SUMMARY PROCEEDINGS

SEVENTH ANNUAL TRACHOMA CONTROL PROGRAM REVIEW

Collaborating to Bring SAFE Together

THE CARTER CENTER

Waging Peace. Fighting Disease. Building Hope.

international trachoma initiative

Addis Ababa, Ethiopia
February 23-25, 2006

Funded by:
Conrad N. Hilton Foundation
Lions Clubs International Foundation
International Trachoma Initiative

Pfizer cnhf LCIF

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A 23-year old public health nurse with training in trichiasis surgery, Mahlet Baynesagne Miheretu has conducted more than 1,400 surgeries since 2004. Her outstanding output and success as a trichiasis surgeon have made her a role model in the Lions-Carter Center SightFirst Initiative in Amhara Regional State, Ethiopia. For two consecutive years, Sister Mahlet has been awarded for being the most productive trichiasis surgeon in the program.

“Collaborating to bring SAFE Together”
7th Annual Trachoma Control Program Review
Addis Ababa, Ethiopia

ACKNOWLEDGEMENTS

The Carter Center's Trachoma Control Program is funded through generous grants from the Conrad N. Hilton Foundation and the Lions Clubs International Foundation (LCIF). The seventh annual Program Review for Carter Center-assisted trachoma control programs was made possible through the generosity of the Hilton Foundation, LCIF and the International Trachoma Initiative.

The individuals below assisted with the preparation of these proceedings. Their contribution and support are gratefully acknowledged.

Elizabeth Cromwell
Paul Emerson
Lisa Rotondo
Amos Sam-Abbenyi

Note:
Inclusion of information in the Trachoma Program Review Proceedings does not constitute "publication" of that information.

EXECUTIVE SUMMARY

The seventh annual Program Review of trachoma control programs was held jointly by The Carter Center and the International Trachoma Initiative (ITI) between February 23rd and 25th 2006. For the first time the review was held in a trachoma endemic country and in recognition of both the scale of the problem and wonderful progress made, the review was held in Addis Ababa, Ethiopia. Holding the meeting in Addis allowed a much greater level of involvement from our Ethiopian colleagues who were able to share some of the secrets of their success with the group. In addition to the six Carter Center-assisted programs we were joined by our colleagues from the International Trachoma Initiative and representatives from ITI supported programs in Senegal, Tanzania, Morocco, Kenya and Mauritania. In keeping with the theme of ***Collaborating to Bring SAFE together*** there were presentations from twelve separate country programs and eleven supporting organizations in addition to the special sessions.

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.

Special session highlights included hearing data from triennial impact assessments conducted in three of the presenting countries (southern Sudan, Niger and Mali). Although there was heterogeneity in the uptake and coverage of the SAFE strategy these presentations demonstrated that the SAFE strategy can have a significant effect on the prevalence of signs of trachoma. All of the presentations showed reductions from baseline of up to 90% after three years of intervention. Despite passing with minimal fanfare and without major celebration these presentations were a milestone, bringing extremely good news for all trachoma programs. They demonstrate that SAFE works, and that if we can continue our efforts we can be optimistic that the objectives of GET2020 can be achieved.

The morning of the third day was given over in its entirety to presentation and discussion on survey methods and application to establish baselines, measure progress, and prioritize areas for intervention. The relative merits of the ASTRA, cluster-randomized surveys, and Trachoma Rapid Assessment were presented along with more examples from the field. Two presentations of particular importance were the national blindness, low vision and trachoma survey from Ethiopia and a state representative survey from Nigeria. The Ethiopian survey finally promises to put accurate and rigorously collected numbers on the scale of the trachoma problem in Ethiopia, which will facilitate national level planning; whilst the Nigeria survey showed us that with a relatively small budget and in a relatively short period of time it is possible to acquire district level data for a state-wide program.

National and regional trachoma control program coordinators representing the ministries of health of Ethiopia, Mali, Ghana, Niger, Nigeria, Government of Sudan, Government of southern Sudan, Morocco, Senegal, Kenya, Mauritania and Tanzania attended. For the first year there were presentations from country programs in Mauritania, Kenya and Senegal in which The Carter Center plays no active role. In addition, The Carter Center's resident technical advisors and country representatives from Ethiopia, Niger, Nigeria and Sudan participated in the meeting. Representatives of the Lions Clubs International Foundation (LCIF), Helen Keller International (HKI), Sight Savers International, World Vision International, Bouamatou Foundation, Orbis, Christoffelblinden Mission, the U.S. Centers for Disease Control and Prevention (CDC), the World Health Organization (WHO) and the London School of Hygiene and Tropical Medicine were also key participants.

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Special Sessions

ACRONYMS

ATO	Annual Treatment Objective
BLTR	Bilamellar Tarsal Rotation
CBM	Christoffel Blindenmission
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 South Sudan
GRBP	Global 2000 River Blindness Program
HKI	Helen Keller International
IDP	Internally Displaced Persons
ITI	International Trachoma Initiative
KAP	Knowledge, Attitudes, and Practices
LCIF	Lions Clubs International Foundation
LGA	Local Government Area
MDG	Millennium Development Goal
MOH	Ministry of Health
NGO	Non-Governmental Organization
NPPB	National Program for the Prevention of Blindness
NR	Northern Region (Ghana)
OLS	Operation Lifeline Sudan
PHAST	Participatory Hygiene & Sanitation Transformation
PHC	Public Health Centers
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)
VDC	Village Development Committee
WAWI	West African Water Initiative
WHO	World Health Organization
WVI	World Vision International

INTRODUCTION

Collaborating to bring SAFE together

These proceedings reflect the thoughts, discussions and proposals made during the seventh annual Program Review of trachoma control programs. These program review meetings offer a unique forum for trachoma control program (TCP) managers, The Carter Center resident technical advisors, International Trachoma Initiative staff and other partners to work face-to-face with their peers to review the previous year and plan for the future. The addition of a large contingent from the International Trachoma Initiative enhanced the breadth of experience on offer and took the program review to a new level. The expanded group, representing twelve country and regional 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 F&E. Discussions during the program review meetings are country-specific, but the impact is global. The achievements, challenges, solutions and lessons learned here have helped to guide the evolution of the GET 2020 Alliance, particularly with respect to F&E.

Through the presentations and discussions the enormity of the task facing us became clear, and with it the recognition that no single agency can expect to tackle the problem on their own. Among the countries represented we saw the full range of the positions of trachoma control programs. From Kenya where there has been little or no coordinated trachoma control activities to date through to Morocco which is now entering the surveillance phase prior to certification that blinding trachoma is a disease of the past. Along the continuum we heard from Ghana with just two endemic regions and a few thousand unoperated trichiasis patients left, to Ethiopia and southern Sudan which both have millions of people at risk of blinding trachoma and huge backlogs of unoperated trichiasis cases numbered in the hundreds of thousands.

Just as each person with severe trachoma suffers in their own unique predicament, each country program has its unique context. Elimination of blinding trachoma is not easy in any context, there is no magic bullet to rid a country of blinding trachoma. However, the progress reported by countries in the pages of this document show that what is required is years of hard work contributed by dedicated staff on the ground. And that with dedication and hard work significant progress can be made. The number of people at risk of blinding trachoma reached through health education, the number of household pit latrines, the number of treatments of azithromycin, and number of lid surgeries performed have all doubled again since last year – and within similar, or even shrinking, budgets. The programs and supporting NGOs gathering at this meeting each brought something different to the table to make this happen, it is the combination of financial support, donated drugs, technical assistance, passion and determination that will bring an end of blinding trachoma. In short it is the ability, and need, to collaborate to bring SAFE together.

Ethiopia Trachoma Control Program

Presented by Mr. Zegeye Haile, Ethiopian Federal Ministry of Health

Carter Center assistance to Ethiopia is supported by the Lions-Carter Center SightFirst Initiative.

Background

The prevalence of blindness in Ethiopia, estimated at 1.25%, is thought to be the highest in the world. The two major causes of blindness are believed to be cataract (40%) and trachoma (30%). The National Committee for the Prevention of Blindness (NCPB) of the Federal Ministry of Health estimates about one million Ethiopians live with trachomatous trichiasis and ten million more suffer from active trachoma (TF or TI). A population of about 60 million are at risk of blindness from trachoma.

In October 2000, The Carter Center began assisting the Amhara Regional Health Bureau in trachoma control with funding from the Lions-Carter Center SightFirst Initiative. Four woredas (districts) in the South Gondar Zone (Dera, Ebinat, Estie and Simada) were selected to launch activities (see map). The initial program area comprised 155 villages, with a total population of over 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. The Health Bureau estimated that there were 36,000 trichiasis patients in need of surgery and almost 300,000 children with inflammatory trachoma in need of antibiotic treatment.

A knowledge, attitudes and practices (KAP) survey including focus group discussions, informal interviews and a household survey was done 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.

Baseline data in Carter Center program zones (2001/2003)

	South Gondar	North Gondar	East Gojam	West Gojam	Total
TF (1-9 yrs old)	62.4-66.6%	71.6%	80.8%	67.3%	
TT (15 yrs & above)	4.3-7.0%	7.5%	4.5%	5.5%	
UIG Antibiotic (Entire population)	2,095,374	510,771	554,433	887,372	4,047,950
UIG TT surgery	58,262	18,500	12,475	24,402	113,639

A five-year (2001-2005) action plan for the South Gondar trachoma control program was drafted in 2000. Based on the successful first three years of the South Gondar program, The Carter Center agreed to assist in expansion to an additional 15 trachoma-endemic districts (see map). These new districts are comprised of 497 villages, with a total population of 3 million persons. Baseline trachoma prevalence and KAP studies were done in 2003-2004 and an action plan developed for 2004-2005. With the expansion, Lions-Carter Center assisted trachoma control activities now comprise 19 districts in four zones of the Amhara Region and a total population of about 4 million persons (22% of Amhara National Regional State).

President Carter's Visit to Amhara Regional State

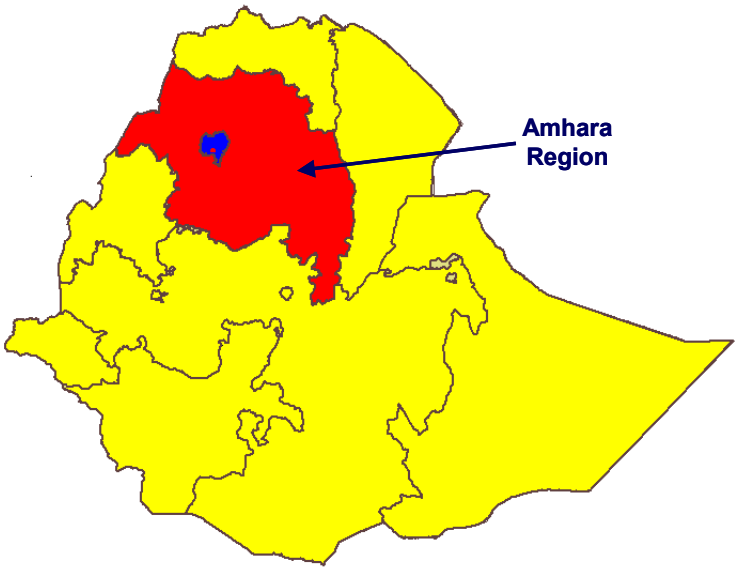
In September 2005, President and Mrs. Carter visited the Amhara region to recognize the accomplishments of the Ethiopian Trachoma Control program. The delegation included James Wagner, president of Emory University; John Moores, chairman of The Carter Center Board of Trustees; Richard Blum, member of The Carter Center Board of Trustees; John Hardman, executive director of The Carter Center; Joseph Feczko, vice president of Pfizer, Inc.; and Jacob Kumaresan, president of ITI.

Dr. Dereje Habte (left), President Carter, and a former trachoma sufferer discuss the successful outcome of his trichiasis surgery. Trichiasis surgical campaigns in Amhara Regional State are supported by LCIF, The Carter Center, and the Ethiopian National Trachoma Control Program.

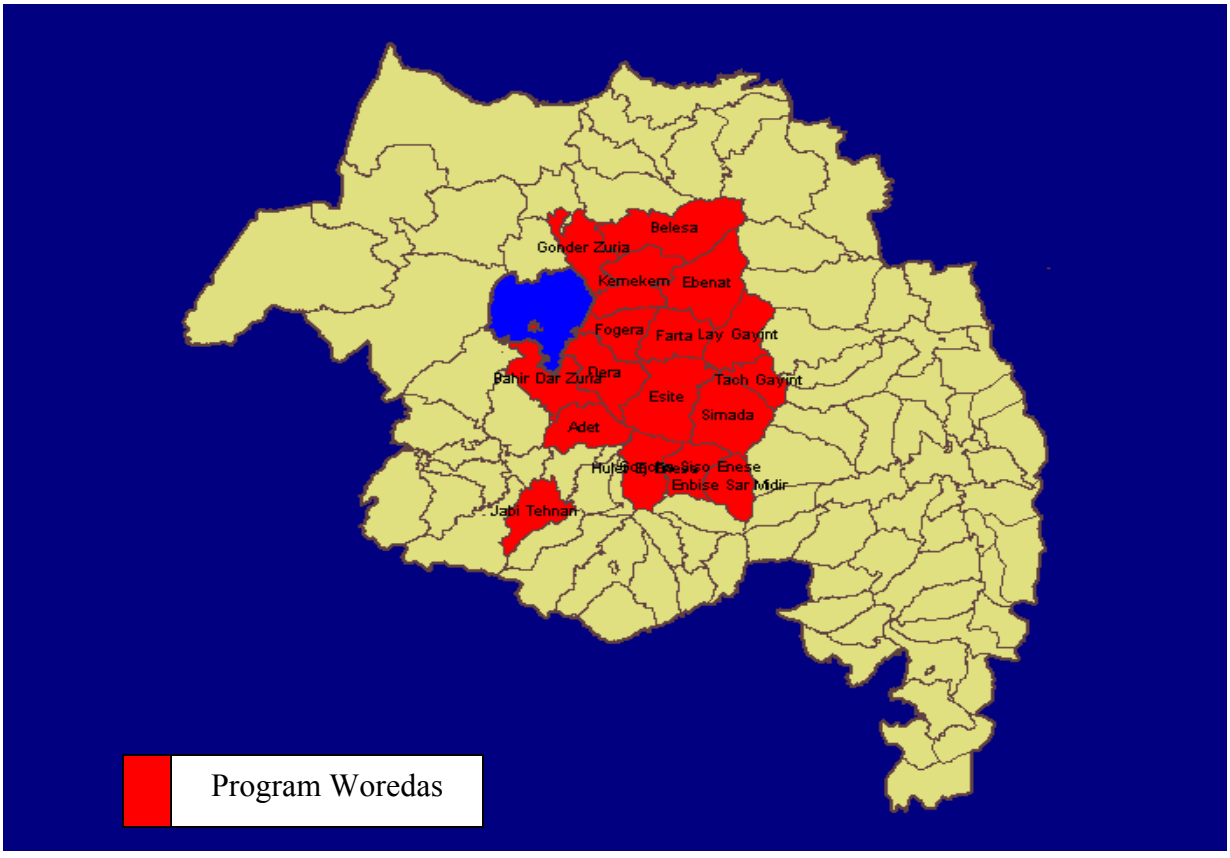
During this major mobilization campaign, the delegation visited the trachoma endemic village of Mosebo, where several households have benefited from the Lions Clubs International Foundation's support of trachoma control. This historic visit demonstrated the strong commitment of the Lions Club, The Carter Center, and the Ethiopian government to eliminate blinding trachoma in Ethiopia.

Lion Getachew Desta (from left to right), Lion George Stavrou, Vice Prime Minister Adissu Legesse, Lion Berhane Ghebray, Lion Ramendra Shah, and Lion Mayur Kortari discuss trachoma control efforts after a welcoming ceremony in Mosebo village.

Carter Center Assisted Trachoma Control Program Woredas, Amhara Region



Map of Ethiopia



National and Regional access to safe water and proper excreta disposal

	Access to Safe Water		Access to Proper Excreta Disposal	
	2001/2	2003/4	2001/2	2003/4
National	28.4%	37.3%	11.5%	28.9%
Amhara National Regional State	29.2%	29.6%	5.0%	32.0%

Baseline data in Carter Center Ethiopia Program Zones (2003)

	South Gondar	North Gondar	East Gojam	West Gojam	All areas
Clean Face	21.1%	33%	11.8%	54.6%	28.4%
Owning household latrine	7.8%	0%	8%	0.7%	4.9%
Owning garbage pit	1.8%	0.3%	1%	0%	1%

Program Achievements in 2005

Facial Cleanliness and Health Education (F)

All Carter Center-supported program villages (654) in Amhara Region receive ongoing health education. Approximately 23,000 health education sessions were conducted in 2005, attended by 1,750,000 people. A total of 8,624 health educators were trained in the four intervention zones, including trachoma volunteers, health workers, community leaders, teachers and women leaders. Trachoma volunteers report monthly on health education activities in the villages using a standardized report form. They also assess clean faces in children 1-9 years old and the status of latrine construction while visiting households.

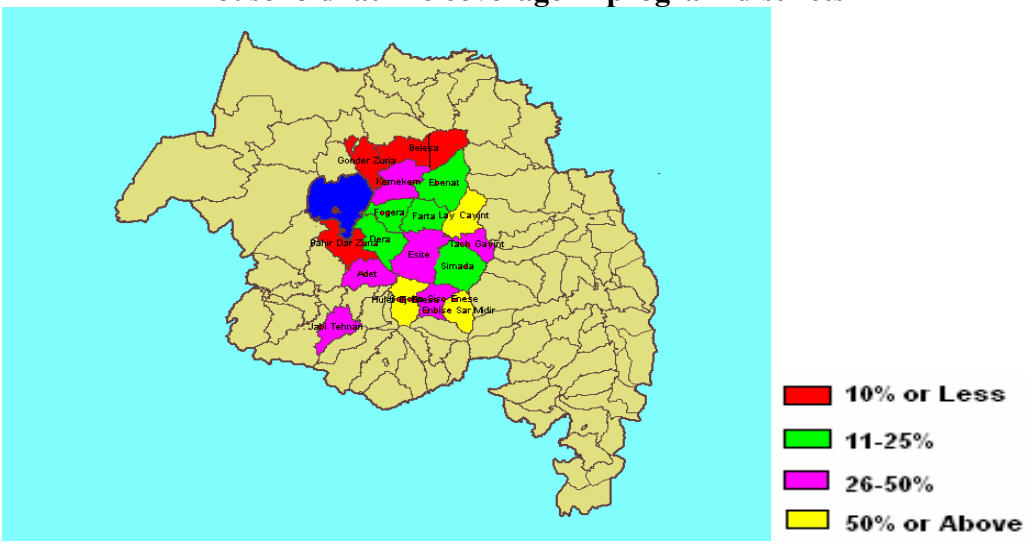
Environmental Improvement (E)

Latrine construction in Ethiopia is promoted nationally in pursuit of the Millennium Development Goal 7 ("to halve the proportion of household without access to sanitation by 2015"). The national program is based on behavior change and empowering community members to build their own latrines using all local materials. Community input in latrine building includes labor and all the materials. In 2005, a total of 144,750 latrines were built in the Carter Center-supported program. National latrine production data were estimated at over 700,000 units, but were not available at the time of the presentation.

Summary achievements of F & E activities from 2002 – 2005,
Lions-Carter Center Sight First assisted areas

	2002	2003	2004	2005	Total
Groups trained for trachoma control mobilization	1,080	138	6,021	8,624	15,863
Villages implementing health education strategies regularly	138	155	654	654	N/A
Latrines constructed	1,333	2,151	89,096	144,750	237,330
Number of children 1-9 years old examined for clean face			586,686	761,447	1,348,133
Number of children 1-9 years old with clean face			354,993	478,673	833,666
% of children with clean face			60.5%	62.9%	61.7%

Household latrine coverage in program districts



Surgery and Antibiotics (S&A)
In 2005, 75 individuals were trained in trichiasis surgery in the 4 intervention zones. A total of 22,097 people received trichiasis surgery. These were operated in camps in health facilities (9,342) and through routine trichiasis surgery in fixed sites (12,755).

Nationally in 2005, 2,618,488 individuals received azithromycin, 1,680,394 of these with Carter Center support. Nine woredas benefited from mass azithromycin distribution, two of which received their second dose in 2005. National data on tetracycline eye ointment distribution were not available, though the Carter Center-supported program treated 256,048 persons for active trachoma with ophthalmic tetracycline ointment.

Summary achievements of S & A activities from 2001 – 2005
Lions-Carter Center Sight First assisted areas

	2001	2002	2003	2004	2005	Total
TT surgeons trained	8	11	19	67	75	180
Persons operated for trichiasis	815	4,019	6,840	23,676	22,097	57,447*
Treatment with azithromycin	0	0	286,942	338,480	1,680,394	2,305,816
Persons treated with tetracycline	1,042	7,964	35,106	125,208	256,048	425,368

*50.1% of estimated backlog

Targets for 2006

During the annual Amhara Region trachoma program review meeting, each woreda set its own targets for 2006.

Health Education, Facial Cleanliness (F)

- Train 13,049 persons in all program areas for mobilization in trachoma control
- Intensify health education strategies in all 654 kebeles
- Educate 2,350,629 community members on trachoma control during 25,024 health education sessions
- Implement the trachoma school health curriculum in all primary schools of the program woredas
- Work closely with women groups in the 19 woredas to heighten awareness on trachoma and latrine use

Environmental Improvement (E)

- Build 257,483 household latrines with available local materials
- Construct 120 small scale water schemes in collaboration with CBM, Lions Clubs Ethiopia and ORDA

Surgery (S)

- Train 36 new trichiasis surgeons
- Perform surgery on 38,097 individuals with trichiasis (20,876 in health facilities, 17,221 during outreach campaigns)

Antibiotics (A)

- Treat 320,960 cases of trachoma with 1% tetracycline eye ointment
- Mass treatment of 3,800,000 individuals with azithromycin in all 19 program woredas

Nigeria Trachoma Control Program

Presented by Dr. Bole Olowu, National Coordinator, National Program for Prevention of Blindness.

Carter Center assistance to Nigeria is supported by the Conrad N. Hilton Foundation.

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. Past review of existing data and anecdotal reports suggested that trachoma is a significant cause of blindness in the northeastern and northwestern states of Nigeria. Since October 2000, prevention of blindness 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 the northeast in February 2005.

Nigeria's 19 northern states are assumed to be endemic with trachoma, with 10 of these believed to be highly endemic. The estimated mean prevalence of active trachoma in endemic states is around 10%, with an estimated TT prevalence of around 1.5%. The magnitude of trichiasis backlog has not yet been determined.

In 2000, The Carter Center Nigeria began working with state and local health authorities to help establish trachoma control programs in Plateau and Nasarawa States. The Ministries of Health for these states did their first population-based trachoma prevalence surveys in April 2002. Survey results suggested that there were moderate levels of trachoma in both states (<10%), with pockets of higher prevalence in some local government areas (LGAs). The survey also showed that access to household latrines varied from 21% in parts of Plateau to 69% in parts of Nasarawa.

The 2002 trachoma knowledge, attitudes and practices survey allowed the program to develop targeted health education and social mobilization strategies. Interventions focusing on the F & E components of the SAFE strategy were then launched in Plateau and Nasarawa States with the distribution of health education materials including flipcharts, posters, and informational brochures. A latrine promotion project was launched with Carter Center support in Plateau and Nasarawa States in 2003.

Program Achievements in 2005

Facial Cleanliness and Health Education (F)

In Nigeria, health education is conducted by all organizations supporting trachoma control. Health education discussions occur in a variety of locations and situations: markets, churches, mosques, schools, and during public gatherings such as naming ceremonies and community meetings. The program promotes the strategy of passing health education messages from person-to-person and from house-to-house, and

emphasizes messages on facial cleanliness and personal and environmental hygiene. Some organizations have trained school teachers to promote facial cleanliness and personal hygiene amongst primary school pupils. For example, Helen Keller International trained 30 teachers in 15 schools in Bama LGA. In Carter Center intervention areas, health education sessions are conducted both in the community and at health facilities during clinic consultations. Posters and flipcharts are used during these sessions and are distributed for use. Radio jingles are also used in Carter Center intervention areas to educate on trachoma control.

In 2005, 506 trachoma control volunteers, 174 environmental health officers, 131 primary health care workers, 28 community health extension workers, and 194 community-selected volunteers were trained in trachoma health education. These health educators conduct ongoing health education campaigns in the intervention areas supported by the national program's partners.

Environmental Improvement (E)

The Carter Center supports the national program in ventilated improved pit latrine promotion in Plateau and Nasarawa states through the training of masons and the provision of construction materials. Two masons are trained per village; in 2005, 161 new masons were trained in latrine construction for a total of 321 trained masons in Carter Center intervention areas. Materials provided include cement, blocks, spades, diggers, rakes and head pans, while the communities provide the labor and support the masons. Latrine construction has taken place in 120 villages, for a total of 5,958 household latrines built in 2005. This more than tripled the number of household latrines built in 2004. The estimated total cost per latrine is $45.70, $28 of which is contributed by the household, and $17.70 comes from The Carter Center.

The Carter Center also supports village cleaning days by encouraging communities to clean every last Saturday of the month. Clean-up days are regularly supervised by a committee composed of community representatives.

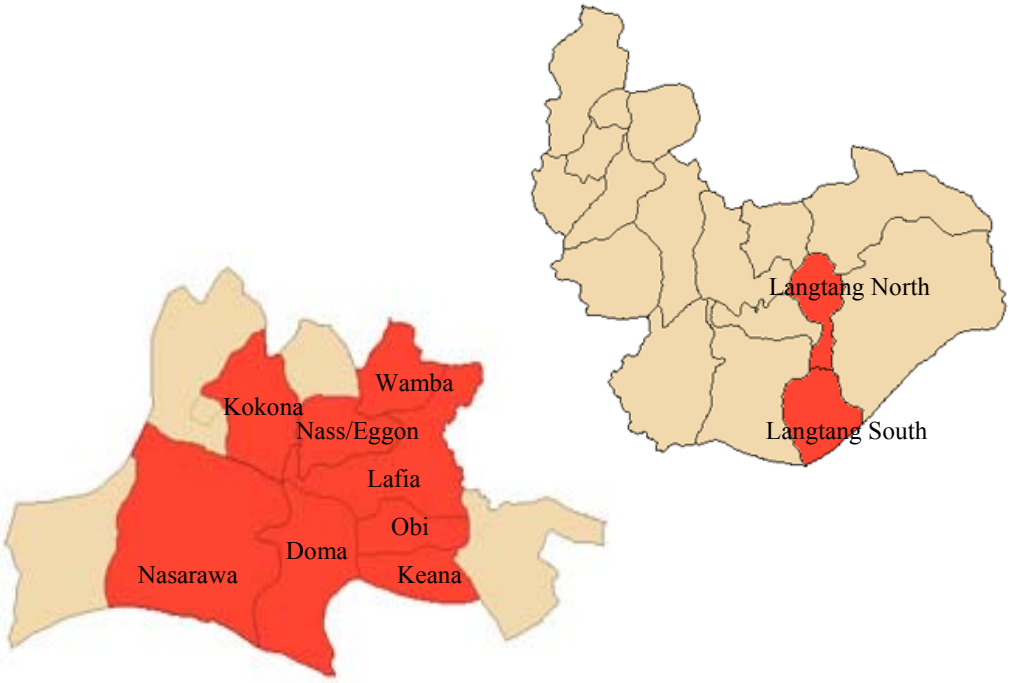
The national program encourages state prevention of blindness committees to advocate to state and local governments to construct wells and provide potable water for trachoma-endemic communities. In 2005, The Carter Center provided wells to 4 villages in Langtang North LGA. Other partners supporting water provision include: RUWATSAN (a Plateau State government agency), Water Aid, and state and local governments. Sight Savers International has begun advocacy for water provision to the trachoma endemic local governments of Kebbi, Sokoto and Zamfara States.

Surgery (S)

The national program undertakes routine cataract camps during the year and has incorporated trichiasis surgeries into these camps. Christoffel Blindenmission, Sight Savers International, and Helen Keller International also use eye camps as opportunities to carry out trichiasis surgeries. Trichiasis surgery also takes place in health facilities and during village-based outreach. In 2005, 6,096 trichiasis surgeries were conducted nationally (a 59% increase from 2004) and 34 trichiasis surgeons were trained in 9 states.

Carter Center-Assisted States, 2005
Nigeria Trachoma Control Program

Nasarawa and Plateau States, with Intervention LGAs



Antibiotics (A)
In 2005, 25,102 tubes of ocular tetracycline were distributed with support from Sight Savers International, Helen Keller International and Christoffel Blindenmission. Sight Savers International continued to purchase azithromycin for distribution, and reached 1,737 people in 2 communities of Sabon Birni LGA of Sokoto State from 2004-2005.

Consistent with the aims of the Conrad N Hilton Foundation support, The Carter Center does not currently support surgery or antibiotic distribution in Nigeria.

Targets for 2006

Health Education and Facial Cleanliness
- Retrain 344 trachoma control volunteers in Plateau and Nasarawa States
- Continue health education in Carter Center's 173 intervention villages

Environmental Improvement
- Construct 6,500 household latrines in Plateau and Nasarawa States
- Assess the use of household latrines in Plateau and Nasarawa States

Antibiotics
- Intensify the possibility of receiving azithromycin through the International Trachoma Initiative so as to reduce the cost of treatment and to increase the number of persons benefiting from azithromycin distribution

Surgery
- To increase the number of trained lid surgeons
- To conduct more eyelid surgical camps/outreach

Other
- Possibility of Carter Center expansion to Katsina State
- CBM plans to conduct a trachoma prevalence survey in 3 states: Yobe, Kano and Jigawa
- Encourage collaboration with UNICEF, Water Aid and the Ministry of Education
- Provide potable water to endemic areas by partnership collaboration with local and international NGOs
- Create more awareness through media, community mobilization

Niger Trachoma Control Program

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

The Carter Center assistance to Niger is funded by the Conrad N. Hilton Foundation.

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, Christoffel Blindenmission, The Niger Association for the Blind, the African Muslim Agency, and the World Health Organization are also Task Force members.

Trachoma prevalence surveys conducted in 1997-1999, with financial assistance from the European Union and The Carter Center, 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. The highest prevalence of trachoma was identified in the regions of Zinder, Diffa and Maradi. The baseline assessment showed that about 50% of households had access to clean water within 1 km, and about 14% of households had access to a latrine. The national baseline prevalence of clean faces in children aged 1-10 years was 52%.

Program achievements in 2005

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 2005. To carry out community health education, 308 volunteers, including community health workers and teachers were trained in trachoma prevention. From 1999 through 2005, there has been a steady increase in the number of villages reached by the program with health education (see graph, page 14).

To broaden the reach of the program's educational campaign throughout Niger, health education messages are produced and broadcast on local radio stations. Radio listening groups gathered in 50 villages to hear some of the 993 broadcasts that took place during the year. To reach persons without access to radio, artists and health educators performed theatrical dramas in large villages and weekly markets. The average proportion of children aged 1-9 years with clean face was 88%.

Environmental Improvement (E)

The Niger latrine promotion project began in 2002 to reduce populations of *Musca sorbens* in trachoma-endemic villages and to improve general hygiene. Latrine promotion is supported by the national program, The Carter Center, local Lions clubs, WAWI, and SAPTA (a local NGO). In 2005, the ensemble of partners assisted the

program to build 7,940 household latrines (7,056 of which were built with Carter Center support), a 48% increase from 2004. This figure for 2005 includes the construction of traditional latrines built by communities as a result of health education increasing demand. In addition, 59 blocks of public latrines were built, 365 women were trained in traditional soap manufacture, and 172 masons were trained in latrine construction. The Niger program also benefited from the construction of 121 new water points, while 75 village water committees were formed in 2005. Decision-makers were sensitized in water provision in trachoma-endemic districts.

