic regression analysis of the associations between severity of active trachoma and A, F, E interventions are shown on Table 1 and Table 2, respectively. Adjusting for age, sex and district baseline prevalence of active trachoma, factors independently associated with severity of active trachoma were: receiving three treatments with azithromycin [odds ratio (OR)= 0.1; 95% confidence interval (CI) 0.0-0.4]; clean face (OR=0.3; 95% CI 0.2-0.4); washing faces of children three or more times daily (OR=0.4; 95% CI 0.3-0.7); and presence and use of a pit latrine in the household (OR=0.4; 95% CI 0.2-0.9).

Analysis of associations between the A, F, E components of the SAFE strategy and active trachoma showed independent protective effects against active trachoma of mass systemic azithromycin treatment, facial cleanliness, face washing, and use of pit latrines in the household. This strongly argues for continued use of all the components of the SAFE strategy together. The packaging of trachoma control interventions into a four-pronged community-based approach provides a comprehensive programme for trachoma elimination that is adaptable to many different situations and which can be implemented at the community level. Because each component of the SAFE strategy uses appropriate and readily adaptable technologies, trachoma control can be integrated with broader health and development efforts targeting poor and marginalized populations.

Table 1: Univariable ordinal logistic regression analysis of association between severity of active trachoma (no TF, no TI; TF only; any TI) and A, F, E interventions

Factors	No. of Children (n=1,7,12)	Prevalence (%)			Odds Ratio	95% CI	p-value
		No TF, no TI	TF Only	Any TI			
Age group (years)							
1-4	818	56%	27%	17%	1.0		
5-9	894	71%	19%	9%	0.3	0.2–0.4	<0.001
Sex							
Male	873	62%	24%	14%	1.0		
Female	839	67%	22%	11%	0.7	0.5–0.9	0.007
Antibiotics							
Azithromycin treatment							
None	804	49%	29%	22%	1.0		
1 time	527	76%	18%	5%	0.8	0.5–1.0	p-trend
2 times	342	78%	18%	4%	0.5	0.3–0.8	<0.001
3 times	39	90%	8%	3%	0.1	0.0–0.4	
Facial cleanliness							
Clean face							
No	643	36%	40%	24%	1.0		
Yes	1069	81%	13%	6%	0.2	0.1–0.2	<0.001
Face washing per day							
1 time or none	470	62%	20%	17%	1.0		p-trend =0.001
2 times	784	62%	24%	14%	0.7	0.4–1.0	
3 or more times	458	69%	24%	6%	0.5	0.3–0.7	
Health education							
No	460	56%	25%	19%	1.0		
Yes	1252	67%	22%	10%	1.2	0.8–1.8	0.348
Environmental improvement							
Water access							
≤30 minutes	760	62%	20%	18%	1.0		
> 30 minutes	952	66%	26%	9%	1.1	0.9–1.4	0.178
Pit Latrine							
No	1605	63%	24%	13%	1.0		
Yes	107	82%	15%	3%	0.4	0.2–0.9	0.038
Cattle ownership							
No	999	79%	16%	5%	1.0		
Yes	713	44%	33%	24%	1.4	1.0–2.1	0.066

AFE=Antibiotics, Facial cleanliness, Environmental improvement
TF=trachomatous inflammation-follicular; TI=trachomatous inflammation-intense

Table 2: Multivariable ordinal logistic regression analysis of association between severity of active trachoma (no TF, no TI; TF only; any TI) and A,F,E interventions (n=17,12)

Factor	Odds Ratio*	95% CI	p-value
Antibiotics (azithromycin treatment)			
1 time	0.8	0.5–1.1	p-trend =0.036
2 times	0.8	0.5–1.4	
3 times	0.1	0.0–0.7	
Facial cleanliness			
Clean face	0.3	0.2–0.4	<0.001
Face washing per day (twice)	0.7	0.4–1.0	p-trend
Face washing per day (thrice or more)	0.4	0.3–0.7	=0.001
Environmental improvement			
Pit latrine	0.4	0.2-0.9	0.031

*Adjusted for the effects of age, sex and baseline prevalence

APPENDIX I: The Disease

Trachoma is the world's leading cause of preventable blindness. The World Health Organization estimates that 6 million people are blind due to trachoma, most of whom are women, and another 540 million – almost 10 percent of the world's population – are at risk of blindness or severe visual impairment. Trachoma is caused by repeated infections of the conjunctiva (the lining of the eye and eyelid) by the bacterium *Chlamydia trachomatis*, and can be prevented through simple hygiene practices. Most cases occur in rural, arid areas of developing countries, such as the Sahelian region of Africa, where access to clean water is limited.