Surgery (S)
In 2005, the program retrained 10 trichiasis surgeons and distributed new trichiasis surgical kits to rural clinics. Overall, 6,500 individuals received corrective surgery for trichiasis in 2005. From 1999 through 2004, a total of 20,766 people have received corrective surgery for trichiasis (see graph, page 14). Challenges to the delivery of surgical activities included the demands of cost-recovery for health clinic activities; competing, non-trachoma related activities such as national polio immunization days; as well as the irregular supervision of the trichiasis surgeons.

Antibiotics (A)
A total of 2,429,500 persons in 4,438 trachoma-endemic villages received azithromycin during mass distribution campaigns in 2005. In addition, 60,781 persons were treated with ophthalmic tetracycline ointment.

Targets for 2006
Facial Cleanliness and Health Education (F)
- Achieve 80% of children with clean face
- Train 252 women in traditional soap-making
- Train 30 village hygiene committees

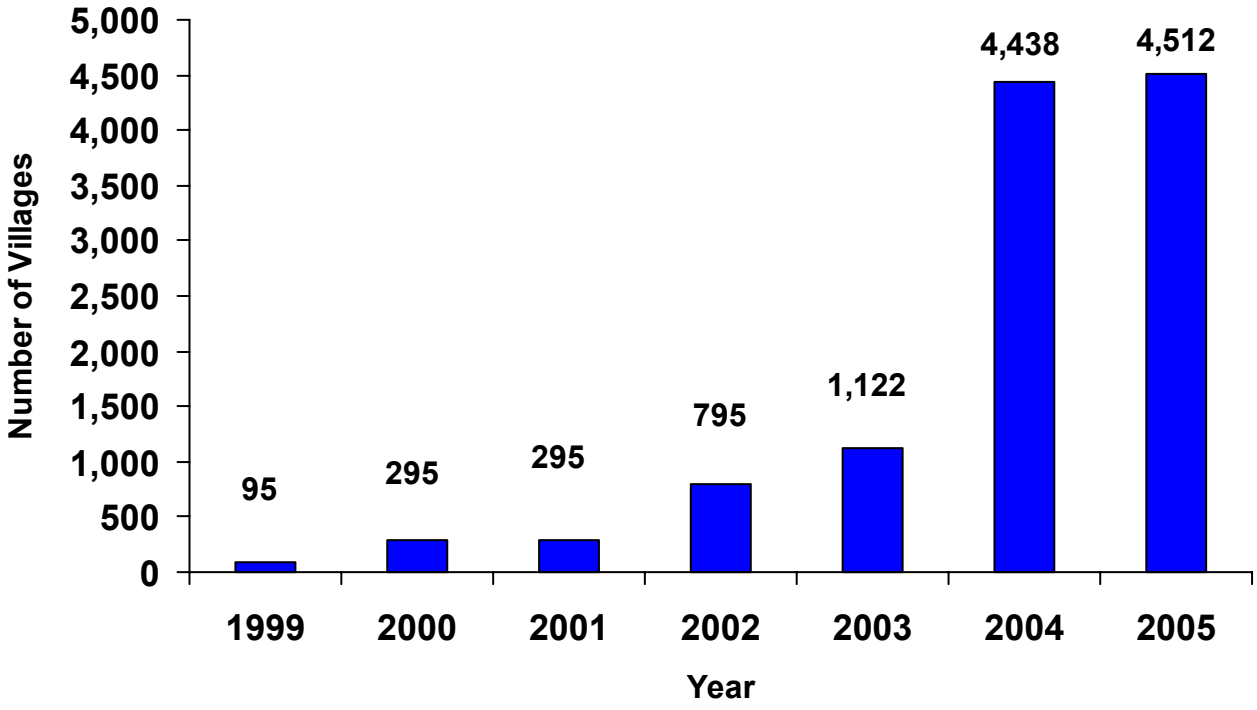
Environmental Improvement (E)
- Train 250 village masons and 30 water point repairmen
- Build 8,400 household latrines and 60 blocks of school latrines
- Build 43 new water points and repair 70 water points

*Antibiotic*s
- Treat 4,393,525 persons with azithromycin in mass treatment campaigns

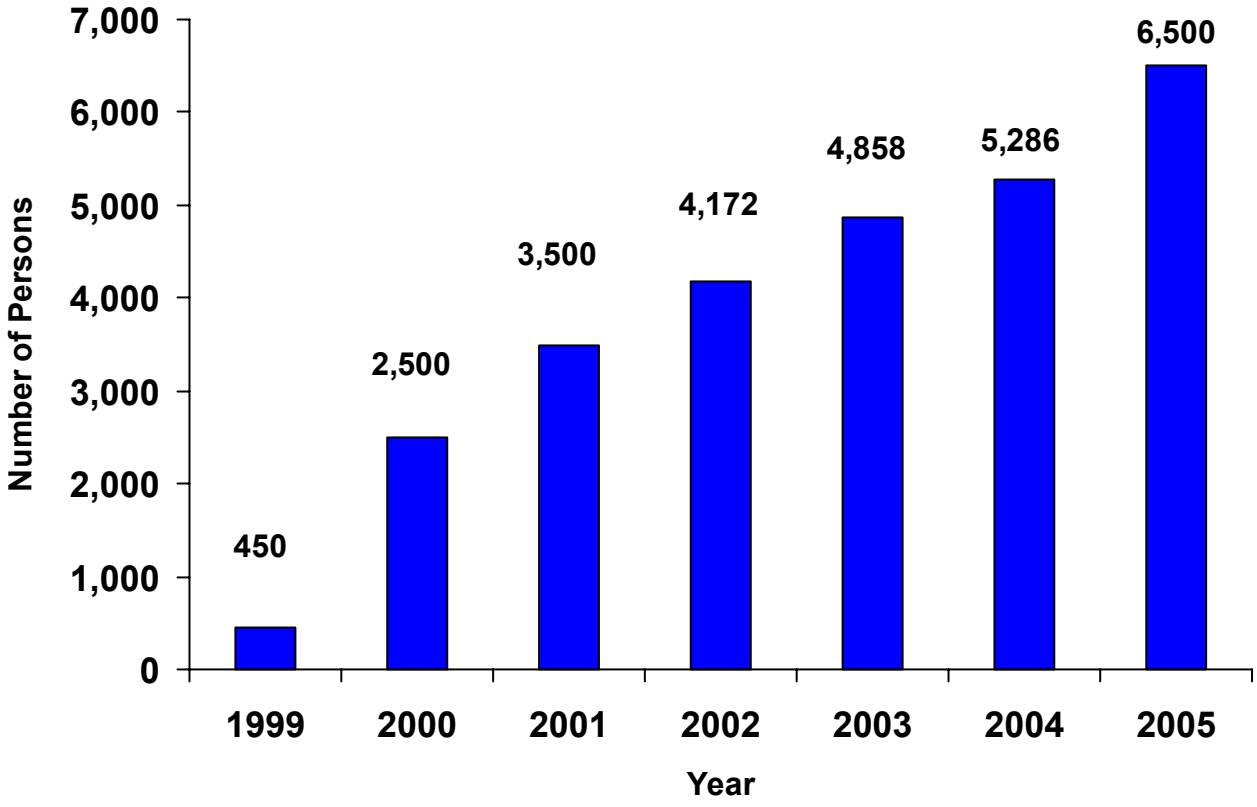
Surgery
- Train 66 additional trichiasis surgeons
- Do corrective eyelid surgery on 10,580 individuals (3,399 in health facilities and 7,181 in outreach camps)

General Targets
- Conduct a study on the quality of trichiasis surgery
- Expand trachoma control activities to 4 new districts: Mayahi and Dakoro (Maradi region), Maïné and N'Guigmi (Diffa region)

Villages Receiving Health Education, Niger



Individuals Receiving Trichiasis Surgery, Niger



Ghana Trachoma Control Program

Presented by Dr. Maria Hagan, Head of Eye Care, Ghana Health Service and Dr. Daniel Yayemain, Trachoma Program Manager, Ghana Health Service

Carter Center assistance to Ghana is funded by the Conrad N. Hilton Foundation.

Background

Trachoma is the third leading cause of blindness in Ghana, after cataract and glaucoma. A trachoma rapid assessment done in July 1999 established that blinding trachoma exists in only the Northern and Upper West Regions and helped to prioritize trachoma-endemic villages for treatment and prevention activities. 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 Ghana program began implementing the SAFE strategy in 5 districts from 2000-2002 and expanded to a sixth district in 2003. To facilitate expansion to include all trachoma-endemic sub-districts in 2004, the program did a trachoma prevalence survey of 551 communities in the two regions. Based on these findings, the program expanded to 681 communities, covering all known endemic districts in the country.

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.

Background on Intervention Activities

In 2001, the Ghana program began training frontline workers including teachers, environmental health officers, community health workers and village volunteers. Social mobilization activities included one-on-one and group health education presentations and discussions, radio spots and programs, mobile video shows, community theater, and durbars. A total of 2,657 frontline workers have been trained to do education activities in trachoma-endemic communities. Frontline workers have been taught to identify and refer trichiasis patients for surgery to increase uptake. Health education materials, such as flipcharts, picture books for radio learning groups, and posters have been developed with the assistance of The Carter Center.

In 2002, The Carter Center supported the launching of radio learning groups in 20 communities in the Wa District of the Upper West Region. The radio learning groups were well-accepted by the target communities who organized to discuss hygiene and health issues after listening to health broadcasts. They were given Freeplay wind-up radios to be able to listen to educational broadcasts on trachoma and hygiene. In 2003, latrine construction and installation of water points were also done in some trachoma-endemic villages with support from International Trachoma Initiative, The Carter Center, and other partner organizations.

Program Achievements in 2005

Facial Cleanliness and Health Education (F)

In 2005, 823 villages benefited from ongoing trachoma health education. Approximately 39,924 household education sessions and 5,073 community education sessions were conducted by frontline trachoma workers. Radio listening groups are active and functioning well; 100 clubs with at least 20 members each in the Northern Region and 12 clubs with at least 25 members each are active in the Upper West Region. A total of 600 health educators were trained in 26 districts.

Environmental Improvement (E)

In 2005, Carter Center shifted focus to meet the increasing demand for household latrines in Ghana and to support the national program's aim to construct 5,000 household latrines per year. A new latrine promotion strategy was presented by Dr. Hagan (see special session summary) that hopes to reach the 'poorest of the poor' in endemic communities. In this first year of increased support of latrine provision, The Carter Center supported construction of 273 of the 3,828 latrines built in support of the program aims. In addition, 834 boreholes or hand dug wells were provided to trachoma-endemic communities. Provision of water is supported by WaterAid, World Vision Ghana, Unicef, West African Water Initiative, USAID, and the Church of Christ.

Surgery (S)

The key activities for trichiasis surgery in Ghana include: creating awareness; case identification and registration during systematic active case searching, passive case identification, community- and facility-based surgery, and follow-up on operated persons. In 2005, 1,146 persons received trichiasis surgery. The Ghana program has found that systematic house-to-house case searching improves case detection and registration. Surgery acceptance is high when performed in the individual's own community and positive testimony from satisfied patients increases acceptance by nearby communities. The trichiasis backlog at the program's inception was estimated to be 13,200; current backlog estimates are 10,000 people.

Antibiotics (A)

In 2005, 740,884 individuals were reached with mass azithromycin distribution and 12,697 were reached with tetracycline eye ointment. The Ghana trachoma control program has found that community recognition of azithromycin as a safe and effective drug increases its acceptance. The program has also found that the active involvement of

chiefs and volunteers in activities coupled with the motivation of Red Cross donated bicycles has improved the process of organizing activities in communities.

Summary of program achievements in SAFE, 2001-2005

	2001	2002	2003	2004	2005
Number of TT patients operated	336	421	383	951	1,146
Number of persons receiving azithromycin	71,438	101,174	163,931	292,715	740,884
Number of persons receiving tetracycline	6,292	6,668	9,785	15,101	12,697
Number of household latrines constructed	14	206	791	1,141	3,828

Targets for 2006

Facial Cleanliness and Health Education (F)

- Train and retrain 1,200 health workers on trachoma control
- Train and retrain 4,000 volunteers
- Continue to support 200 radio listening clubs
- Produce and broadcast 48 radio messages
- Print 5,000 educational materials
- Produce video documentaries in 2 languages

Environmental Improvement (E)

- Construct 200 potable water sources
- Construct 5,000 household latrines

Surgery

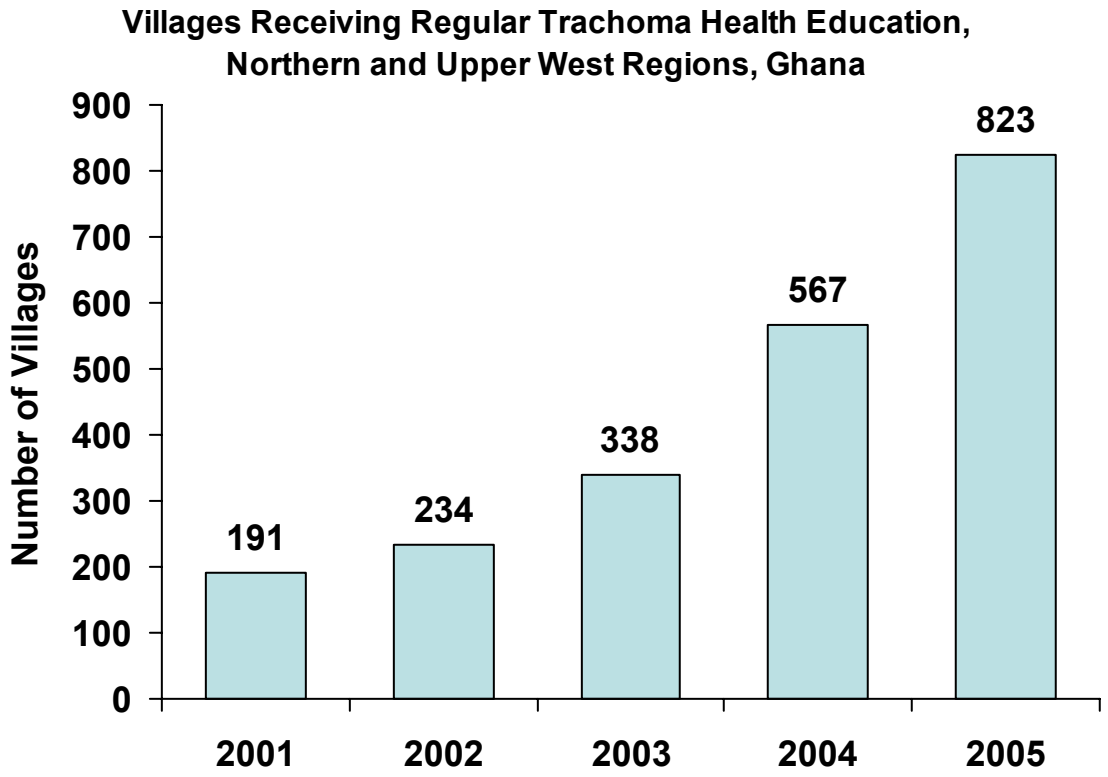
- Detect and operate 1,500 people with trichiasis
- Train and retrain 650 teachers and 130 environmental health workers on identification of trichiasis

*Antibiotic*s

- Distribute antibiotic to 1,650,000 people

Other

- Conduct a baseline trachoma prevalence survey in Upper East Region



The Ghana Trachoma Control Program, with support from the Conrad N. Hilton Foundation, The Carter Center, and the Freeplay Foundation, promotes latrine construction and health education through community radio.

Mali Trachoma Control Program

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

Carter Center assistance to Mali is funded by the Conrad N. Hilton Foundation.

Background

Surveys of blindness in Mali between 1980 and 1990 showed the major causes of blindness to be cataract (45%), trachoma (25%), and glaucoma (9%). 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%.

A National Prevention of Blindness Program was established in Mali 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 International President, Jim Ervin. Trachoma knowledge, attitudes, and practices surveys conducted in Koulikoro Region in 1996 and 2000 provided baseline sociological data for the development of health education strategies and materials. The national program currently operates in four regions of the country: Kayes, Koulikoro, Ségou and Mopti. (The Carter Center is assisting mainly in Ségou.) A national 5-year plan finalized in 2005 is still awaiting official government approval. This is expected to coincide with the approval and launch of Vision 2020 activities in Mali.

In Mali, health education activities are carried out through multiple channels: by rural radios, primary schoolteachers, environmental health agents, village educators, NGO supervisors and field officers, and during village gatherings such as naming ceremonies and weddings. In 2003, new trachoma health education strategies and materials (documentary film, video, radio tapes and a comic book) were developed with support from Johns Hopkins University, including a logo and slogan for the educational campaign and a training manual. In order to reach large numbers of persons at risk for trachoma, the program also developed radio and television campaigns to broadcast information about trachoma and its prevention. Trachoma education has also been included in primary school curricula in Mali.

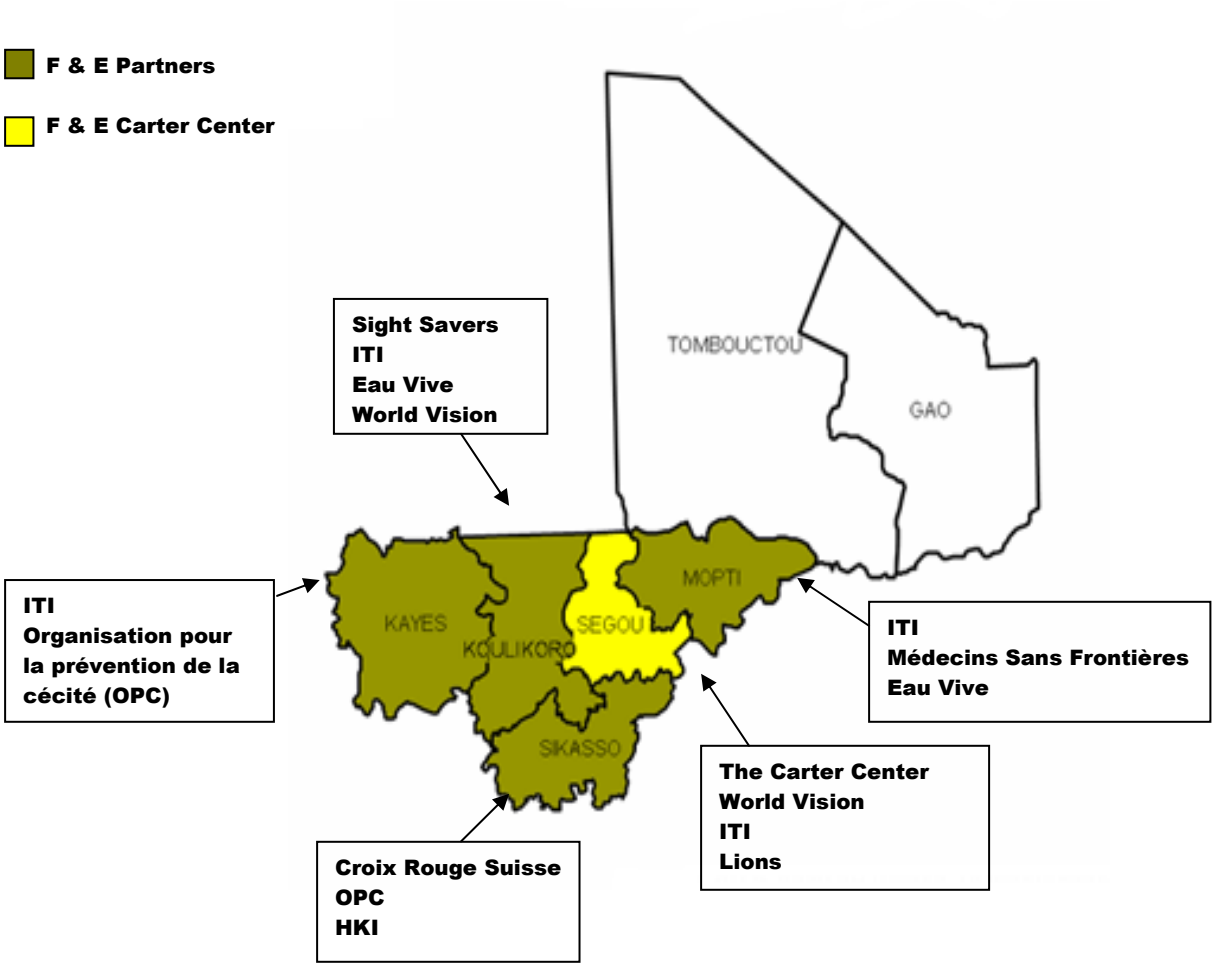
In 2003, the Mali National Division of Hygiene and Trachoma Control Program began household latrine promotion in Kayes and Ségou regions with assistance from the International Trachoma Initiative (ITI) and The Carter Center. A national survey found that in 2001, 23% of households did not have a latrine across Mali (30% in rural areas).

A 1997 estimate showed the backlog for trichiasis surgery to be 85,700 persons. Since 1999, 15,150 persons have been operated (18% of backlog). Trichiasis surgery is conducted in 5 fixed locations throughout Mali, as well as during routine rural outreach

and rural trichiasis surgery campaigns. The main partners supporting surgery in Mali include: ITI, Sight Savers International, Organisation pour la Prévention de la Cécité, Swiss Red Cross, Médecins Sans Frontières Luxembourg, and Helen Keller International.

Since 2001, the Malian program has distributed Pfizer-donated azithromycin in mass treatment campaigns. Distribution currently takes place in Kayes, Koulikoro, Mopti (Bandiagara and Bankass districts) and Ségou (Tominian district) regions.

Map: Mali and the partners supporting trachoma control activities



Program achievements in 2005

Facial Cleanliness and Health Education (F)

The Carter Center supported ongoing health education in 548 villages in 2005. Rural radios broadcasted trachoma health education messages—a total of 60 radio broadcasters were trained in trachoma control. To strengthen routine hygiene education, a clean village competition took place among targeted endemic villages. The Mali program also trained a variety of people in trachoma health education and community mobilization techniques including: 1,088 village volunteers (30% of which are women), 136 teachers, 100 teacher trainers, and 313 health workers.

Environmental Improvement (E)
There continues to be a higher demand for household latrines than the Mali program can meet. In 2005, 12,199 household latrines with Sanplat slabs were built in 895 villages (8,354 of which were supported by The Carter Center), along with 10 blocks of school latrines. To increase local capacity, 538 village-based masons were trained in latrine construction and equipped with tools. Other partners working in latrine promotion include: World Vision, Islamic Relief, UNICEF, WaterAid, Plan International Mali, CREPA Mali and Lions Clubs in Mali.

Water provision in endemic communities is supported by the Ministry of Water and NGO partners such as Helen Keller, World Vision, Eau Vive and Islamic Relief. A total of 103 villages benefited from new water sources from World Vision/WAWI. An additional 647 modern water points were constructed and 108 were repaired.

Surgery (S)
In 2005, 5,872 persons were operated, which represents a 63% increase from 2004. The program cited difficulties with a lack of human resources to carry out surgery outreach in communities.

Antibiotics (A)
In 2005, the Mali program expanded antibiotic distribution to Ségou (Tominian district) and Mopti regions. A total of 14,642 village-based distributors were trained and community-based distribution of azithromycin reached a total of 3,575,000 persons. An additional 75,000 people received tetracycline eye ointment. For the first time, the Malian government contributed 72 million FCFA ($140,000) to facilitate drug distribution in 2005. A prevalence survey took place in Koulikoro region in 2005 after 3 years of antibiotic distribution (see special session summary).

Targets for 2006
Facial Cleanliness and Health Education (F)
- Train 1,000 village volunteers, 200 teachers, and 20 radio broadcasters in IEC
- Involve all rural radios in the national program's regions in the fight against trachoma
- Assist 10 women's groups in social mobilization

Environmental Improvement (E)
- Organize Trachoma Week in villages with high prevalence
- Organize village clean-up competitions
- Train 500 village masons in SanPlat slab construction
- Construct 15,000 household latrines, 10,000 of which in Ségou Region
- Build 10 blocks of public latrines
- Build 510 new water points and repair 1,015 old water points
- Train 100 water point repairmen

*Antibiotic*s (A)

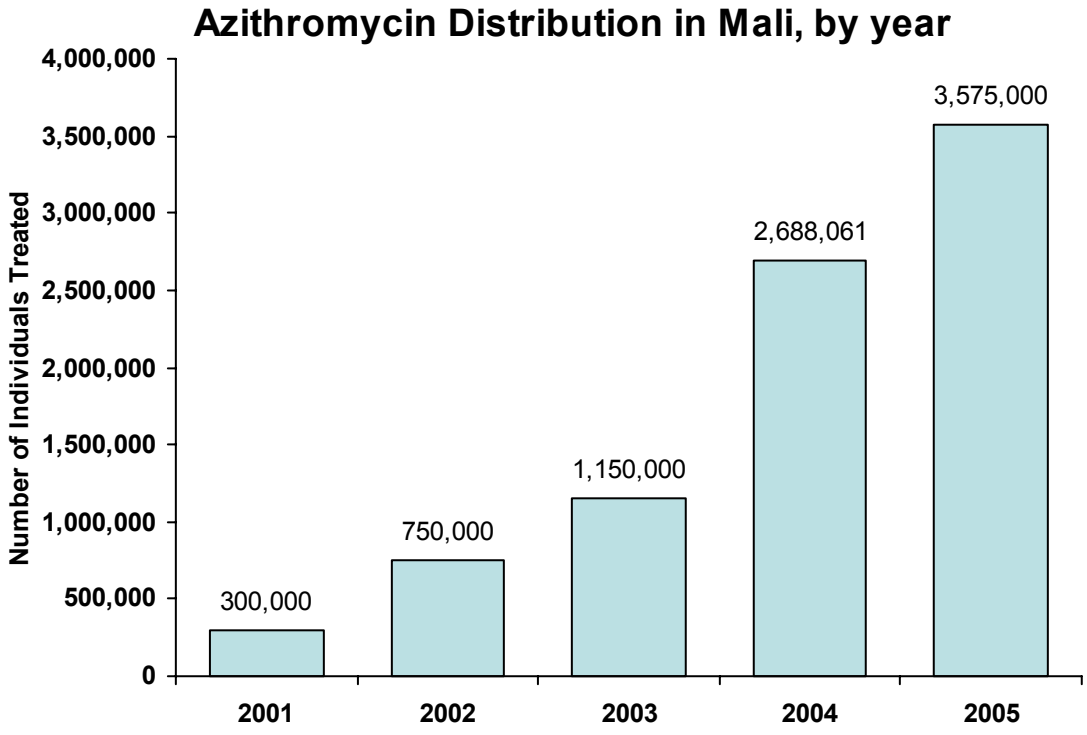
- Treat 3,877,261 people with azithromycin
- Treat 79,127 children with tetracycline eye ointment
- Create and equip 10 ophthalmic centers across the country

Surgery (S)

- Operate 8,000 persons with trichiasis
- Train and retrain 200 rural health nurses (infirmiers chefs de poste médicaux) in trichiasis surgery

Summary of SAFE intervention achievements, 1999-2005

	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Number of persons receiving TT surgery	1,500	2,500	2,500	4,150	4,500	2,758	5,872
Number of persons receiving azithromycin	0	0	300,000	750,000	1,150,000	2,688,061	3,575,000
Number of persons receiving tetracycline	0	0	0	0	0	0	75,000
Number of household latrines built	0	0	0	0	1,577	3,327	12,199
Number of household latrines built with Carter Center support	0	0	0	0	477	2,646	8,354



Sudan Trachoma Control Program: Government of Sudan

Presented by Dr. Awad Hassan, National Trachoma Control Program Coordinator, Federal Ministry of Health, Government of Sudan

Carter Center assistance to Sudan is funded by the Lions-Carter Center SightFirst Initiative.

Background

Sudan is the largest country in Africa, with an area of about 2.5 million km^2. Sudan has been affected by civil war for 37 of the 49 years since independence in 1956. On January 9th, 2005, a peace agreement ended the 21-year civil war which had been the longest lasting war in Africa. Under the terms of the Comprehensive Peace Agreement, the country is now unique in that it has two governments: the Government of Sudan governs the 16 northern states; the Government of South Sudan the 10 southern states. Government of Sudan areas have a population of about 26 million, including 4 million internally displaced persons (IDP).

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 financial assistance from the Conrad N. Hilton Foundation and technical support from The Carter Center. 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.

These survey results, in part, led to the signing later that year of an agreement for the Lions-Carter Center SightFirst Initiative. 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 Government of Sudan (GOS) areas continue to be coordinated and monitored from Khartoum. In 2005, the program decentralized implementation of program activities to the state ministries of health and localities.

In Government of Sudan 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. 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, 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 new national

policy has established that incentives will not be paid to drug distributors.

Program Achievements in 2005

Two thousand five was a landmark year for the Government of Sudan Trachoma Control Program. After the program's transfer to the FMOH from the Academy of Medical Science and Technology, a national trachoma task force was created, state committees for prevention of blindness were established, and state blindness prevention coordinators were nominated. A November meeting of the WHO Eastern Mediterranean Region named Sudan a top priority country for trachoma control. The Federal Minister of Health targeted the year 2015 for the elimination of blinding trachoma in northern Sudan. Priority intervention states participated in a workshop in June to begin to elaborate action plans and a situational analysis was conducted by the national program with assistance from The Carter Center and International Trachoma Initiative in August.

A strategic planning workshop was held in December to begin establishing a five-year plan for intervention in Government of Sudan areas. This workshop identified 3 priority states for intervention after 2005: Northern State, Kassala State, and Khartoum State (IDP camps). The National Prevention of Blindness buildings underwent a complete renovation and will soon house all Blindness Prevention Programs. Finally, a Local Lions Club, the first ever in Sudan, was founded in northern Sudan in 2005.

Peter Kilima of ITI and Raymond Stewart of The Carter Center examine a window at the expanded Government of Sudan Prevention of Blindness program offices. The renovation is underway with support from The Carter Center and the Lions Clubs International Foundation.

Facial Cleanliness and Health Education (F)
Health education in Government of Sudan areas is conducted through a variety of channels. Village health educators use flipcharts to teach about trachoma prevention during house-to-house visits and during azithromycin distribution. Local media often broadcast health education messages through songs and plays on radio and television, and national newspapers also actively report on trachoma control.

Environmental Improvement (E)
Latrine construction continued to grow in 2005, with 1,156 latrines built in trachoma-endemic areas. The national program partners with existing organizations, using existing staff and infrastructure. Partners like Medair have also organized village-clean up days in some locations.

Surgery (S)
A total of 1,949 trichiasis surgeries were conducted in 2005 during 40 eye camps and surgical outreach that included surgery in internally displaced persons' camps in Khartoum State. A total of 43 new TT surgeons were trained in Bashair hospital, 25 of which are ophthalmic residents, 18 are surgical theater attendants.

Antibiotics (A)
In 2005, the Government of Sudan program decentralized drug distribution to the state ministries of health. Distribution takes place from house-to-house, and is conducted by community-selected distributors and supervisors. Although tetracycline distribution did not take place, the program distributed azithromycin to 132,755 persons in 2005, primarily in IDP camps in Khartoum State.

Targets for 2006
Facial Cleanliness and Health Education (F)
- Priority states (total population of 2.8 million) will receive trachoma education via mass media, schools, village health committees and community trachoma volunteers
- Develop, field test, and produce flipcharts and teaching material for use in schools and by village volunteers
- Conduct training of trainers for 5 community leaders
- Train 225 community health workers (one person per village)
- Develop a video about trachoma control
- Involve local singers and artists in trachoma control
- Work with the Ministry of Education and UNICEF to incorporate trachoma control in the primary school curriculum
- Integrate F & E education into primary health care programs that training primary health care workers in primary eye care

Environmental Improvement (E)
- Construct 2,000 household latrines and consider utility of communal latrines
- Advocate with other partners to focus household latrine construction on priority endemic areas
- Include WES/UNICEF in national and state task forces

Surgery (S)

- Operate 4,000 cases in priority areas of Khartoum IDP camps, Kassala and Northern states

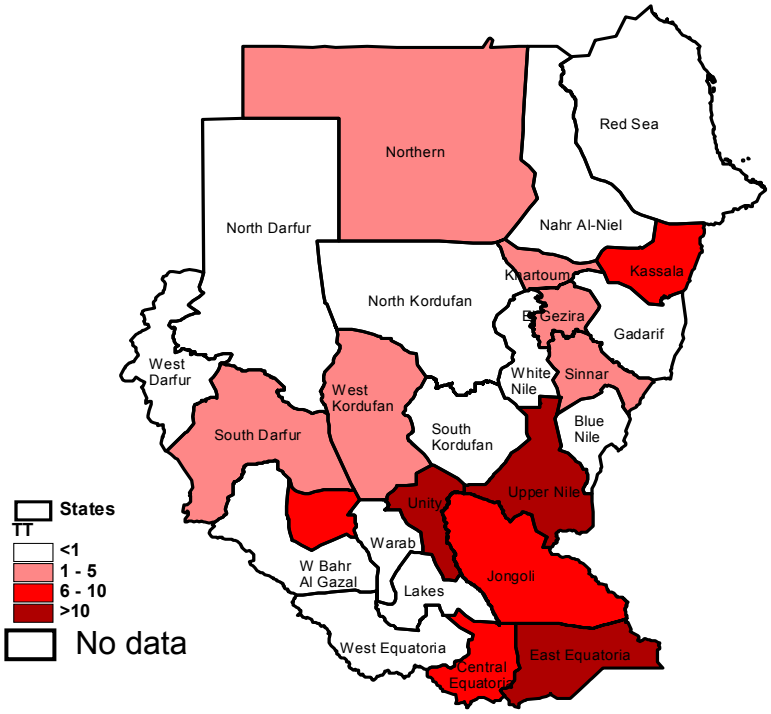
Antibiotics (A)

- Distribute 750,000 doses of azithromycin in priority areas of Khartoum IDP camps, Northern and Kassala states

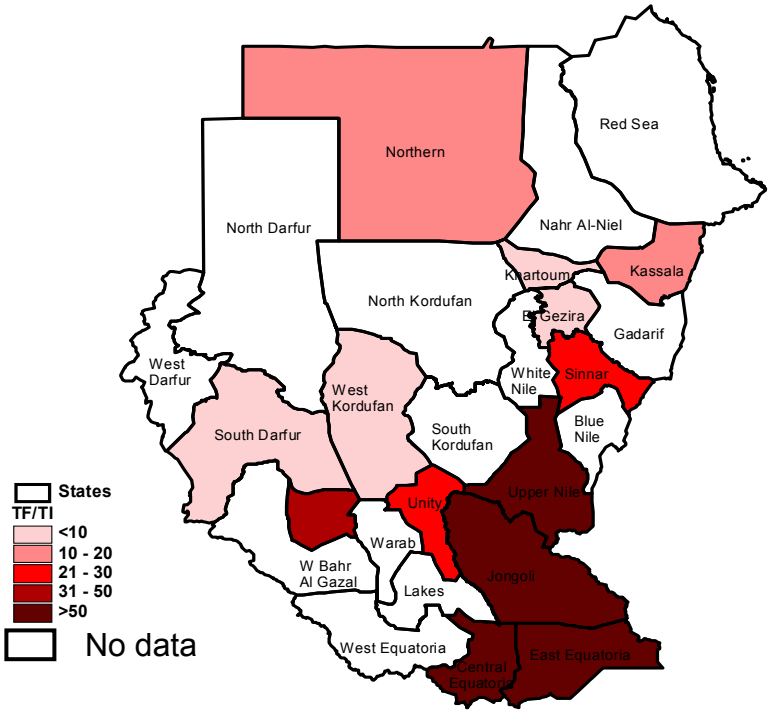
Other

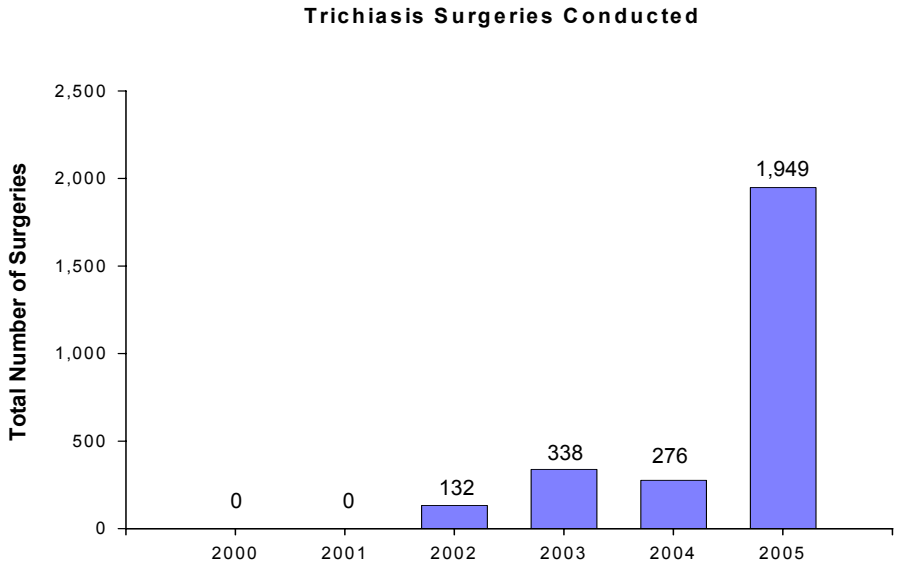
- Establish clear guidelines for trachoma control, including: health education , social mobilization, advocacy, and community-based drug distribution
- Continue to monitor and make supervisory visits to intervention areas
- Develop a data reporting system that gives data at all levels from village to state
- Coordinate with NGOs working in the program areas to hold regular interagency meetings
- Conduct trachoma prevalence surveys in 6 states: El Gezira, Sinnar, River Nile, White Nile, Blue Nile and Gadarif.

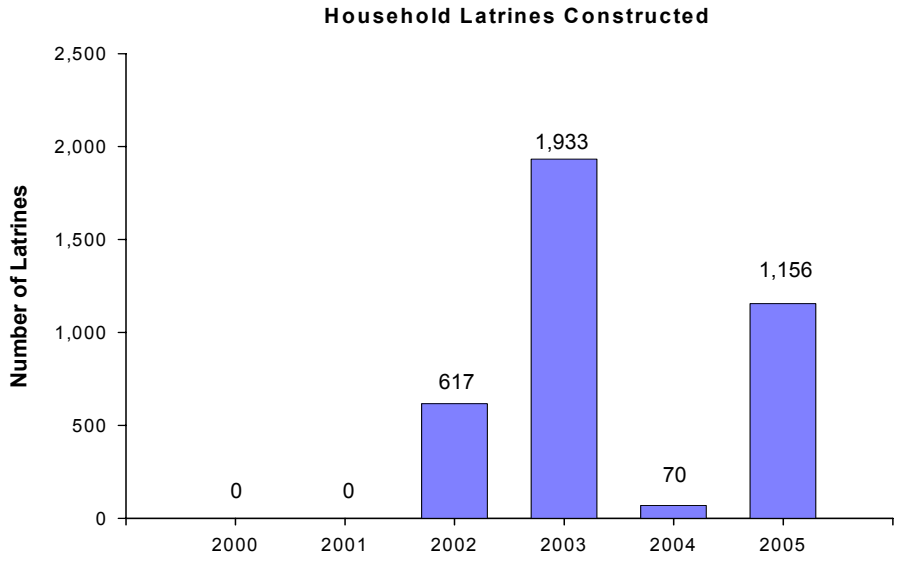
Map 1: Burden of trachomatous trichiasis in Sudan

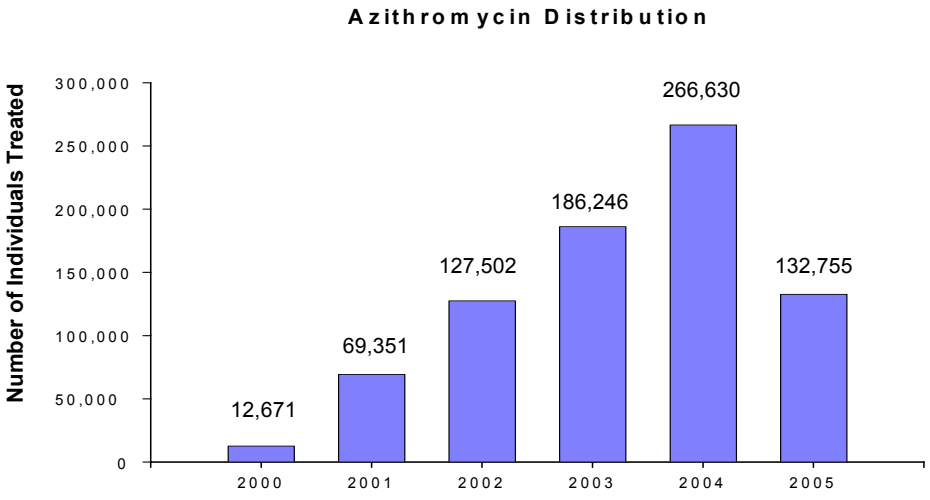


Map 2: Burden of active trachoma (TF and/or TI) in Sudan




Trichiasis Surgeries Conducted
Total Number of Surgeries
2,500
2,000
1,500
1,000
500
0
0
0
132
338
276
1,949
2000
2001
2002
2003
2004
2005


Household Latrines Constructed
Number of Latrines
2,500
2,000
1,500
1,000
500
0
0
0
617
1,933
70
1,156
2000
2001
2002
2003
2004
2005


Azithromycin Distribution
Number of Individuals Treated
300,000
250,000
200,000
150,000
100,000
50,000
0
12,671
69,351
127,502
186,246
266,630
132,755
2000
2001
2002
2003
2004
2005

Sudan Trachoma Control Program: Government of South Sudan

Presented by Mr. Ben Lopidia, Carter Center Trachoma Program Officer, South Sudan
The Government of South Sudan was represented by Dr. Samson Baba and Dr. Pius Subek, Ministry of Health, Government of South Sudan

Carter Center assistance to Sudan is funded by the Lions-Carter Center SightFirst Initiative.

Background

Sudan is the largest country in Africa, with an area of about 2.5 million km^2. Sudan has been affected by civil war for 37 of the 49 years since independence in 1956. On January 9th, 2005, a peace agreement ended the 21-year civil war which had been the longest lasting war in Africa. Under the terms of the Comprehensive Peace Agreement, the country is now unique in that it has two governments: the Government of Sudan governs the 16 northern states; the Government of South Sudan the 10 southern states.

Since 1989, humanitarian aid to southern Sudan has been carried out under the auspices of Operation Lifeline Sudan, a consortium of United Nations agencies and over 40 non-governmental organizations. The initial partners for trachoma control in southern Sudan began working with nongovernmental organizations in the Operation Lifeline Sudan (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 Government of South Sudan (GOSS) areas began its relocation from Nairobi, Kenya to Juba, Sudan in 2005.

The Government of South Sudan Trachoma Control Program operates in areas with extremely high prevalence of blinding trachoma, where trichiasis is found in children as young as 5 years old. The Carter Center supports work in 13 locations that have an estimated total population of 1 million persons. It is difficult for the program to gain access to those most at risk because of the insecurity in many areas. 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 who are hard to reach and at-risk for infection and eventual blindness.

NGO partners supporting trachoma control interventions in Government of South Sudan areas include: Adventist Development Relief Agency (ADRA), Christian Mission Aid (CMA), Sudan Medical Care (SMC), Tear Fund, ZOA Refugees Care, and Christoffel

Blindenmission.

Program Achievements in 2005

Facial Cleanliness and Health Education (F)

The trachoma control program in south Sudan has a multisectorial approach to health education. Health education strategies vary according to the location and NGO partners involved, but include participation of village volunteers, community leaders, trachoma supervisors, school teachers, women and church groups, and the water, hygiene and environmental sanitation sectors. In 2005, the program delivered health education on trachoma to 429 villages reaching a total population of 648,500. A total of 18 primary schools and 34 primary health care units also benefited from trachoma health education.

Environmental Improvement (E)

The program promotes ventilated improved pit latrines and in 2005 constructed a total of 269 latrines. Masons or artisans are trained during 10 days in latrine construction and are provided materials (cement, iron bars, digging tools, etc.) by the NGO partner. Communities provide locally-available materials such as sand and stones. In Upper Nile and Eastern and Northern Bahr el Ghazal plastic linings/drums or concrete linings are necessary for the pit due to the loose soil conditions. A total of 27 public or school latrines were also built in various locations.

Safe water sources are provided by various partners and may include: installation of new hand pumps, drilling new bore holes, rehabilitating broken hand pumps and protecting community hand-dug shallow wells. In 2005, 27 water points were built by the program's partners.

Surgery (S)

The estimated trichiasis backlog in south Sudan trachoma program areas is 36,000. This, however, may be only a small proportion of the actual backlog, as not all of the 90 counties in south Sudan have been surveyed. In 2005, the program facilitated 604 surgeries. An additional 9 new trichiasis surgeons were also trained.

Antibiotics (A)

The population at-risk of trachoma in Carter Center supported areas of south Sudan is 1,047,000. In 2005, 84,096 people received azithromycin and 22,435 received tetracycline.

Other

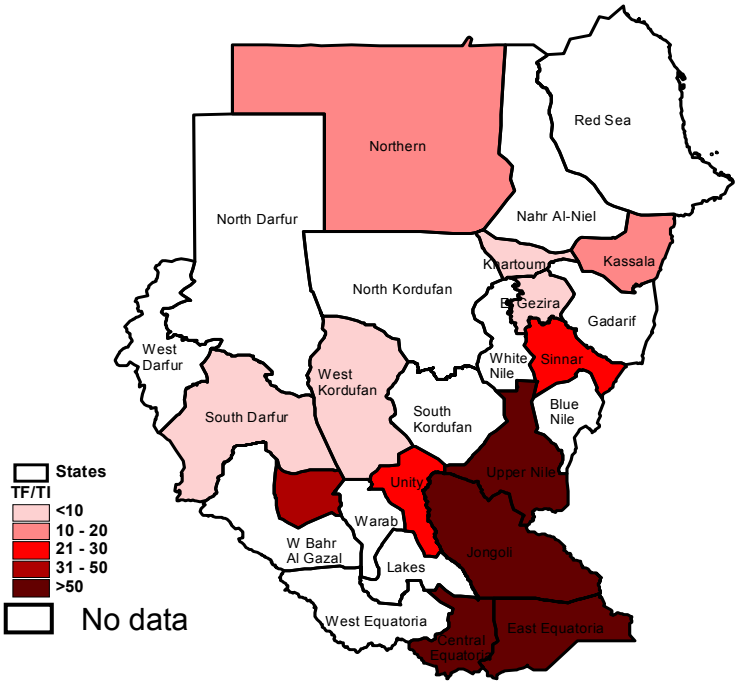
Baseline prevalence surveys were conducted in Mankien in 2005, as well as triennial impact assessment surveys in Tali, Padak, Katigiri and Kiech Kuon (see special session summary).

Targets for 2006

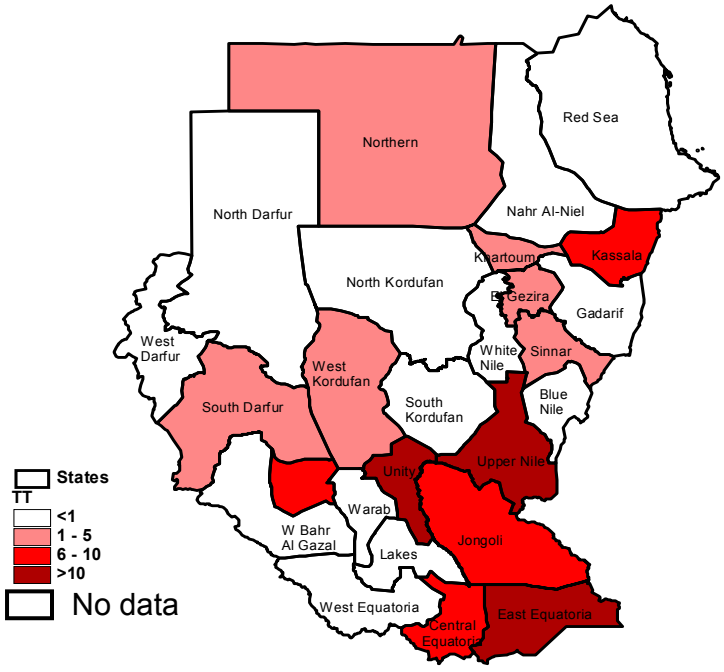
Facial Cleanliness and Health Education (F)

- Target 2,004 villages in existing areas with health education
- Train 1,000 health educators

Map 1: Burden of active trachoma (TF and/or TI) in Sudan



Map 2: Burden of trachomatous trichiasis in Sudan



Environmental Improvement (E)

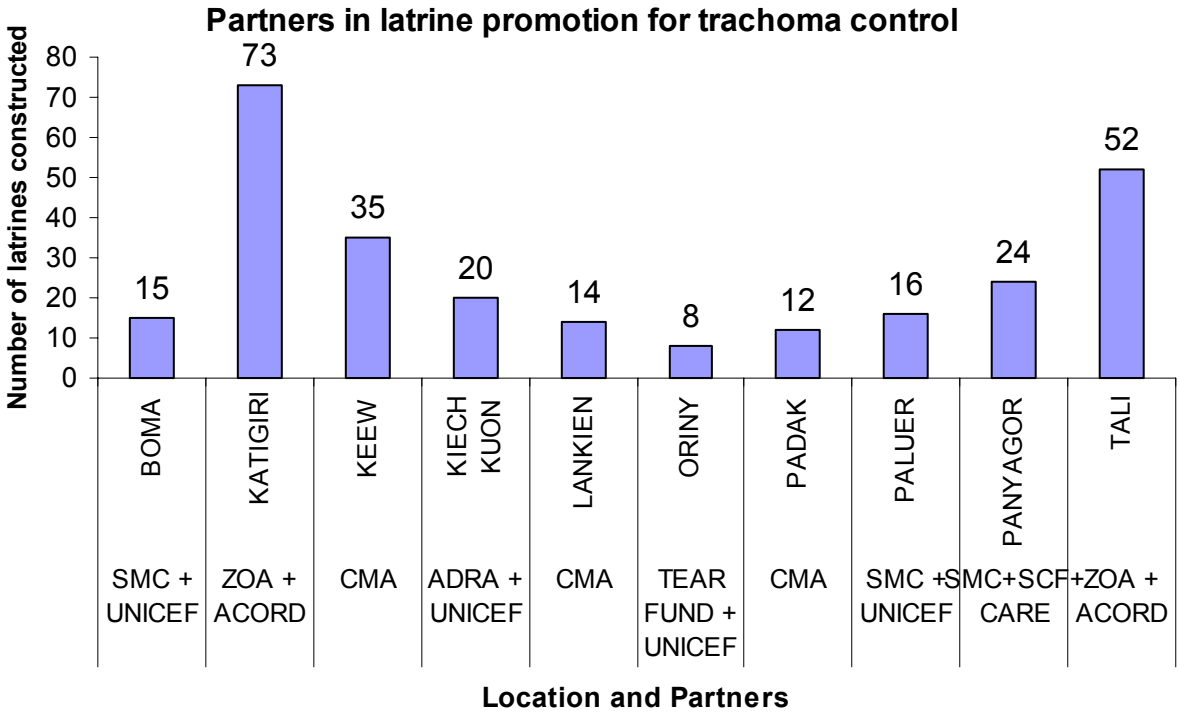
- Construct 1000 household and public latrines

Surgery (S)

- Train 100 new trichiasis surgeons
- Operate 26,450 people with trichiasis

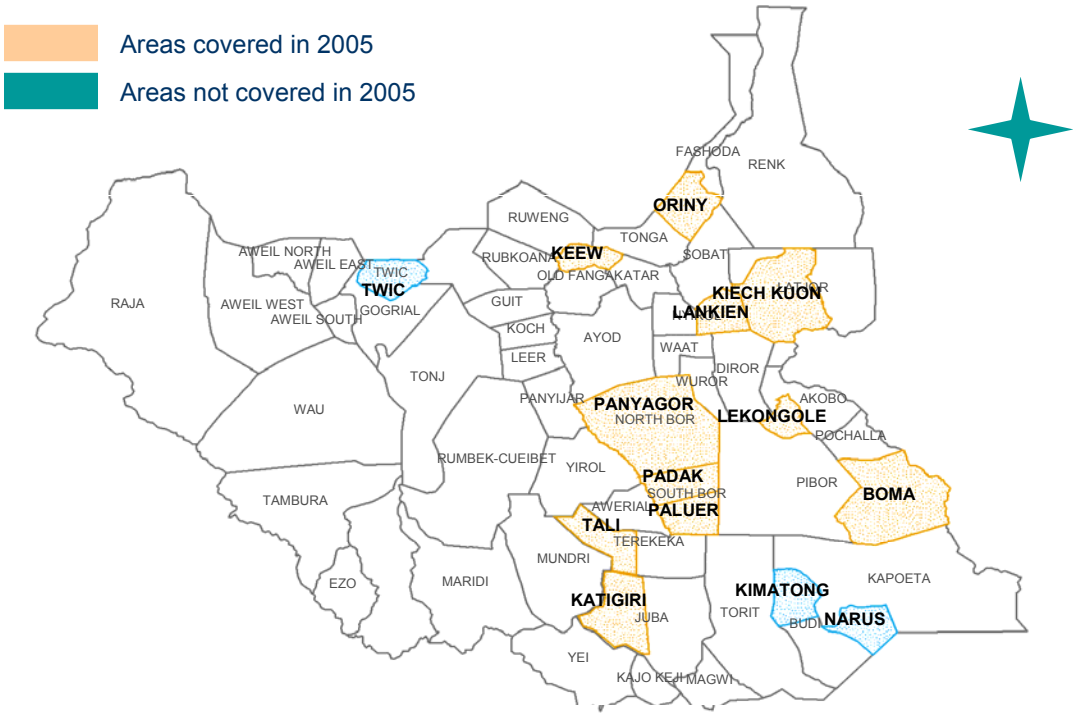
Antibiotic (A)

- Distribute azithromycin to 992,000 people
- Distribute tetracycline eye ointment to 660,000 people

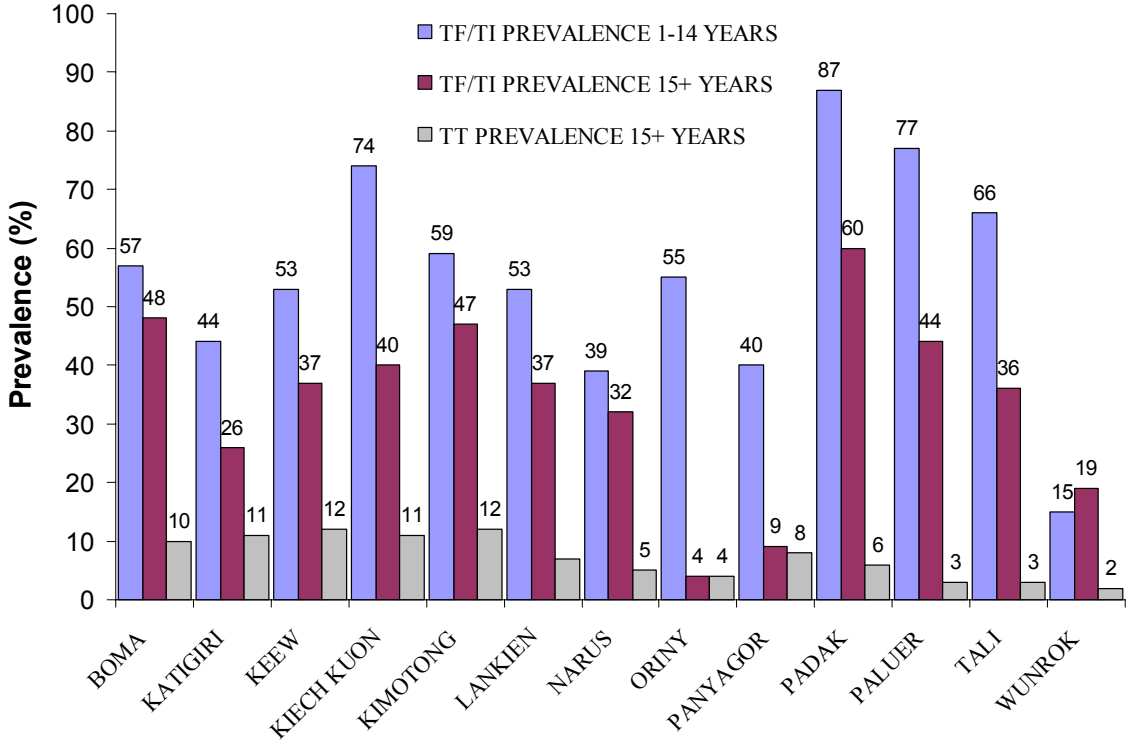


Pupils in a school in south Sudan in South Bor County.

Map 3: Government of South Sudan Program Areas



Prevalence of trachoma (TF/TI) and TT in program areas



Tanzania Trachoma Control Program

Presented by Dr. Edward Kirumbi, National Eye Care Program, Ministry of Health

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 (PPP) began between Pfizer, the International Trachoma Initiative and the Tanzania Ministry of Health, and distribution of Pfizer-donated azithromycin began in 6 districts. In 2003, The National Trachoma Control Program expanded considerably, as the SAFE strategy was integrated into 20 health district action plans. Through 2005, implementation of the SAFE components was expanded to a total of 40 districts, reaching a projected 10 million people. In general, the increased government commitment and community involvement have raised the visibility of the program.

In Tanzania, 50 districts are currently known to be trachoma-endemic. Two million children under 10 years old are suspected to have active disease and 12 million persons are at-risk of being infected. The backlog of adults over 40 years old needing surgery for trichiasis is estimated at 54,000. In 36 districts, the prevalence of TF is greater than 10 percent, indicating that they need the full SAFE strategy including azithromycin distribution. National trachoma baseline surveys that will examine all components of the SAFE strategy took place in 2005 in 30 districts.

The National Trachoma Task Force is made up of: the Ministry of Health Director of Preventive Services, the National Eye Care Program Coordinator, representatives from the Ministries of Education and Culture, Community Development, Gender and Children, Water and Livestock Development, Muhimbili University College of Health Sciences, Kilimanjaro Christian Medical Center/Tumaini University Eye Department, International Trachoma Initiative, Sight Savers International, Christoffel Blindenmission, and Helen Keller International. Additional partners involved in supporting the Tanzania Trachoma Control Program include: the Centre for Educational Development in Health Arusha, and the Kongwa Trachoma Project.

Program achievements in 2005

Facial Cleanliness and Health Education (F)

In 2005, 32,336 health education sessions were reported in 30 program districts. The Participatory Hygiene and Sanitation Transformation (PHAST) trainings to support F&E activities were implemented in 6 districts: Mpwapwa, Dodoma, Manyoni, Kilosa, Magu and Kondoa. Health education sessions are typically conducted in primary schools, maternal and child health clinics, and during community meetings and religious gatherings. IEC officers and trained primary school teachers conduct health education, and distribute posters and leaflets to endemic communities. In some districts, the child-to-child approach for hygiene education has been used. Trachoma control has been

incorporated into the primary school curriculum and has been piloted in Manyoni district by Helen Keller International.

Environmental Sanitation (E)
The program estimates that 53% of the population has access to a functional water source within 1 hour travel time or 1 kilometer. A 2004 report estimated that 70% of households use or have access to a latrine. However, the program cites challenges with cultural barriers to latrine use and construction in some target communities. The national rural water supply and sanitation program does not target trachoma-endemic districts. The program also mentions a lack of resources.

The national program promotes the use of Sanplat latrines in 11 of the 30 districts. Artisans are trained in latrine construction and cement and corrugated iron sheets are provided by partners for the construction of demonstration latrines, mainly in schools. Partners supporting the program in latrine construction include: Ministry of Water and the World Bank (through the National Rural Water Supply and Sanitation Program), UNICEF, Ministry of Health (through technical support and training of artisans), Water Aid (for technical support including training of artisans and monitoring), and EEPCO (training). Hygiene and Sanitation competitions have also been initiated by the Ministry of Health.

Water provision takes place mainly through advocacy through the national and district trachoma task forces. More than 200 villages in 11 program districts have benefited from new water sources including rainwater harvesting, piped water and borehole wells. Water supply is a priority area for funding under the debt relief funds. The program has participated in national Water Week, strengthening the partnership with the Ministry of Water, and participated in the development of a national strategy for hygiene and environmental sanitation in 2005.

Surgery (S)
The Tanzania program's main partners in trichiasis surgery are International Trachoma Initiative, Sight Savers International, Christoffel Blindenmission, Lions Clubs, and Helen Keller International. In 2005, the program reached 4,668 people with lid surgery—since 1999, the program has facilitated more than 15,500 surgeries. An additional 21 trichiasis surgeons were trained in 2005 also. Trichiasis surgery is conducted during eye camps and in communities and health facilities.

Antibiotics (A)
Antibiotic distribution in Tanzania is community-based using community health workers/community drug distributors throughout program districts. A total of 21 districts were targeted and the program adopted the CDTI approach for drug distribution. In 2005, a total of 4,990,733 persons received azithromycin.