The early stage of the disease is called *inflammatory trachoma*, and is most common among children. Inflammatory trachoma can present as either the formation of whitish follicles on the conjunctiva under the upper lid or around the cornea, or as an intense uncomfortable inflammation with thickening of the conjunctiva and pain. Repeated cycles of infection and resolution lead to the formation of scar tissue on the conjunctiva. Women are repeatedly exposed to inflammatory trachoma in their role as primary caretakers of children. It is therefore not surprising to find that women develop chronic trachoma two to three times more often than men. Trachoma is transmitted through discharge from the eyes and nose of infected individuals, which may be passed to others on hands, towels and clothing, or by flies, which are attracted to ocular and nasal discharges. As a trachoma patient's eyelids are repeatedly infected with chlamydia, subsequent scarring of the conjunctiva deforms the eyelid margin, resulting in eyelashes turning inward and rubbing against the cornea. This condition, called *trichiasis*, causes disabling pain and physically abrades the cornea, scratching it and introducing other infections. Trichiasis is horrific in itself, but also rapidly leads to blindness.

Recent developments have brought new hope that we can effectively control this disease. In 1987, eye care experts and the World Health Organization (WHO) developed a simplified trachoma grading scale, which facilitated and standardized the diagnosis and identification of all stages of trachoma. In 1996, WHO established the GET2020 Alliance, which brings international non-governmental development organizations, donors and researchers together to work collectively in controlling trachoma. In addition, with support from the Edna McConnell Clark Foundation (EMCF) and WHO, the *SAFE strategy* was created to control trachoma through community-based interventions.

Another important development was the finding that the oral antibiotic *azithromycin*, taken once or twice annually, is as effective in preventing chronic trachoma as six weeks of daily treatment with tetracycline eye ointment, the previously recommended therapy. To assist ministries of health in implementing the "A" component of the SAFE strategy, the International Trachoma Initiative (ITI), formed through the collaboration of EMCF and Pfizer Inc, is managing a significant donation of Zithromax® (azithromycin) for treatment of trachoma in selected endemic countries. Pfizer's donation of azithromycin is the largest donation of patented pharmaceutical in history, and the existence of the donation program has served to invigorate trachoma programs.

"Ensuring implementation of the full SAFE strategy"
The Ninth Annual Trachoma Control Program Review
February 11-13, 2008

Monday, February 11

8:00	***Shuttle Pick-up at Hotel***	
8:30 – 9:00	Breakfast	
9:00 – 9:30	Welcome and Introductory Remarks Participant Introductions	Dr. Paul Emerson
9:30 – 10:00	International Trachoma Initiative Update	Dr. Adam Zayan
10:00 – 10:30	Group Photo and Coffee Break	
10:30 – 11:30	Mali presentation and discussion	Dr. Sanoussi Bamani
11:30 – 12:30	Ethiopia presentation and discussion	Dr. Zerihun Tadesse
12:30 – 1:45	Lunch	
2:00 – 2:30	Triennial Evaluation in Ethiopia	Mr. Teshome Gebre
2:30 – 3:00	The Ethiopia Suture Study	Mr. Mulat Zerihun
3:00 – 3:30	What will happen if we do nothing to control trachoma? Health expectancies for trichiasis in Southern Sudan	Dr. Jeremiah Ngondi
3:30 – 4:00	Coffee Break	
4:00 – 4:30	STAR Trial: Use for Program Planners	Dr. Sheila West
4:30 – 5:00	Media habits, social mobilization and health education: methods applied and lessons learnt among the Nuer and Taposa in Southern Sudan	Ms. Anne Heggen
5:30	***Shuttle Departure for Hotel***	

Tuesday, February 12

8:00	***Shuttle Pick-up at Hotel***	
8:30 – 9:00	Breakfast	
9:00 – 10:00	Ghana presentation and discussion	Dr. Oscar Debrah
10:00 – 11:00	Government of Southern Sudan presentation and discussion	Dr. Lucia Kur
11:00 – 11:30	Coffee Break	
11:30 – 12:30	Niger presentation and discussion	Dr. Boubacar Kadri
12:30 – 1:45	Lunch	
2:00 – 2:30	VIP Latrine Design	Mr. James Dumpert
2:30 – 3:00	Experience of synchronized Guinea worm, trachoma and malaria interventions in Southern Sudan	Mr. Gideon Gatpan
3:00 – 3:30	Ethiopia Lions Clubs	Dr. Tebebe Y. Berhan
3:30 – 4:00	Coffee Break	
4:00 – 4:30	Mali national program experience with NTD integration	Dr. Sanoussi Bamani
4:30 – 5:00	Mid-term Evaluation of the Niger program five-year plan	Dr. Boubacar Kadri
5:30 – 7:00	***Reception at The Carter Center Museum** **Departure for Hotel***	