2005	Target	Achievement	Percent Achievement
Population reached	10,781,632	10,781,632	100%
Surgeries- number of people	6,000	4,668	77.8%
Trichiasis surgeons trained	40	21	52.5%
Azithromycin distribution- Persons reached	5,517,021	4,990,773	90.5%
Health Education- Number of sessions	33,984	32,336	95.2%
Environment- Number of new latrines	20,000	390,000	1950%
Environment- Number of new water sources	363	304	83.7%

Program targets for 2006

Facial Cleanliness and Health Education (F)

- Conduct 50,000 health education sessions in intervention villages and schools

Environmental Improvement (E)

- Construct 80,000 latrines
- Construct 500 new water sources

Surgery (S)

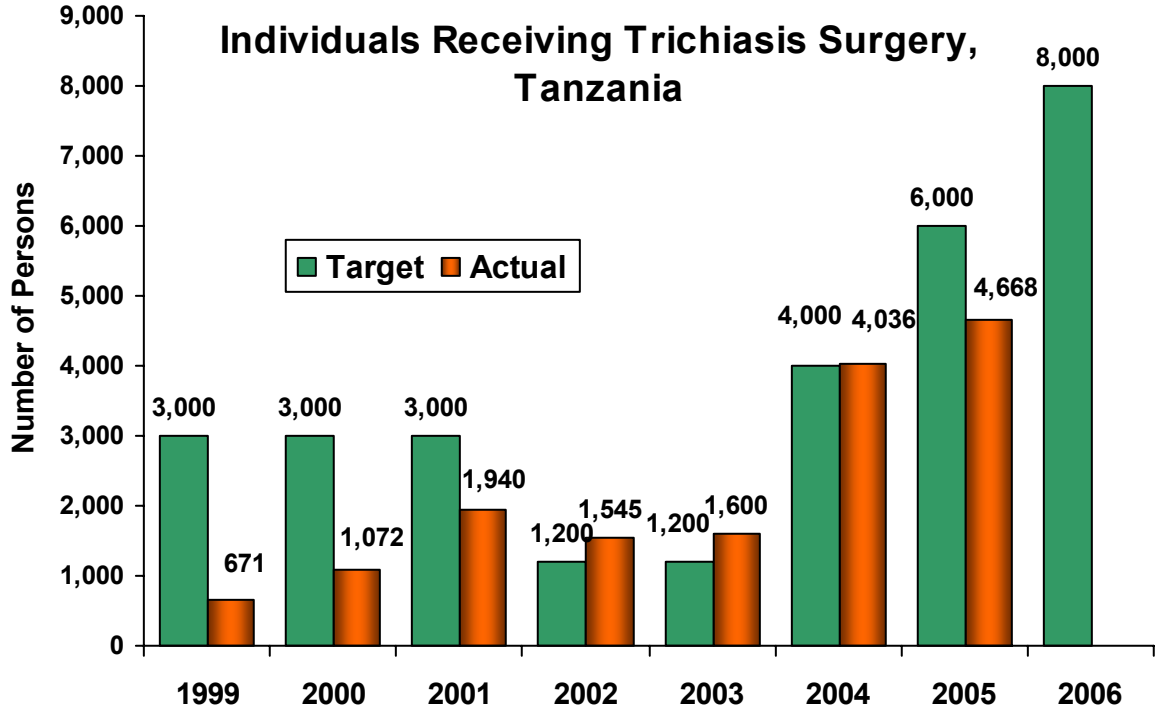
- Conduct 8,000 trichiasis surgeries

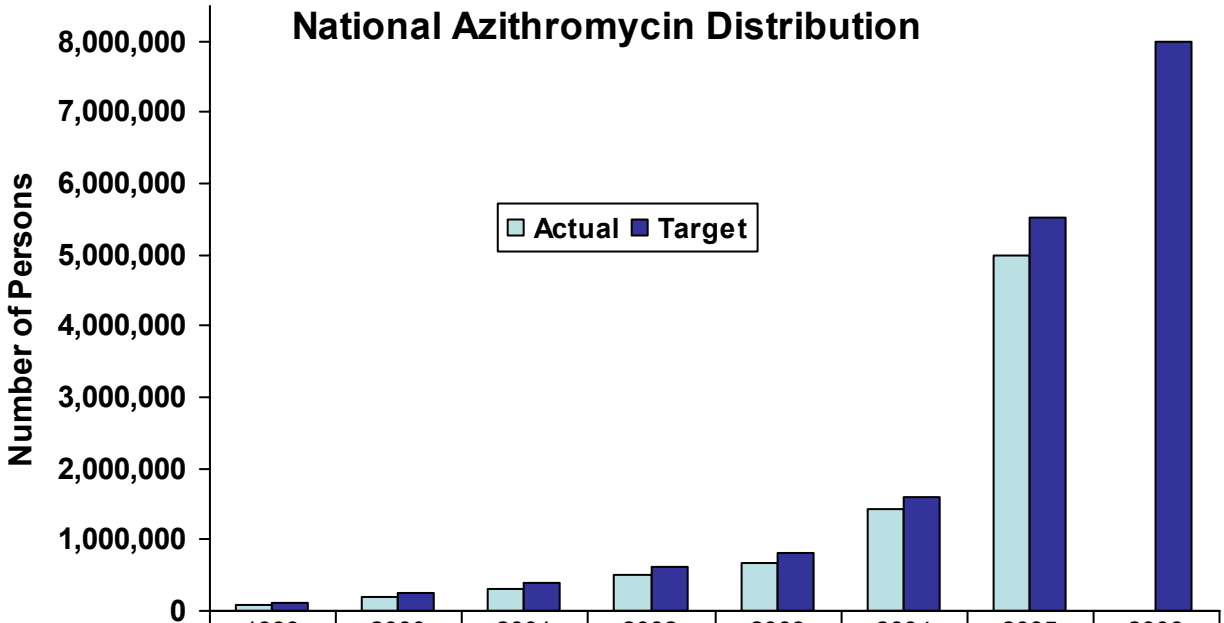
Antibiotic (A)

- Distribute 8 million doses of azithromycin to reach 36 districts

Other

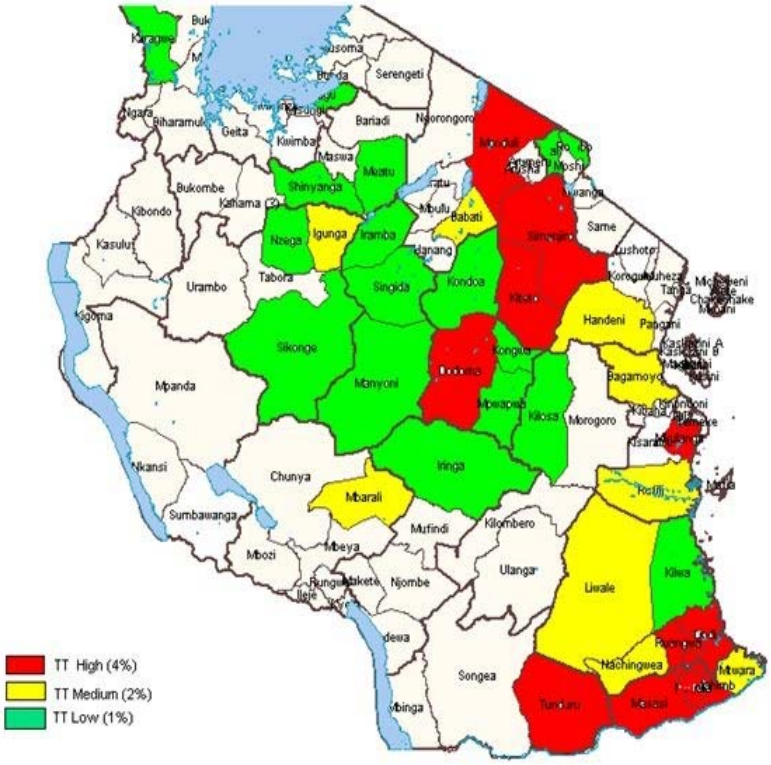
- Conduct a baseline survey of the remaining 10 districts to complete surveying of the 50 endemic districts



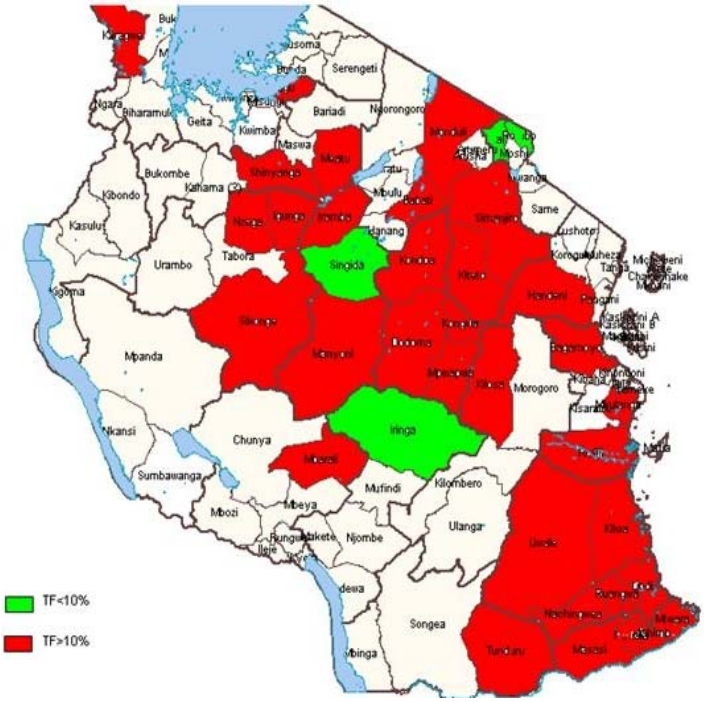


	1999	2000	2001	2002	2003	2004	2005	2006
Actual	70,839	209,578	310,671	517,700	663,178	1,427,563	4,990,733	
Target	107,791	264,195	390,361	624,030	800,000	1,600,000	5,517,021	8,000,000

Map 1: Tanzania showing TT prevalence by district



Map 2: Tanzania showing TF prevalence by district



Senegal Trachoma Control Program

Presented by Dr. Boubacar Sarr, National Eye Care Coordinator, Ministry of Health

Background

There is currently no specific national trachoma control program in Senegal. Trachoma control activities take place as part of the national blindness prevention program. Blindness in Senegal is estimated to be about 1.42%, with trachoma as the second cause of blindness after cataract. A national survey from 2000 found an average prevalence of TF/TI of 10.8% and an average prevalence of trichiasis of 2.6%. Trachoma control activities currently take place in the Diourbel, Tambacouda and Thies regions. A five-year plan was written in 2005, defining the program's priority regions to be Diourbel, Thies and Louga. Nationally, trichiasis surgery takes place at health posts, and the Trabut method is taught and used. Azithromycin distribution only takes place in priority regions. The F & E components of the SAFE strategy are supported only through advocacy to the Health Education and Public Health departments and through intersectoral collaboration.

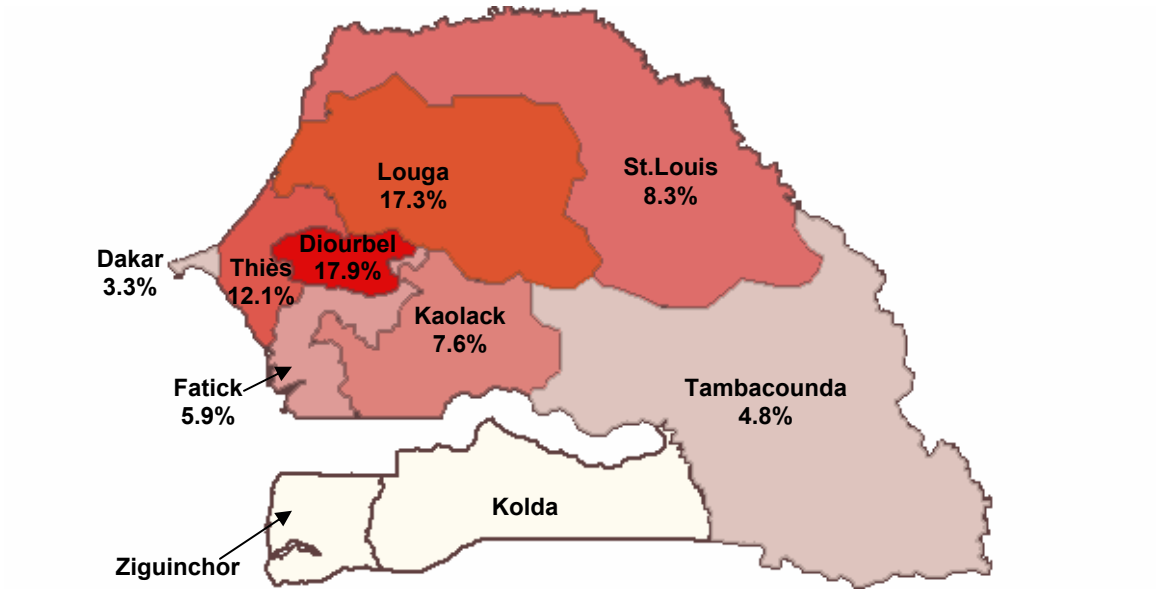
Program activities

The national blindness prevention program conducts lid surgeries in Diourbel and Tambacounda regions with support from the NGO Organisation pour la Prévention de la Cécité. Since 2001, 1,572 persons have received trichiasis surgery in the two regions. The ultimate intervention goal for surgery for Diourbel and Tambacounda are 14,5000 and 1,280 respectively. In the Thiès region, the program is supported by the International Trachoma Initiative in two districts: Tivaouane and Djourbel. A total of 1,891 persons have benefited from trichiasis surgery since 2004 in these districts. In 2005, Thies was the first region to benefit from mass azithromycin distribution. The districts of Tivaouane and Khombole distributed in 721 villages, reaching a total of 245,800 people.

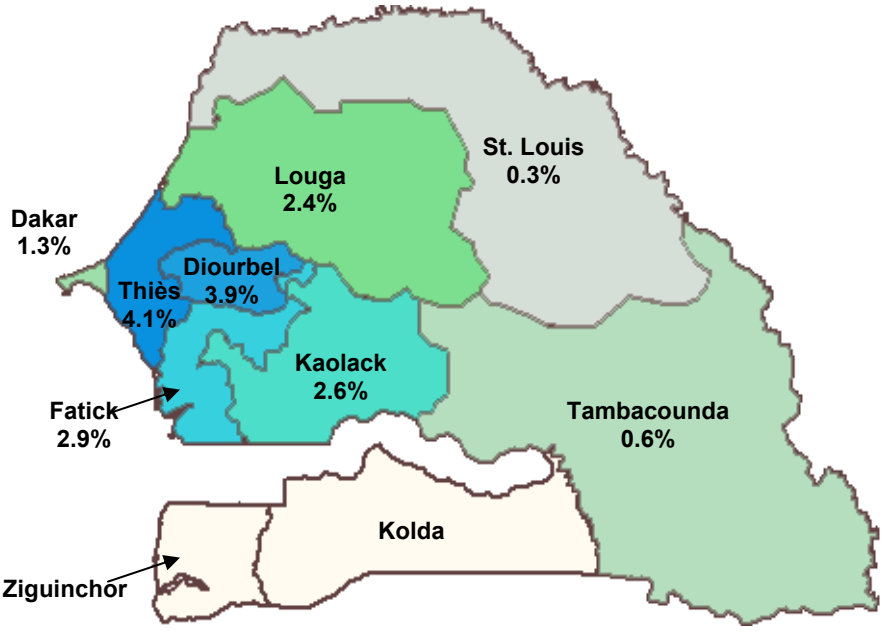
There are no concrete F & E activities taking place in Senegal as part of blindness prevention activities. An IEC plan was written for the Thies region in 2005, but has not yet been carried out. The program is challenged by a lack of resources and a minimal understanding of the burden of trachoma on behalf of the communities and the administrative authorities.

In general, active trachoma is less of a problem in Senegal compared to trichiasis, reflecting past decades' epidemiological situations. In 2006, the program plans to expand to two additional districts and has the objective of distributing 476,701 doses of azithromycin.

Map 1: Active trachoma in Senegal among children 1-9 years old, from 2000 national survey



Map 2: Trichiasis in Senegal among adults older than 14 years old



*Surveying is not yet possible in the Casamance (Ziguinchor and Kolda regions) due to civil unrest.

Morocco Trachoma Control Program

Presented by Dr. Jaouad Hammou, National Prevention of Blindness Program, Ministry of Health, Kingdom of Morocco.

Background

The Kingdom of Morocco has an estimated population of 30 million persons with a population of 680,000 at risk of trachoma. It is divided into 37 provinces, of which 5 in the south-east are trachoma-endemic (Errachidia, Figuig, Ouarzazate, Tata, and Zagora). While the Ministry of Health does not have a specific trachoma control program, activities take place through the National Blindness Prevention Program. Trachoma activities have been conducted in three phases in the 20 districts that make up the 5 endemic provinces: Phase I from 1999-2001, Phase II from 2001-2004, and the current Phase III from 2005-2007. An evaluation of Phases I and II took place in December 2004. Prevalence surveys in 2004 showed a reduction in trachoma prevalence from the 1999 estimates. The 2004 survey also allowed the program to identify districts where trachoma interventions should be focused and to calculate ultimate intervention objectives for each of the SAFE strategy components.

The Moroccan Program for the Prevention of Blindness interacts and collaborates with the national Ministry of Health (Program of Maternal and Child Health, Program for School and University Health), Governmental Departments (Ministries of Education, Social Affairs, Equipment, and the National Office for Potable Water), as well as numerous nongovernmental associations (Hassan II Ophthalmologic Foundation, Helen Keller International, International Trachoma Initiative, Moroccan Red Crescent) and with general civil society through other local development associations. Coordination of the trachoma program takes place through national, provincial and local blindness prevention committees.

Facial Cleanliness and Health Education

Trachoma prevention is part of the curriculum for school teachers and prevention of blindness in taught in primary schools. The program aims to have more than 80% of children under 10 years old with clean faces.

Environmental Improvement

According to a 2003 survey, 100% of the target population has access to potable water within 1 hour travel time or within 1 kilometer, and 55-83% of households uses or has access to a latrine. Access to potable water before the program was established was approximately 40%.

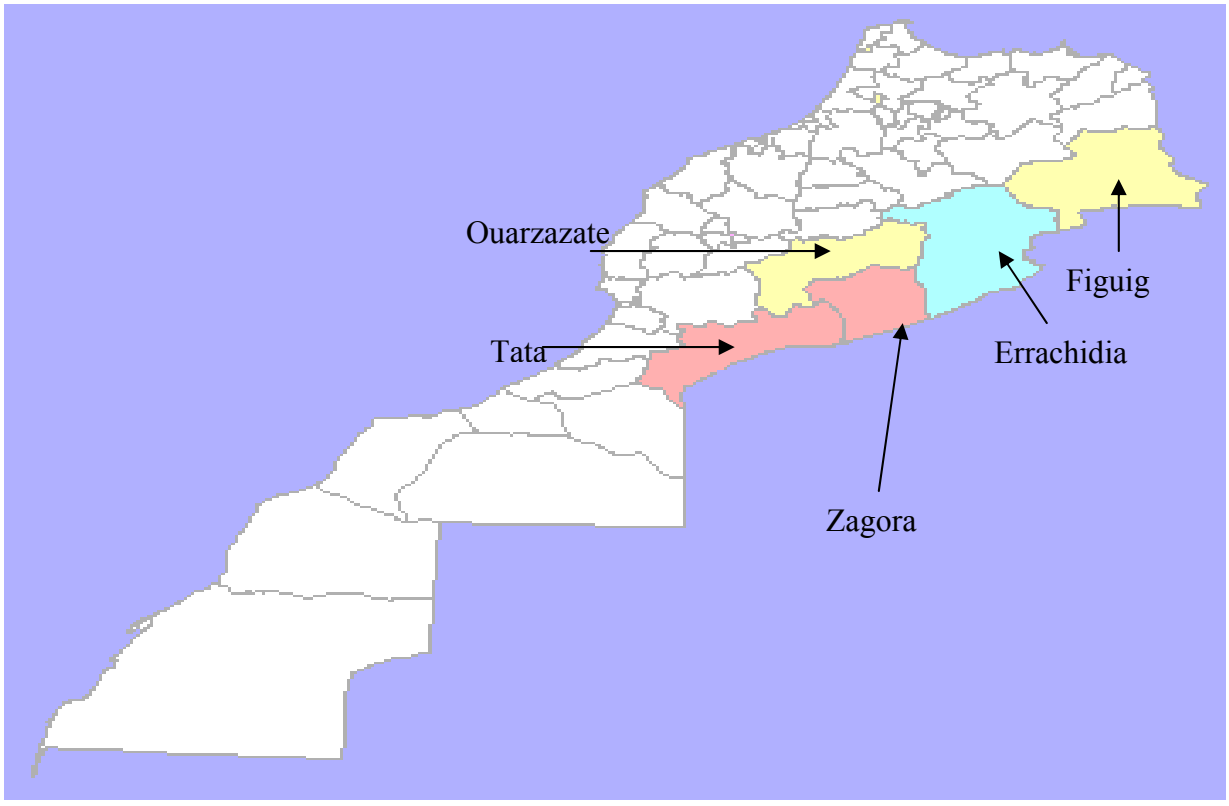
Surgery

Trichiasis surgery takes place in fixed surgical centers, during routine surgical outreach campaigns, and during trichiasis surgery campaigns with the support of ophthalmologists from the Hassan II Ophthalmologic Foundation. In 2005, 7,389 persons received trichiasis surgery.

Antibiotic
In 1997, the national program introduced azithromycin distribution for trachoma control. Using data from the 2004 prevalence survey, the program has used mass antibiotic distribution in the Agdez district of Zagora where TF prevalence remains above 10% and switched to target household distribution in Arfoud, Zagora (urban), Agdez (urban), and Zagora district. Individual treatment takes place in other districts. The program has an active screening and treatment campaign for active trachoma. The antibiotic coverage rate is about 80%.

Way Forward
During its 2006-2008 phase, the Morocco program plans to put in place an epidemiological surveillance system to follow prevalence of both TF and TT through sentinel surveillance, comprehensive screening, and through surveys and studies. The program has achieved elimination criteria, but seeks to sustain its accomplishments in eliminating blinding trachoma with support from the government and its partners.

Map of Morocco with 5 Intervention Provinces



Mauritania Trachoma Control Program

Presented by Dr. Sidi Ely Ahmedou, Coordinator, National Trachoma Control Program

Background

Mauritania has an estimated population of 3 million, with a total area of more than 1 million km^2. From 1986 to 1991, the Mauritania Blindness Prevention Program was headed by Dr. Chassot Adrar, and was supported by a Swiss NGO and Helen Keller International. At that time, education on blindness prevention took place in schools by educating teachers as health educators. A trachoma brochure was published and distributed during this period. From 1991-2000 activities were postponed as limited partnerships were available.

In 2000 the French NGO, *Organisation pour la Prevention de la Cécité,* supported the first national trachoma prevalence survey which found some endemic locations but a low prevalence of trichiasis (lower than the WHO threshold for intervention). In 2004, the Blindness Prevention Program established a partnership with the International Trachoma Initiative, Lions Clubs International Foundation and the Bouamatou Foundation. Together they prepared a five-year strategic plan for eliminating blinding trachoma from 2006-2010.

Program Activities

Facial Cleanliness and Health Promotion:
To promote the F component of the SAFE strategy, the national program has organized sensitizing workshops to educate and motivate NGOs, the media, and administrative leaders in trachoma control. The program has produced posters, banners, stickers, television and radio spots, and comic books to promote trachoma control.

In 2005, the national program felt the need to train the IEC department of the Ministry of Health, specifically educating MOH staff about the burden of trachoma in Mauritania. The national program also conducted a knowledge, attitudes and practices survey in Brakna, Assaba, Tagant examining behaviors and environmental conditions.

Environmental Improvement
The national program supports the E component of the SAFE strategy through work in schools and through community-level social mobilization. Efforts are focused on latrine promotion programs in schools and in training teachers in trachoma prevention. A trachoma module has been included in the primary education curriculum. Community-level social mobilization takes place through the efforts of hygiene committees and community health workers. Together they mobilize community leaders through group discussions and information received via radio to make improvements necessary to control trachoma in their communities.

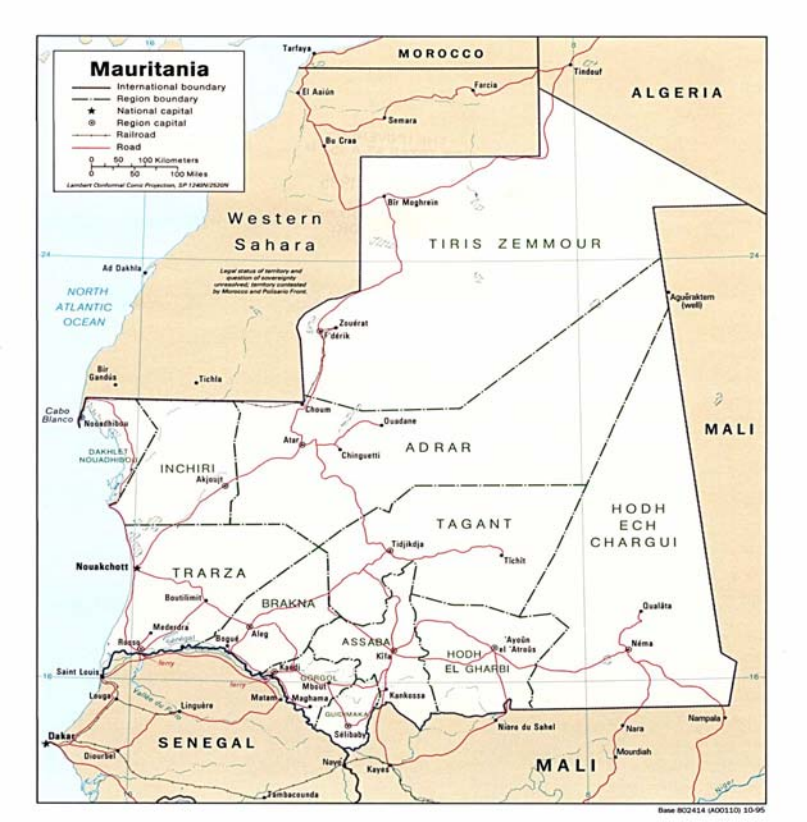
The Ministry of Water is the main partner responsible for water provision in endemic communities. A 10-year plan for water provision (2006-2015) has been written in

partnership with the African Development Bank and the World Bank. In 2006-2007, 120 localities will receive new water points and 49 water points will be rehabilitated.

Surgery:
There is a very low prevalence of trichiasis in Mauritania. The main strategy to address the TT backlog of about 2,000 cases is to have mobile teams with 5 trainers and 15 trichiasis surgeons. In 2005, the program achieved 235 lid surgeries. In 2006, the program plans to operate 2,000 cases through both fixed and mobile surgery teams.

Antibiotics
In 2004, 103,000 doses of azithromycin and 4,995 doses of tetracycline were distributed in the regions of Adrar and Tagant. The program distributed 470,753 doses of azithromycin and 15,985 of tetracycline in 5 wilayas and 17 moughataas in 2005, achieving 80.4% of their target. With support from the Bouamatou Foundation, the program plans to reach 662,000 people with azithromycin in 2006.

Map 1: Mauritania



Kenya Trachoma Control Program

Presented by Dr. Ambrose Ooko Misore,
Head of Preventative and Promotive Health Services, Kenyan Ministry of Health

Background

Kenya has a national population of approximately 33 million, of which 41% are between 0 and 14 years of age. About 66% of the population is found in rural areas, and 50% live below the poverty line. There are an estimated 250,000 blind and 750,000 with low vision. Trachoma accounts for an estimated 19% of blindness and is thought to be endemic in 18 districts, affecting 6 million people along the Rift Valley. There is currently no specific trachoma control program established in Kenya, with control activities taking place within the primary health care/primary eye care system.

Surveys

Prior to 2004, there were no accurate national data on trachoma prevalence in Kenya. The only information available was through outpatient registers. In June-July 2004 the first phase of a national trachoma prevalence survey took place in 6 districts (Kajiado, Narok, Baringo, West Pokot, Samburu, and Meru North), surveying a total population of 2,279,839. This survey found that trachomatous trichiasis was a public health problem (prevalence greater than 1%) in all six districts surveyed. Four of the six districts were found to have prevalence of active trachoma (TF) greater than 10% in the entire district (Kajiado, Narok, West Pokot, Samburu). The two other districts (Meru, Baringo) were found to have active trachoma only in some sub-locations.

Intervention Plans

A proposal for 2 years of intervention in the surveyed districts has been accepted by the International Trachoma Initiative. The Ministry of Health will continue to integrate trachoma control activities into the primary health care system. District-wide implementation of SAFE will begin in Kajiado district, with AMREF and CBM as leading partners of the National Blindness Prevention Program. The program has received a commitment from ITI/Pfizer for azithromycin for Kajiado and will commence mass distribution using the directly observed treatment methodology in 2006. It is expected that the program will expand to other trachoma endemic districts in the coming years.

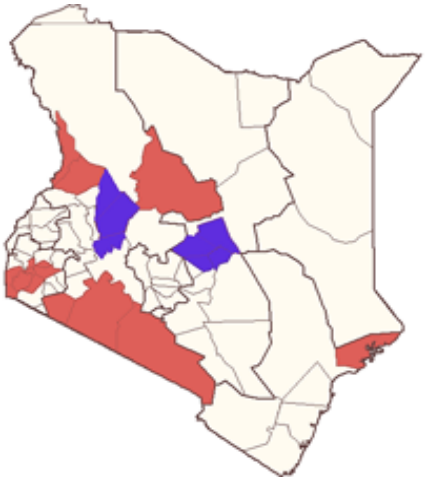
Future plans

The future plans of the Kenyan Blindness Prevention Program include:

- Conducting phase 2 and 3 of the national trachoma prevalence survey
- Establishing an integrated and coordinated Kenya Trachoma Control Programme
- To establish a national trachoma task force under the leadership of the Ministry of Health

Map 1: Kenyan districts believed to be endemic with trachoma

Map 2: 2004 Prevalence Survey Results



Legend

TF is a public health problem in the entire district (prevalence >10%)

TF is a public health problem only in some sub-locations

Map 3: 2004 Survey results

Legend

TT is a public health problem in all the six districts

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

National data as reported for 2005 at the Seventh Annual Program Review, Addis Ababa, February 23-February 25, 2006

	Ghana	Mali	Niger	Sudan		Ethiopia	Nigeria	Totals
				GOS†	GOSS‡			
F & E								
Number of villages with hygiene education	823	895	4,512	31	429	654	173	**7,517**
Villages targeted	2,600	4,500	4,438	*	1,589	654	*	**13,781**
Percent coverage	31.7%	19.9%	101.7%	*	26.2%	100.0%	*	**54.5%**
Number of household latrines constructed	3,828	12,199	7,940	1,156[1]	269[1]	144,750[1]	5,958[1]	**176,100**
Target for household latrines	5,000	5,000	8,400	*	269	278,966	2,000	**299,635**
Percent coverage	76.6%	244.0%	94.5%	*	100.0%	51.9%	297.9%	**58.8%**
Antibiotics								
Azithromycin								
Treatments	740,884	3,575,000	2,429,500	132,755	84,496	2,618,488	1,737	**9,582,860**
2005 Target	814,154	3,899,282	2,593,320	750,000	247,000	4,047,950	7,700	**12,359,406**
Percent coverage	91.0%	91.7%	93.7%	17.7%	34.2%	64.7%	22.6%	**77.5%**
Tetracycline								
Treatments	12,697	75,000	60,781	N/A	22,435	256,048[1]	25,102	**452,063**
2005 Target	16,935	79,577	48,342	N/A	40,000	*	*	**184,854**
Percent coverage	75.0%	94.2%	125.7%	*	56.1%	*	*	**N/A**
Surgery								
Surgeries	1,146	5,872	6,500	1,949	604	22,097[1]	6,096	**44,264**
2005 Target	1,500	10,511	7,560	2,050	6,260	113,639	*	**141,520**
Percent coverage	76.4%	55.9%	86.0%	95.1%	9.6%	19.4%	*	**31.3%**

† Government of Sudan (GOS)

‡ Government of South Sudan (GOSS)

[1] Carter Center-supported only, national data not available.

* Data not presented

Table 2. National Trachoma Control Program Annual Targets 2006 (Carter Center-assisted countries)

As presented at the Seventh Annual Program Review, Addis Ababa, February 23-February 25, 2006

	Ghana	Mali	Niger	Sudan		Ethiopia	Nigeria	Total
				GOS	GOSS			
Facial cleanliness & Environmental change								
Health education (villages)	**	500	**	225	2,004	654	**	**3,383**
Household latrines to construct	5,000	15,000	8,400	2,000	1,000	257,483	**	**288,883**
Water sources to construct or repair	200	1,525	113	**	**	120	**	**1,958**
Antibiotic								
Azithromycin mass distribution (persons)	1,650,000*	3,877,261	4,393,525*	**	992,000	3,800,000	**	**14,712,786**
Tetracycline ointment distribution (persons)	**	79,127	**	**	660,000	320,960	**	**1,060,087**
Surgery								
Persons for trichiasis surgery	1,500	8,000	10,580	**	26,450	38,097	**	**84,627**

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

Table 3. Summary of Carter Center-Supported Interventions, by country 1999-2005

	Indicators	Ghana	Mali	Niger	Sudan		Ethiopia	Nigeria	Total
					GOS***	GOSS***			
S	Number of people operated for trichiasis	N/A**	N/A**	N/A**	1,031	5,574	94,557	N/A**	**101,162**
	Number of new trichiasis surgeons trained	N/A**	N/A**	N/A**	43	37	180	N/A**	**260**
A	Number people treated with azithromycin	N/A**	N/A**	N/A**	52,464	84,096	2,406,072	N/A**	**2,542,632**
	Number of people treated with tetracycline ointment	N/A**	N/A**	N/A**	N/A	23,035	432,979	N/A**	**456,014**
F	Number of villages with ongoing health education*	823	548	482	31	800	654	173	**3,511**
	Number of new persons trained for health education	7,760	13,253	3,561	225	1,026	10,127	1,443	**37,395**
	Clean faces (%) 1-9 years old*	89.10%	82.6%	87.90%	N/A	80.20%	62.90%	80.50%	**80.50%**
E	Number of household latrines built	1,066	12,577	11,781	N/A**	269	237,330	8,249	**271,527**
	Number of public latrines built	N/A	42	5	N/A	27	N/A	1	**75**
	Number of new masons trained	N/A	1,307	382	N/A	N/A	N/A	270	**1,959**

*Data for 2005

**Carter Center support in Niger, Nigeria, Mali, and Ghana is focused exclusively on F & E intervention activities. 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 South Sudan

Figure 1. Villages Receiving Health Education, Carter Center-Assisted Countries

National program data as presented for January - December 2005

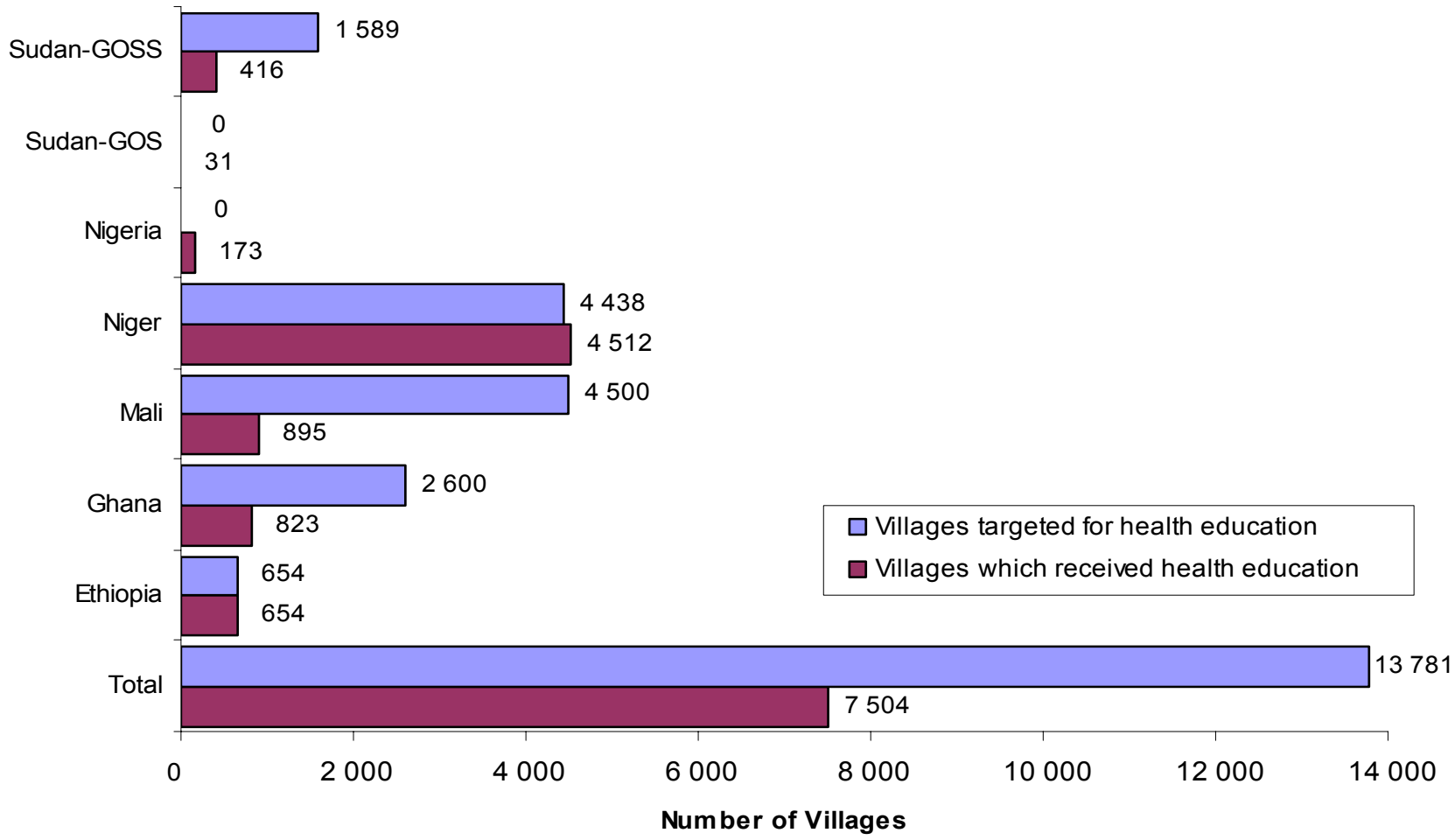


Figure 2. Household Latrines Built, Carter Center-Assisted Countries

National program data as presented for January - December 2005

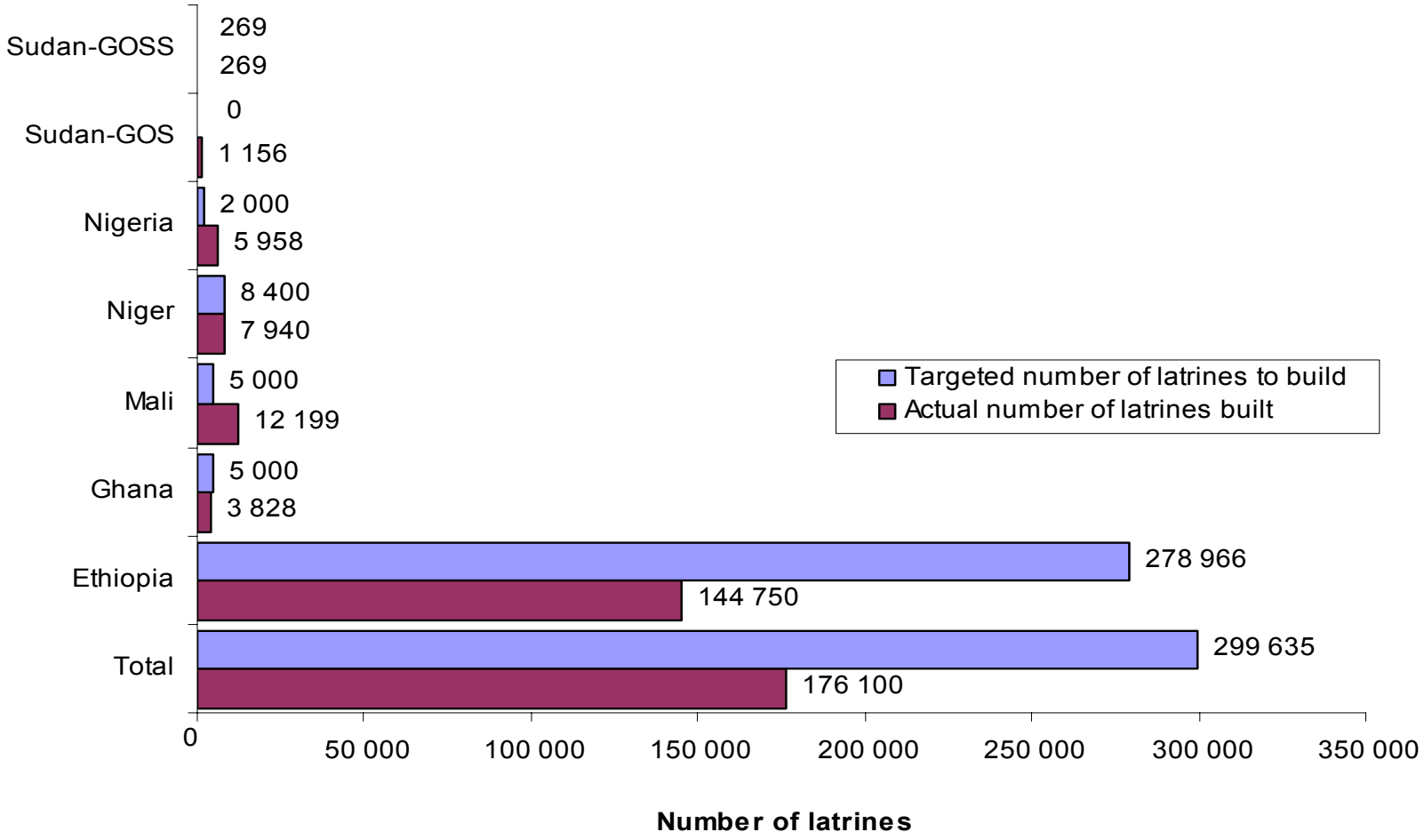


Figure 3. Azithromycin Distribution, Carter Center-Assisted Countries

National program data as presented for January - December 2005

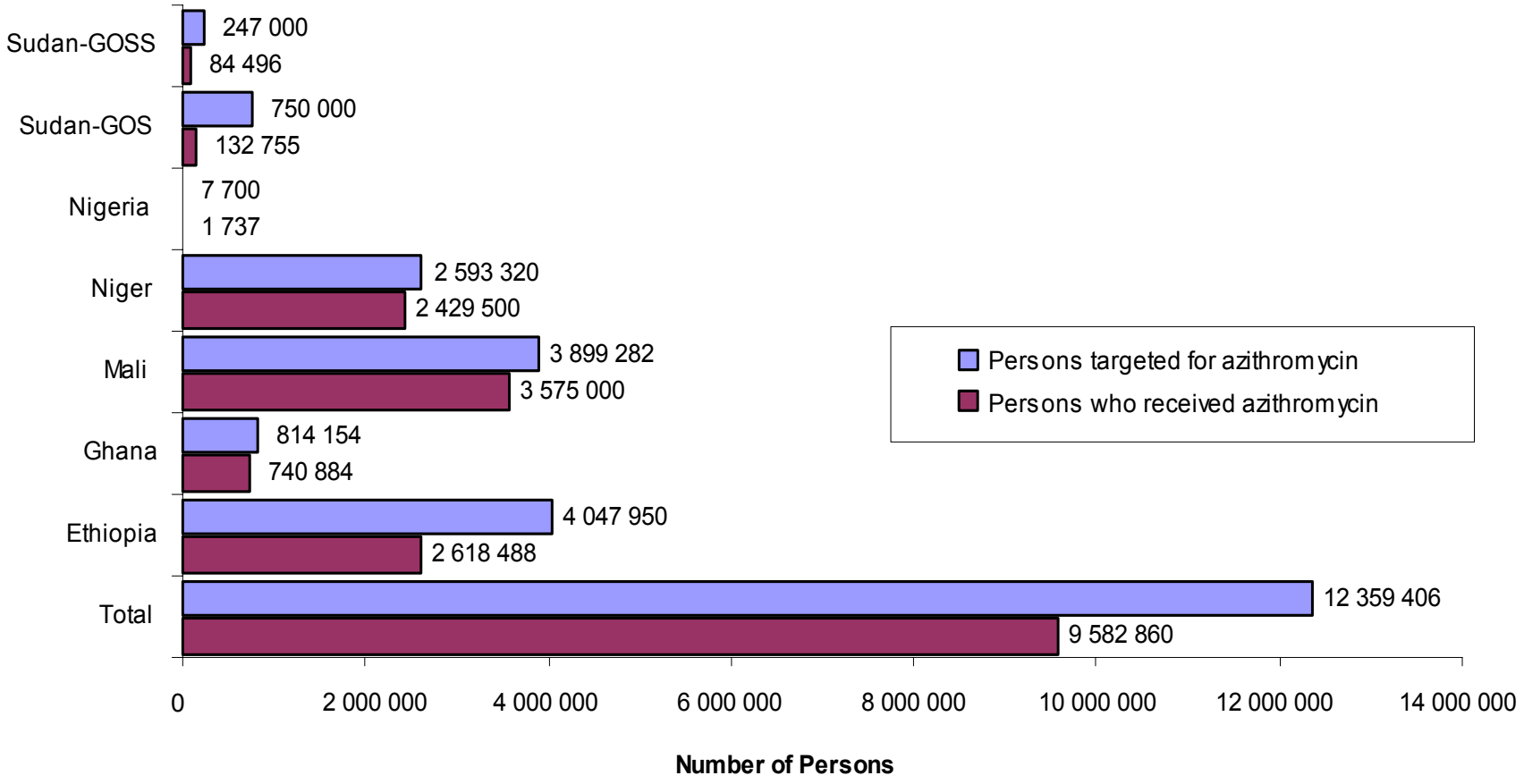


Figure 4. Persons Having Received Trichiasis Surgery, by country

National program data as presented for January - December 2005

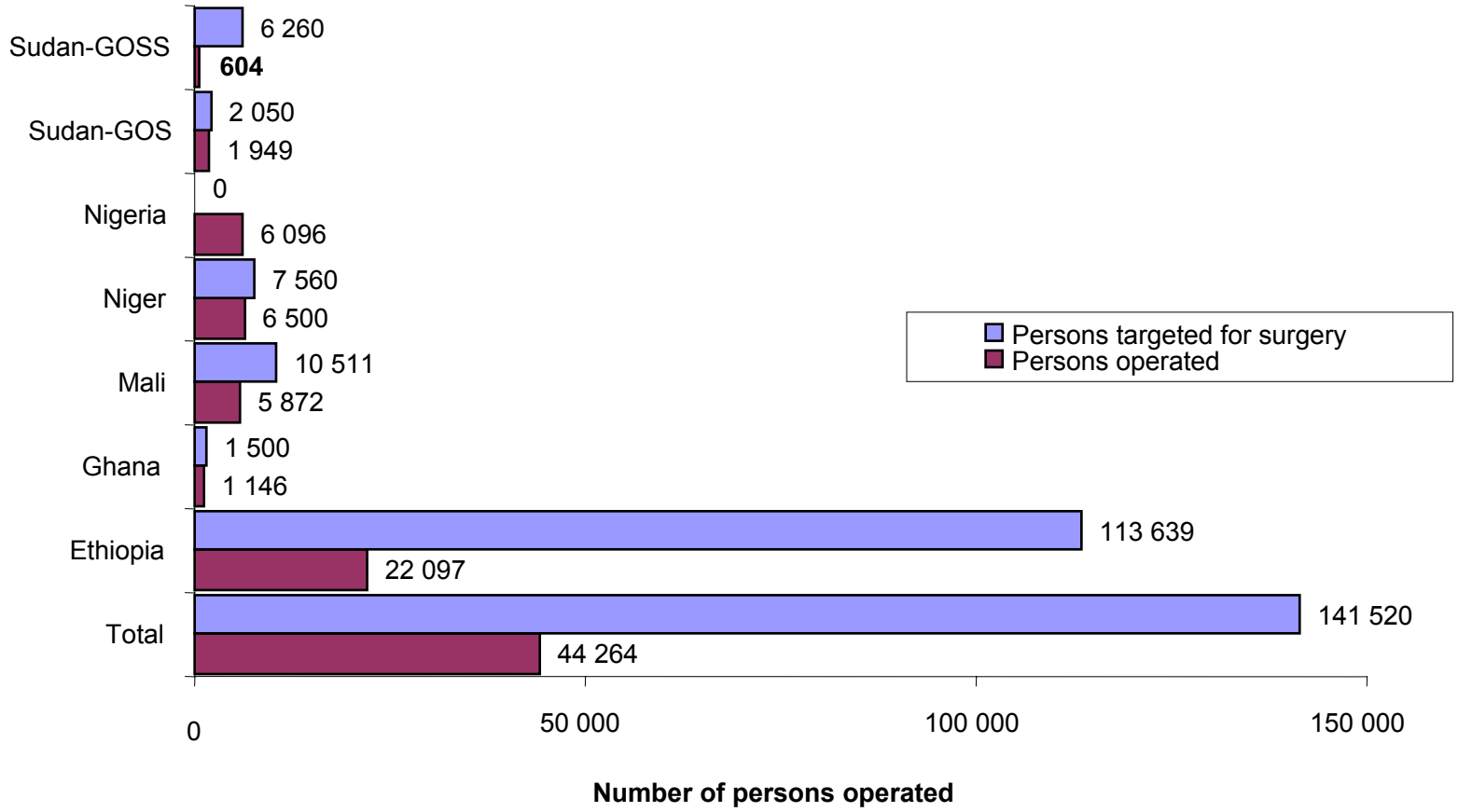


Figure 5. Villages Which Received Ongoing Health Education

National data in Carter Center-assisted countries as presented for 2001-2005

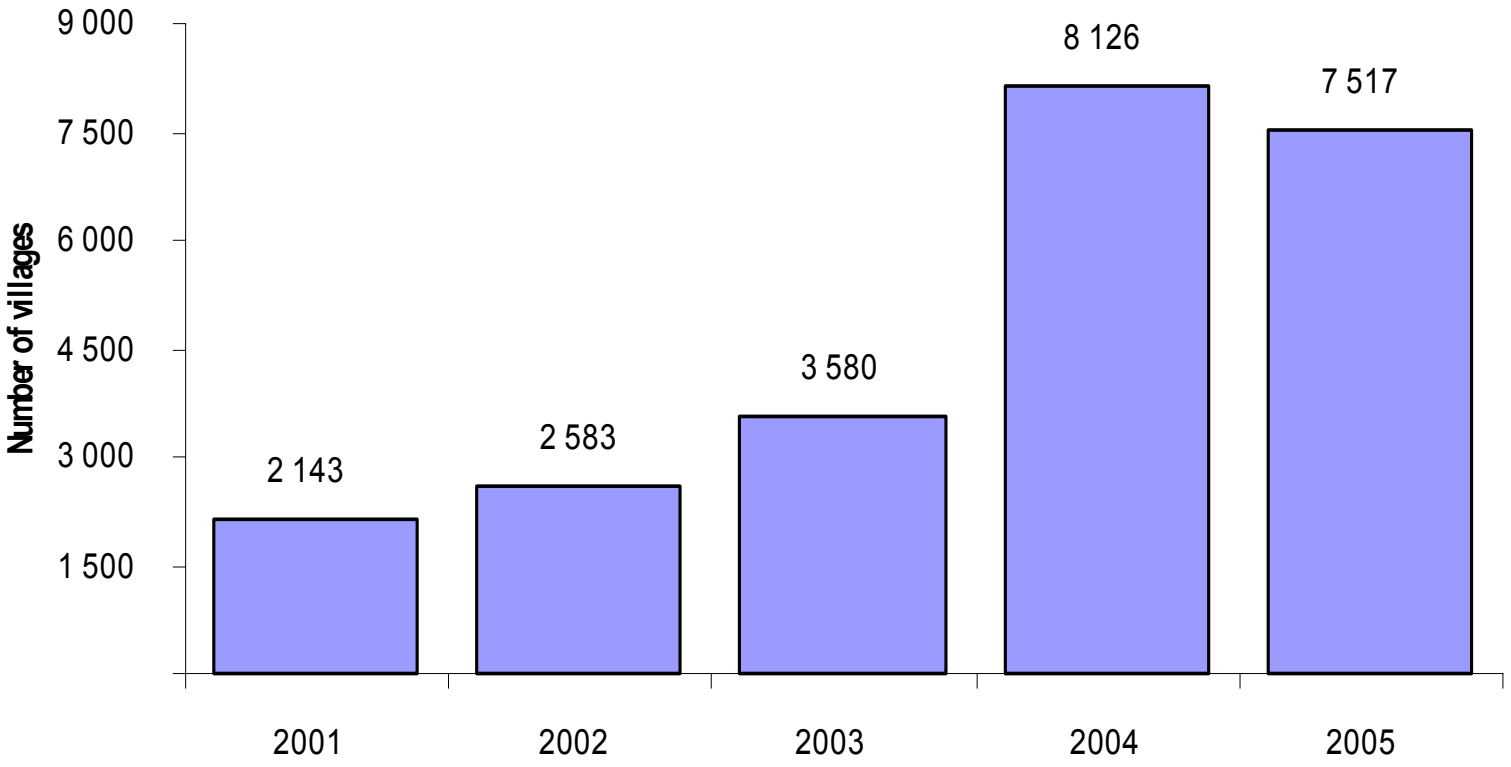


Figure 6. Household Latrines Built

National data in Carter Center-assisted countries as presented for 2001-2005

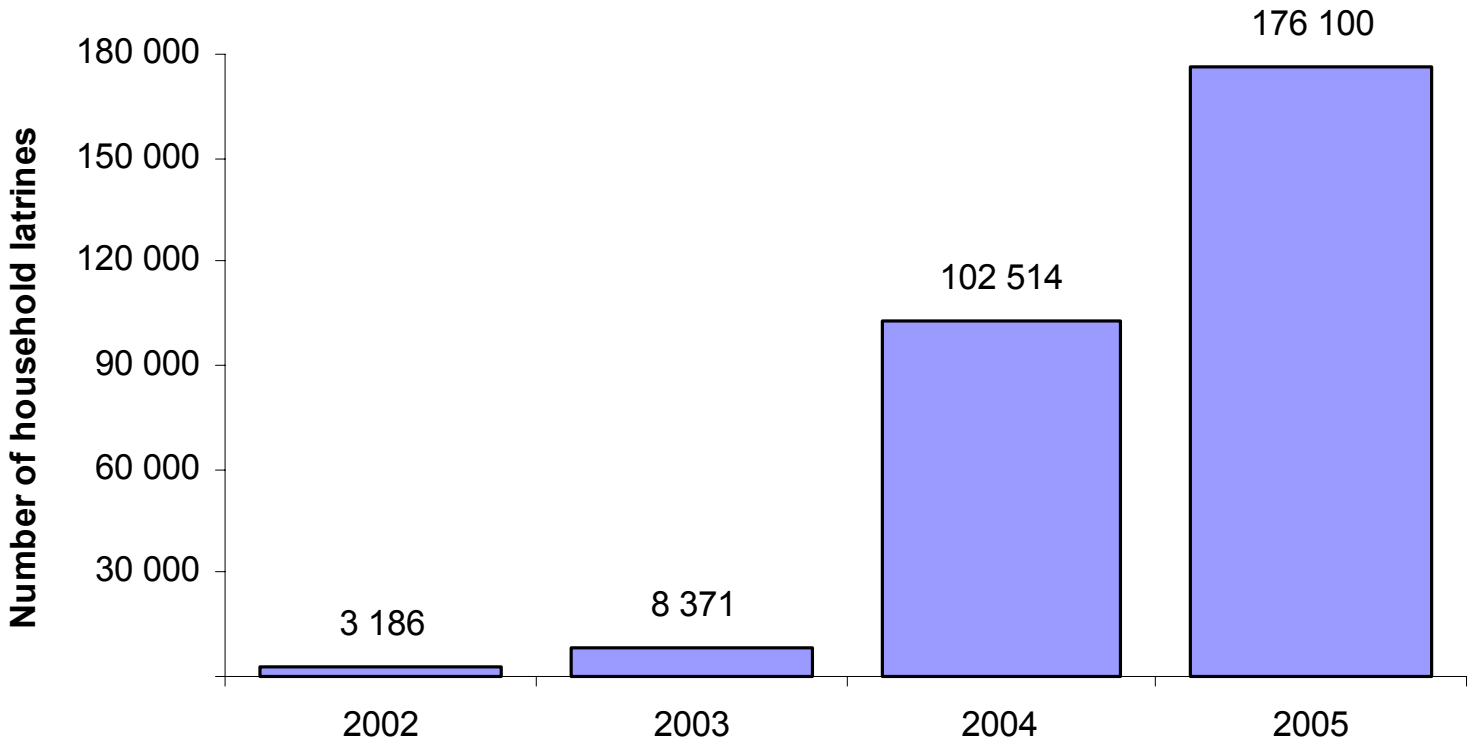


Figure 7. Persons Having Received Antibiotics

National data in Carter Center-assisted countries as presented for 2001-2005

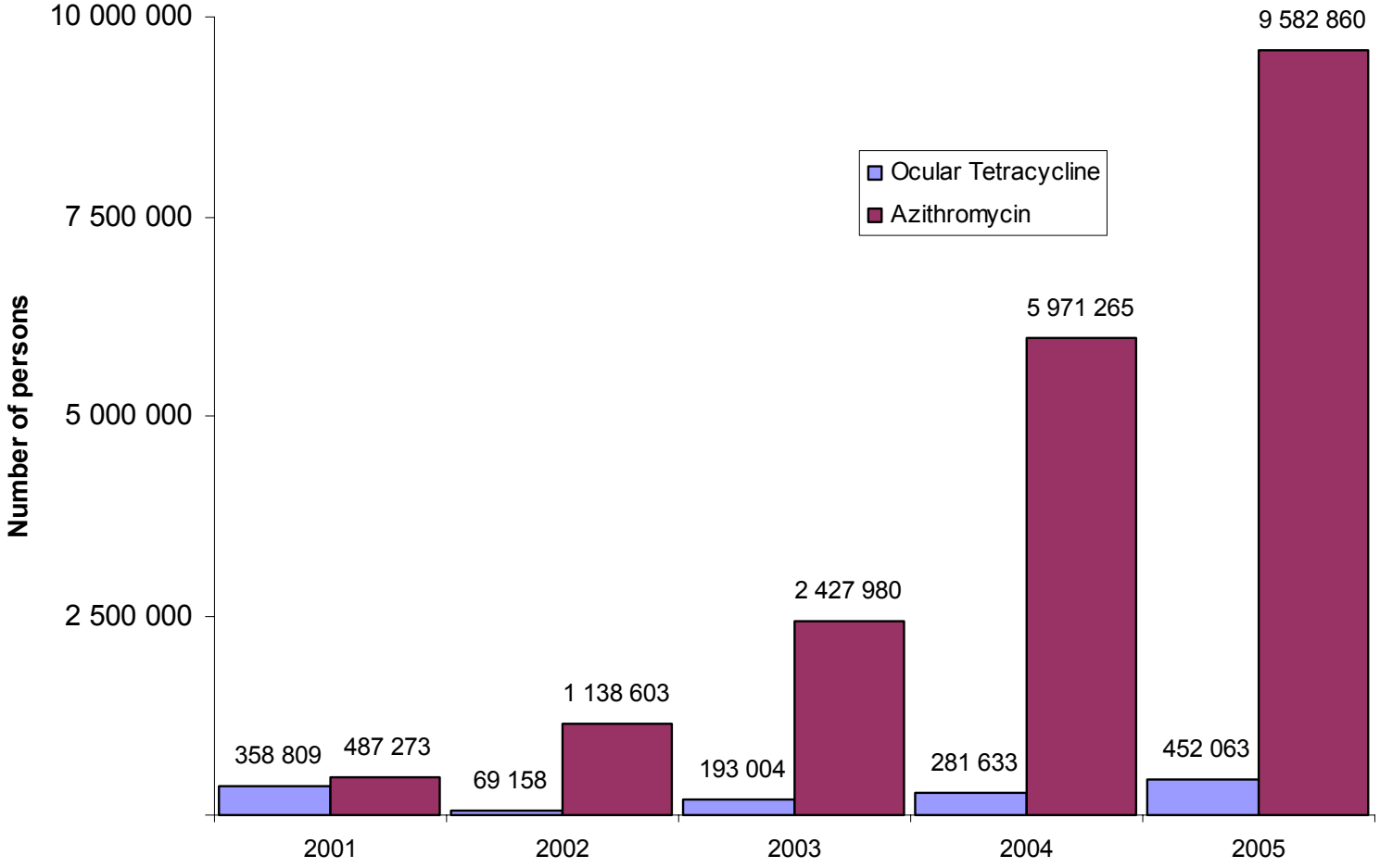
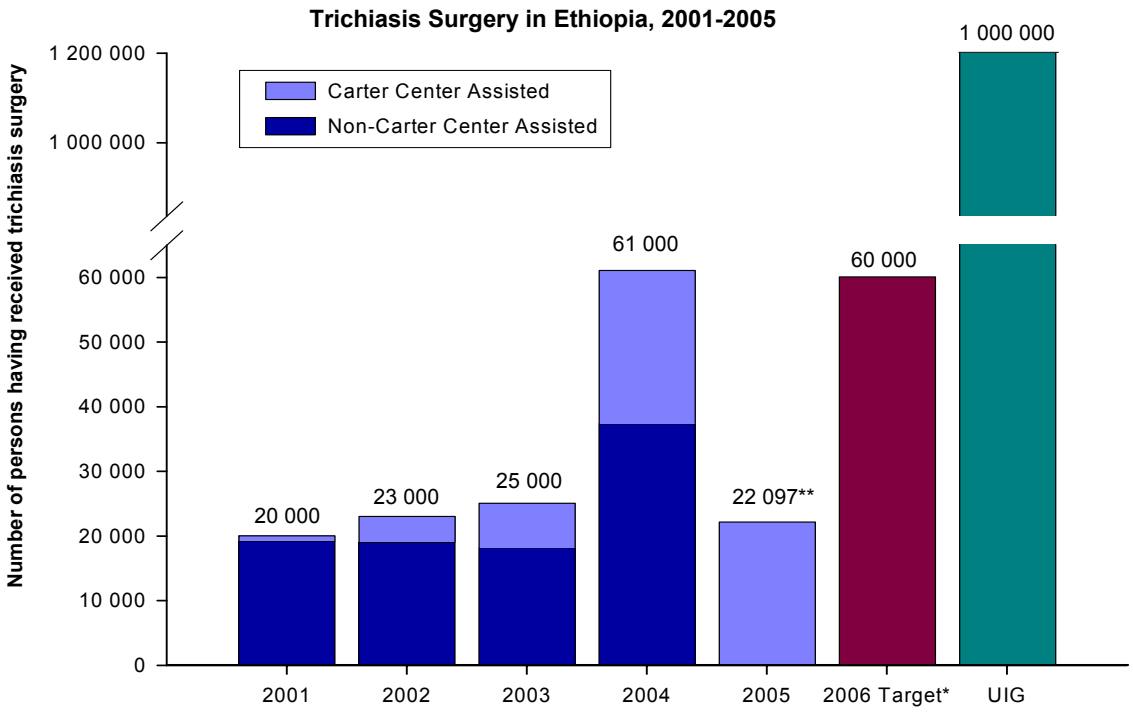
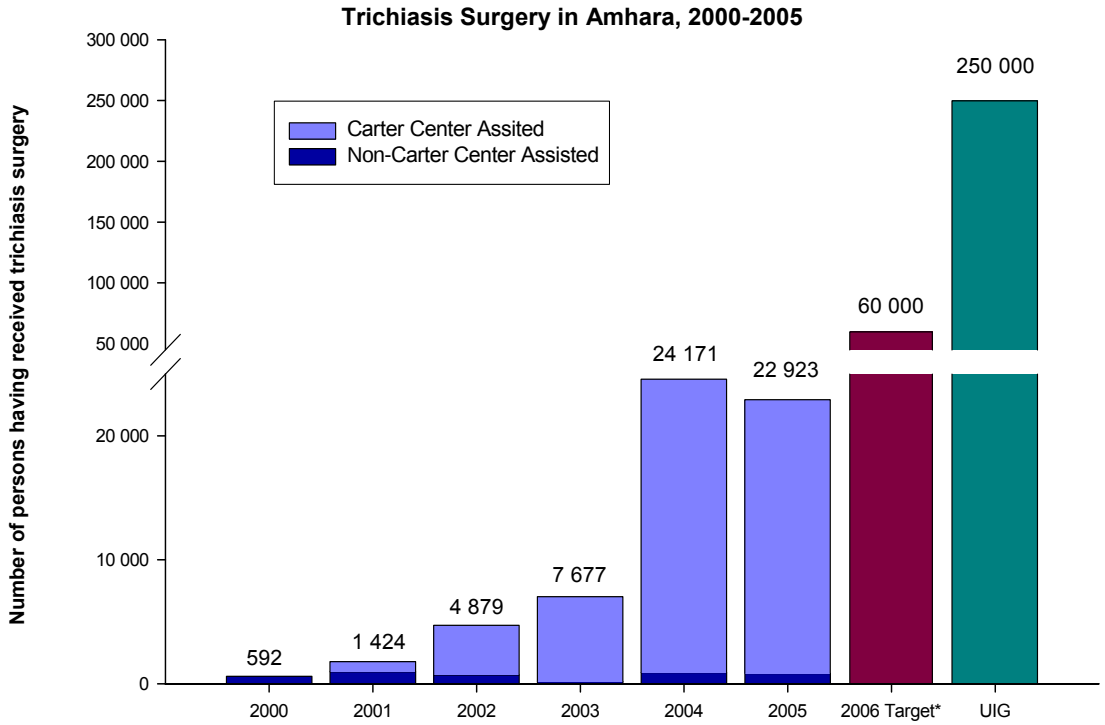