Wednesday, February 13

8:00	***Shuttle Pick-up at Hotel***	
8:30 – 9:00	Breakfast	
9:00 – 10:00	Government of Sudan presentation and discussion	Dr. Kamal Hashim
10:00 – 11:00	Nigeria presentation and discussion	Dr. Uwaezuoke Onyebuchi
11:00 – 11:30	Coffee Break	
11:30 – 12:00	Tanzania Presentation	Dr. Grace Saguti
12:00 – 12:30	Uganda Presentation	Dr. Stanley Bubikire
12:30 – 1:45	Lunch	
2:00 – 2:30	Training of Women's Groups in Mali	Mr. Yaya Kamissoko
2:30 – 3:00	Community-by-community assessment of trachoma and schistosomiasis in Nigeria	Mr. Jonathan King
3:00 – 3:30	RTI Update	Dr. Dieudonné Sankara
3:30 – 4:00	Coffee Break	
4:00 – 4:30	Associations between active trachoma and community intervention with Antibiotics, Facial cleanliness, and Environmental improvement (A,F,E)	Dr. Jeremiah Ngondi
4:30 – 5:00	Conclusions	
5:30	***Shuttle Departure for Hotel***	

Appendix III: List of Participants

Ethiopia
Mr. Ali Assen
Dr. Estifanos Biru (The Carter Center)
Mr. Teshome Gebre (The Carter Center)
Dr. Zerihun Tadesse
Mr. Tesfaye Teferi (The Carter Center)
Mr. Mulat Zerihun (The Carter Center)

Ghana
Dr. Oscar Debrah
Mr. Jim Niquette (The Carter Center)
Mr. Ibrahim Yussif (The Carter Center)

Government of Sudan
Dr. Kamal Hashim

Government of South Sudan
Mr. Steven Becknell (The Carter Center)
Mr. Gideon Gatpan (The Carter Center)
Dr. Lucia Kur

Mali
Mr. Yaya Kamissoko (The Carter Center)
Dr. Bamani Sanoussi
Mr. Jim Ting (The Carter Center)

Niger
Mr. Ali Amadou (The Carter Center)
Dr. Kadri Boubacar
Mr. M. Salissou Kané (The Carter Center)

Nigeria
Dr. Abel Eigege (The Carter Center)
Dr. Nimzing Jip (The Carter Center)
Dr. Emmanuel Miri (The Carter Center)
Dr. Anthonia Njepuome
Dr. Uwaezuoke Onyebuchi

Tanzania
Dr. Grace Saguti

Uganda
Dr. Stanley Bubikire

Arthur M. Blank Foundation
Ms. Barbara Saunders

Bill & Melinda Gates Foundation
Ms. Erin Shutes

Cambridge University
Dr. Jeremiah Ngondi

The Centers for Disease Control and Prevention
Dr. Michael Deming
Dr. Patrick Lammie
Dr. Els Mathieu

Conrad N. Hilton Foundation
Ms. Shaheen Kassim-Lakha
Ms. Jennifer Lieberstein

Research Triangle International
Dr. Dieudonné Sankara

Helen Keller International
Ms. Maki Suzuki

International Trachoma Initiative
Dr. Amos Sam-Abbenyi
Dr. Adam Zayan

Johns Hopkins University
Dr. Sheila West

Lions Clubs International Foundation
Mr. Philip Albano

Lions Clubs-Ethiopia
Dr. Tebebe Yemane Berhan

Michigan Technical University
Mr. James Dumpert

Taskforce for Child Survival
Dr. Mark Rosenberg

University of Michigan
Ms. Anne Heggen

World Vision
Dr. Joseph de Graft Riverson

The Carter Center
Ms. Rebecca Brookshire
Ms. Kelly Callahan
Ms. Elizabeth Cromwell
Mr. Don Denard
Mr. Philip Downs
Dr. Paul Emerson
Ms. Maureen Goodman
Dr. Patricia Graves
Dr. John Hardman
Ms. Madelle Hatch
Dr. Donald Hopkins
Ms. Nicole Kruse
Mr. Jonathan King
Mr. Aryc Mosher
Dr. Frank Richards
Ms. Lisa Rotondo
Mr. Randy Slaven
Dr. Ernesto Ruiz-Tiben
Mr. Craig Withers