Figure 8. Carter Center and Non-Carter Center Assisted S & A Interventions in Ethiopia
Data as presented at the Trachoma Control Program Review, February 2006

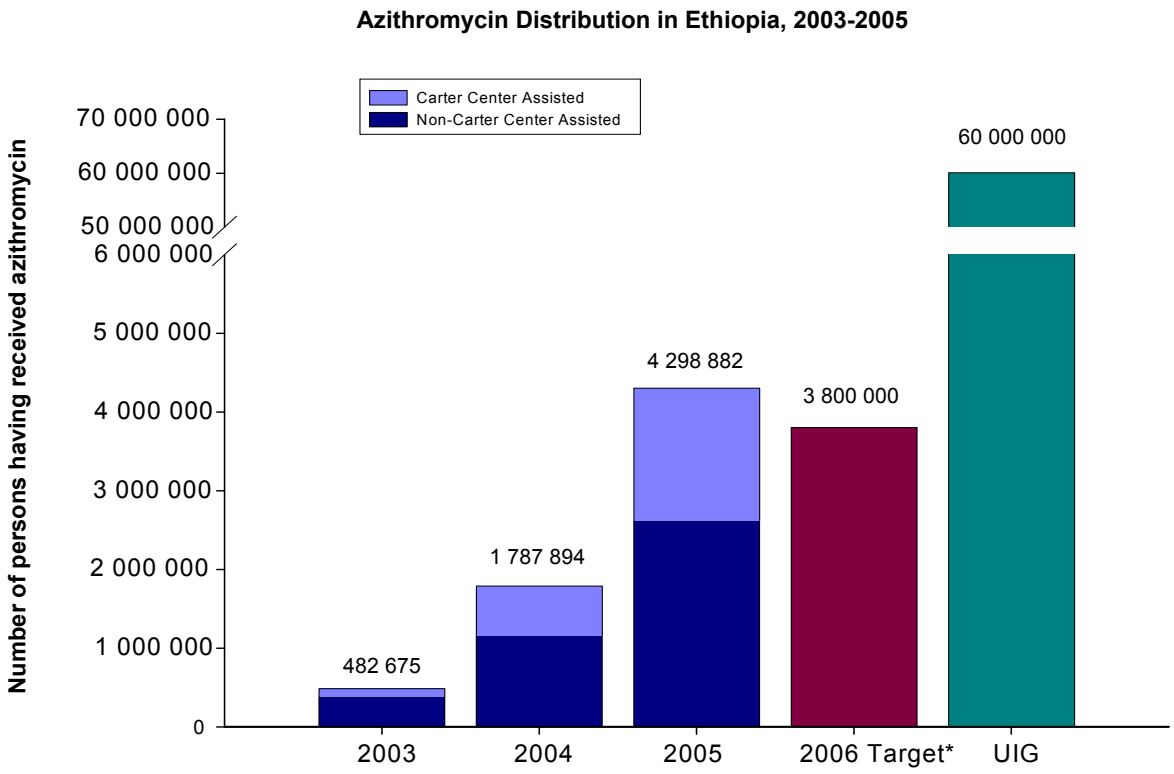


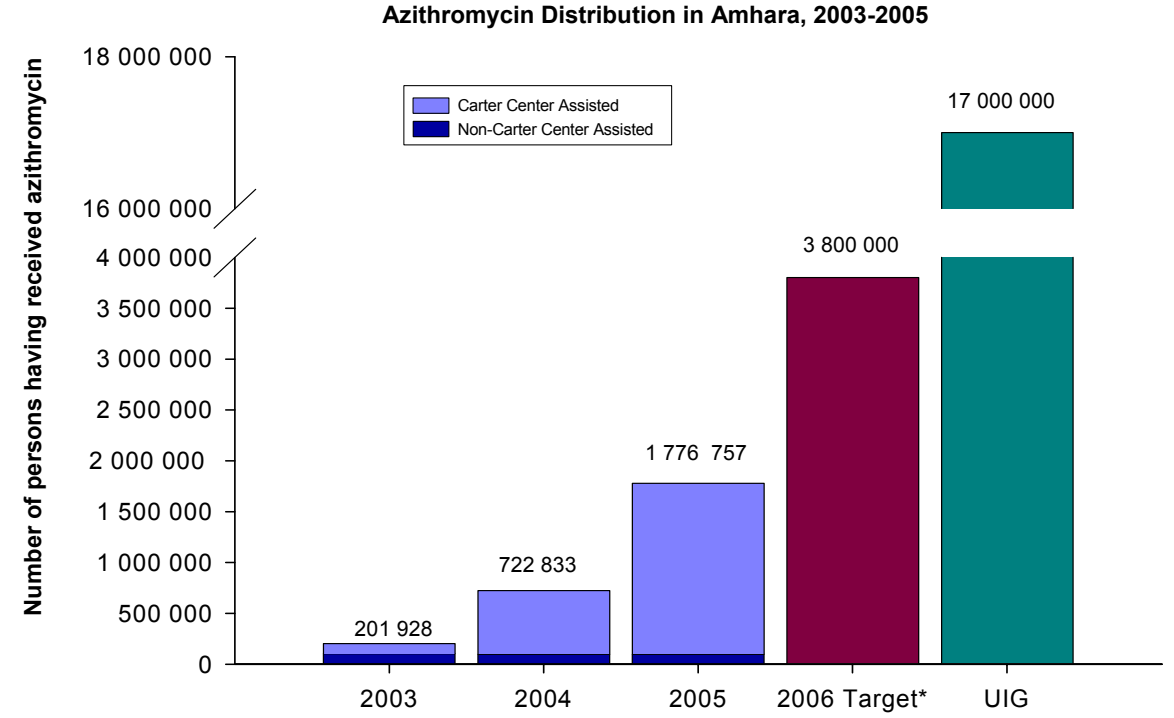


*No national target presented. 2006 targets represent Carter Center-assisted interventions only.
**National data unavailable for 2005.

Figure 9. Carter Center and Non-Carter Center Assisted S & A Interventions in Ethiopia

Data as presented at the Trachoma Control Program Review, February 2006





*No national target presented. 2006 targets represent Carter Center-assisted interventions only.

Achieving Equity In Latrine Promotion In Ghana

Presented by Dr. Maria Hagan, National Eye Care Coordinator, Ghana Health Service

Background

The Millennium Development Goal (MDG) 7 states that by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation should be halved. Ghana is a signatory to the Millennium Development Goals. A Community Water and Sanitation Agency (CWSA) report states that 31,207 household latrines had been built between 1994 and 2004 in Ghana. In order to achieve the MDG 7 of halving proportion of people without access to basic sanitation, Ghana would have to build a total of 1.5 million household latrines. This translates to 166,000 latrines per year between 2006 and 2015.

A trachoma prevalence survey carried out in 2003 in two trachoma-endemic regions of Ghana (Northern and Upper West), showed that household latrine coverage ranged from 0 to 9.6% in trachoma-endemic communities. In 2004, it was recorded that more than 80% of households do not have access to a latrine (Ghana Health Service report).

Following the current policy in latrine promotion implemented by several NGOs, the head of household applies to the health district or implementing NGO and must complete an application form. Once the application is processed and approved, the construction of the latrine is based on a cost-sharing agreement between the applicant and organization. An estimate of the total cost of the latrine could range from USD $45 to USD $100 depending on the type of super-structure and roofing material used.

The current latrine promotion strategy reaches those who can afford latrines. Those more likely to participate in latrine promotion are relatively 'richer' than the majority of people in the endemic areas. The heads of such households have typically had some education, may have large families, or have houses with metal roofs. The latrines are also of very high quality; the construction materials exceed the quality of materials used to build a typical house. It appears that the high cost of these latrines creates an unrealistic demand that cannot be met by the poorest of the poor, the most in-need in trachoma-endemic communities. The delivery process is also administratively complex, thus making provision slow.

The 5-year strategic plan of action of the National Trachoma Control Programme (2005-2009) aims for the construction of 25,000 household latrines in trachoma-endemic communities by 2009. The Carter Center took the challenge to support latrine promotion and shifted its support of the National Programme to concentrate on mass latrine promotion.

Ghana Trachoma Control Programme and The Carter Center latrine promotion strategy

The strategy aims to provide high coverage of households with latrines in endemic communities and to ensure equity in latrine promotion—all households should benefit from subsidized household latrines. The delivery strategy will work through the communities, local masons (trained by the CWSA), district assemblies, and regional administration.

This new strategy offers every household the opportunity to have a latrine at the same time—every household will be included. The minimum acceptable participation for The Carter Center to enrol a community is 75% of households. If commitment is less than 75%, the programme is offered to the next endemic community because the programme is for the entire community and not only for individuals. During an initial meeting with community leaders, the benefits of having a household latrine are discussed, emphasizing the benefits of latrines for women, men and all community members. Roles and responsibilities of all partners in the project are discussed and the community's approval is sought.

The roles of Ghana Trachoma Control Programme and Carter Center include:

- Mobilize and sensitize trachoma-endemic communities
- Provide materials (cement for slab and ring beam, PVC vent pipes, and aluminium fly screening for the vent pipe) and organize their transport
- Post a mason to the village and pay his fees
- Donate 45,000 cedis (approximately USD $5) to the village development committee for every completed latrine
- Provide trachoma field officers to follow work

The roles of the District Assembly include:

- Provide a line list of priority communities for sanitation
- Confirm the population of the selected communities
- Provide trucks to transport materials and convey sand and aggregate to communities that are far from river sand
- Provide technical advice in latrine construction through the CWSA
- Support communities that may have no access to digging tools

Roles of Community / Village Development Community (VDC)

- Provide land and assist in demarcating latrines
- Provide tools and ensure that all pits are dug
- Provide aggregate, sand, and water
- Assist the mason
- Offload materials in the community and ensure their safe storage and security
- Provide accommodation for the mason
- Build the superstructure for all latrines
- Use and maintain latrines

The responsibilities of the mason

- Work with VDC and the labour teams to cast ring beams and slab
- Lay each slab with adequate mortar to stay in place
- Ensure that materials are stored and cared for appropriately

The roles and responsibilities of Carter Center Trachoma Field Officers

- Facilitate community meetings and attempt 100% household participation
- Work with the chief and VDC to determine the fair allocation of latrines and organise work teams
- Ensure adequate supplies are in the community when needed
- Record keeping: list names of participating households

- Inspect each latrine pit for minimum depth of 3 meters and all completed latrines with superstructures
- Authorise payment for VDC and mason

The Way Forward

From July to December 2005, a total of 528 latrines were built in 17 villages, reaching 89% of targeted households. A number of constraints prevent the National Programme from reaching its target of providing 5,000 latrines per year, including: the high latrine unit cost (around USD $47); rocky subsoil that prevents digging; and the inability of field staff to recruit some villages. Above all, the high unit cost of latrines prevents the National Trachoma Control Program and its partners from achieving its target. Following CWSA regulations, all latrines are of very high quality, including a plastic ventilation pipe and aluminium fly screening. Again, the quality of latrine construction materials often exceeds the quality of materials used to build a typical house in endemic communities. The National Trachoma Control Programme and its partners should advocate for the Community Water and Sanitation Agency to reconsider its minimum requirements for household latrines, in order for all households to benefit from basic sanitation and to enable Ghana to meet the Millennium Development Goal 7.

Using Mass Media to Promote Behavior Change for Trachoma Control

Presented by Mr. Chad MacArthur, Helen Keller International

Background

Sustained trachoma control and the eventual elimination of the disease as a cause of blindness will be dependent on sustained change in those behaviors most closely associated with trachoma. Within the SAFE strategy, behavior change is most often spoken of in terms of the F and E components but, in fact, behavior change is also necessary to successfully address the S and A components. For example, health-seeking behaviors and compliance with treatment and surgery are critical.

Behavior change communication is defined here as the strategic application of techniques from various disciplines such as behavioral psychology, adult education, and marketing to the analysis, design, implementation, monitoring and evaluation of or programs to promote and influence voluntary behaviors that will improve the health and well-being of the individual and community.

Use of Mass Media

To effect change, mass media are often used to reach the largest number of people possible. For mass media to be effective, as with any communication initiative, a number of aspects must be considered.

1) Ensure that the communication is action-oriented. It must be very clear which behavior the target audience is to adopt: wash faces twice a day; use latrines, etc. Behavior change is the bottom line.
2) Segment the population to ensure the messages are effectively tailored. The critical question is: whose behavior must change in order to successfully control trachoma?
3) Understand the target audience: their needs, hopes, current behaviors, resources, etc. in order to effectively communicate with them. Consumer research is a fundamental aspect of marketing.
4) Offer the target audience a benefit. What will they get in exchange for changing behavior? Step 3 above is key in understanding what benefit will be most meaningful to the primary audience. Ensure that the promised benefit is possible within the context of the target group. Always be truthful.
5) Field-test, re-test and field-test again. To design effective materials, the target group must be involved. Communications must be a dialogue and not a monologue by the implementers.
6) Monitor and evaluate to be able to improve materials and to design new materials that will coincide with the progress the target audience is making towards behavior change and the maintenance of that behavior.

The Example of Rural Community Radio as a Mass Medium

Rural or community radio is an ideal mass medium in many countries. Rural radio meets the challenge of reaching the most people possible without diluting the message. It is not dependent on a literate audience, and messages can be broadcast in local languages.

Many community-based radio initiatives involve the whole community in programming, managing, and broadcasting. Ensuring community involvement ensures the needs and priorities of the community are met.

More and more these FM radios are being used to disseminate development-related information and in many countries play a vital role in trachoma control. Radio stations broadcast messages promoting face-washing and latrine use, advising communities of trachoma screening, and announcing trichiasis surgery or mass drug administration campaigns. Radio listening clubs are a mechanism that can be used to enhance the communities' critical listening skills and thus utilize the messages and information being disseminated. Rural radios are also being developed into community media centers providing the community with access to the internet and other technologies as a means to bridge the "digital divide."

Water, Sanitation and Hygiene: UNICEF

Presented by Ms. Therese Dooley, UNICEF Ethiopia

UNICEF's water, sanitation and hygiene (WASH) project aims to "contribute to the realization of child rights to survival and development and to achieving universal and sustainable WASH coverage through support to programmes that increase equitable access to, and use of, safe water and basic sanitation services, and promote improved hygiene". In Ethiopia in particular, UNICEF focuses on rural water supply, environmental sanitation and hygiene education, and Guinea worm eradication.

UNICEF's WASH strategy was approved in January 2006 - since that time all UNICEF offices include components of environmental sanitation and hygiene education:

- Provision of new and rehabilitation of existing community water sources
- Promotion of improved sanitation
- Hygiene education and promotion, including in schools and at health facilities
- Capacity development
- Policy formulation/refinement support
- Integration
- Water quality
- Emergency preparedness and interventions
- Guinea worm, trachoma

The three pillars for effective and sustainable WASH programmes are: enabling environments, behavioural change, and water and sanitation services. These then lead to enhanced child survival and development.

Pillar 1: Enabling Environment

- Sanitation strategy and protocol; national standards and guidelines for sanitation
- Health service extension programme: 2 health workers in every kebele in Ethiopia. They are the preventive health specialists.
- Integration: integration among the ministries (education, water and health). MoU on water, sanitation and hygiene and defined responsibilities for each ministry

Pillar 2: Behavior Change

- WASH movement within Ethiopia (unify, pool resources, no logos, produce and distribute materials)
- Common messages and approaches: simple, uniform messages
- Developing materials: Ministry making all materials available to NGOs, churches
- PHAST: participatory hygiene and sanitation transformation. Use of participatory processes, training of trainers
- Community-based processes

Pillar 3: Water and Sanitation Services

- Water Supply
- Demonstration Latrines: According to Ethiopia policy latrine subsidies are impossible
- Hand Washing Facilities in communities, schools, health institutions

"We Will Never Go Back to Open Field"
The Lay Gayint Experience of Latrine Promotion

Presented by Dr Dereje Habte, Carter Center Program Officer, Ethiopia

Background: The Carter Center's program implements all elements of the SAFE strategy in Ethiopia, and the "E" component has shown significant achievement. Since the program started, 233,846 household latrines were constructed in the 19 woredas using locally available material, improving sanitation coverage in the respective woredas. In 2005 alone, 144,750 household latrines were built in 19 program woredas, of which 30,279 were in Lay Gayint. Sanitation coverage improved in this woreda from 11.5% in 2004 to 59.5% in 2005.

Strategies: Discussions with local administrators, health bureaus, education offices, women affairs offices and community members helped to understand the strategies employed for this significant accomplishment. The core strategic approaches were:

- Strong commitment and leadership role played by the woreda administration
- Woreda Health Office and Health Facility staff motivation in latrine promotion
- Woreda Health Office integrates other health programs like polio campaign and safe motherhood initiatives with hygiene promotion
- Appropriate and efficient use of locally available resources
- Inter-sectoral collaboration among woreda administration, health, education, women affairs and agriculture sectors
- Training on hygiene promotion and trachoma control addressed a wide range of individuals: health workers, teachers, trachoma volunteers, women, community leaders and development agents
- All stakeholders and community members showed a sense of program ownership
- There were visionary leaders in the woreda who had big dreams, ambitions, and who could not settle for anything less than 100% latrine coverage in the woreda
- Community members, state and kebele officials were actively involved in the planning, monitoring and evaluation activities.
- The existing government structures in the kebeles were used in the planning, implementation, monitoring and evaluation of the hygiene promotion.
- Regular supervision and follow up mechanism was established at all levels.

Benefits: Community members were pleased with the benefits of owning latrines and most are willing to make use of them properly. Most witnessed that cleanliness around the village, and ease of walking in the bush to fetch fire wood or gather vegetables have improved after latrine utilization. Community members had tried to put the benefits in their own words:

"These days, we are happy to host an urban guest."

"I tried open field somewhere and couldn't make it. I am civilized and couldn't go back to open field."

"We can walk at ease in the field. It (excreta) is buried underground and can't come out."

Assessment of latrine coverage: The rationale of the assessment was to assess latrine coverage, evaluate the status of latrines constructed, and observe latrine usage.

Method: Ten kebeles (villages) were randomly selected from a total of 30, and one state unit (sub-village) was randomly selected from each kebele for the interview using the lottery method. All households within the randomly selected state units were interviewed and a total of 585 households took part in the study. The heads of the households or adult family members in their absence responded to questionnaires.

Results: Among 585 households visited, 496 (84.8%) respondents reported having a latrine in their household. Among the 496 persons who reported having a latrine, all with the exception of three were observed to actually have one (although some were incomplete). A total of 319/493 (64.7%) latrines were complete, 153/493 (31%) were under construction and 21/493 (4.3%) were started but construction was abandoned. All except two respondents built their latrine voluntarily. The majority of latrines were built in the year 2004/5, of which more than half were during March - May 2005. Actual coverage was 319/585 (54.5%).

Health workers, government officials, and trachoma volunteers were reported to be the main driving forces that advised the public to build latrines. In addition, agricultural development agents and a local NGO (CPAR) were involved in the effort of expanding latrine construction. Cleanliness and general health benefits were among the advantages of latrine mentioned by the majority of the respondents, while two-fifths cited trachoma prevention and reduction in fly density as added benefits of owning latrines.

Two-third of the latrines observed were found to have evidence of current use. The presence of flies within the latrine was reported by 31.9% of the observers. Most latrines (362/475; 76.2%) did not have covers and not all households with latrine covers used them properly. Only 22 households had hand washing containers outside the latrine.

Out of 313 houses where a child was available for inspection, 170 (54.3%) were found to have clean faces. Those children with flies and/or discharge on their face were considered unclean. The status of clean face was compared between households with and without evidence of current latrine use. The odds of finding a child with unclean face in households with no evidence of latrine use was 2.05 times of those who are using latrine (OR=2.05; 95% CI- 1.21, 3.46).

Summary

- About four-fifths of the households own a latrine. The reported 59.5% latrine coverage in the woreda was found to be reliable, in that it was similar to the 54.5% found in our sample of 585 households
- Two-thirds of the latrines were in use
- Two-thirds of latrines (281/447) were built in 2004/5, of which 155/281(55.2%) were made in the months March-May 2005

- Multi-sectoral effort was the driving force for the success: health workers, government officials and trachoma volunteers
- Household latrines can be easily built using local materials
- Owning a latrine was found to be protective from dirty face

"Implementing the SAFE Strategy for Trachoma Control: A Toolbox of Interventions"

Presented by Dr. Paul Emerson, The Carter Center Atlanta

The F & E toolbox is a result of a collaboration with the International Trachoma Initiative over the last three years. The aims of the toolbox are to provide program managers and planners with guidance for designing interventions for the F & E aspects of their trachoma control programs. Specifically, the manual shows how to learn about risk practices, identify appropriate F & E interventions, and identify target groups. It offers a 'toolbox' of successful interventions, and gives specific examples and case studies. Program managers can select interventions from this toolbox and modify them for their own country contexts. The manual explains how to communicate about a trachoma control program using the media, provides a resource to assist in evaluating the impact of interventions, and gives resources for further information. The toolbox is divided into six sections:

1. Introduction: This section discusses the lifecycle and transmission of trachoma, how trachoma is identified, and how it leads to blindness. It identifies the challenge of sustainable trachoma control as trying to link the mild infection seen in children to the horror of trichiasis in adults. It argues that sustainable trachoma control is possible when the use of antibiotic is accompanied by behavioral and environmental change.
2. Identifying context and trachoma specific risks for transmission: There are several routes of transmission that may vary between localities and also between seasons and years. This variation makes it impossible to provide a single set of interventions that will be effective in all localities all the time. The programs must react to their own specific contexts and consider which transmission route to target for behavior change. This section introduces the framework for understanding hygiene improvement.
3. Generating momentum for changing health related behavior: This section describes the importance of establishing a trachoma task force or steering committee that has representatives from health, water and sanitation, and education sectors. It describes the steps to behavior change and how to target interventions to the key demographic groups.
4. F & E interventions in trachoma control: The authors consider this section to be the 'meat of the sandwich'. All of the F & E interventions currently in use in any program, in any country are described here. The relative strengths and weaknesses are considered and case examples are highlighted in separate text boxes.
5. Communicating health through social marketing: The section details four steps in the use of social marketing to promote F & E interventions: research, message development/pre-testing, materials development/pre-testing, and campaign delivery and evaluation.
6. Monitoring and evaluating interventions: The section stresses the importance of baseline data, in that they allow programs to set reasonable targets, to monitor progress towards those targets, and to evaluate the effectiveness of the interventions. Examples of the use of process and outcome indicators are given to ease the user through the process.

The toolbox has been produced in both English and French and extensively field tested in both contexts. Printed versions have been made available free of charge by a generous grant from the Conrad N. Hilton Foundation. Electronic versions are available at The Carter Center website (www.cartercenter.org). Anyone interested in using the toolbox is encouraged to copy and share the electronic or paper version without any copyright hindrance.

Impact of three years of the SAFE strategy for trachoma control in southern Sudan

Presented by Dr. Jeremiah Ngondi, Cambridge University

Background

In southern Sudan, trachoma is a severe public health problem, with up to 206,000 people in immediate need of trichiasis surgery, and an estimated 3.9 million requiring treatment with antibiotics and access to trachoma prevention strategies. A trachoma control program was started in 2001 and by 2005 triennial evaluation was due in accordance with the WHO policy of reviewing disease status after three years of intervention. The objective of this evaluation was to quantify the uptake of SAFE (Surgery, Antibiotics, Facial cleanliness and Environmental change) interventions, and to assess prevalence of active trachoma and unclean faces in children aged 1-9 years.

Methods

Four sites (Kiech Kuon, Padak, Katigiri, Tali) that had sound baseline surveys and had received SAFE interventions for 3 years were selected. Baseline prevalence surveys were designed to detect a prevalence of active trachoma in children aged 1-9 years of 50%. The triennial evaluation survey was designed to detect a change in prevalence of active trachoma in children aged 1-9 years of at least 20% (from approximately 50% at baseline to 30%). For both surveys, two-stage cluster random sampling was used with a design effect of 5. Clusters were defined as villages. In stage one, villages were selected using computer-generated random numbers and a list of villages in each area. In stage two, households were randomly selected and all eligible individuals examined and/or interviewed. A baseline prevalence survey was also conducted in a fifth site (Mankien) planned for program expansion. This site served to provide a comparison to the intervention areas for a secular trend for trachoma decline.

Program data, interviews and observations were used to measure coverage and uptake of SAFE components. Clinical assessment of trachoma (using the WHO simplified grading scale) and examination were used to determine outcome indicators: signs of active trachoma and unclean face in children aged 1−9 years. A before and after analysis was conducted to calculate percentage change in prevalence of active trachoma signs and unclean face.

Findings

Key results are summarised in the figure below. There was heterogeneous uptake of SAFE between intervention areas. Surgical coverage was low in all areas (range 0.5−6%). In three intervention sites (Padak, Katigiri and Tali), 85% or more households had participated in azithromycin distribution and 69% or more people reported taking azithromycin. At least 70% of households in Padak, Katigiri and Tali had received health education over the three years. Uptake of antibiotics and health education was significantly lower in Kiech Kuon than the mean for the other three areas (household antibiotic 35% vs 91%, $p<0.001$; individual antibiotic 14% vs 72%, $p<0.001$; household health education 49% vs 79%, $p<0.001$). Overall, 41% of households reported round trip water collection took less than 30 minutes, although the mean proportion reporting <30 minutes in Padak (19%) was significantly lower than the mean proportion of the other 3 areas (49%); ($p<0.001$). Household latrine coverage was low in all intervention areas, ranging from 3−16%.

All intervention areas showed a decline in trachomatous inflammation-follicular (TF), trachomatous inflammation-intense (TI), and unclean face, ranging from 6−90%, 28−99%, and 10−83%, respectively. Substantial decreases in prevalence of TF and unclean faces were recorded in two of three sites where uptake of antibiotic and health education were high:

Katigiri, TF 88% decline (95% CI 83−92), unclean face 83% decline (76−91); Tali, TF 90% decline (86−93), unclean face 52% decline (42−60). Moderate effects were observed in one area with high coverage: Padak, TF 25% decline (17−33), unclean face 28% decline (22−34). No evidence of decline was seen in Kiech Kuon where uptake of antibiotic and health education was low: TF 6% decline (3% increase−14% decline), unclean face 10% decline (0−18). The prevalence of both TF and TI in Mankien (the non-intervention site) were comparable to the prevalence seen in the intervention areas at baseline and Kiech Kuon at triennial evaluation, suggesting that secular trends in decline were unlikely.

Interpretation

These data demonstrate that implementation of the SAFE strategy for trachoma control can result in dramatic reductions in the prevalence of signs of active disease and unclean face. If we accept that the decline in signs of active disease implies that there will be fewer incident cases of trichiasis and corneal opacity from trachoma, then it is likely to be associated with a great public health benefit in the future. If we consider these results to be generalizable to other trachoma-endemic countries that do not have the same difficulties of access and insecurity as southern Sudan, then these data suggest that it should be possible to produce similar or greater results with the SAFE strategy in all trachoma-endemic areas.

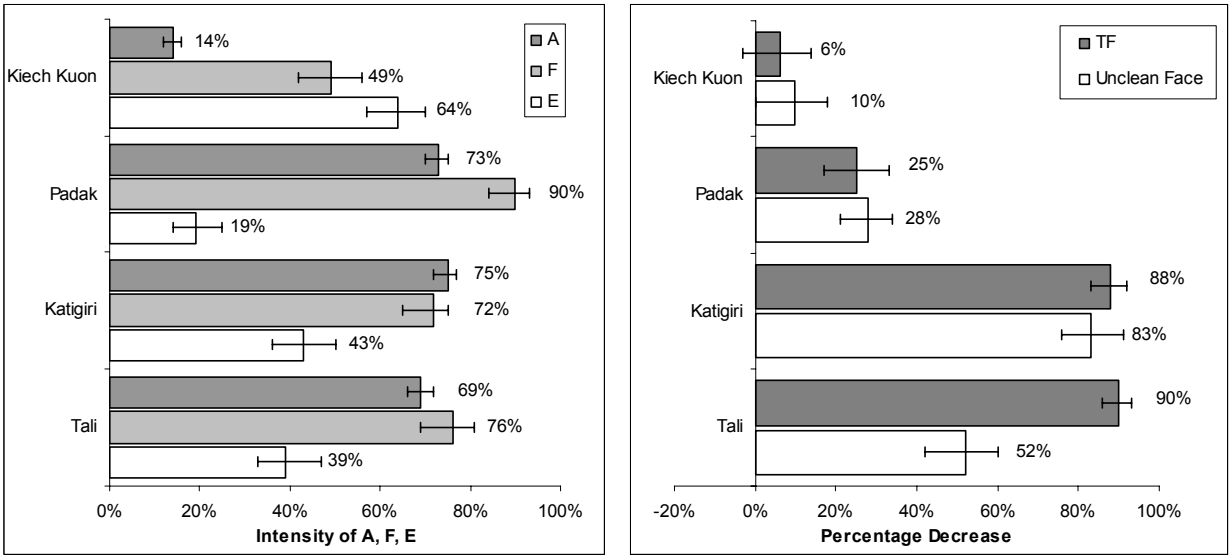
Whilst it is reasonable to suspect that the majority of the declines in clinical signs of trachoma may be attributable to the use of antibiotic, the decline in unclean face observed (i.e., an increase in the proportion of clean faces) is consistent with effective hygiene education leading to behaviour change among the caregivers of children. Trachoma health education had the least effect in Kiech Kuon and Padak. In Kiech Kuon this is probably associated with the relatively poor uptake of the SAFE strategy. However in Padak, where 90% of households had received hygiene education, we interpret this to underscore the fact that hygiene promotion needs to be accompanied by water provision if it is to be effective. Padak had the lowest proportion of households able to access water within a half hour's walk, and scarcity of water may have prevented behaviour change.

There needs to be plasticity in the implementation of trachoma control programs so that they are sensitive to the behavioural and environmental conditions of the endemic population. Rational implementation of the SAFE strategy ought to focus on the community's needs. In this case, a program should emphasize access to water before promoting hygiene, or promote personal hygiene while emphasizing that it is possible to achieve facial cleanliness by using small quantities of water.

To minimize examiner bias, we maintained a high inter-observer agreement of at least 80% among trachoma graders. However, it was not possible to validate grading by use of photographs or laboratory tests. While the possibility of a seasonal effect cannot be excluded, this is likely to have affected all the study sites given the timing of the baseline and triennial evaluation surveys. Use of reports by individuals to determine antibiotic and health education coverage is likely to have underestimated coverage due to recall bias. Reporting on number of antibiotic treatments received was not reliable; therefore, coverage reported demonstrates reports of ever receiving azithromycin over the three years.

Although it is not possible to determine the attributable portion of the observed decline in TF to aspects of the interventions in these data, it is generally apparent that where more A, F, and E activities were conducted, the greatest declines in TF were achieved. This observation would be consistent with a synergistic effect of A, F and E, the three components of SAFE designed to slow trachoma transmission.

Figure: Uptake of A, F & E interventions, and percentage decrease in TF and unclean face in children aged 1-9 years in the four intervention areas



A: Proportion of individuals reporting ever taking azithromycin

F: Proportion of households reporting taking part in trachoma health education

E: Proportion of households reporting roundtrip to water source < 30 minutes

TF: Trachomatous inflammation-follicular

Unclean Face: Proportion of children with ocular or nasal discharge or both

*The solid bars represent the intensity of uptake and percentage decrease in point estimates; error bars denote 95% CI of the estimates.

Trachoma Prevalence Surveys in Koulikoro Region, Mali

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

Background

A national trachoma prevalence survey conducted from 1996-1997 revealed a national prevalence of active trachoma of 34.9% in children 1-9 years old and a national prevalence of trichiasis of 2.5% in women over 14 years old. The Koulikoro region had a 35% prevalence of active trachoma and a 3.9% prevalence of trichiasis. Starting in 2000, the national program, in partnership with the International Trachoma Initiative, conducted mass azithromycin distribution in Koulikoro. In 2005, the national program decided to re-evaluate prevalence in those health districts that had already benefited from three years of azithromycin.

Objectives and Methods

The survey aimed to study the prevalence of trachoma in 7 health districts in Koulikoro region, specifically, the prevalence of active trachoma in children aged 6 months to 9 years and the prevalence of trichiasis in people over 14 years old. The total study population was 1,449,352, and the survey used two-stage random sampling. The survey utilized the cluster method of sampling—20 clusters were chosen randomly from a list of the villages. Within each cluster (village), the first compound was chosen by spinning a pencil in a public location. Within each compound, all household members were interviewed/examined. Ocular exams were conducted to diagnose the different stages of trachoma. Upper eyelids of both eyes were everted and illuminated with a flashlight or by daylight. The WHO standard grading cards were used as a reference for grading trachoma. Active trachoma was defined as either TF or TI. After field work, data were double entered into Epi Info 6 and were verified. Children with signs of active trachoma were treated with tetracycline eye ointment. Similarly, cases of trichiasis were referred to the nearest health center where free trichiasis surgery was available.

Results

A total of 8,019 children aged 6 months to 9 years were examined; 51% were female and 52% were aged 0-4 years. Among the 7,194 adults 15 years or older examined, 55% were female. Results are presented in the tables below:

Table 1: Prevalence of active trachoma (children 6 months to 9 years old), by health district

District	Oué	Koul	Kan	Ban	Fana	Dioi	Kati	**Average**
%TF or TI	1.34	0.20	4.87	5.28	2.37	0.81	2.70	**2.51**

Table 2: Prevalence of trichiasis (adults over 14 years old) by health district

District	Oué	Koul	Kan	Ban	Fana	Dioi	Kati	**Average**
%TT	1.09	1.06	1.25	1.27	1.33	1.48	2.49	**1.42**

Discussion

Prevalence of active trachoma fell from 35% to 2.51% in the districts with 3 years of azithromycin distribution. Similarly, the prevalence of trichiasis fell from 3.90% to 2.49% for these same districts.

In conclusion, it is difficult to quantify the decrease in prevalence that is directly attributable to antibiotic distribution. The decrease in prevalence of active trachoma and of trichiasis are undeniable, though the level of TT still exceeds WHO thresholds for intervention. Continued efforts with providing trichiasis surgery must focus on decreasing the trichiasis backlog. The program is now struggling with the question of how to sustain the decreased levels of active trachoma.

Who in the Community is Infected with *Chlamydia trachomatis*?

Presented by Dr. Matthew Burton, International Centre for Eye Health, London

Introduction

For the A component of the SAFE strategy to be successful, it is necessary to determine who needs antibiotic treatment. In addition to those who have active infections with *C. trachomatis,* it would be instructive to know who comprises the main reservoir of infection, as treating these people may be more important than just those with signs of disease. This paper explores the available technology to determine who has *C. trachomatis* infection and who should be targeted for treatment.

Tests for Ocular *Chlamydia*

The first tests for ocular *Chlamydia* required the collection of tissue followed by examination using a microscope. This was improved upon using the direct fluorescent antibody staining technique which increased both the likelihood of detecting *Chlamydia* if it was there (sensitivity) and correctly identifying it as *Chlamydia trachomatis* (specificity). Tissue samples can also be cultured for *Chlamydia*, a process that is both complex and expensive: there remain very few laboratories in the world that can skillfully culture *Chlamydia*. Microbiologic techniques of ELISA and nucleic acid hybridization brought new levels of sensitivity and specificity, which has culminated in the nucleic acid amplification technique (NAAT). The principle of the NAATs is to target specific DNA that is only found on the target organism and to replicate that DNA such that its presence can be demonstrated. The process of amplification is known as Polymerase Chain Reaction (PCR). The PCR technique can be both qualitative (does somebody have ocular *Chlamydia*: yes or no?) and quantitative (a measure of the number of organisms present in the sample).

What are we measuring with *C. trachomatis* PCR?

The aim of the test is to determine if the person has an active, replicating infection. It is important to realize that the NAAT techniques that use PCR can only tell us whether there is *Chlamydia* DNA *in the sample*. It is possible that a person could have a *Chlamydia* infection and have a negative test result if the swab used to take the sample did not collect sufficient material from the conjunctiva to contain any *C. trachomatis*. Similarly, it is possible to have a positive test result if the swab was contaminated by DNA in the environment, or if there were dead *Chlamydia* in the tear fill. A positive NAAT result using the standard DNA technique is not the same as an "infection."

Qualitative versus Quantitative

The introduction of real-time PCR allows an estimate of the quantity of organism in a sample to be determined. The estimate is probably not a true representation of the number of organisms in the sample but is instructive in that it shows the distribution of the relative burden of infection in the community. The use of real-time PCR has allowed us to look at who in the community has the greatest number of organisms in their eyes and who, therefore, constitute the reservoir of infection. The vast majority of organism is found in children aged less than ten years old, and extremely high quantities are frequently seen in children aged six to thirty-six months. It has long been thought that "young children" constitute the reservoir of infection, and these data

confirm that it is indeed the youngest children in the community. Children from the ages of six months to ten years should be given very special attention during mass treatment campaigns. Conversely, adults aged over forty seldom have significant quantities of ocular *Chlamydia* and missing these people during mass drug administration will be of less importance.

A new technique using RNA PCR

In the lifecycle of *Chlamydia* the transmission stage (known as an elementary body) is essentially a bundle of DNA in a peptide capsule. The elementary bodies contain very little, if any, RNA. Once the *Chlamydia* enter a host cell, they become very metabolically active and reproduce rapidly. During this metabolically active phase, they produce a nucleic acid called 16S rRNA as part of the protein synthesis cycle. The 16S rRNA is represented several orders of magnitude more frequently than DNA. This means that tests to detect 16S rRNA can be more sensitive than the DNA based tests (there are thousands more copies to detect in a metabolically active infection), and may be more specific at identifying real infections. Some data from a study conducted in The Gambia suggest that a "home brew" 16S rRNA test was more specific than the commercial DNA test at detecting active infections. Although these data suggest that the RNA test is more specific, they are also consistent with the test being less sensitive than the commercial DNA based test, in that it was only able to detect organism when there were many copies in the sample and gave a negative result when there were few.

Summary

1. Nucleic Acid Amplification Technique (NAAT) is very sensitive for detecting Chlamydial DNA, but may not represent "true" infections.
2. The clinical signs (TF and TI) do not always correlate very well with the results of PCR. The correlation is better where the prevalence of signs is higher, but is worse after antibiotic treatment.
3. The quantity of *Chlamydia* found in eyes is not the same for all age groups. Almost all of the individuals with high loads are children. Children aged under thirty-six months may have most of the ocular *Chlamydia* in the community.
4. Children aged between six months and ten years should be the primary target of treatment campaigns. It is really important to get high coverage in this age group.
5. 16S rRNA may represent a metabolically active infection.
6. The "home brew" 16S rRNA test used in The Gambia was strongly associated with signs of active disease and may be a more useful test in the future.

Factors Affecting Trichiasis Recurrence

Presented by Dr. Amir Bedri, International Trachoma Initiative, Ethiopia

Trachoma is the leading infectious cause of blindness worldwide. Repeated infections with *Chlamydia trachomatis* can result in entropion/trichiasis, which, if left untreated, could lead to corneal opacity and blindness.

Surgery to correct entropion/trichiasis is one of the mainstays of the SAFE strategy, which has been launched by the WHO to control blinding trachoma.[1] However, there is a high recurrence rate of about 20% at one-year postoperative. Long-term follow up results demonstrated even alarmingly higher rates that ranged up to 62%.[2-4]

Several factors may contribute towards TT recurrence:

1. type of surgical procedure
2. surgeon's skill
3. severity of entropion/trichiasis (number of lashes)
4. previous trichiasis surgery
5. inflammation/infection.

There are several surgical procedures to correct entropion/trichiasis. Among these, the bilamellar tarsal rotation (BLTR) procedure had the lowest recurrence rate and is recommended by the WHO for trachoma control programmes.[5] The posterior lamellar tarsal plate rotation, also known as the Trabut technique, is widely used in Africa and has been shown to have comparable results with BLTR.[6] In Vietnam and other Asian countries, the Cuenod Nataf technique is used that is better suited to the dominant eye shape. A recurrence rate of 10.8% was reported after one year in a study in Vietnam.[7]

The skill of the surgeon does definitely play a role, as there is inter-surgeon variability in recurrence rates. It has been shown that trained paramedical staff could perform surgery equally well as ophthalmologists.[8] However, not every trained paramedical is equally proficient in surgical methods. In order to reduce recurrence due to surgical failure, there is a need to make use of the WHO recommended manual to certify trained TT surgeons.[9]

Several studies have demonstrated that the more severe the entropion/trichiasis at baseline, the higher the recurrence. Previous trichiasis surgery is also associated with a higher rate of recurrence.

Programmes usually use either absorbable sutures (catgut, vicryl) or non-absorbable sutures (silk). Non-absorbable sutures are usually removed after a week post surgery. Early removal might theoretically lead to wound dehiscence and recurrent trichiasis, and incomplete removal can lead to formation of granulomas. Absorbable sutures are left to dissolve, thus allowing for the wound to heal properly. These conjunctures need to be supported by studies.

Bacterial infection and conjunctival inflammation are both associated with higher recurrence with odds ratios of 4.0 (95% CI: 1.49 - 10.8) and 3.16 (95% CI: 1.51 -6.62) respectively.[4] The most common bacterial isolates were *Strep. pneumoniae* and *Staph. aureus*. Additionally, Zhang et al. showed that *Chlamydial* infection at baseline and follow up is associated with higher recurrence (OR ~6.0; 95% CI: 1.5 - 2.4 at 6 months).[10]

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Randomized Control Trial of Azithromycin following Trichiasis Surgery

Presented by Dr. Matthew Burton, International Centre for Eye Health, London

Background

There is good evidence that trichiasis surgery reduces the risk of blindness, and this belief underlies the "S" component of the SAFE strategy. However, following surgery, trichiasis frequently returns, and with it an increased likelihood of blindness. It is believed that the mechanisms resulting in trichiasis recurrence are: surgical method, surgeon ability, pre-operative disease state, wound healing responses, and infection with *Chlamydia* or other bacteria. We posed the question "does azithromycin following trichiasis surgery improve the outcome under operational conditions?" In this paper we will describe the effect of giving trichiasis patients two oral doses of azithromycin at the time of surgery in addition to the normal application of tetracycline eye ointment when the surgeries are conducted under normal field conditions.

Study Design

We enrolled 451 patients with major trichiasis (greater than five lashes touching the globe) and randomized them after surgery to either receive tetracycline eye ointment alone or tetracycline plus azithromycin. We also treated the children of those patients in the azithromycin arm. We followed up patients at six and twelve months and re-administered azithromycin at the time of the six month follow-up.

Results

Of the 451 patients enrolled, 216 were in the azithromycin arm and 235 in the tetracycline only arm. The characteristics of the patients were similar between the two groups, with 70% being female, a mean age of 57 years, a mean body mass index of twenty, and similar ethnic composition. We were able to follow-up 90% or more of each group at six and twelve months. After one year, 41.3% of all the patients had recurrence trichiasis, and this was the same between the azithromycin and the control groups. Of the 176 with recurrent trichiasis, 139 had at least one lash touching the cornea, and 84 had five or more lashes touching the globe. Recurrent trichiasis at one year was associated with the severity of disease status at baseline. Patients with more than ten lashes touching the eye were twice as likely to have recurrence, and almost five times as likely to have major recurrence than those with less severe trichiasis. Severe conjunctival infection, and bacterial infection (but not *C. trachomatis*) was also positively associated with an increased rate of recurrence. Seventeen ophthalmic nurses operated during the study, with a mean of 26 cases each. There was a wide range of recurrence between surgeons from 0 to 83%. Of interest, patients reported a high level of satisfaction with the surgery (even if they had recurrence), and almost 60% of the patients had improved visual acuity, measured using the LogMAR scale. Seventy-seven percent of patients reported that their vision had improved.

Conclusions

1. The high recurrence rate (40% overall) is very disheartening.
2. It is possible for a well-trained surgeon to have very little or even no recurrence whilst others have very high recurrence. It is therefore imperative that the quality of surgery be audited, that training be conducted to the highest standards possible, and operators be tested and certified before going operational.
3. Trichiasis surgery improved visual acuity, reduced pain, and was perceived as being beneficial amongst patients.
4. In this operational study, there was no added advantage of providing azithromycin at the time of surgery, although it should be noted that the study was undertaken in a low prevalence area where the force of infection with *C. trachomatis* is low. This may not be the same in a high prevalence area.
5. The higher recurrence associated with poor surgical technique is probably the greatest single factor in recurrence. The most effective single change a program can make to reduce recurrence will therefore be improved training and certification of operators.

Zithromax Stock Management

Presented by Dr. Amos Sam-Abbenyi, International Trachoma Initiative

Background and objectives

Zithromax audits were conducted in the third quarter of 2005 in Vietnam, Ghana, Mali, Mauritania and Senegal. The objectives of the exercise were: (1) to map up customs clearance procedures and recommend, where applicable, an efficient interface with essential medicines distribution system in each country, and (2) to assess logistics functions of Zithromax supply chain from the port of entry to community mass treatment points.

Methodology

An assessment tool was adapted from the logistics systems assessment tool designed by John Snow International/DELIVER Project (JSI). Each audit involved a team consisting of a lead auditor from JSI, the national trachoma control program, a representative from the ITI country office, and the national essential medicines distribution system. Data were collected on logistics functions by visiting the airport warehouses (port of entry), the central medical store and a randomly-selected sample of districts that could be reached within the allotted time.

Findings and Recommendations

These are summarized in Table 1 below.

Way Forward

The next steps in the short term are to:

- identify an operational Zithromax stock management system in view of minimizing product loss from port of entry to village delivery points
- effectively monitor and supervise the system integrated into national essential medicines distribution system

Table 1. Summary of findings and recommendations for action on Zithromax logistics functions in trachoma-endemic countries

Logistics function	Strengths	Weaknesses	Recommendations
1. Staff organization and support	• Guidelines and manuals developed and used • Micro-planning by districts before and after Zithromax distribution campaigns	• Lack of supply chain procedure in manuals/guidelines • Untrained staff involved in Zithromax distribution at district level	• Increase advocacy for Zithromax logistics at all levels • Update current manuals/guidelines with supply chain for Zithromax
2. Logistics management information system (LMIS)	• Stock cards at warehouses: regularly/accurately filled • Accurate logistics data at region/districts levels • Reports on products after campaign/feedback meetings	• Population coverage rate monitored but no logistics indicators • No defined Zithromax supply system at central & regional stores • Lot # & expiry dates not on forms • Missing POS & tablets needed for audits • Higher levels did not receive inventory forms from lower levels	• Logistics indicators (stock on hand, stock outs & overstock) in feedback at end of campaign • LMIS forms should match those of LF, Vitamin A & de-worming programs • Summary forms should be adjusted to show treatment with POS & tablets • Losses & adjustments in stock control forms
3. Forecasting	• Quantification efforts made using demographic data • Responsive & flexible forecast • Surveys indicate endemic districts for intervention	• Inaccurate national stock figures – remaining stock not reported by districts • Dispenser – to – user data not used for Zithromax forecasting • Overestimation of Zithromax needs (demographic data)	• Zithromax quantification should be based on logistics data in post-campaign reports: stock on hand & dispensed-to-user data • Consider population movement in demographic data

Logistics function	Strengths	Weaknesses	Recommendations
4. Inventory control procedures	• Staff understand the principles of First Expired, First Out (FEFO) • Appropriate amounts of Zithromax received at correct time at all levels • Physical inventory of Zithromax carried out on yearly basis following the campaign	• Expired drugs in district stores • FEFO ignored at regional level even by trained store managers • Reversed Zithromax stock not necessarily documented • Disposal process for used Zithromax bottles not documented nor communicated	• Increase supervision by central/regional warehouses • Formal guidelines for reverse Zithromax inventory should be developed to enhance FEFO • National guidelines for disposal of empty bottles & expired drugs should be applied
5. Warehousing & storage	• Sufficient space is available in clean central & regional stores • Zithromax stores on pallets (labels, lot # & expiry dates	• Expired stocks at the regional warehouse from the past campaign occupying space • FEFO procedures not necessarily followed, calculation errors and stock imbalance	• Increase supervision by central/regional warehouses • Formal guidelines for reverse Zithromax inventory should be developed to enhance FEFO • National guidelines for disposal of empty bottles & expired drugs should be applied
6. Quality assurance (QA)	• Products for accuracy of the quality delivered & physical damage to the boxes at the airport and upon receipt at all warehouses • When visual inspections, expiry date, and ensuring seal of the bottle were regularly observed throughout the system	• Laboratory quality testing not performed • QA of the product (color, smell, ED, bottle seal, visual inspection) not expressed in NTCP manuals • No quality control certificates for Zithromax	• Visual inspection of Zithromax should be become routine • Update NTCP manual to include a checklist for regular verification of Zithromax quality before distribution

Logistics function	Strengths	Weaknesses	Recommendations
7. Transport & distribution	• Vehicles from central to region are covered • Reliable & adequate transport system from central to district level	• Inadequate transport allocation due to long bureaucratic delays • Zithromax exposed to direct sunlight	• MOH should avail trucks for trachoma mass treatment campaigns as planned • Motorcycles & bicycles – sub-district level
8. Produce use	• Trained health workers before campaign on Zithromax use • Guidelines for appropriate use of Zithromax were followed	• Some individuals refused Zithromax treatment	
9. Financing	• Partner support & government commitment in funding for Zithromax distribution costs • At all levels government provided for warehousing & storage costs	• Some individuals refused Zithromax treatment	• Increase advocacy, fundraising & resource mobilization for Zithromax distribution costs • MOH should provide budget for trachoma mass treatment campaigns • Build capacity in logistics through out the system in Zithromax management

Trachoma Prevalence Surveys

Presented by Dr. Jeremiah Ngondi, Cambridge University

Introduction

Trachoma is mainly found in underprivileged communities and often in remote rural areas of developing countries. Trachoma surveys are essential for quantifying disease prevalence in order to plan program implementation and for assessing impact of interventions. However, in trachoma-endemic settings, insurmountable methodological and practical obstacles may often make surveys complex, laborious, and expensive. Currently, three survey methodologies for trachoma have been suggested: cluster random sampling (CRS), trachoma rapid assessment (TRA) and more recently, the modified lot quality assurance sampling (LQAS), also referred to as assurance-sampling trachoma rapid assessment (ASTRA). While there are no magic bullets in survey design, there is need for country programs to have minimum standards for trachoma field surveys based on achieving efficiency (save time and cost) while at the same maintaining precision (methodological rigor).

Survey designs

Cluster random design (CRS)

Non-overlapping subpopulations (clusters) usually based on geographical or political boundaries are selected and within each cluster each subject is selected. More often, a two-stage design with selection of villages (clusters) and individuals within households is used. The design can be extended to incorporate multiple stages. Modifications of CRS include use of probability proportional to size (PPS) of some variable in the population (e.g., population size). This method is advantageous in that only lists of units in the selected clusters are required, thus making it cost-effective. The main drawback of CRS is that it is not intended for calculation of estimates from individual clusters. CRS samples can be used for multiple indicators at the same time; for instance, assessment of active trachoma, trichiasis, and community risk factors. It is used extensively in sample surveys for most diseases in the developing countries.

Trachoma rapid assessment (TRA)

This is a simple and efficient method developed to allow for rapid assessment of active trachoma in children, trichiasis in women, and environmental risk factors. These indicators would then allow for classification of communities, thus enabling prioritisation of interventions in worst-affected communities. However, this method is based on a convenience sample and has been found to have low consistency and doubtful accuracy. It does not allow for estimation of prevalence, and is therefore of limited use since the results cannot be used as 'baseline' data or to assess impact, merely to prioritise communities.

Assurance-sampling trachoma rapid assessment (ASTRA)

Lot quality-assurance sampling (LQAS) originated from the manufacturing industry for quality control purposes. The main outcome of this methodology is to determine if a batch, or lot, of goods is acceptable or unacceptable by taking a sample of items and defining the level of risks the manufacturers are willing to take for not inspecting every item. The decision value is the number of defective items that need to be found before a lot is deemed unacceptable. ASTRA is a modification of LQAS whereby sampling in a lot continues until the maximum sample size is met, rather than stopping when the expected "defective" units are identified. ASTRA has been suggested as a possible replacement of trachoma rapid assessment (TRA). However, the main drawback with this method is that it uses stratified random sampling design—a list of all individuals would be required. Small sample sizes in each lot are likely to result in imprecise estimates. In

addition, ASTRA has only ever been suggested for trachoma and may not be applicable in surveys for other diseases. ASTRA data are not intuitively interpretable since they are specific to trachoma.

Methodological issues

A major methodological challenge to trachoma surveys is unreliability of sampling frames due to: 1) lack of up-to-date population census data; 2) marginalized and remote communities or areas may be excluded; 3) high migration rates (nomadic communities, displacement of populations); 4) security and accessibility concerns. In choosing a survey design, these challenges need to be considered, since they can often result in imprecise estimates. This is true even in a well-conducted survey, especially when stratified random sample designs are used in situations where individuals cannot be randomly selected.

Field experience

Experience from country programs has shown that the CRS design is simple, adaptable, and efficient and maintains accuracy of results with good precision when well designed and conducted. In southern Sudan where there were no sampling frames during the conflict, a 2-stage CRS design was used to conduct extensive baseline surveys for program planning. More recently, triennial evaluation surveys have been conducted using the CRS design in four program areas. The follow-up data enables comparison to be made by determining change in prevalence.

Table 1: Cluster random sampling versus ASTRA method

Issue	CRS Cluster random sampling	ASTRA Assurance-sampling trachoma rapid assessment
Sampling design	Two-stage cluster sample (may be multistage)	Stratified random sample
Sub-populations	Called clusters Based on geographic or political boundaries Supposed to be heterogeneous	Called lots Based on geographic or political boundaries Supposed to be homogenous
Sample size	Estimated based on a population proportion, Or Estimated based on a hypothesis test	Estimated based on hypothesis test (desired proportion and level of risks) Overall sample size smaller than CRS
Lists of units	No need for list of units	Need for lists of all units in population
Basis for inference	Confidence interval for estimate	Hypothesis test
Outcome	Overall estimate Estimate from individual clusters should not be calculated	Overall estimate Individual lots judged as acceptable or unacceptable **Classification of lots is stopping rule is not used**
Weighting of sample	Self weighting (PPS)	Weights need to be calculated for each lot
Cost	Lower travel time and preparation	Need to sample each lot, thus higher cost
Reasons for potential bias	Geographical clustering of sample	Small samples in each lot Selection of children within households violates stratified random sample Age 2-5 years not consistent with WHO recommendation for TF prevalence indicator

Ease of implementation	Simple, efficient, cheap	Need to decide acceptable proportions and risks Need list of all units in the population Technical expertise may be required
When to use	Interest in overall population estimate obtained at a low cost	Interest in information for each lot

Conclusion and Recommendations

To enable good program planning, there is need to determine trachoma prevalence at least at the district level with reasonable precision. While classification of community prevalence has been suggested, this is not essential and is not likely to provide additional information over and above that obtained from district level prevalence estimates. Currently the WHO recommendation is implementation of SAFE in areas where prevalence of TF in children aged 1-9 years exceeds 10%. Mass distribution is based on district prevalence; therefore classification of community prevalence is not essential in mass treatment with azithromycin.

We therefore recommend that country programs should adopt the cluster random sampling design for baseline as well as follow-up surveys. The key advantage of CRS is its adaptability, efficiency in saving time and cost, and ability of maintaining precise prevalence estimates. To optimize prevalence results from this method, we also propose standardisation of the following methodological issues:

- *Sample size estimation:* In estimating the sample size for estimation of prevalence of active trachoma signs using CRS design, a design effect of at least five is suggested.
- *Outcomes of active trachoma signs:* Trachomatous inflammation-follicular (TF) has been suggested by WHO as the key indicator for assessing prevalence of active trachoma. There is a need for trachoma surveys to report on prevalence of TF to improve consistency. If needed, trachomatous inflammation-intense (TI) should be reported separately. The combined outcome of active trachoma (TF and/or TI) is not a robust measure since TF and TI represent different entities in the same disease process, thus making the combined measure difficult to interpret.
- *Age range of children to be examined:* The WHO has suggested inclusion of children aged 1-9 years in estimating prevalence of TF. There is need to keep this age range uniform since the prevalence of TF is age-dependent. Examining different age groups at different time points may result to imprecise estimation of prevalence, especially when only school-going children are sampled.
- *Analysis of point prevalence estimates:* There is a need to adjust for the sampling design to account for clustering in the case of CRS. Confidence intervals for prevalence estimates should be reported.

In situations where disease burden is to be determined in a localised target area such a community (village or cattle camps), rapid assessment by use of TRA or ASTRA is suggested. Trachoma field surveys do not eliminate the need for surveillance and monitoring in low-endemic settings and active case search for trichiasis cases.

Katsina State Trachoma Prevalence Survey

Presented by Dr. Emmanuel Miri, The Carter Center Nigeria

Background

Katsina State is in the so-called Trachoma Belt in Nigeria and borders to the north with the Maradi Region of the Niger Republic (map). Maradi is known to have a high prevalence of active trachoma (greater than 40% TF in children aged 1-9) and it has long been suspected that Katsina also suffers a considerable trachoma burden. The Katsina State Ministry of Health requested a collaboration with The Carter Center to assess the burden of trachoma as a precursor to launching a state trachoma control program.

Methods

Cost-Sharing

The Carter Center and Katsina State government agreed to share the cost of the survey according to ability. The state provided the staff and paid per diem for two ophthalmologists, a driver, and a data entry clerk, provided a vehicle and fuel, provided tetracycline eye ointment for treatment and offered trichiasis surgery where indicated. The Carter Center provided per diem for an additional seven staff, two vehicles, and incidental survey costs, such as stationary and printing.

Protocol

The survey was a population-based prevalence survey conducted in the ten local government areas (LGAs) that anecdotally were considered to have the highest trachoma burden. Within each LGA we sampled twenty randomly-selected villages to give a total of at least 1,300 children aged 1-9 years and 750 adults aged fifteen years or above. The sample size was based on an assumed prevalence of TF in children of 25%, and of TT in adults of 1%, with a design effect of four.

Quality Control

Screeners had a two-day training in the use of the simplified grading system and were tested on a sample of fifty trachoma slides and fifty live subjects, selected to represent all stages of trachoma. Only screeners who performed at greater than 80% agreement with both slides and subjects continued to the field. Data were recorded on standard forms in the field. Forms were checked in each village prior to leaving that village, and illegible or missing records rectified. Data were double-entered and verified.

Ethical Considerations

The study protocol was approved by the Emory University Internal Review Board and permission to conduct the survey was given by the Katsina Ministry of Health. Participation was voluntary and conducted in accordance with the tenets of the declaration of Helsinki.

Results

The double-entered data set was not available at this meeting. Preliminary data, which are subject to change, were presented. A total of 20,086 participants were enrolled from 200 separate villages in the ten LGAs. Of those, the mean age was nineteen, and 50% were male. Overall, the mean prevalence of active trachoma in the LGAs was 14.5%, and the mean prevalence trichiasis in adults was 3.8% (this equates to a population prevalence of TT of around 1.7%). There was considerable variation between LGAs where prevalence of active trachoma ranged between 4% and 18%. Household level data suggest a high mean latrine coverage rate of 80% and a high level of access to water within a thirty-minute round trip of 95%.

Conclusions

1. With a carefully prepared agreement, cost-sharing between the state and The Carter Center was very effective. The total cost of the survey was held to around US$10,000.
2. Preliminary data analysis indicates that several LGAs exceed the WHO threshold of 10% TF in children aged 1-9 years—this indicates that a district-wide control program is warranted.
3. The baseline environmental sanitation hardware (latrines and water) were high, suggesting that an intervention program should be based largely on surgery, antibiotic, and behavior change promotion.
4. The relatively high mean prevalence of trichiasis (17 times the recommended WHO threshold level for intervention) suggests that trachoma was a considerably greater problem in the past. Tackling the surgical backlog will be a priority for the nascent control program.

Surveys in Magaria and Matameye districts of Zinder Region, Niger

Presented by Dr. Kadri Boubacar, National Program for Blindness Prevention, Niger

Background

According to epidemiological data, trachoma is an important public health problem in Niger. With an average TF/TI prevalence of 36.4% in children 0 to 10 years old, and an average TT prevalence of 1.7% in women over 15 years of age, both indicators exceed World Health Organization thresholds for intervention. Of the 8 health regions in Niger, 6 are trachoma-endemic: Zinder, Diffa, Maradi, Tahoua, Dosso, and Tillaberi.

In 2001, with the support of Helen Keller International, the program determined the prevalence of trachoma in the 6 health districts of Zinder region: Tanout (26.3%), Gouré (61.4%), Zinder Commune (37.7%), Matamèye (63.4%), Magaria (62.8%), and Mirriah (34.8%). Magaria and Matamèye were then chosen as pilot districts for intervention with the SAFE strategy, including antibiotic distribution to men, women, and children 6 months of age and older. The program also used traditional channels to sensitize about trachoma: health workers, marabouts, community workers, and actors, as well as broadcasting 3 messages on the radio per day. Household latrines and clean faces among children were also promoted. From 2003 to 2005, annual mass azithromycin distribution took place in 700 villages in Magaria and Matamèye.

Methods

At the end of 2005, a follow-up study sought to determine trachoma prevalence, using the same study protocol as that used at baseline: transversal survey with stratified two-stage random cluster sampling. The sampling base was a list of villages from the 2001 general census. In each village or group, the number of households visited was drawn at random from a central place of reference (mosque, public place, market, etc.)

Every member of a household was examined until the teams reached the targeted number of persons to examine. In each group, the sample was made up of 78 children from 1 – 9 years old and 80 adults over 15 years of age. The upper lids of both eyes were everted and examined with x 2.5 binocular loupe with adequate light. All data were analyzed using Epi Info Version 6.

Results

Tables 1 and 2 below show results from the 2005 follow-up study compared with baseline data form 2001.

Table 1: Change in trachoma and clean face prevalence in Magaria district, 2001-2005

MAGARIA	**TF**	**TI**	**TT**	**Clean Face**
Baseline (2001)	62.3%	0.5%	7.7%	51.4%
2005	7.6%	2.0%	0.04%	33.3%

Table 2 : Change in trachoma and clean face prevalence in Matameye district, 2001-2005

MATAMEYE	TF	TI	TT	Clean Face
Baseline (2001)	49.6%	1.3%	4.2%	43.5%
2005	6.7%	13.1%	0.08%	74%

Availability of potable water during this period also increased from 40.0% to 42.6% in Magaria and from 50.0 to 53.1% in Matameye district. Latrine coverage also increased from 1.1 to 8.0% in Magaria and from 6.0 to 23.4% in Matameye. From this study we can conclude that mass azithromycin distribution, along with the other components of SAFE, have brought about a reduction in the prevalence of trachoma in these endemic zones.

Conclusion

Information, education and communication are necessary to achieve the behavior change necessary for trachoma control. The persistence of a high proportion of children with dirty faces could have been associated with the period of the study—the dry, hot season during the baseline study and the cold season during the impact study.

These results lead to the difficult question of how to sustain the decrease in trachoma prevalence already made in these two districts, and how to target the pockets of trachoma endemnicity that still exist. In conclusion, mass azithromycin distribution in trachoma-endemic zones allowed a reduction in prevalence of active trachoma to acceptable levels (<10%) but alone will be insufficient to bring about a continued change in behavior in order to eliminate blinding trachoma in Niger.

The coordinated efforts of the National Blindness Prevention Program (PNLCC) and of its partners (Helen Keller International, World Vision, The Carter Center, International Trachoma Initiative, UNICEF) in Zinder, Maradi and Diffa regions have made these encouraging results possible.

National Survey on Blindness and Low Vision in Ethiopia, 2005/6

Presented by Prof. Yemane Berhane, Addis Ababa University-Medical Faculty

Background

Blindness is a major health problem in Ethiopia. Based on reports of small scale surveys, the national prevalence of blindness is estimated to be 1.25%, one of the world's highest. About 80% of blindness in Ethiopia is believed to be avoidable (i.e., preventable or curable), and is ascribed to trachoma, cataract and glaucoma. The national blindness control program focuses mainly on cataract surgery and trachoma control programs through the SAFE strategy.

The rationale of the survey is to establish recent national estimates of blindness, low vision, and prevalence of active trachoma in children 1-9 years old. This will help to show the burden of blindness (including blindness due to trachoma), to estimate needs, and to serve as a baseline to monitor progress.

Objectives

- To determine the prevalence of blindness and low vision at national and regional levels
- To determine the national and regional prevalence of active trachoma among children 1-9 years old
- To determine the causes of blindness and low vision at the national level, focusing on cataract, glaucoma, trachoma and refractive error

Methods

A population based (household) prevalence survey was conducted using a multi-stage cluster sampling design stratified by region and urban/rural strata. The primary sampling unit is the kebeles (village), while the secondary sampling units were households within the cluster. Homeless people, even if they live in the survey kebele, were not included in order to avoid clustering of cases of blindness. A total of 179 clusters were randomly selected from nine regional states and two city administrations on the basis of probability proportional to size, where 25,776 persons (6,265 households) are expected to be enrolled.

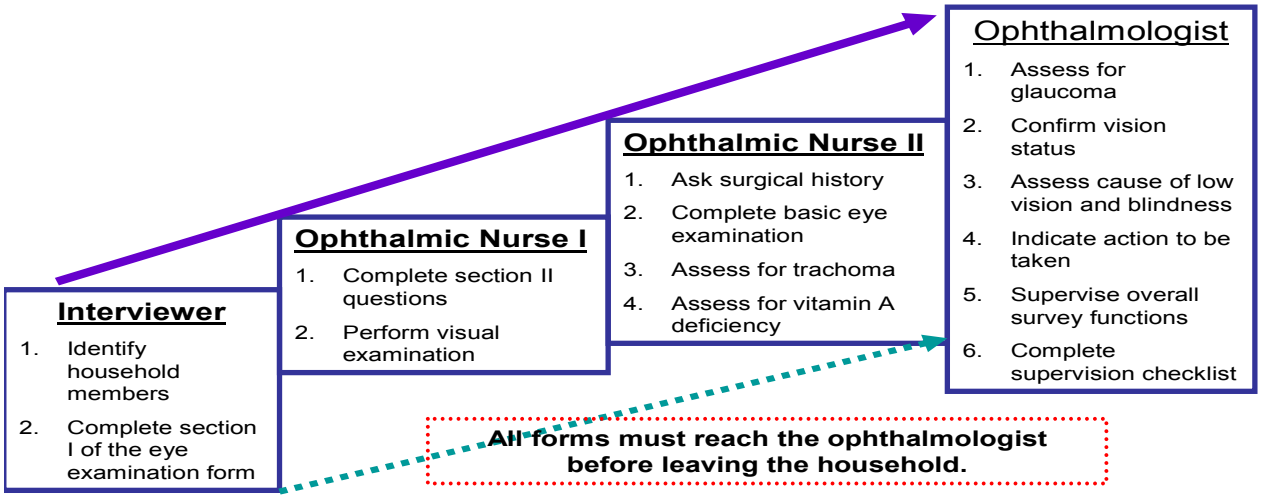
The survey used interviews and eye examination as methods of data collection. Interviews were conducted with the head of household, their spouse, or an adult member of the household (15 years old or more) in their absence. Examination teams (at least one per region) were composed of an ophthalmologist, an ophthalmic assistant, two health assistants, ten enumerators, five guides and a driver. Demographic data were recorded by enumerators who were employed locally and knowledgeable of the culture and language of the area of the survey. Visual acuities were measured by the health assistants, and ocular examinations including assessment of glaucoma, cataract, trachoma and xerophthalmia were performed by the ophthalmic assistants and ophthalmologists. Individuals with visual acuity of less than 6/18 in either eye were examined by the ophthalmologist and the cause of low vision or blindness was recorded. If action was deemed necessary after examination, the

specific intervention recommended by the examiners were recorded. The ophthalmologist was the overall coordinator and leader of the team (see Figure 1).

Table 1: Number of clusters and population in the national blindness survey, Ethiopia, 2005-2006

Region	Adjusted number of clusters	Adjusted population	Expected prevalence	Expected Precision (%)	95% LCI~	95% UCI~	Total number of households
Tigray	10	1,440	1.25	0.85	0.40	2.10	350
Afar	10	1,440	1.25	0.85	0.40	2.10	350
Amhara	33	4,752	1.25	0.47	0.78	1.72	1,155
Oromia	33	4,752	1.25	0.47	0.78	1.72	1,155
Somalia	10	1,440	1.25	0.85	0.40	2.10	350
Benshangul Gumuz	10	1,440	1.25	0.85	0.40	2.10	350
SNNP	33	4,752	1.25	0.47	0.78	1.72	1,155
Gambella	10	1,440	1.25	0.85	0.40	2.10	350
Harari	10	1,440	1.25	0.85	0.40	2.10	350
Addis Ababa	10	1,440	1.25	0.85	0.40	2.10	350
Dire Dawa	10	1,440	1.25	0.85	0.40	2.10	350
Total	**179**	**25,776**					**6,265**

Fig 1: Eye Examination Procedures



The survey's limitations include:

- Lack of local maps
- No recent census or list of population/ households
- Limited transportation
- No telephones
- Language barriers
- Age determination

Following ethical considerations, participants were informed about the survey procedure and voluntarily consented to participate. Treatable eye problems were either treated on the field or referred to service centers.

Amhara region

In Amhara Region, as part of the National Blindness Survey, 33 clusters were randomly selected from 11 woredas (districts) on the basis of probability proportional to size. The survey in Amhara region was conducted by five teams from December 15, 2005 to January 4, 2006.

Data entry and processing is still underway—as a result, survey findings are not yet available.

The SightFirst Program and Campaign SightFirst II: A Vision for All

Presented by Ms. Sonia Pelletreau, Lions Clubs International Foundation

Lions Clubs International Foundation

Lions Clubs International Foundation (LCIF) is the humanitarian arm of Lions International Association that was foundation in 1968. With an annual budget of 35 million USD, LCIF is the only Lions foundation that serves the entire world and all 1.4 million Lions. It is fundamentally concerned with humanitarian service, aid for victims of natural catastrophes, community rebuilding, care of children, and the fight against blindness through the SightFirst Program.

What is SightFirst?

SightFirst is a global program against blindness that was inaugurated in 1989 and is the Lions' most ambitious and successful initiative thus far. Its goal is to significantly reduce preventable and avoidable blindness worldwide, especially in developing countries, by putting into place viable and sustainable projects at national or regional levels. During the Campaign SightFirst, 144 million USD were collected by Lions worldwide; to date, more than 185 million USD in grants have been approved for 724 projects in 85 countries worldwide.

SightFirst works in 33 countries throughout the Africa and Middle East region (including Haiti); through 114 projects, about 70 million USD were granted to date. SightFirst in Africa focuses on the defined eye care priorities of the region: training (ophthalmic personnel, community distributors, community health workers); infrastructure development (building renovations and expansions and equipment upgrades); and direct service delivery (screening, training, and treatment of cataract, river blindness, and trachoma).

Of the US$70 million granted to African programs through SightFirst, $6.3 million has been for trachoma control activities. There has been an emphasis on supporting trichiasis surgery activities, with the exception of Sudan, Ethiopia, Mali and Niger. Support began in 1998, when the first grant to local Lions in Mauritania for trichiasis surgeries was given. The following year, SightFirst/LCIF expanded into Ethiopia, Sudan, Guinea, Mali, Niger, and Senegal. Highly successful partnerships have developed with numerous organizations: The Carter Center, the International Trachoma Initiative, Pfizer, The Organization for the Prevention of Blindness, the Conrad N. Hilton Foundation, WAWI, and country governments.

Campaign SightFirst II: A Vision for All

In 2005, with roughly 20 million USD of the original 144 million USD remaining in the SightFirst fund, LCIF hired a consulting firm to determine if Lions worldwide were willing to support and expand SightFirst by raising additional funds for the program. Focus groups were held and one-on-one interviews and electronic surveys were given in all Lionistic regions. More than 70% of all respondents agreed that a major fundraising

campaign to continue and enlarge SightFirst was needed. In July 2004, LCIF trustees approved the planning for a Phase II SightFirst fundraising campaign.

Goals:

- To build upon the success of the first part of the SightFirst program against avoidable blindness
- To raise funds totaling US$150 million, with a stretch goal of US$200 million
- To continue to support SightFirst current priorities as well as to expand the current parameters of the program by addressing emerging priorities in blindness prevention
- To launch major new initiatives to prevent millions from going blind in both developing and developed countries

Goal 1: US$102 million will be used for control and elimination of major causes of blindness. Goal 2: US$48 million will target newly emerging threats to sight. Goal 3: US$50 million challenge will provide "Vision for All" through research, rehabilitation and reaching out to vulnerable populations. A strategic working group of technical experts was formed and met in January 2006 to discuss programmatic details of the continuation of SightFirst.

SightFirst II: Significant Expansion of Support to Trachoma Control Programmes
Of the US$102 million anticipated for disease control and elimination, US$25 million has been designated for the continuation and augmentation of trachoma control activities. Lions in affected areas have been mobilized to carry out the entire SAFE strategy (where feasible) through the provision of training, project coordination, and financial resources to local Lions clubs. It is likely that SightFirst support will be designated for programs: in the most endemic countries where the disease can be eliminated by 2020; in regions of lesser-affected countries where pockets of the disease still exist; and that will aggressively tackle the trichiasis backlog.

Scaling Up Efforts in Trachoma Control

Presented by Dr. Jacob Kumaresan, International Trachoma Initiative
and Mr. Robert Mallett, Pfizer, Inc.

Background

Between 1988 and 1995, the Edna McConnell Clark Foundation established through operational research that **S**urgery, **A**ntibiotics, **F**ace cleanliness and **E**nvironmental improvement (the SAFE strategy) could be effective in the fight against blindness due to trachoma. There was need for Pfizer's commitment to donate azithromycin (Zithromax®) for mass treatment. In 1996, the World Health Organization (WHO) formed the Alliance for Global Elimination of blinding Trachoma by the year 2020 (GET 2020). In May 1998 the World Health Assembly passed resolution WHA 51.11 on blinding trachoma elimination.

In November 1998, the International Trachoma Initiative (ITI) was formed by a partnership between the Clark Foundation and Pfizer, Inc. In November 2003, Pfizer, Inc. increased the Zithromax donation to 135 million treatments over 5 years (2004 - 2008), as long as there is evidence of progress in the control of blindness due to trachoma. ITI has supported trachoma control programs since 1999 in Morocco and Tanzania; since 2000 in Ghana, Mali, Sudan, and Vietnam; since 2001 in Ethiopia, Nepal and Niger; since 2003 in Mauritania and Senegal, and since 2005 in Kenya.

Expected outcome by 2010

The geographic coverage of the SAFE strategy in trachoma-endemic countries will, at least, have tripled from 17% in 2006 to 57% of endemic districts in 2010, in ITI-supported countries. Furthermore, in addition to Morocco which declared having eliminated blindness due to trachoma as a public health problem in 2005, four other countries (Ghana, Mauritania, Nepal and Vietnam) will reach the targets of eliminating blindness due to trachoma. Hence the global burden of trachoma will be reduced by 25% should these targets be met.

There has been an exponential increase in the number of Zithromax treatments administered in the past five years: from less than 2 million treatments in 2000 to more than 20 million treatments in 2005, while the forecast shows over 34 million in 2006 and 51 million in 2008 should the present trend continue.

On the other hand, 186,000 lid surgeries have been performed thus far. It is projected that a quarter of a million lid surgeries will be performed in the next five years. Public – private partnerships are important ingredients of the success of trachoma control interventions. The total contribution of Pfizer Inc. in cash and product in this endeavor between 1998 and 2005 is approximately USD $760 million, compared with USD $49 million by all other partners. However, the in-kind contribution by public partners has not yet been assessed.

Fostering a stronger alliance with other neglected tropical diseases initiatives is one of the objectives for 2006-2010. Other initiatives to be pursued include linking trachoma to millennium development goals, women's rights, child health issues, water and sanitation, etc. In the past two years, the shift has been towards more political commitment and ownership of trachoma control programs by endemic countries at all levels.

ITI has significantly reduced its direct financial contribution to support trachoma control activities, while there is an increase in partner responsibility for implementation of activities and a substantial increase in in-country resource mobilization from basket funding and debt relief/cancellation funds. There is increased evidence of in-country fundraising from partner organizations and contributions from private foundations (as in Mauritania). This is within the framework of trachoma elimination efforts.

Lessons learned

In order to achieve elimination of blindness due to trachoma there must be:

- political will in trachoma-endemic countries to initiate and scale-up implementation of the SAFE strategy;
- strengthening of public (ministries of health, education, community development, water and sanitation, information and culture, women's affairs, finance, etc.) and private (international NGOs in eye care, water, and sanitation, national NGOs, civil society, faith-based organizations, community-based organizations, private foundations and individuals, etc.) partnerships;
- empowerment of communities including rights-based approach; and
- additional resources (financial and technical) made available to the cause.

Conclusion

There is a great opportunity to scale up programs within trachoma-endemic countries with increased ownership by national programs. The trend is to reach over 51 million treatments of Zithromax by 2008. Hence, Pfizer Inc. reiterates its commitment to provide Zithromax® for SAFE as long as there is serious progress towards reaching the goal of eliminating blindness due to trachoma by 2020.

Bouamatou Foundation

Presented by Mr. Mohamed O. Debagh, Bouamatou Foundation

The Bouamatou Foundation was created in 1998 by Mr. Mohamed Bouamatou in Mauritania with the objective of preventing blindness and all forms of poverty. The Foundation's Ophthalmic Hospital opened its doors to the public on July 24, 2001. Offering services for free, the hospital targets its services to populations in need. Since opening, the following services have been offered:

- 234,795 ophthalmic consultations
- 500 pediatric consultations
- 12,094 surgical interventions
- 7,774 laboratory exams
- 19,262 functional explorations, of which:
    - 10,445 echographies
    - 1,257 perimetries
    - 569 angiographies
    - 5,433 refractions
    - 165 orthoptic exams
- 2,446 radiographies
- 13,895 anesthetic consultations
- 6,345 pairs of corrective glasses distributed

The Ophthalmic Hospital also serves as a training center for medical residents and ophthalmic nurses for initial training as well as refresher training during their careers.

The Bouamatou Foundation works in partnership with the Mauritanian Ministry of Health and Social Affairs through the National Blindness Prevention Program. The Foundation has worked with the International Trachoma Initiative (ITI) since May 10, 2003 for the elimination of blinding trachoma in 5 years. In 2005, the Bouamatou Foundation alone supported all costs of distributing azithromycin throughout Mauritania and specifically in the endemic regions of Adrar and Tagant. The Foundation used a new method of distribution that utilizes modern technology such as laptop computers, global positioning systems, digital cameras, satellite modems and the internet. This method was tested successfully in 2004 for distribution of Pfizer-donated azithromycin in the mountainous province of Tagant. In 2005-2006 this method will be used in Adrar and again in Tagant.

Working with Optic 2000 France, the Bouamatou Foundation opened an Optic Center for free donation of corrective lenses to all Mauritanian students in need. The Foundation also funded the construction of an operating room for the maternal ward of the Cheikh Zayed Hospital in Nouakchott and supported a program providing potable water to 10,000 households in the city of Kiffa in central Mauritania.

Trachoma Elimination In World Vision Area Development Programs

Presented by Dr. Joe Riverson, World Vision

The sixteen countries on the WHO's priority list for the elimination of blinding trachoma by 2020, includes eight World Vision countries: Chad, Ethiopia, Ghana, Mali, Myanmar, Niger, Tanzania and Vietnam. The children and families in World Vision Area Development (ADP) communities in all these countries are at risk of blindness due to trachoma.

Since 1998, funding provided by the Conrad N. Hilton Foundation with a match by World Vision US, has enabled World Vision to engage in an intense fight against blindness caused by trachoma in Tanzania, Vietnam and Ethiopia. World Vision has been working in collaboration with Ministries of Health, other international non-governmental organizations like The Carter Center, Helen Keller International, and the International Trachoma Initiative, and local agencies, community health workers and communities themselves.

In carrying out the project, World Vision has used the SAFE strategy to eliminate trachoma, with particular emphasis on facial cleanliness and environmental improvement, and by integrating trachoma preventive measures into the current World Vision's integrated health and community development activities of the participating ADP[1]s. World Vision has provided potable water (by means of hand-dug wells, boreholes, or water catchment facilities), and mobilized, trained and facilitated communities to build and use ventilated improved pit (VIP) latrines.

World Vision's determination to eliminate trachoma from its Area Development Programs comes out of a commitment to empower entire communities – a process that can be stunted by the reduced economic productivity and increased demands on health services often associated with high trachoma prevalence.

Over the years, the project has developed model trachoma control strategies suitable for replication within the ADP framework around the world. Each country has identified culturally appropriate, community-based, and effective strategies for battling trachoma. These include the use of peer educators, sending out mobile surgery teams, and integrating prevention messages into dramas and videos.

The end-of-project evaluation in June-July 2004 showed that the World Vision trachoma program achieved great progress between 1999 and 2004. The target of reducing active trachoma by 50% was exceeded in all three countries. The project sustainability objective was fully met in all three countries, and significant progress was made in the surgical objective, which was interpreted differently by each participating country.

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[1] ADP: An Area Development Program usually covers a cluster of communities that share a common development strategy. In some countries, the "area" could mean a province or district, in others a commune, sub-district, or at least a significant portion of those political subdivisions.

The Conrad N. Hilton Foundation funding for the trachoma control projects in Tanzania and Vietnam came to an end by September 30, 2004. However, a new three-year grant from the Hilton Foundation, with a 1:1 match by World Vision, was given to World Vision Ethiopia to extend and expand its trachoma control and prevention program in the original two ADPs – Kemissie and Antsokia, to two new ADPs – Adama and Bosset.

With the implementation of the five-year plan (2003-2008), the Hilton Foundation and World Vision US matched West Africa Water Initiative (WAWI) in the trachoma-endemic ADP communities in northern Ghana, Mali and Niger, intending to prevent and control trachoma through water provision, coupled with hygiene education and sanitation improvements.

World Vision will continue to collaborate with the WHO Alliance for GET 2020, International Trachoma Initiative, The Carter Center and Helen Keller International, locally and in the United States for technical assistance, project information, and monitoring tools. Appropriate guidelines will be used as implementation standards. World Vision's local infrastructure, emphasis on primary health care and long-term commitment to socio-economic development make it a valuable partner in meeting the trachoma elimination goals of WHO GET 2020, the International Trachoma Initiative, the Carter Center, and Helen Keller International.

Orbis International, Ethiopia

Presented by Dr. Wondu Alemeyehu, Orbis Ethiopia

Orbis's program components in Ethiopia include: advocacy/public awareness, eye banking, institutional strengthening (to create a link between primary, secondary and tertiary levels), biomedical engineering, development of rural eye care, and research. Below is a summary of Orbis' major achievements:

- Worked towards making visual impairment a priority health agenda of the nation
- H.E. President Girma Wolde Giorgis signed a declaration of support for Vision 2020 on board Orbis' flying eye hospital
- Assisted in the establishment of the 1st eye bank in the country
- Working towards strengthening the teaching, research and service capacity of the Departments of Ophthalmology, Addis Ababa University Medical Faculty, Debub and Gondar Universities to implement projects aimed at addressing the acute shortage of eye care professionals in the country
- Assisted the establishment of the first pediatric eye unit in the country
- Engineers, technicians, managers and end users were trained in repair, maintenance and management of ophthalmic and other medical equipment
- Developing a model rural eye care system with a focus on the leading cause of blindness. Comprehensive eye care projects are being implemented in West Gurage, Kembatta Tembaro and Alaba, Wolaita, Gamo Gofa, Konso and Derashe covering 38 woredas with a population of about 6 million.

Trachoma control activities from 2002 – 2005

- International Trachoma Initiative supported the project and partners/implementers included – Federal Ministry of Health, Regional Health Bureaus, BBC-World Service Trust, Carter Center, World Vision Ethiopia, Water Aid
- Orbis in cooperation with its partners implemented the project in West Gurage with the following objectives:
    - Surgery to reduce the backlog of trichiasis
    - Distributing 200,000 doses of azithromycin per annum (prevalence of active trachoma was 53%)
    - Raise the level of awareness of the population on trachoma prevention
    - Increase the number of households with latrines and garbage disposal pits
    - Develop and distribute teaching aids
    - Build the capacity of 4 health centers and 3 health stations for the delivery of primary eye care including trichiasis surgery
    - Train 20 CHAs and 20 IECWs on trachoma prevention and treatment
    - Improve water supply
- The following were achieved:
    - 8,594 trichiasis surgeries
    - 493,312 persons treated with azithromycin
    - 19,019 persons treated with tetracycline
    - Educational materials produced and distributed
    - 1,189,162 persons educated/informed

- 3,118 demonstration slabs distributed and 4 communal latrines constructed
- 23 IECWs and 153 CHAs trained
- 3 deep and 5 shallow wells were constructed

Research: Research mainly focusing on trachoma control is conducted in cooperation and collaboration with: Addis Ababa University, Ethiopian Health and Nutrition Research Institute, Johns Hopkins University, Proctor Foundation, University of California San Francisco and with the support of Pfizer, ITI, and NEI/NIH. To date, 18 research papers have been published in peer-reviewed local and international medical journals. Two research projects are currently underway: one to develop guidelines for the appropriate frequency of azithromycin distribution and another to evaluate the effects of antibiotics post-surgery on preventing trichiasis recurrence.

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 eyelids by the bacterium *Chlamydia trachomatis*, and can be prevented through simple hygiene. 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, acute stage of the disease is called *inflammatory trachoma*, and is most common among children. 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 pain and scarring of the cornea, which eventually 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, Pfizer's brand of azithromycin, for treatment of trachoma in selected developing countries.

Collaborating to Bring SAFE Together
7th Annual Trachoma Control Program Review
February 23 -25, 2006

Thursday, February 23

8:00 – 8:30	Welcome and Introductory Remarks	Dr. Donald Hopkins Dr. Jacob Kumaresan Dr. Kebede Worku, Ethiopian State Minister of Health

F & E Components of the SAFE Strategy

8:30 – 9:00	Ethiopia presentation and discussion	Dr. Zegeye Haile
9:00 – 9:30	Niger presentation and discussion	Dr. Kadri Boubacar
9:30 – 10:00	Mali presentation and discussion	Dr. Sanoussi Bamani
10:00 - 10:30	Group Photo and Coffee Break	
10:30 – 11:00	Nigeria presentation and discussion	Dr. Omobolanle Olowu
11:00 – 11:30	South Sudan (GoSS) presentation and discussion	Mr. Ben Lopidia
11:30 – 12:00	Sudan (GoS) presentation and discussion	Dr. Awad Hassan
12:00 – 12:30	Ghana presentation and discussion	Dr. Maria Hagan
12:30 – 1:30	Lunch	
1:30 – 2:00	Tanzania Update	Dr. Edward Kirumbi
2:00 – 2:30	Senegal Update	Dr. Boubacar Sarr
2:30-3:00	Coffee Break	

F and E Special Sessions

3:00-3:30	Achieving equity in latrine promotion in Ghana	Dr. Maria Hagan
3:30-4:00	Using mass media to promote trachoma control	Mr. Chad MacArthur
4:00-4:20	Working with UNICEF for F & E	Ms. Therese Dooley
4:20-4:40	The Lay Gayint experience of latrine promotion	Dr. Dereje Habte
4:40-5:00	Toolbox of F & E interventions	Dr. Paul Emerson

Collaborating to Bring SAFE Together
7th Annual Trachoma Control Program Review
February 23 -25, 2006

Friday, February 24

S & A Components of the SAFE Strategy

8:00 – 8:30	Ethiopia presentation and discussion	Dr. Zegeye Haile
8:30 – 9:00	Ghana presentation and discussion	Dr. Maria Hagan
9:00 – 9:30	Mali presentation and discussion	Dr. Sanoussi Bamani
9:30 - 10:00	Coffee Break	
10:00 – 10:30	Nigeria presentation and discussion	Dr. Omobolanle Olowu
10:30- 11:00	South Sudan (GoSS) presentation and discussion	Mr. Ben Lopidia
11:00 – 11:30	Sudan (GoS) presentation and discussion	Dr. Awad Hassan
11:30 – 12:00	Niger presentation and discussion	Dr. Kadri Boubacar
12:00 – 1:00	Lunch	
1:00 – 1:30	Kenya Update	Dr. A. O. Misore
1:30 – 2:00	Mauritania Update	Dr. Sidi Ely Ahmedou
2:00-2:30	Morocco Update	Dr. Jaouad Hammou
2:30-3:00	Coffee Break	

Special Sessions

3:00-3:20	Impact of three years of SAFE in Southern Sudan	Dr. Jeremiah Ngondi
3:20-3:40	Impact of three years of antibiotic distribution in Koulikoro, Mali	Dr. Sanoussi Bamani
3:40-4:00	Who in the community carries the ocular *Chlamydia*?	Dr. Matthew Burton
4:00-4:20	Factors affecting TT recurrence	Dr. Amir Bedri
4:20-4:40	Effect of azithromycin at the time of surgery on TT recurrence	Dr. Matthew Burton
4:40-5:00	Managing Zithromax stock	Dr. Amos Sam-Abbenyi

Collaborating to Bring SAFE Together
7th Annual Trachoma Control Program Review
February 23 -25, 2006

Saturday, February 25

8:00 – 8:30	Prevalence Surveys: Methods	Dr. Jeremiah Ngondi
8:30 – 8:50	Katsina Prevalence Survey	Dr. Emmanuel Miri
8:50 - 9:10	Matameye and Magaria Prevalence Survey	Dr. Kadri Boubacar
9:10 – 9:30	Amhara Blindness Prevalence Survey	Prof. Yemane
9:30 – 10:15	Discussion on Surveys	
10:15– 11:00	Coffee	
11:00–11:15	Lions Club International Foundation Presentation	Ms. Sonia Pelletreau
11:15 – 11:30	Pfizer and ITI Presentation	Mr. Robert Mallett
11:30 – 11:45	Sight Savers International Presentation	Dr. Johnson Ngorok
11:45 – 12:00	Bouamatou Foundation Presentation	Mr. Ould Mohamed Debagh
12:00 – 1:00	Lunch	
1:00 – 1:15	World Vision Presentation	Dr. Joe Riverson
1:15 – 1:30	ORBIS Presentation	Dr. Wondu Aleymahu
1:30 – 2:45	Recommendations and Targets	
2:45-3:00	Conclusions and Reflections	Dr. Donald Hopkins; Dr. Jacob Kumaresan; Representative Ethiopian Ministry of Health

Appendix III: List of Participants

Ethiopia
Dr. Liknaw Adamu
Mr. Melak Alemu
Sr. Abeba Anteneh
Mr. Muluken Asres(The Carter Center)
Mr. Adugna Birhanu
Mr. Asefa Cherinet (ITI)
Mr. Frew Demeke (The Carter Center)
Mr. Debassu Eskeziaw
Mr. Tsega Gelawneh
Mr. Teshome Gebre (The Carter Center)
Dr. Afework H/Mariam
Dr. Dereje Habte (The Carter Center)
Mr. Zegeye Haile
Mr. Tadele Mebrate
Mr. Birhanu Melak
Mr. Berhanu Menber
Ms. Sirgut Mulatu (The Carter Center)
Mr. Getachew Temeche (The Carter Center)
Mr. Gashaw Tesfahun
Dr. Abraham Tesfaye
Mr. Abate Tilahun (The Carter Center)
Mr. Kassa Tiruneh
Dr. Abdu Seid
Dr. Alemayehu Seifu
Dr. Alemayehu Worku
Mr. Alehegn Wubie
Prof. Yemane Birhane
Dr. Hailu Yeneneh (The Carter Center)
Mr. Mulat Zerihun (The Carter Center)

Ghana
Dr. Agatha Aboe (ITI)
Ms. Lydia Ajono (The Carter Center)
Dr. Maria Hagan
Dr. Daniel Yayemain

Government of Sudan
Dr. Awad Hassan
Dr. Tong Chor Malek
Mr. Raymond Stewart (The Carter Center)

Government of South Sudan
Dr. Samson Baba
Mr. Steven Becknell (The Carter Center)
Mr. Ben Lopidia (The Carter Center)
Dr. Pius Subek

Kenya
Dr. A. O. Misore

Mali
Dr. Sanoussi Bamani
Mr. Yaya Kamissoko (The Carter Center)
Dr. Antandou Telly (ITI)

Mauritania
Dr. Sidi Ely Ahemdou

Morocco
Dr. Jaouad Hammou

Niger
Mr. Ali Amadou (The Carter Center)
Dr. Kadri Boubacar
Mr. Mohamed Salissou Kane (The Carter Center)
Mr. Mohamed Samna (ITI)

Nigeria
Dr. Nimzing Jip (The Carter Center
Dr. Emmanuel Miri (The Carter Center)
Dr. Bola Olowu

Senegal
Dr. Boubacar Sarr

Tanzania
Dr. Edward Kirumbi
Dr. Edith Ngirwamungu (ITI)

AMREF
Dr. Festus Ilako

The Bouamatou Fondation
Mr. Mohamed Ould Debagh

Cambridge University
Dr. Jeremiah Ngondi

Appendix III: List of Participants

The Carter Center
Ms. Kelly Callahan
Ms. Elizabeth Cromwell
Dr. Paul Emerson
Dr. John Hardman
Dr. Donald Hopkins
Dr. Moses Katabarwa
Ms. Lindsay Rakers
Dr. Frank Richards
Ms. Lisa Rotondo
Dr. Ernesto Ruiz-Tiben
Mr. Craig Withers

Centers for Disease Control and Prevention
Dr. Mark Eberhard

Christoffel Blindenmission
Dr. Amir Bedri
Mr. Fasil Chane
Dr. Edmund Gabriel

Helen Keller International
Mr. Chad MacArthur

International Trachoma Initiative
Mr. Amos Sam-Abbenyi
Dr. Ibrahim Jabr
Dr. Peter Kilima
Dr. Jacob Kumaresan
Mr. Christian Stengel
Ms. Felicity Turner

Lions Clubs International Foundation
Ms. Sonia Pelletreau

Lions Clubs-Ethiopia
Dr. Berhane Ghebray
Mr. Getachew Desta
Mr. Ramendra Shah
Hon. Dr. Tebebe Y/Berhan

London School of Hygiene and Tropical Medicine
Dr. Matthew Burton

ORBIS International
Dr. Wondu Alemayehu

Pfizer, Inc.
Mr. Robert Mallet
Ms. Lebo Taunyane

SightSavers International
Dr. Johnson Ngorok

World Vision
Dr. Joseph Riverson de Graft
Dr. Sisay Sinamo

World Health Organization
Dr. Daniel Argaw

UNICEF
Ms. Therese Dooley
Mr. Hans Sprujit